Reinventing Human Resource Management in the Era of Artificial Intelligence

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Abstract. Technology based on artificial intelligence is now widely used. AI is the driving force behind everything today, which has altered our approach to life. This paper provides a broad overview of the integration of artificial intelligence into the HRM function. AI-assisted decision-making may allow human resources staff to focus on important duties. HR is using AI increasingly and help organizations move from reactive to pre-emptive problem-solving will turn HR departments into strategic decision-making hubs. Numerous case studies that highlight the benefits and limitations of this cutting-edge technology are used to analyze how AI will affect the administration of human resources. The findings show the importance of HRM in the application of AI. Companies should use AI to supplement human resources. Technology and automation should help human resources accomplish its work. This study investigates AI in HR and its future, which may assist experts and HR professionals.

Keywords: Artificial Intelligence, Human Resource Management, Technology, Big Data

1 Introduction

The development of Artificial Intelligence (AI) is altering people's daily lives since it allows machines to perform tasks that previously required human intelligence. The fields of finance, agriculture, healthcare, production, sales, e-commerce, as well as human resource management seem to be just a few of the many that have used this tool. Given AI's potential to one day replace human intelligence, it has found favor and acceptance in many different areas. One of the most talked about HR developments right now is the use of AI (AI). Terms like "data mining," "machine learning," "deep learning," and "neural networks" that were once unfamiliar are now often used. Artificial intelligence (AI) is no longer a far-off notion, as many companies have already adapted and began using it to their advantage.

Computer intelligence, human intellect emulation, and mind machine are just a few of the names given to AI. According to [6], "artificial intelligence" is "the engineering and science of creating intelligent machines" .Amazon has filed two patents for "intelligent machines"

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including a bracelet that monitors workers' tasks, locations, and activity in a warehouse. The band can vibrate whenever a worker accesses the incorrect shelf or is detected in the wrong location, for example, in addition to just tracking these data [19]. This is a specimen of another type of AI implementation in what way AI may aid in the creation of machines that are aware of their surroundings and act as if they can think [10].

There are many possible applications of artificial intelligence. Automation in the form of robots can let people do the same or similar tasks over and over again without getting bored. In contrast to the recurrent scripts required by some Cloud-based solutions, machine learning solutions can operate independently [17] . On the other end, machine learning can immediately gather and understand data, recognize languages, understand workflows, and develop manufacturing processes that can be automated. There are self-driving car prototypes that are capable of performing tasks like deep learning and computer vision using machine learning [5] .

Over the next few years, AI will undoubtedly have a growing effect on the labor market [28]. In major work in this field, initial AI pay-out forecasts have been revised over time [39]. [7] believes that new jobs will be produced as a result of emerging technology such as artificial intelligence, robots, drones, and self-driving cars. Even if we accept the reasonableness of this reasoning, job loss and job growth are unlikely to occur at the same time: there will inevitably be a transition period. [48] argue that to deal with this anticipated shift, industry representatives and regulatory agencies will place a high value on re- and up-skilling their workforces.

Numerous definitions of artificial intelligence (AI) have been proposed in the literature, and they all center on AI's capacity to mimic human cognition and learning. "a system's ability to accurately absorb external perspective, learn out of that data, and employ those learnings to fulfill specified goals and tasks via flexible adaptation," states another study [41]. To paraphrase an AI strategy, "machine-processable instructions to execute tasks which would demand clear cognitive capacities if solved by humans" [13]. This research identifies knowledge discovery (the extraction of useful data), knowledge representation (the representation of relevant information in a form that machines can recognize and use while solving difficult problems), knowledge processing (the creation of knowledge acquisition using recognized knowledge), methods for searching alternatives, text processing, and speech processing as the main categories of AI functions. Several companies have already started using AI in their daily procedures. Companies are embracing modern technology and digital transformation because they recognize the immense value of data and its crucial role in the success of both individuals and the larger organization [11].

The purpose of this literature review is to examine the applications of AI in the field of human resources and to discuss the advantages, disadvantages, and future possibilities of this technology. The use of secondary data from applicable studies allows for this to be achieved.

Incorporating AI into Human Resource Management

AI technology is revolutionizing every facet of human resources management (HRM). Currently, virtual assistants help with HRM activities like hiring, choosing employees, training & development, performance evaluation, and employee engagement. Human resource

management's initial and most crucial stage is human resource planning. The Human Resources Information System can help with this. HRIS is described as "a systematic technique for acquiring and maintaining necessary data by an organization in relation its organizational unit features, personnel activities, and human resource needs" [15]. HRIS can help with HR planning, job roles, performance reviews, training initiatives, and more [9]

A. Recruitment and Selection

The capacity of AI to process a large volume of application submissions fast and accurately is advantageous to businesses and recruiting firms. In the modern world, businesses can utilize artificial intelligence (AI) to increase candidate engagement and use both high high-touch and high-volume recruitment strategies, culminating in a long-term relationship to their potential employees. AI-powered bots are used to contact with potential employees, respond to their inquiries, and otherwise keep them active and involved during the hiring process [8]. Thanks to their sophisticated NLP abilities, machine intelligence assistants and bots are well adapted to manage a variety of applicant conversations. The capacity of NLP to convert speech into text in milliseconds allows recruiters to work more productively by eliminating the need for typing [12]. The AI assistants support recruiters with tasks including prospect screening, contact management, organizing meetings and interviews, and involving candidates in the hiring process. This helps businesses locate and hire the finest candidates, accurately map their talents, avoid bias, and quickly reply to candidate enquiries in addition to saving money and time [14].

According to a source referenced in an article, the use of artificial intelligence in the hiring process can save costs by 71% per applicant. This will triple the effectiveness of recruiting efforts [4]. In conducting pre-employment exams, online interviewing systems like Hire Vue are invaluable. When using Hire Vue, recruiters can ask candidates pre-determined questions through video, and the candidates must respond to them. Recruiters watch the pre-recorded videos and narrow the field to those who will be invited in for a face-to-face interview. In a short period, a large number of prospects may be analyzed with this method. These kinds of procedures aid in attracting and retaining qualified applicants while also streamlining the employment process [1] .

B. Onboarding

A new employee's onboarding is the process of familiarizing him or her with the company's policies and work culture. Induction sessions are commonly held by companies for this purpose. Although new employees deserve additional attention, it is impossible to attend to each of them one by one. To help new employees adapt to their new workplace, artificial intelligence (AI) is increasingly providing tailored onboarding programs [3]. Bots now assist HR personnel in interacting with new hires and informing them of their employment benefits, corporate laws and procedures, and resolving their questions and concerns [2].

C. Training and Development

In today's fast-changing world, employees must be informed of the most recent trends, advances, and changes in their field of work. An organization's ability to maintain a highly-skilled workforce requires a well-equipped training centre. By using online learning platforms,

human resources departments can make their training programs more successful and smarter. Employees are asked to provide comments and ideas based on their experiences during the training period to find out how effective and gratifying these training sessions have been for them. Artificial intelligence (AI) aids the HR department by facilitating these kinds of feedback operations as well.

Training is necessary to stay up with the quick pace of technological progress [40]. Artificial intelligence (AI) has the ability to remotely design, organize, and manage classrooms and online courses. Another area where AI may contribute more is by placing employees in training programs that are specifically designed for them based on their individual needs. Continuing professional development (CPD) has been found to take less than 25 minutes a week for the average worker, making it imperative to maximize the efficiency of this time. This is where AI can be of service [45]. Any employee training that has affected their subsequent work history can be tracked using these types of databases. The last benefit of AI is the ability to respond to employees' needs before they arise. Employees that put in extra effort deserve to have their efforts recognized, and AI-assisted applications can help with that [42]. Problems with talent retention can be detected early on by paying attention to these statistics.

D. Employee Engagement

By utilizing a range of artificial intelligence-supported prediction techniques, organizations may now estimate the levels of employee engagement with greater ease. They are able to estimate employee engagement levels for both the present and the future, evaluate large data sets, and provide useful outputs from them. On any given day, an organization's employees' mood can be determined by analyzing their expressions using face-recognition technology. This enables the firm to better understand the behaviour of its employees, which in turn makes people feel more important and appreciated by their employer. Finally, this results in a more engaged workforce (Integration of Artificial Intelligence in Human Resources, 2019).

Large and diversified data sets such as a terabyte of professional biographies and performance evaluation histories may be processed and learned from using AI, which provides the information processing muscle to do so. As a result, management interventions will be more successful and opportunities for professional growth will be more tailored to the needs of the individual [50]. In this way, artificial intelligence (AI) will be a critical "connective tissue" between businesses and the brightest minds in society, improving information precision and matchmaking precision [16]. Employee social media activity data can be used for "emotion analysis," a new field that uses this data to assess employees' positive and negative emotions as well as any biases they may have [46]. A vocabulary of user replies, for example, can be used to provide a positive or negative score to a given expression that reveals an individual's emotional state [18]. Emotional analysis software might be used to put HRM at the forefront of HR practice, allowing organizations to respond to employee sentiment and motivation promptly.

E. Compensation Management

The effectiveness of an organization's workforce can be directly correlated to the effectiveness of its compensation policy. Based on regulations and standards, it is a method for establishing

an employee's compensation. Individual and group performance can be improved by an effective pay management system in the workplace [43]. Compensation evaluation can benefit from the usage of artificial neural networks (ANNs), a type of artificial intelligence. It is possible to identify relationships in large data sets with a neural network system because it mimics human thought processes [21].

F. Performance Management

Performance management is a crucial HRM strategy. The usage of technology supported by artificial intelligence has further sped up this process. 360-degree reviews and other forms of scientific assessment are carried out automatically. A range of pertinent data is fed into the system, including standards for employee appraisal, to produce performance-based results [20].

G. Employee Retention

Employees are more likely to stay with the company if AI is in place. Finding employees who are considering leaving the company is now easier thanks to AI-based tools. This is accomplished by maintaining tabs on the browsing habits of each employee's personal computer. Artificial Intelligence (AI) systems are used to analyze the company's data for one month, and any signs that indicate an employee's impending departure are notified [49].

H. Performance Appraisal

Employees who exhibit high levels of effectiveness, productivity, and involvement add value to an organization [47]. The organization is unable to analyze these factors at the same time due to standard performance measures, which can be overly rough. By employing AI to analyze performance in a more targeted manner, HR administrators may increase the granularity of performance reviews [23][44]. Smaller units of activity may be recorded and assessed more easily, enabling more focused interventions intended to improve overall performance and efficiency. One of the most crucial methods for enhancing job performance is creating a work plan that outlines our objectives and provides opportunities for analyzing results. AI can support quick performance comparisons with initial objectives [32]. Increased performance rating efficiency can be achieved by creating appropriate incentives, which will lead to more effective motivating strategies [22].

Managers can utilize AI to boost the accuracy of the data they use to evaluate employee performance [24]. AI can make this process continuous and real-time, as opposed to just matching performance to objectives at the beginning and end of a weekly, monthly, quarterly, or annual period. Data on salaries and remuneration are now routinely maintained by organizations. In large enterprises, AI may make it simpler to query those data. Second, more accuracy in processing payment data, made possible by AI, would help to raise levels of collective balance, which in turn would help to increase organizational effectiveness [35].

Elevating HR within Organisations through AI potential

In light of AI's potential to enhance HRM procedures and hence increase shareholder value, elevating HR to the level of a value-creating activity is quite appropriate [33]. Using this

simple annotation, we may recommend a portfolio strategy for assigning funds to HR programs, for example, by enhancing staff training so that they can work more effectively with AI applications—in light of their role as a tool for organisational efficiency. As a result of these factors, one might claim that HRM is on the rise in terms of its recognition as a critical component of a company's overall strategy [36]

Even if the rapid rate of change has increased the burden on HRM methods to allow behavioural responses at the organizational level, this has not always been the case. There are four different roles that HR can play, all of which build on the differentiation between a tactical and an operational paradigm in HRM. These roles are handmaiden; lawyer; regulator; change agent. The roles of Counselor, Innovator, Controller and Service Provider were later renamed [25]. In addition to these models, [27] propose that Figure 1: A conceptual model summarizing the reviewed literature

Source: Author's compilation

HR skills can be divided into two broad categories. Practitioners and executors should serve as role models for the first category of competencies. Instead, the roles of a business associate, strategic partner, innovator, achiever, and administrative expert might be used to model the second class of abilities.

Caldwell's fourfold model has been challenged empirically by [26] with evidence from 15 significant organizations was Caldwell who revised these previous models and popped up with the distinguishing roles for the winners: winner; winner; translator; professional; and infinite impulse [37]. This new classification was also influenced by [34] taxonomy of HR skills, which more clearly accounted for Ulrich's characterization of a 'change agent' or shift agent' skill set. An emphasis on the HR function's probable responsibilities in organizational change has been included in Caldwell's revised model [29]. It has instead been found that HR qualities play an important part in maintaining a company's long-term success, according to Ulrich and colleagues (2007). Human resource management now includes positions such as strategist, technical specialist, representative of employees, resource creator, and chief of human resources as a result of these developments. As with dual classification, these positions encompass the confluence of institutional (tactical) and strategic functions that might be taken up amid HRM [38].

The organization's HR function has yet to be depicted in a unified fashion. All of the previous models include unsolved conflicts and ambiguities in their descriptions of various functions. These findings show that the shift

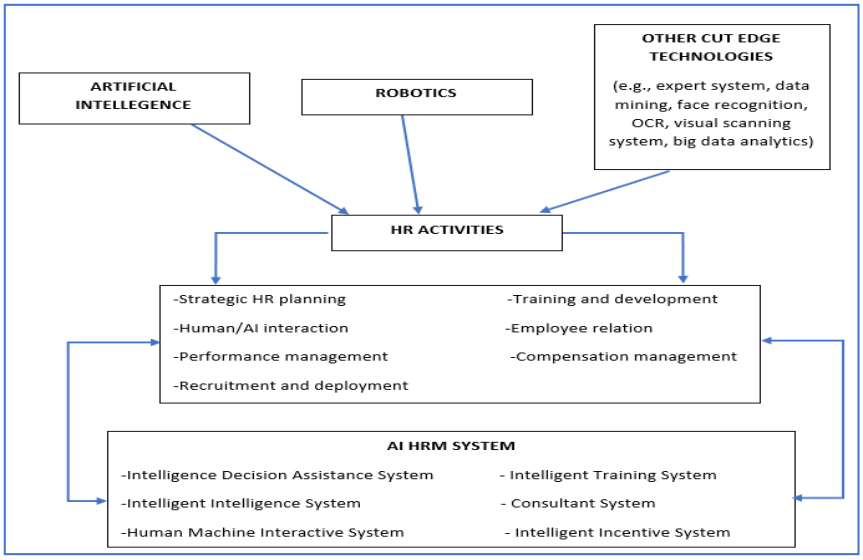

Figure 1: Conceptual model summarizing the reviewed literature

from HRM being primarily an operational role to an independent strategic function is yet unfinished [29]. According to [31], and by carefully following through on a more pivotal approach for HRM in non-profits and figuring out the specific ramifications of personnel well-being on labour efficiency and hence on meeting strategic goals. They suggest that According to [30], the chain of supermarkets represents exactly what has just been stated. Strategic HRM priorities must be carefully followed through on the implementation level to be effective, and the 'bottleneck' in the ability of line managers to do so was used as an example in their research [4]. Human resources management can benefit greatly from the use of artificial intelligence, but this technological step must be followed properly through to verify that practical problems exist for it to provide results.

Benefits

The application of AI can aid in the overall growth of a company. It is used as a supplementary activity for human resources management. Today, a methodical and well-planned approach is taken to handling employee hiring, engagement, and retention. 66% of CEOs, according to IBM studies, think AI can significantly advance the field of human resources. Human resources employees may now concentrate on human attributes like creativity, problem-solving, and compassion thanks to automated HRM technologies that have facilitated the interaction between humans and robots [14]. Artificial intelligence (AI) and machine learning have made significant strides recently, making it possible to track and evaluate employee performance over time. By concentrating on their particular areas of weakness through the use of individually tailored training and development programs, employee productivity can be increased. Artificial intelligence (AI) and intelligent bots to aid employees with concerns about their jobs have increased workplace openness and fairness [50]. Finding the best candidate for a position can be greatly aided by clever AI technologies.

HR professionals can use artificial intelligence (AI) as a consultant and as a helper. For a charge, the "Virtual Assistant System" comprises time-consuming tasks including coordinating with both candidates and workers, drafting emails, setting up meetings, and reporting. Future outcomes can be intelligently forecasted using the "advisor system" to support decision-making. Big data analysis can be used to forecast significant organizational issues' outcomes in the near future. The information gathered can then be used to implement the necessary safety measures [5]. AI can assist in addressing worries about compliance. The network data of the company can be used to spot any potential compliance problems before they arise [45].

Financial and Legal Implications of AI Adoption in HRM

Incorporating AI into HRM will have a significant impact on this business function's quantitative profile. As a result, a cost-benefit analysis will be able to be performed more easily. A decision-making approach known as cost-benefit analysis takes into account both the positive (benefits) and negative (costs) aspects of a potential course of action [1]. This methodology is put in the spotlight as a decision-making tool by AI. In addition, the cost-benefit analysis makes things simpler to account for actions and judgments in front of stakeholders, making it more accurate. Although HRM has previously been largely separated from the comparison of benefits and costs in comparison to marketing, finance, and operations in organizations, this is no longer the case.

It's possible that conventional HR practice's lack of quantifiable data contributed to its past marginality. This is because managers may have a preference for quantifiable outcomes when allocating insufficient economic resources to various firm operations [16].. Researchers and practitioners in the field of human resources management (HRM) have already begun focusing their energies on the progressive realization of quantitative metrics to aid in cost/benefit decision-making. HR will become more closely integrated with other company activities as a result of the increasing usage of artificial intelligence (AI) and the associated prospects for better monitoring and assessment.

The use of artificial intelligence (AI) will hinder human resource management, discussed in the areas of employee relations inside a corporation [9]. Legally, the trend in AI research appears to be heading toward more independence, in the portion of AI-assisted applications, when it comes to making judgments. AI is also likely to play a role at critical points in the employment relationship, including performance review, workplace safety assessment, the awarding of personnel social benefits, and the resolution of harassment in the workplace. When workers are presented with decisions made by or based on information generated through an AI algorithm, issues like workplace discrimination become more pertinent. This is understandable [14]. Anti-discrimination laws apply to all aspects of the workplace, including hiring practices, employment contracts, salary, and the allocation of benefits, as well as choices about job relocation, termination, and redundancy. Gender, ethnicity, sexual orientation, or religious affiliation cannot be considered in making these decisions. In addition, employers need to guarantee that any biases based on spousal background, handicap, or veteran status are eliminated from the workplace [3]. Employers are often required to advise their workers on their legal rights so that they can seek recourse through the courts if necessary [27]. Raw data-based algorithms may produce biased results due to the indirect links between seemingly non-discriminatory criteria (such as educational attainment) and anti-

discrimination attributes (like race or ethnicity). As a result, human resources departments are faced with the tough challenge of placing safeguards in place in their operating regulations to prevent substantially biased choices.

When it comes to how much legislation will be necessary to regulate AI applications in the workplace, a new debate arises. While the implementation of AI in HRM will undoubtedly result in new legal requirements, several perspectives exist on the best way to implement such requirements. There is a need to have a long-term perspective and recommend postponing a full-scale legislative involvement until AI technologies are mature. In the meantime, they recommend that existing workplace laws be followed.

Following these statements, it is likely that a combination of legislative action and voluntary restraint at the company level is necessary to effectively manage the legal issues associated with AI usage. Organizations have taken tangible steps to ensure that automated systems can be scrutinized in keeping with this concept, for example. Machine-made choices have been held to the account of the courts through legislative interventions. Artificial Intelligence will also be regulated by collective labour agreements in nations like France. Establishing a 'human-in-command' paradigm and restricting the use of AI-assisted judgment calls within the organization to specified areas are just two examples of how they may achieve just that [34].

Challenges

Although new artificial intelligence technologies and approaches are showing enormous promise for businesses, there are still several issues that need to be addressed. There is a chance that artificial intelligence will someday replace all human occupations. Mechanical and analytic intelligence duties have already been replaced by AI, and the technology can perform intuitive and empathic functions as well. Human job security may be jeopardized, despite the fact that this offers a potential for creative and successful machine-human integration [21].

Enterprises must also overcome the cost repercussions of implementing new AI technology in the workplace [17]. According to research, those involved in the deployment of AI in the public sector believe that managers should concentrate on the connection, consistency, reliability, and volume of data used. This is due to the fact that data is essential for AI applications to operate, and without properly integrating data, no AI technology can deliver on its promises of value [19]. This research led to the conclusion that a sound approach is required to deal with challenges associated with the transition of artificial intelligence (AI). A legal framework must be developed to address the problems of AI misuse, unethical and inappropriate data sharing, and a lack of faith in AI-driven decisions [34]. Finding people who are informed about the newest technology-based tools and processes will be a significant problem for HR managers. The market is in critical need of highly trained candidates who can fill in for individuals who have left the industry because the majority of employees are unable to learn and grasp new AI tools and technology [47].

Future Opportunities

Researchers believe that artificial intelligence will soon be able to outperform humans in a wide range of tasks and activities. Over the next 120 years, researchers think that AI will have a 500 per cent chance of exceeding human work in 45 years and eliminating human jobs.

Many experts feel that AI will start playing a supplementary role and could never completely replace humans. In the future, people and machines will work together in tandem. An additional research study on AI and machine learning underlines how important it is to work with computers and people to forecast the outcomes and take appropriate steps. HR leaders need to decide what information to track, analyze, manage and safeguard to allow AI to play a bigger role in the field. We have plenty to learn and discover in the area of human analytics. Recruiting the best and brightest will become increasingly difficult as more businesses begin to use AI technology. A company's digital capabilities and capacity to give the greatest possible experience to candidates will be the only thing that separates them from the competition. The sector that best educates its employees to take advantage of the advantages that artificial intelligence (AI) and big data provide will be the dominant force in the future.

Conclusion

Here, we have attempted to present an accurate assessment of the influence that AI applications will have on the HR department of business organizations. Increasing HRM staff's ability to process information is indicated in Section 1 as one possible effect of AI. Additionally, this will have a direct impact on the speed and efficiency with which talent acquisition procedures may be streamed through, as well as on the ability to provide customized professional development possibilities for individual employees. These innovations, made possible by AI, will transform HRM from a reactive to a proactive function that anticipates and responds to future difficulties.

Although there is still a long way to go, artificial intelligence has had a favorable impact on the field of human resources. Every new shift has its own unique set of challenges, but in order to fully benefit from it, we must continually look for answers to these issues. A similar approach should be taken by human resources (HR). This paper covers a number of studies that show the use of data when applying artificial intelligence to organizational operations. The HR expert must pay close attention to ensure that the right data is used. The precision and adaptability of planning and decision-making have increased with the application of artificial intelligence (AI) in human resources management (HRM). It's no secret that technologies powered by artificial intelligence (AI) have helped businesses cut expenses, improve workplace efficiency, and boost employee productivity. In the current environment of rising competition and technological change, only those businesses that were able to see the advantages of AI early on and take advantage of them will be able to survive and perform better.

This change may have the effect of elevating the role of HR departments inside the organization. In other words, rather than only being used for regular business processes, they may start to serve as locations where strategic outcomes and decisions are produced. But the HRM function itself must possess the requisite skills for AI's potential to be used for good. Companies should search for candidates that can perform in virtual environments and communicate successfully with both human and machine actors when hiring new employees. Additionally, they require individuals who can convert numerical data produced by computers into a language that stakeholders can comprehend. Last but not least, the growing capacity of AI-assisted computers to make decisions poses special legal issues, such as how to prevent discrimination, and will call for a new era of legal tools, business regulations, and legal contracts to safeguard employees' privacy.

Finally, the information presented here justifies a couple of suggestions. For example, the output of AI has a certain potential for increased productivity. However, this commitment needs to be balanced with the preservation of employees' confidentiality, notably at the volume of data gathering. As a second point, HRM and company management should avoid utilizing AI output as an instrument for policing and controlling their staff members. But it should be welcomed as long as it helps boost employees' commitment, involvement, trust, and motivation in the long term. To do this, human resources departments need to be well-versed in data science and well-versed in complex methods of interpersonal communication. The legislative debate around artificial intelligence (AI) is the last decision that has nothing to do with internal organizational issues. A reasonable approach here would be to keep an eye on the growth of AI-related organizational practices while maintaining a degree of constraint, to prevent stifling this burgeoning sector in its early phases of development. Managing human resources in the field of artificial intelligence: upcoming HR practices, expected skill sets, financial and legal ramifications. In this field, there haven't been many experiments or statistical studies done yet, therefore future study in this area has a wider scope.

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