

# Synergy between Professional Human Resources and Artificial Intelligence: A review of the Consequences of Technological Innovation

Muliati Usman<sup>1\*</sup> Fadhilah<sup>2</sup>

<sup>1</sup>Department of Management, Faculty of Economics and Business, Syiah Kuala University, Darussalam, Banda Aceh, Indonesia

<sup>2</sup>Department of Family Welfare Education, Faculty of Teacher Training and Education, Syiah Kuala University, Banda Aceh, Indonesia

\* muliatiusman@unsyiah.ac.id

---

**Abstract:** The purpose of this study is to provide a review on professional human resources and artificial intelligence (AI) and the consequence of technological innovation. This study identifies that AI has become a dilemma in the digital era on the human resource (HR). In particular, AI raises many questions and becomes a problem in organizations. It has well known that AI provides high impact on the work activities. On the other hand, the presence of AI is considered a threat that has the potential to replace human roles in various aspects of life. However, there are still lack of studies that focused on this issue. Therefore, this study, attempts to review critical aspects that should be considered by organization to solve this phenomenon.

**Keywords:** Professional Human Resource, Artificial Intelligence, Technological Innovation

**Paper type:** Conceptual paper

## 1. Introduction

The presence of AI has raised many questions for the current digital era. AI has a positive impact to the organization or business, on the other hand, the presence of AI is considered a threat that is feared to have the potential to replace the role of humans (Khatri, et al., 2020). There are various assumptions that can be found regarding the presence of AI. For example, a techno-deterministic approach confirms that this era of development is inevitable. It is the price to be paid to benefit from the rewards of technological progress. Therefore, limiting the functioning of new technologies in the workplace will certainly reduce the progress of the economy and society in general. If these limits can theoretically be applied through regulation, there is also a risk of creating the impression that regulation of the introduction of new technology tools and machines will have implications for the quantity and quality of work. Attempts to regulate the effects of technological breakthroughs will hinder innovation and cause economic losses (De Stephano, 2019).

Humans and machines coexist in the job market as a contradiction to the machine alternative that eliminates jobs as a different view of the presence of AI (Hamid et al., 2017). To answer this dilemma, experts have emphasized that the presence of AI in the Industrial 4.0 era will not have a bad impact that becomes a deviation or brings a big problem and of course humans will still be able to live side by side well and keep winning or controlling, so they are able to guard well presence of AI (Khatri et al., 2020). In understanding how advances in artificial intelligence are changing the environment or workplace and also the work of managers in the coming years, it is also necessary to

realize how clearly AI has provided such great value or benefit to progress (Agrawal, et al., 2017). Regardless of the scenario that automation is assumed to be the elimination of human work, machines and humans can collaborate with each other to promote positive collaboration. Automation is not the elimination of jobs, but how artificial intelligence is able to generate or establish cooperative cooperation between humans and machines (Hamid et al., 2017).

HR must be able to coexist or adapt to the AI technology. To be able to realize the synergy between HR and AI, it is necessary to understand that the twenty-first century is the century that will truly bring about the impact of this convergence in life. This new era demands professional human resources who master the skills to harness the power of these technologies and also demand readiness to understand the consequences (Skilton & Hovsepian, 2017). Thus, AI demands the importance of digital mastery by HR in order to be able to increase capabilities. Utilization of technology will be able to maximize organizational members to be able to work optimally, which will improve performance so that technology will be able to accommodate management functions in an organization.

In this regard, AI affects and presents a challenge for humans because of some of its very important characteristics, namely building trust, interpersonal skills and interfaces, large investment and higher productivity and profits. Simultaneously, it demands an increase in human resource skills to deal with technological changes (Khatri et al., 2020). Artificial intelligence requires human cognitive intelligence. AI technology is more than concerned with applying technology to address industry problems of value creation and productivity improvement. However, the technology never creates business value if the problems in the industry are not well understood and studied. Thus, humans and technology complement each other (Khatri et al., 2020).

Therefore, HR and AI must be able to synergize so that they can provide optimal benefits to increase HR productivity that supports the successful achievement of organizational goals. HR must be able to optimize the capacity they have so that there is a significant collaboration between HR and technology, in this case through the use of AI. We must be able to clearly identify that the presence of AI is nothing to worry about because AI is not to replace the role of humans but is only an effort to make human work easier and simpler.

Meanwhile, along with the increasing importance of digitization, technological innovation has become an important research agenda due to the increasing need for new digital solutions (Yablonsky, 2019). Overall, there are some researches and reports from leading technology providers and articles in top management magazines, such as the Harvard Business Review and the MIT Sloan Management Review that provide companies with strategic and practical guidance on how to leverage AI. However, this study found that there are very limited studies that focus on how humans can synergize with AI to minimize the negative impact of technology. This study views that there is important for further investigation on this issue. Considering this, the present study aims to provide a review on how Professional HR and AI can coexist in increasing organizational productivity.

## **2. Literature Review**

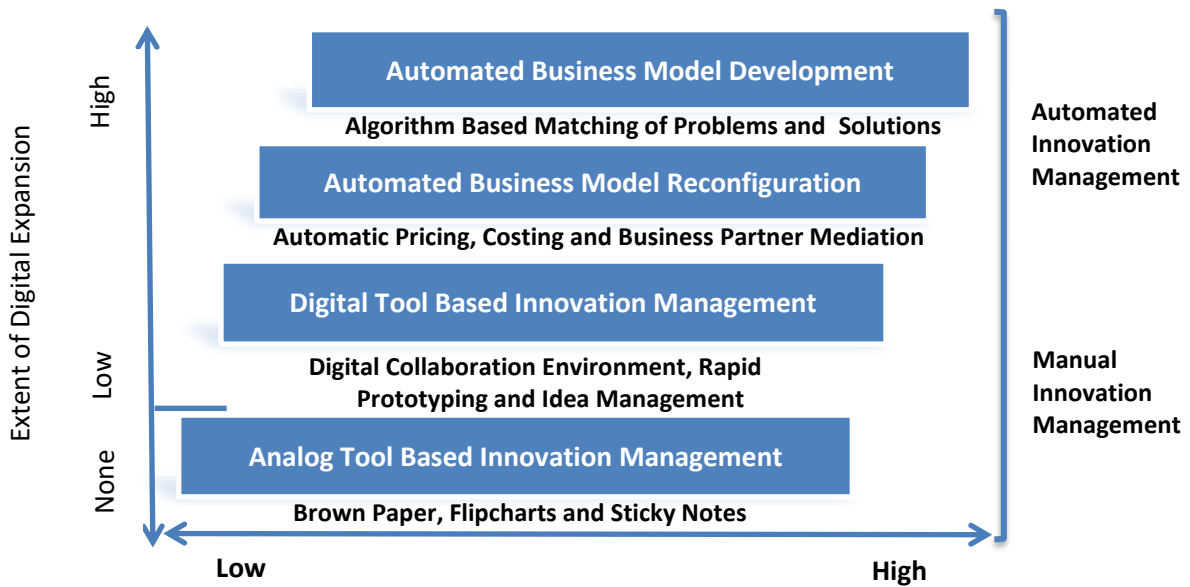
### **A. Professional Human Resource in the Digital Transformation Era**

HR is the main asset in the organization that must receive special attention in the era of digital transformation. Human resource development in the era of digital aims for the advancement of individuals and organizations. Qualification development refers to ongoing training for employees to equip them with the necessary qualifications aimed at planning and realizing midterm positions/successions in a manner that suits the needs of the organization as well as individual

potentials and ambitions. But the most important thing at this time is the adoption of advanced technology for the advancement of employees (Strohmeier & Piazza, 2015).

This study considers that AI is the best example of science and technology that helps employee productivity and human resource management in a way that doesn't interfere with or negatively impact other activities. As stated by Khatri et al., 2020, it must be realized that human resource management can be measured both qualitatively and quantitatively by considering the vision, mission, planning, strategy, policy, culture, structure and communication of an organization. But what is very important is to adopt technology to improve employee progress, their motivation and retention. AI is the best example of science and technology used to help employee productivity and human resource management. In the following picture you can see the impact of innovation and human resource management with digital penetration, which clearly represents the era of the automated business model (see figure 1).

Figure 1. Impact of AI on HR



Source: Khatri et al. (2020)

Human resources are the blood stream of the organization. Managing human and industrial resources is an integral part of economic and technological development. It deals with the work cycle from recruitment to employee retirement. It demands continuous learning, creativity and resource innovation to deal with the product life cycle, design, manufacturing planning, process results, service, distribution and reclamation since it is an economically profitable combination and coordination of product, supply, service and HR (Khatri, et al. 2020). Indeed, AI influences and challenges humans for very important activities like to build trust, improve interpersonal skills, high investment and higher productivity and returns. However, all of these aspects demands improvement human resource skills to cope with technological change so that AI presents many questions and poses a dilemma for human resources in organizations regarding what are the possible or will be benefits, and consequences and also the impact of AI? It can be understood the degree of impact of innovation and human resource management with digital penetration, which clearly indicates the coming era of automated business models. Thus, AI will help HR professionals better understand that they are a workforce that must ready to forecast future issues and trends. AI is a tool that will

solve all the complicated manual analysis and tasks of HR and thus enable the workforce to do more productive tasks.

## B. Basic Concepts of Artificial Intelligence

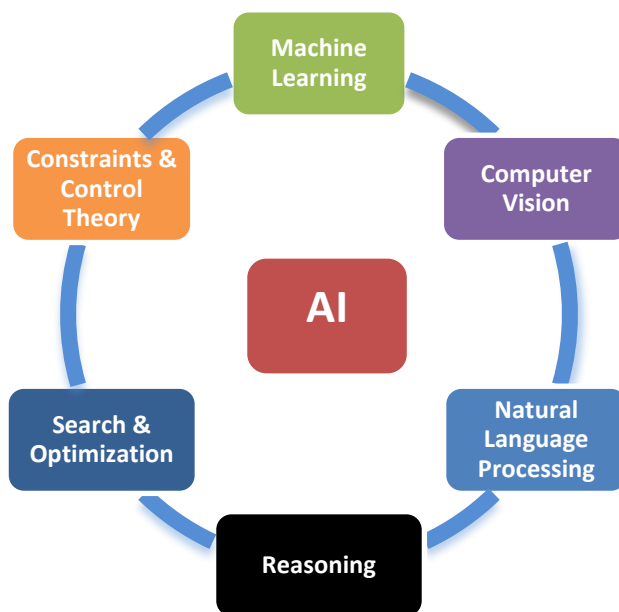
There is no generally accepted definition of AI. However, AI is often defined as the ability of machines to learn from experience, adapt to new inputs, and perform tasks like humans. AI was first introduced in the 1950s. Since then, AI has experienced ups ("AI springs") and downs ("AI winters"). With the rapid advancement of Big Data technology, e.g. increased computing storage capabilities and super-fast data processing engine speeds, AI is revitalized with the availability and power of Big Data (Duan et al., 2019). Buzko et al. (2016) affirmed that computing is an important part of modern management because of an environment that demands rapid change. The traditional approach must be replaced with manufacturing systems that need to continuously adapt to information technology, namely AI technology focuses on the reproduction of the principles of human intelligence.

According to Livingston & Risse (2019), AI is termed as "machine learning" and "deep study." Through machine learning, the algorithm is trained to identify relationships, develop predictive models, and make decisions. If the better data, the better the algorithm. In some cases, users of websites, social media, and other platforms apply the algorithm by interacting online. Further, Yablonsky (2019) confirmed that AI is a digital innovation which presents a good change solution for company's products, services and business. Therefore, Yawalkar (2019) claimed that AI is intelligence that is demonstrated by different machines with natural intelligence carried out by humans which is very helpful in various business functions so that it helps to reduce workload and work pressure on employees in the workplace. While, Agrawal (2017) claimed that AI presents the opportunity to make things work, which has been relatively effective and efficient. In other words, AI is having the ability to take the information you have and generate the information you previously did not have. AI is linked to advancements that can help us solve the problem. It is how information and technological change has affected the high costs that must be incurred and anticipated how AI can impact workers and managers.

However, this study identifies that AI is automation of work activities by robot or machine that requires special handling from humans. This fits with the concept proposed by Khatri et al. (2020) that confirmed AI performs functions that are usually carried out by individuals who require human cognitive intelligence. Therefore, AI is more focused on applying technology to solve problems in the industry in order to create customer value and increase productivity. AI is a specialized stream of computer science that enables or builds intelligence in machines and systems, leveraging the available Big Data around. Humans have created computers, networks, the internet, and cloud servers, enabling them to begin collecting enormous transactional data. AI takes advantage of this, with the help of complex algorithms, leverages Big Data to create predictive solutions to human problems. All these solutions have always been the exclusive domain of mankind, as our evolving minds have species. AI is now trying to provide machines with similar characteristics to the human brain, in order for them to be intelligent. We can see many examples scattered around us, from digital assistants to robots, voice recognition to digital customer service agents. Machines are programmed to demonstrate human nature skills such as reasoning, knowledge, problem solving, learning, perception, planning, manipulation, and others using algorithms and programming. AI is indeed an ensemble of many technologies, namely machine learning, computer vision, and others. AI is the fourth stage of automation in technological development. Then, it is a fact that the third stage of technological development, namely automation, is already contributing to the job loss of workers. AI aims to develop cognitive skills and powers, AI is already present in voice assistance, facial

recognition, science fiction games and is faster than humans in things like using apps, sensing the environment and acting according to some examples of AI, which forces us to think about future job challenges, whether self-driving cars, cashiers and free store vending, and so on. In fact, AI has applications in almost all fields such as healthcare, automotive, finance, economics, infrastructure, manufacturing, and others (see figure 2).

Figure 2. AI Topography



Source: Khatri et al. (2020)

Therefore, this study recognizes that AI is automation or robot by machines through the use of information technology that produce extraordinary output compared to humans as individuals, both in terms of quality and quantity of work that is equal to human intelligence. Indeed, AI and HR still need a collaboration so that all activities can run optimally because the implementation of work activities is not only related to technical activities but also requires considerations that can only be performed by humans as the main part of organization.

### C. The Impact and the Advantage of AI Technology

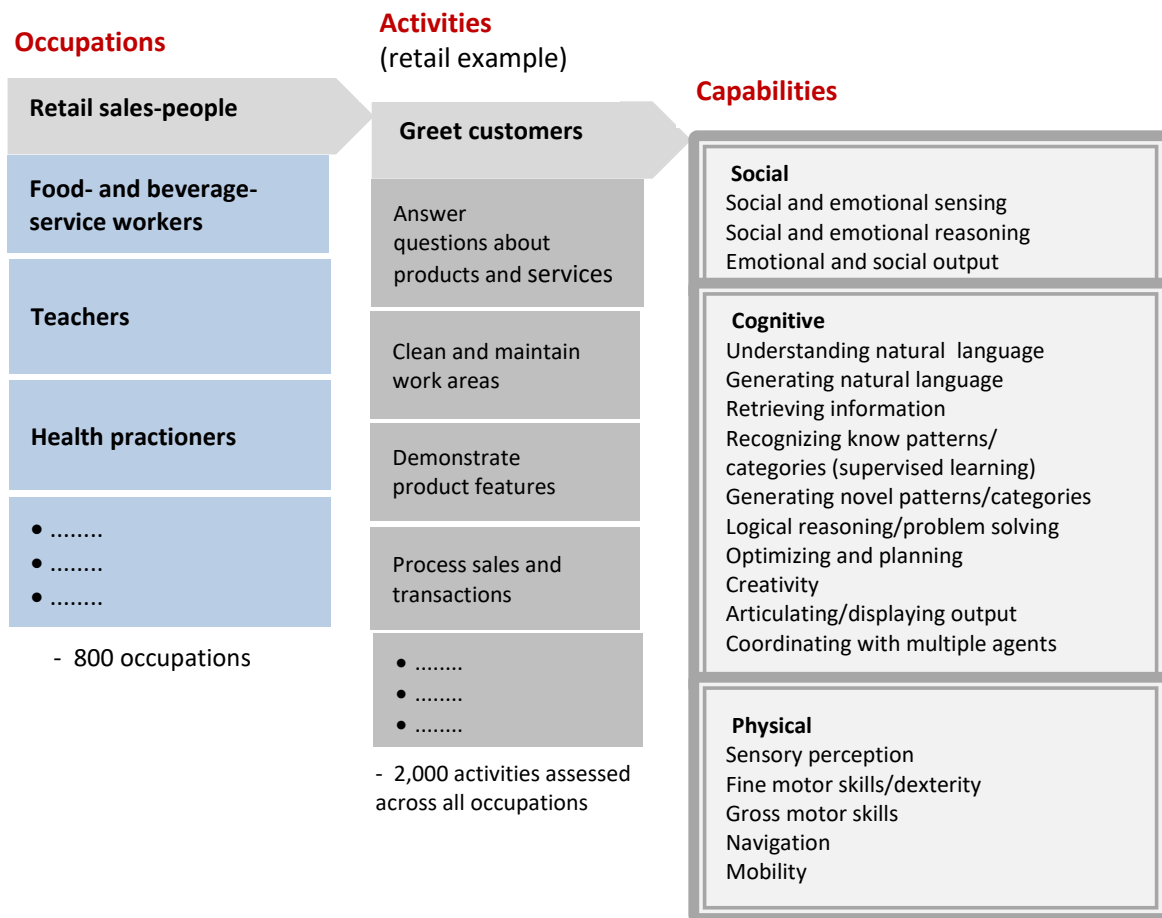
Generally, many studies that specifically discuss the impact of AI and strategies for dealing with it. A study by Vochozka et al. (2018) discussed how to participate in a highly automated society as a result of artificial intelligence disrupting the job market. De Stephano (2019) insisted that all of these assumptions must be questioned. Regulation effects of the use of device technology on the quality of work and human dignity of workers already exist in many countries around the world. Moreover, many jurisdictions already have regulations that aim to reduce the social impact of mass redundancy and job loss, also related to automation and technological innovation.

Further, Duan et al., 2019 found that AI has a great impact on decision making in the era of Big Data-Evolution. According to Yablonsky, 2019, AI can support leaders and their management team to be able to deliver more effectively measurement and management of their intellectual. At the same time, Buzko et al. (2016) claimed that in today's modern business conditions will be relevant to using artificial intelligence technology as a method for decision making because it refers to the

sustainable paradigm (learning artificial intelligence) that allows faster and more accurately adapt to environmental requirements.

This study considers that automation by AI has a huge impact on various human resource activities. The benefits obtained are very immense from when done manually by workers. It is not only routine activities by ordinary staff but also activities at the leadership level, namely planning, organizing, actuating and controlling, all of which can be automated through technology, namely AI, so that it has an impact on the finances and competitive advantage of the organization. The statement mentioned in this study fits to the research by Chui et al. (2015). Specifically, they compiled an analysis of about 2,000 different work activities. They found that individual activities can be automated by adopting current technology as much as 45 percent, including the organizational implications and great leadership. Frontline leaders need to redefine jobs and processes in order for their organizations to take advantage of the automation potential distributed among them. Automation has the potential to change business processes, starting from increasing output to higher quality because it has the potential to perform several tasks at the superhuman level which would usually require large costs if with individual personnel. This shows the immense benefits of automation to organize, manage, and lead so that it becomes even more automated in this competitive era. In order to understand the impact of technology automation (see figure 3)

Figure 3. The Impact of AI in Various Work Activities



Source: Chui et al. (2015)

Further, Big tech companies like Apple, Google, and Amazon are prominently displaying artificial intelligence (AI) in their product launches and acquiring AI-based startups. Interest in AI triggers a variety of reactions - everything from excitement about how capabilities will add to human work. The way to assess the impact of such radical technological change is to ask fundamental questions: How can technology reduce costs? Only then can we really know how things might change (Agrawal, et al., 2017). While, Abdeldayem & Aldulaimi (2020) claimed that AI is the application when machines are able to imitate human "cognitive" functions with other people such as "learning" and "problem solving". Therefore, this study viewed that AI has a tremendous impact on organizational productivity. It can affect the automation of human resource activities both at the employee level and at the leadership level. We have to realize that automation can provide extraordinary results for organizational activities. Likewise, with leaders, many decisions are based on various policies. A leader is able to affiliate with AI so that he can take the best decisions for the organization. The same benefits are also obtained by the workers.

#### D. Human Resources and Artificial Intelligence: Consequences of Technological Innovation

There is an urgent need to embrace human resources as a result of the impact of AI and automation. The impact is significant on the facilities and work of those who support the digitization of human resources. Therefore, human resources must be fully prepared to support digital transformation. When human resources are not able to adapt, they will risk being left behind (Abdeldayem & Aldulaimi, 2020). Currently, the perception formed in the organization that the presence of AI is a threat. Specifically, Khatri et al. (2020) identified some impacts of AI on HR. The open questions and problem statements to analyze the interdependence or rather the impact of AI on human resources are as follows:

- (a) Will artificial intelligence replace human resources?
- (b) Does artificial intelligence create job opportunities?
- (c) Can AI and human resources complement each other?
- (d) Will AI create a demand for human resources with newer and more specialized skills?
- (e) Is the organization prepared for AI threats and challenges?
- (f) What type of strategy should be adopted by the organization to retain, motivate and develop its human resources?

This study assumes that the environment is concerned about the presence of AI because it is relevant to replace the role of humans, who will be replaced by robots. Worker interaction with increasingly smart technology and robots are risky, which introduces new elements of dehumanization. This is a trend that could be exacerbated by growth of collaborative robots or co-bots, i.e. robots that physically interacting with human users in a shared workspace that may eliminate or minimize the role of human supervisors in manage workforce (De Stefano, 2019). Thus, the risk of dehumanization of workers will increase conflict when it is related to rights and obligations that will conceptually equate robot or machine with humans.

Technology is not only changing the way things work, it is also changing the company's personnel practices. Employers rely on tools built using big data and AI to try to solve the most vexing problems facing human resources departments, such as how to successfully recruit and retain productive employees (Kim, 2019). However, people and technology complement each other in running and advancing organizational growth. The requirement for human is to improve their existing skills and demonstrate a desire to learn newer skills, namely knowledge-based techniques to confront and compete with AI. Thus, AI promises to be the biggest technological change in our lives. Every industry will have to fundamentally reassess how it operates to incorporate AI and coexistence with machines, which will be a very valuable partner in solving real problems. We can say that the

aims and objectives of the organization must be aligned with changing and implementing it in a structured manner, considering and prepare employees through necessary training and skills that needed to be updated and upgraded, as they too can break down if not mapped by technology. That is the key to successful human resource management (Khatri, et al. 2020).

In today's era, AI is ways for organizations to manage and develop a human resource in order to improve productivity and increase productivity of staff. It has become imperative and important in today's millennial business world that the use of new knowledge by employees is supported by technology. The new generation of employees that can be done through the most effective way, namely through technology so that employees ready to adopt digital transformation in AI. In addition, it can take advantage of technology in the workplace by empower employees to do their work in line with the new digital era (Abdeldayem & Aldulaimi, 2020). AI is clearly more than just the integration of new technology components, but is also a dynamics of socio-technical systems. There exists a need to better understand the dynamics to explore the potential for collaboration. Therefore, it should also be taken into account the risks and unintended consequences that may occur as a result of integrating AI in the workplace

HR professionals should be aware that they must be able to apply AI techniques in their work activities. Having advanced technical AI technical skills is a prominent method of harness the so far untapped potential of AI techniques that create value for HRM (Strohmeier & Piazza, 2015). However, Khatri et al. (2020) claimed that cognitive intelligence is crucial when dealing with AI. Thus, AI is now trying to provide machines with similar characteristics to the human brain, in order for them to be intelligent, we can see many examples scattered around us, from digital assistants to robots, voice recognition to digital customer service agents. Machines are programmed to demonstrate human nature skills such as reasoning, knowledge, problem solving, learning, perception, planning, manipulation, and others using algorithms and programming. AI is indeed an ensemble of many technologies, namely machine learning, computer vision, and others.

According to Abdeldayem & Aldulaimi (2020), the impact of AI is clearly a major emerging trend in the rapidly changing HR field. Implementation of technology, including privatization, which is far different from the way past HR programs used AI technology. It means that the systems that have been introduced in the employee environment will help increase employee productivity. There is a need for continuous support for learning AI technology as an evolution of automation and the use of technology that will be very important for the success of human resources in the future to ensure employees to be assigned to new jobs. Organizations must ensure that employees mastering technology since business changes affect their work. They must acquire the skills to continue their future success. Thus, the company must build an infrastructure that supports employees in the organization's efforts to learn new technology skills to develop their ability to anticipate changes in the field.

Recent study by Liu et al. (2020) found that in countries that are relatively low level of technological development, it is necessary to develop a strategy and application of AI that should be formulated to promote the creation of knowledge or skills on the effects of using technology to increase the level and the magnitude of national technological innovation. Further, Khatri et al. (2020) claimed that cognitive intelligence is crucial when dealing with AI since AI is now trying to provide machines with similar characteristics to the human brain in order for them to be intelligent.. Similarly, study by Rampersad (2020) found that critical thinking have significant effect on the AI development. The application of critical thinking by considering various actions is very important for innovation to run successfully. Critical thinking is needed to critique market and business opportunities, identify candidates of consumers, partners, and financial scenarios that drive success innovation.



This study clarifies some critical aspects for organization in dealing with AI in order to synergize the link of human resource professional and AI i.e. capacity for assimilating or adapting AI, capability/specialized of AI and capacity for cognitive intelligence/critical thinking as shown in Table 1.

**Table 1. Matrix of Critical Aspects for Dealing With AI**

<b>Author/Year</b>	<b>Capacity for Assimilating/ Adapting AI</b>	<b>Capability/ Specialized of AI</b>	<b>Capacity for Cognitive Intelligence/ Critical Thinking</b>
Ford (2013)	√		
Strohmeier & Piazza (2015)		√	
Buzko et al. (2016)		√	
Hamid et al./2017	√		
Agrawal et al. (/2017)		√	
Skilton & Hovsepian (2017)	√	√	
Makridakis (2017)	√		
Kim (2019)		√	
Livingston & Risse (2019)	√		
Topol (2019)	√		
Khatri, et al. (2020)	√		√
Paschen et al. (2020)		√	
Abdeldayem & Aldulaimi (2020)	√	√	
Liu, et al. (2020)			
Wilkins (2020)	√		
Rampersad (2020)			√
Abdeldayem & Aldulaimi (2020)	√		

Source: Compiled by the authors

This study identifies that the capacity of worker for assimilating or adapting AI and capability/specialized of AI as a skill for the worker. It is the most important aspects that need to be considered by organizations to be successful in synergizing professional human resource and AI. Therefore, Ford (2013) confirmed that even though advances in AI and robotics will certainly provide significant implications for the development of the economic system, it must be pointed that AI could not create an unemployment crisis. Technology does not have to cause workers to become unemployed. The best solution is that workers have to adapt and migrate to new skills because these jobs are their routine work. Thus, there is no need to worry on the presence of AI.

### 3. Implication

This study is expected to provide theoretical as well as practical benefits. From a theoretical point of view, this study will provide benefit that contribute to science, especially related to the problems being discussed. This study considers that there is still a need for references that can be used as a basis for decision making by managers in the face of the presence of technological innovation. It is hoped that this study will also contribute to the problem of professional human resource and AI in organizational or business activities in the digital era, which is highly dependent on the use of technological innovation. This study will present new treasures that are relevant to today's world

developments, namely the presence of technology in an organization or business that must be addressed wisely.

#### **4. Discussion and Conclusion**

This study considers that individuals can manage the era of digital transformation. Automation by the machine is not the elimination of jobs in HR but how HR and artificial intelligence are able to synergize by migrating, adapting and increasing the capacity of Professional HR towards the mastery of AI technology. Thus, the synergy of professional HR and AI is very important in the success of the organization in achieving the goals that have been set. Without good coordination, there will be many obstacles and challenges that must be faced in carrying out business or organizational activities in the current era of digital transformation. HR must be able to adapt to the trends that exist in the current organizational environment that the progress of AI will determine the success of the organization's work activities. With the skills or skills possessed, HR will be able to become a leader or be able to lead the technological machines that currently dominate human life.

This study concludes that with the competencies possessed, HR will be able to accommodate the presence of technological innovation without any concern that machines will replace the role of humans. The limited capabilities possessed by HR in the IT field are challenges and obstacles that must be anticipated by managers. It is necessary to prepare human resources who are very familiar with technological innovations brought by AI. Through various trainings that will improve HR competencies, the organization will be ready for the presence of technological innovation. Thus, the integration of professional HR and AI is not a threat but an important opportunity that needs to be utilized optimally in the era of digital transformation.

These are good indications of the negative assumptions that might emerge in response to serious speculation about the possibility that technological advances could destroy jobs and lead to long-term structural unemployment. Nonetheless, advances in artificial intelligence and robotics are rapidly pushing us to a point of inflection where the historical correlation between technological progress and broad-based prosperity is likely to decline unless our economic system adapts to new realities. Why are the implications of today's information technology acceleration different from past innovations? The answer, then, lies in the nature of the transition that the majority of the workforce will need to adapt and remain relevant. It can be identified that the synergy of human resources and AI is the appropriate collaboration that becomes a strength for the industry. It is not vice versa as a threat that needs to be worried by the human. Professional human resources must be ready to face the presence of AI and robots so that they can have expertise in mastering the AI technology so that they can take full advantage of it. AI does not need to be avoided since the digital era must be faced with the capabilities possessed by professional HR on technological innovation.

#### **Reference**

- Abdeldayem, M. M., & Aldulaimi, S. H. (2020). Trends and opportunities of artificial intelligence in human resource management: Aspirations for public sector in Bahrain. *International Journal of Scientific and Technology Research*, 9(1), 3867-3871.
- Agrawal, A., Gans, J., & Goldfarb, A. (2017). *What to expect from artificial intelligence*. MIT Sloan Management Review.
- Buzko, I., Dyachenko, Y., Petrova, M., Nenkov, N., Tulenina, D., & Koeva, K. (2016). Artificial Intelligence technologies in human resource development. *Computer modelling and new technologies*, 20(2), 26-29.

- Chui, M., Manyika, J., & Miremadi, M. (2015). Four fundamentals of workplace automation. *McKinsey Quarterly*, 29(3), 1-9.
- De Stefano, V. (2019). "Negotiating the Algorithm": Automation, Artificial Intelligence, and Labor Protection. *Comp. Lab. L. & Pol'y J.*, 41, 15.
- Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2019). Artificial intelligence for decision making in the era of Big Data—evolution, challenges and research agenda. *International Journal of Information Management*.
- Ford, M. (2013). Could artificial intelligence create an unemployment crisis?. *Communications of the ACM*, 56(7), 37-39.
- Hamid, O. H., Smith, N. L., & Barzanji, A. (2017, July). Automation, per se, is not job elimination: How artificial intelligence forwards cooperative human-machine coexistence. In *2017 IEEE 15th International Conference on Industrial Informatics (INDIN)* (pp. 899-904). IEEE.
- Khatri, S., Pandey, D. K., Penkar, D., & Ramani, J. (2020). Impact of Artificial Intelligence on Human Resources. In *Data Management, Analytics and Innovation* (pp. 365-376). Springer, Singapore.
- Kim, P. T. (2019). Big Data And Artificial Intelligence: New Challenges For Workplace Equality. *University of Louisville Law Review*, 57(2).
- Liu, J., Chang, H., Forrest, J. Y. L., & Yang, B. (2020). Influence of artificial intelligence on technological innovation: Evidence from the panel data of china's manufacturing sectors. *Technological Forecasting and Social Change*, 158, 120142.
- Livingston, S., & Risse, M. (2019). The future impact of artificial intelligence on humans and human rights. *Ethics & international affairs*, 33(2), 141-158.
- Makridakis, S. (2017). The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. *Futures*, 90, 46-60.
- Paschen, U., Pitt, C., & Kietzmann, J. (2020). Artificial intelligence: Building blocks and an innovation typology. *Business Horizons*, 63(2), 147-155.
- Rampersad, G. (2020). Robot will take your job: Innovation for an era of artificial intelligence. *Journal of Business Research*, 116, 68-74.
- Skilton, M., & Hovsepian, F. (2017). *The 4th industrial revolution: Responding to the impact of artificial intelligence on business*. Springer.
- Strohmeier, S., & Piazza, F. (2015). Artificial intelligence techniques in human resource management—a conceptual exploration. In *Intelligent techniques in engineering management* (pp. 149-172). Springer, Cham.

- Topol, E. J. (2019). High-performance medicine: the convergence of human and artificial intelligence. *Nature medicine*, 25(1), 44-56.
- Vochozka, M., Kliestik, T., Kliestikova, J., & Sion, G. (2018). Participating in a highly automated society: How artificial intelligence disrupts the job market. *Economics, Management, and Financial Markets*, 13(4), 57-62.
- Wilkins, U. (2020). Artificial intelligence in the workplace—A double-edged sword. *The International Journal of Information and Learning Technology*.
- Yablonsky, S. (2019). Multidimensional data-driven artificial intelligence innovation. *Technology innovation management review*, 9(12), 16-28.
- Yawalkar, M. V. V. (2019). a Study of Artificial Intelligence and its role in Human Resource Management. *International Journal of Research and Analytical Reviews (IJRAR)*, 6(1), 20-24.