

# ARTIFICIAL INTELLIGENCE PRACTICES, OPPORTUNITIES AND BARRIERS IN HUMAN RESOURCE MANAGEMENT

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## Summary

*As organizations progressively integrate artificial intelligence (AI) into their operations, the role of human resource (HR) managers becomes monumental in navigating the complex landscape of AI practices and challenges. This study aimed to investigate HR managers' perceptions concerning AI meaning, its usage in daily business activities, presence of AI in HR departments, and opportunities and barriers for AI adoption. The research employed a single-method approach of questionnaires to gather insights from a diverse sample of HR managers across miscellaneous medium/large enterprises. The findings revealed a nuanced perspective among HR professionals, with a spectrum of attitudes ranging from enthusiasm for AI's potential to concerns about its impact on traditional HR functions. There are a practical and theoretical aspects of this study that are relevant to every industry in determining the practices and opportunities of AI in HRM which improve efficiency, reduce various costs, enhance profitability and add value to overall business.*

**Keywords:** *artificial intelligence, human resource management, human resource, human resource practices*

JEL classification: O15, M12, M54, O32



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## 1 INTRODUCTION

Today's business environment has been increasingly characterized by the usage of artificial intelligence (AI) throughout the different management departments. In order to maximize resources and remain competitive, companies are embracing AI-driven solutions as their crucial part. Even though AI is expected to cause job losses and destroy the very essence of humanity (Agar, 2020), it can help firms to enjoy a number of benefits. Companies can accomplish overall strategic results in an optimal level through AI and similar applications based on intelligent algorithms, such as providing excellent service at a low cost, greater productivity and service quality (Wirtz, 2019). Additionally, the usage of AI brings also other benefits for organizations, named: higher loyalty and engagement of customers, operational efficiency (Prentice & Huyen, 2020), substantial capital and operational cost reduction (Wirtz, 2019), quality of employees' service (Nguyen & Malik, 2022) and return on investment (ROI) (Torres & Mejia, 2017). To create transformative value at low cost, any organization need to intelligently combine people, technology and diverse processes. Regarding human resource (HR) domain, AI is altering dramatically its departments around the world, from automated recruiting process, performance management to personalized training programs. Using AI, many back-office functions will be automated for delivering HR services and transactions with reliability and accuracy. In the recruitment industry, AI replaces regular mechanical tasks that were previously handled by HR recruiters, which can be described as the introduction of the new HR era. Similarly, AI employs real-time data analytics to create suitable development and training plans in the case of every employee. Thus, tools on the basis of AI can reinforce workers' job engagement, commitment, satisfaction (Castellacci & Viñas-Bardolet,

2019), making effective decisions (Azadeh et al., 2018), diminish expenses linked to HR and other departments and improve productivity (Wirtz, 2019). Besides bringing numerous opportunities, adoption of AI technologies can be simultaneously hindered by several barriers. The core question that arises is: "What is preventing AI from being adopted more widely in this field?". Is it primarily because of poor financials, lack of knowledge or something else? This study aims to theoretically explain AI practices, the opportunities and barriers associated with the usage of AI in human resource management (HRM), as well to discover the HR managers' perceptions on AI practices, opportunities and barriers presented in BiH companies.

## 2 MEANING OF AI

Basically, in AI, large data sets are combined with computer science to resolve various issues through the assistance in routine business tasks. More specifically, AI involves developing machines (machines, devices, applications) on the foundations of computer science, that have the capability to react like humans and learn in the same way as humans do. Consequently, predictive analysis and data mining are possible with AI, which analyzes past trends and enables businesses for better and more informed decision-making. AI can be defined as a form of technology that can perform human-like tasks by replicating a certain degree of human intelligence, through understanding, learning from and implementing inputs to realize the specified outcomes. It requires cognitive capabilities of human along with a decision-making process that is adaptive (Tambe et al., 2018). AI machine can emulate human intelligence when fed with tons of data and trained by machine learning models to act intelligently as humans in the role of "intelligent agent" (Russel and Norvig, 2010).

### 3 PRACTICES AND OPPORTUNITIES OF AI IN HRM

In HRM, employees are recruited, selected, provided with training, motivated, retained and utilized to their full potential in an effort to make the enterprise triumph. The digitalization of enterprises requires managers to consider disruptive technologies (such as also AI) for every aspect of their employees' needs. Generally, routine tasks can be automated with the help of AI in HRM, since managing a workforce can overwhelm HR departments with paperwork and administrative tasks. There are multiple feasible applications for AI in HRM domain, which involve for instance: HR planning, recruiting and selection; HR onboarding; HR training and development; talent management; HR compensation management; and HR performance management. More detail description of addressed opportunities is provided in the next segment.

*HR planning, recruiting and selection.* The first step in HRM is to plan for the use of human resources in a strategic manner and AI can enormously help in the efficient process of decision-making and strategic plans accomplishment. For example, AI simplifies the major task of HR planning regarding matching the suited person to the right position, identifying the needs of future workers and communicate job openings better. When hiring requirements continue to grow, AI can assist in speeding up the recruiting procedure (Skil AI, 2020). The use of AI through trained models based on machine-learning can aid in screening resumes (from candidate's education levels, skills to previous experience) and detecting and sorting out a job position's most fitting candidates. Furthermore, AI plays a role in improving the job interview process, as asynchronous video interviews (AVIs) have become more effective than face-to-face interviews (Torres & Mejia, 2017).

*HR onboarding.* "Onboarding" new employees is one of the most important responsibilities of the HR sector, by familiarizing them with the organizational structure, rules, culture, internal trainings, meetings and other firm's standards, procedures and benefits. As a result, new and existing workers usually have a great deal of repetitive questions, and therefore HR staff is burdened with many frequent monotonous activities. An internal virtual assistant (internal HR helpdesk) or a chatbot can handle a variety of recurring HR tasks by answering on regular workers questions and enabling the HR sector to focus on higher-level tasks and to provide more personalized support to employees.

*HR training and development.* Training programs can be effectively planned, organized, and coordinated owing to AI assessment of all workers skill-gap. A number of solutions are available in this regard, such as digital classrooms and online courses. In accordance with the study conducted by Bersin (2017) approximately 25 minutes a week is spent on training and learning by the average employee. Thus, the time should be used appropriately for the development of employee skills through easy digital training methods. In the course of training, workers' progress on a daily basis can be monitored, education events with varying levels of simulations can be retrieved and the amount of their total attention can be computed precisely by a robot instructor that uses scanners for visual identification.

*HR performance management.* Both workers and organizations can benefit from AI-enhanced tools for managing performance. As an example, decision-making tools that use fuzzy multi-attributes or a 360-degree method of performance assessment result in fair and successful workers evaluations. By using these tools, managers can identify workers who need to improve further in some areas (through trainings, additional qualification, talent betterment) and what degree of

improvement is needed in specified areas (Manoharan et al., 2011). Every function and division in the organization can outline its business objectives from the start of the year and afterwards, an all-embracing assessment and analysis can be carried out in line with the performance goals of each individual, collected peer feedback, estimations of department managers and alternative measures (Jia et al., 2018).

*HR compensation and benefits.* The remuneration system automation makes it easier for HR experts in smoothly processing complete HR compensation operations, which is closely linked to managing workers performances results. Based on the existing skills shortages from the databases, an organization's compensation and benefits plan is quickly determined (Pessach et al., 2020). Managers can also make use of AI systems to collect the most relevant workers' benefit and compensation information. More concretely, individuals and teams can benefit from effective system of managing compensations, which calculate diverse salary parameters in relation to their jobs in order to provide its higher fairness.

#### **4 BARRIERS OF AI IN HRM**

HRM also faces many obstacles and challenges posed by AI. One of the issues that concerns HR specialists is about absence of confidence in AI or skepticism about its correctness and reliability. To overcome this challenge, HR workers must be trained about AI's capabilities and in what way to utilize them for making a better decisions and judgements in HR processes. Another worry involves keeping sensitive data safe and private, since HRM deals with collecting and analyzing personal and payroll information of every worker. It is imperative for businesses to incorporate robust protocols for data protection and to obey laws for protecting personal data (such as "General Data Protection Regulation (GDPR)") in order to stop accessibility to sensitive data by unauthorized individuals.

The cost of implementation represents one more barrier since it is required to invest a substantial amount of money in terms of infrastructure, technology, servicing and training for HRM applications powered by AI. Budget-constrained and smaller organizations may find this especially challenging. In accordance with the PWC report, 23% of examined firms showed that implementation cost is actually the main reason why they are prevented from using AI technology (PWC, 2022). In addition to financial obstacles in AI implementation, there is also an issue of resistance to change within organization, which is viewed as common in any innovative technology implementation. It may concern some employees that their jobs will be replaced by AI or make them irrelevant if used in HR management. For this reason, communication of AI's advantages and its capacity of improving experience in work is essential to overcoming this resistance. AI adoption is also hindered by a number of other factors, such as (PWC, 2022): "lack of compelling use case; cybersecurity worries; high complexity of integration; missing technological knowledge; deficiency of qualified workers; and insufficient leadership support". In line with the research outputs of Ernst & Young (2018), an enormous obstacle of AI in HRM represents the fact that AI applications are with limited proof of success and exist only as possible concept.

#### **5 RESEARCH METHODOLOGY AND SAMPLE DESCRIPTION**

As part of our study, we examined HR managers within medium and large enterprises situated in B&H about their perception regarding AI meaning, its usage in everyday life/business, presence of AI in HR departments, and benefits and barriers for AI adoption. I selected firms in line with the classification from Agency for Statistics of B&H, which states that medium enterprises involve firms which employ

from 50-250 workers and large firms employ more than 250 workers. For this research purposes, the questionnaire on AI in HRM was used, which was developed based on research carried out by Kumari and Hemalatha (2019) and comparable research. More specifically, an e-mail method was applied for the purpose of gathering AI-HRM-related information. Overall, I have mailed questionnaires to 67 HR managers within medium/large enterprises in Bosnia & Herzegovina, and 41 answered them (response rate of 61%). In terms of respondents' profile depiction, female HR managers outnumbered male HR managers (64% of female HR managers and 36% of male HR managers). Concerning age groups, the majority of HR managers (79%) belonged to the category of middle-aged (30-50 years old), whereas the rest of HR managers (21%) belonged to the group of 51-60 years old. An analysis of HR managers' educational backgrounds revealed that a master's degree was held by 57%, while a bachelor's degree was held by 43%.

## 6 RESEARCH FINDINGS

A descriptive statistical analysis is presented in this section with regard to HR managers' perception on AI meaning, its usage in everyday life/business, AI presence in HR departments, and AI adoption' opportunities and barriers within medium and large enterprises in B&H. The findings of a study on table 1. revealed that HR managers associate AI mainly with automatization (mean = 4.71; SD = 0.562), even though AI actually comprehends data through simulating human reasoning and learning, while the automation only works with data by executing instructions as directed. Secondly, AI was understood as application (mean = 4.57; SD = 0.601), what is no surprise since the AI has been increasingly utilized in applications for facilitating and resolving diverse everyday industry/life issues in e-commerce, targeted advertising, language translation and many

other fields. Thirdly, HR managers viewed AI as smart computers (mean = 4.32; SD = 0.702), although they complement each other, bringing through AI capabilities of judgement to data processing in an efficient manner. Moreover, many HR managers viewed AI as smart machines and expert systems, while AI's association with robots was the smallest among the offered options.

**Table 1.** HR managers' attitudes regarding the meaning of AI

No.	The meaning of AI	Mean	SD	Rank
1.	Robots	3.61	0.967	6
2.	Smart computers	4.32	0.702	3
3.	Smart machines	4.17	0.780	4
4.	Applications	4.57	0.601	2
5.	Expert systems	4.10	0.795	5
6.	Automatization	4.71	0.562	1

Source: Author's work)

The utilization of AI in daily life is illustrated on the table 2. The first place in the ranking belonged to intelligent internet search (mean = 4.54; SD = 0.623). It signifies that HR managers are well aware that they are using AI in search engines, such as Google, which help them to search online in easier and enhanced way through locating the exact information they are looking for despite the abundance of information available. The "machine/automatic translations" was on the second place when it comes to the AI utilization in everyday life/work (mean = 4.14; SD = 0.775). Thus, HR managers frequently use automatic translations as a cheap and fast way for getting an adequate translation of any text with a general understanding, even though it is not a 100% flawless and makes mistakes since the system is unable to comprehend nuanced meanings and full context. Ranking third was image and video processing (mean = 3.85; SD = 0.902), indicating that HR managers use AI increasingly in order to

edit and enhance video/images' quality. Among other highly ranked AI types that are used in everyday life were: "smart shopping and advertising over the Internet" and "virtual (digital) assistants on a smartphone or personal computer/laptop".

**Table 2.** The utilization of AI in daily life

No.	The utilization of AI in daily life	Mean	SD	Rank
1.	Virtual (digital) assistants on a smartphone or personal computer/laptop	3.66	0.973	5
2.	Smart shopping and advertising over the Internet	3.70	0.934	4
3.	Intelligent internet search	4.54	0.623	1
4.	Machine/automatic translations	4.14	0.775	2
5.	Image and video processing	3.85	0.902	3
6.	Face recognition/biometrics	3.14	1.250	6
7.	Speech and voice recognition	2.65	1.680	8
9.	Chatbots that use natural language processing to create human conversational dialogue (such as ChatGPT)	2.85	1.443	7

Source: Author's work

The HR managers' perception on the application of AI in HRM areas is displayed on the table 3. HR managers perceive that AI is applied the most in HR recruitment department (mean = 3.71; SD = 0.935); following by HR compensation and benefits area (mean = 3.60; SD = 0.983) and HR selection (mean = 3.57; SD = 1.006). They consider that the AI is utilized the least in the talent management department and "HR planning and strategy" since these fields require more specific management skills and capabilities.

**Table 3.** The HR managers' perception on the application of AI in HRM areas

No.	The application of AI in HRM areas	Mean	SD	Rank
1.	HR planning and strategy	2.88	1.437	7
2.	HR recruitment	3.71	0.935	1
3.	HR Selection	3.57	1.006	3
4.	HR onboarding	3.14	1.248	6
5.	HR training and development	3.42	1.071	5
6.	HR performance management	3.48	1.059	4
7.	HR compensation and benefits	3.60	0.983	2
8.	Talent management	2.55	1.687	8

Source: Author's work

When it comes to AI practices that are already used in HRM (table 4.), the HR managers ranked first communication through intelligent systems/groups with workers (mean = 4.57; SD = 0.601). The second most present practice within HRM department in B&H companies was automation of administrative tasks (mean = 4.43; SD = 0.687). HR managers have realized the full potential of AI for facilitating a manifold of daily administrative tasks which are highly time-consuming, from drafting/managing various documents for workers (involving forms and contracts), screening resumes to applicants shortlisting. The third most present AI practice within HRM was measurement of productivity and other performances of workers (mean = 4.12; SD = 0.779), which improves decision-making' efficiency, objectivity and accuracy by swiftly identifying insights and patterns in massive volumes of employee performance data that might otherwise be overlooked.

**Table 4.** AI practices in HRM

No.	AI practices in HRM	Mean	SD	Rank
1.	Intelligent internet advertising for business	3.70	0.933	4
2.	Intelligent candidate assessment system	2.57	1.677	11
3.	Intelligent training system	3.21	1.231	8
4.	Intelligent measurement of productivity and other performance of workers	4.12	0.779	3
5.	Automatic payroll processing	3.24	1.219	7
6.	Getting real-time feedback	3.10	1.266	10
7.	Communication through intelligent systems/groups with workers	4.57	0.601	1
8.	Automation of administrative tasks (for example, using the robots such as Power Automate)	4.43	0.687	2
9.	Automatic use of knowledge from databases (such as Power BI)	3.38	1.086	6
10.	Chatbots that use natural language processing to create human conversational dialogue (such as ChatGPT)	3.17	1.180	9
11.	Expert systems/decision support systems	2.35	1.819	12
12.	Predictive HR analytics	3.54	1.011	5

Source: Author's work

Concerning the opportunities of AI in HRM (table 5.), HR managers saw the highest opportunity in reducing costs in the long run (mean = 4.71; SD = 0.562). Furthermore,

they viewed as the second greatest opportunity an enhanced employee experience (mean = 4.63; SD = 0.587). Thirdly, an improved efficiency was considered as a huge opportunity of using AI in HRM (mean = 4.57; SD = 0.605). Among other opportunities of AI in HRM which had the high mean values were: freeing up time for more important (non-routine) business tasks; greater speed of performing routine tasks; added value for the company (business) and increased profitability.

**Table 5.** The opportunities of AI in HRM

No.	The opportunities of AI in HRM	Mean	SD	Rank
1.	Improved efficiency	4.57	0.605	3
2.	Enhanced employee experience	4.63	0.587	2
3.	Reduced costs in the long run	4.71	0.562	1
4.	Better support for learning and development (training and education)	3.88	0.894	8
5.	Increased accuracy and less possibility of error	3.75	0.912	9
6.	Improved decision making	3.34	1.079	11
7.	Greater speed of performing routine tasks	4.42	0.694	5
8.	Freeing up time for more important (non-routine) business tasks	4.49	0.673	4
9.	Continuous work without interrupting work processes	3.41	1.035	10
10.	Increased profitability	3.95	0.871	7
11.	Added value for the company (business)	4.00	0.810	6

Source: Author's work

The barriers for adopting AI in HRM are addressed in the table 6. The HR managers perceived that the highest barrier in adopting AI in HRM includes lack of trust in AI (mean = 3.71; SD = 0.934). As the second largest barrier was stated lack of technological knowledge of HR workers (mean = 3.57; SD = 0.982), while as the third most present barrier was emphasized data privacy concerns (mean = 3.47; SD = 1.011). Even though the HR leaders in USA considered implementation cost as the core obstacle in using AI technology within HRM department (PWC, 2022), the results showed that within B&H medium/large companies, HR managers found affordable ways to implement AI within HR functions, through using already available AI solutions and customizing them for their firms' needs. Hiring business developers for resolving AI implementation complexities in business has proved as a successful method in many cases.

**Table 6.** The barriers for adopting AI in HRM

No.	The barriers for adopting AI in HRM	Mean	SD	Rank
1.	High cost of implementation	3.28	1.108	5
2.	Lack of convincing use in practice	2.71	1.591	8
3.	Risk of the cyber attacks and data loss	3.42	1.028	4
4.	Lack of technological knowledge of HR workers	3.57	0.982	2
5.	Lack of trust in artificial intelligence	3.71	0.934	1
6.	Insufficient support from the general management (leader) in the company	2.88	1.480	7
7.	Data privacy concerns	3.47	1.011	3

8.	Ethical issues – replicating intelligence	2.90	1.471	6
9.	Narrow specialization without possible general application of learned knowledge	2.64	1.667	9

Source: Author's work

## CONCLUSION

In today's competitive business landscape AI plays a pivotal role in HRM by revolutionizing the way HR functions are performed and enhancing the overall efficiency and effectiveness of HR processes. In this paper the paramount objectives were oriented towards exploring HR managers' perceptions on AI meaning, its usage in everyday life/business, presence of AI in HR departments, benefits and barriers for AI implementation in B&H medium/large enterprises. Regarding the HR managers' perceptions about what AI means, the findings showed that they interpret AI mostly as: (1) automatization; (2) applications; and (3) smart computers. This discovery confirms that HR managers lack the proper understanding of what AI actually is and its differences comparing to other technological terms. On the subject of using AI in daily life, HR managers addressed the next three AI practices as the most utilized: (1) intelligent internet search; (2) machine/automatic translations; and (3) image/video processing. Even though they weren't aware of the fact that AI is behind many of these practices they already use in everyday life, the results pointed to a conclusion that AI is largely present in their day-to-day activities. In relation to the application of AI in the business context (within the HRM department), HR managers perceive that AI is applied the



most in HR recruitment department; following by HR compensation and benefits area and then by HR selection function. In their opinion AI is utilized minimally in the “talent management department” and “HR planning and strategy” since there is a greater need for specific managerial capabilities and skills. Moreover, HR managers ranked the AI practices that have already been used as the part of HRM in the following order: (1) communication through intelligent systems (groups with workers); (2) automation of administrative tasks (for example, using the robots such as Power Automate); and (3) intelligent measurement of productivity and other performance of workers. Concerning core opportunities of AI in HRM, majority of HR managers viewed the highest opportunities in the operational business aspect through reducing costs in the long-run and improving efficiency, what is strengthened also with enhanced employee experience. However, it's crucial to note that many barriers exist for adopting AI in a greater level in HRM, of which the highest barriers include: (1) lack of trust in artificial intelligence; (2) lack of technological knowledge of HR workers; and (3) data privacy concerns. In summary, AI in HRM can greatly enhance the recruitment process, streamline administrative tasks, ensure compliance, provide data-driven HR insights/predictions, and improve engagement/retention of workers. It ultimately allows HR professionals to focus on more value-added, strategic aspects of their role and contributes to a more effective and productive workforce. Recommendations for firms are to start developing the new internal procedures, policies, practices and to upgrade the existing ones on AI usage in the business operations, in order to continue performing

business in more efficient way. HR leadership shall also implement strategies and training programs to enhance AI literacy within HR and other management departments.

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