



ORIGINAL

Human resources management in the age of artificial intelligence

Gestión de recursos humanos en la era de la inteligencia artificial

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ABSTRACT

Today's businesses are operating in a complex environment, marked by the emergence of a digital culture that is transforming space and time, as well as relationships at work. These various transformations have given rise to a new concept: artificial intelligence. With the introduction of artificial intelligence, work is being transformed, creating new challenges for organizations and leading to new HR practices in terms of recruitment, training, compensation, talent management and so on. For all these reasons, the mobilization of collective intelligence is ultimately becoming a priority for HR, insofar as it makes it possible to support transformation within organizations by means of agile methods. Against this backdrop of changing organizational practices, a number of questions arise:

-What is artificial intelligence and how does it impact organizations?

-What role can collective intelligence and artificial intelligence play in the evolution of the HR function?

The aim of this theoretical research is to underpin the various concepts linked to these notions. We will also try to understand what is at stake in collective intelligence for HR, and how artificial intelligence can impact organizational practices.

Keywords: Transformation; HR Function; Artificial Intelligence; Collective Intelligence.

RESUMEN

Las empresas actuales operan en un entorno complejo, marcado por la aparición de una cultura digital que está transformando el espacio y el tiempo, así como las relaciones en el trabajo. Estas diversas transformaciones han dado lugar a un nuevo concepto: la inteligencia artificial. Con la introducción de la inteligencia artificial, el trabajo se está transformando, creando nuevos retos para las organizaciones y dando lugar a nuevas prácticas de RRHH en términos de contratación, formación, compensación, gestión del talento, etc. Por todas estas razones, la movilización de la inteligencia colectiva se está convirtiendo en una prioridad para los RRHH, en la medida en que permite apoyar la transformación dentro de las organizaciones mediante métodos ágiles. En este contexto de cambio de las prácticas organizativas, se plantean una serie de preguntas:

-¿Qué es la inteligencia artificial y cómo impacta en las organizaciones?

-¿Qué papel pueden desempeñar la inteligencia colectiva y la inteligencia artificial en la evolución de la función de RRHH?

El objetivo de esta investigación teórica es apuntalar los diversos conceptos vinculados a estas nociones. También trataremos de entender qué está en juego en la inteligencia colectiva para los RRHH, y cómo puede impactar la inteligencia artificial en las prácticas organizativas.

Palabras clave: Transformación; Función RRHH; Inteligencia Artificial; Inteligencia Colectiva.

INTRODUCTION

Since the 2000s, the massive introduction of high technologies has profoundly transformed organizational practices (Brasseur and Biaz, 2018). Change and innovation remain the major challenges in the organizational transformations of the fourth industrial revolution (Industry 4.0), which require a new type of organizational operation and human resources management. Faced with these changes, human resources management is therefore being questioned in its tools, practices and methods to take account of them.

The HR function is at the heart of the transformation that companies are undergoing. As the guarantor of fairness, ethics, innovation and the place of people within organizations, it must grasp the new challenges facing organizations, particularly those linked to the introduction of Artificial Intelligence (Agrawal et al., 2018) and Collective Intelligence (O’leary et al., 2011). It is with this in mind that the notion of collective or collaborative intelligence is arousing growing interest, with the development of communities of practice benefiting from digital tools that stimulate the exchange and sharing of knowledge through the pooling of work.

In the present work, the HRM theme is therefore approached from the angle of Artificial Intelligence (AI) and Collaborative Intelligence (CI). The aim is to understand the extent to which artificial intelligence and collaborative intelligence can play a synchronous role in the evolution of the HR function in a context of transformation.

Our presentation is divided into three sections. The first is devoted to the challenges facing the HR function in a context of transformation. The second is devoted to a review of the literature on AI, to shed light on its implications for the HR function. Finally, the third section presents collective intelligence as a new HR practice.

The challenges facing the HR function in a context of transformation

Since the amplification of information and communication technologies (ICT) and the exponential development of their uses, the world has witnessed an evolution in practices, from industry 1.0 to 4.0, and organizations have tipped over into a digital era where transformation has become the new rule.

A changing environment

In this context of change and the race for innovation, digital transformation concerns all organizations. They are now faced with the need to promote new uses and transform themselves to remain successful (Chouaib, 2021).

Let’s start by defining what transformation is: According to (Vial, 2019, p. 2) digital transformation is “*a process that aims to improve an entity by triggering significant changes in its properties through combinations of information, computing, communication and connectivity technologies*”. For Dudézert, it’s a voluntary process that consists in “*exploring and exploiting the new possibilities generated by these information technologies, particularly at organizational level*”. It implies “*a transformation of internal work practices [...] towards a more flat collaborative organization, less centralized and leaving broad autonomy of action to the player*” (Dudézert, 2018, p. 14).

Transformation is more than just a technical issue (Chouaib, 2021). It also stems from a change in organizational practices. They are now faced with the need to promote new uses and transform themselves in order to remain successful. The Covid 19 pandemic and climate change have come on top of these transformations, sometimes accelerating or amplifying them, sometimes inhibiting them. New work tools have been introduced, and the collaborative nature of work has abolished space-time constraints. What’s more, we’re witnessing a rapid evolution in the skills required, as well as a revolution in managerial practices and organizational culture.

The new challenges facing the HR function

The HR function is the company’s strategic partner in the same way as the finance function (Dejoux, 2020). Moreover, its place has changed with the pandemic, becoming more strategic, indispensable and central; it has been challenged to implement telecommuting; and it has enabled remote recruitment and many other actions.

The HR function is faced with multiple challenges. It must both transform itself and support the transformation of the company’s businesses and organization (Dejoux, 2020). In concrete terms, here are just a few of the challenges currently facing organizations, and for which the role of the HR function is strategic:

For employees :

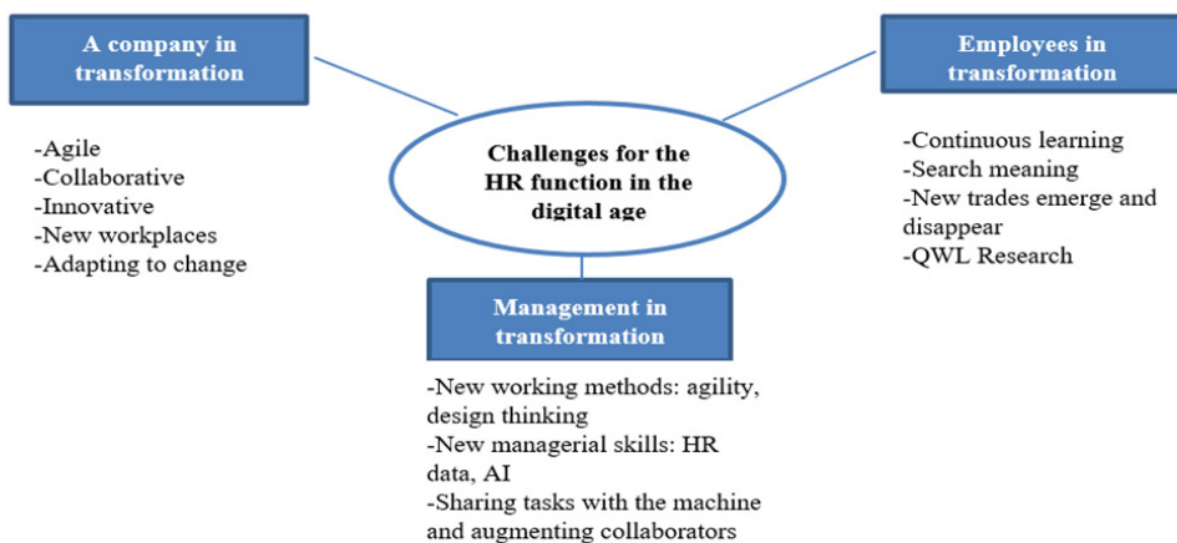
HR function must ensure employee engagement, adopt transparent communication with its employees, be empathetic, supportive and provide the necessary training (Scouarnec, 2020). It must optimize the employee experience and implement measures of employee engagement that can be remote, face-to-face or phygital

in different locations and with teams around the world. Another major challenge for the HR function is to enable its employees to give meaning to their work, whatever their age, profession or career path, so that they feel secure and committed, since every employee needs meaning at work and to feel useful, particularly with the introduction of digital technology. (Chevalier & Dejoux, 2021). The HR function needs to be agile; it needs to train employees on new subjects, subjects related to artificial intelligence and digital technology, in order to co-construct a consensual and innovative social dialogue with digital technology, and to have clear communication on the impact of artificial intelligence on organization within the company and the evolution of professions (Dejoux, 2020).

For organizations :

The HR function must develop a communication strategy on the stakes and challenges of artificial intelligence, in close collaboration with management and the various stakeholders, in order to explain to employees how artificial intelligence is going to be introduced into the company, and what this will change for the service offering, business lines, work organization, professional practices and decision-making... (Chevalier & Dejoux, 2021).

Figure 1 summarizes the challenges of an HR function in transformation, whether for the organization, for employees or for management.



Source: Adapted from C Dejoux, Chapter 1 La GRH à l'ère du numérique et de l'intelligence artificielle in Fonctions RH 5e Ed: Des stratégies, métiers et outils en transformation, 2020

Figure 1. Challenges facing the HR function in organisations undergoing transformation

The future of the HR function in the face of artificial intelligence

In today's context, the HR function is called upon to play a proactive role, enabling companies to achieve their strategic objectives and gain a competitive edge over competitors (Laghzal & Temnati, 2022). In this sense, artificial intelligence is proving to be an innovative solution for improving processes, boosting productivity and competitiveness, and supporting decision-making.

In the field of management, artificial intelligence is already affecting finance, operations, purchasing, marketing, sales and human resources (Chevalier and Dejoux, 2021). So, how do we define artificial intelligence, and how does it impact on HR practices?

Artificial intelligence: what are we talking about?

Artificial intelligence (AI) enables machines to perform activities previously reserved for humans. It is highly efficient in analysis, voice and facial recognition (Dejoux & Léon, 2018).

Artificial intelligence has been a research topic since the 1950s, with the Turing test. For some, AI is presented as "the automation of activities associated with human reasoning, such as decision-making, problem-solving, learning..." (Bellman, 1978) or as "the discipline of studying the possibility of having computers perform tasks for which humans are now better than machines". (Rich & Knight, 1990) or even "the study of the mechanisms that enable an agent to perceive, reason and act". (Winston, 1992). For Peter Capelli (2017) read in (Chevalier and Dejoux, 2021), AI generally refers to a broad class of technologies enabling a computer to perform tasks

that normally require human cognition, including decision-making.

AI is polymorphic and can bring together other techniques (Dejoux and Chevalier, 2018). Figure 2 below shows what AI can do thanks to different technologies.

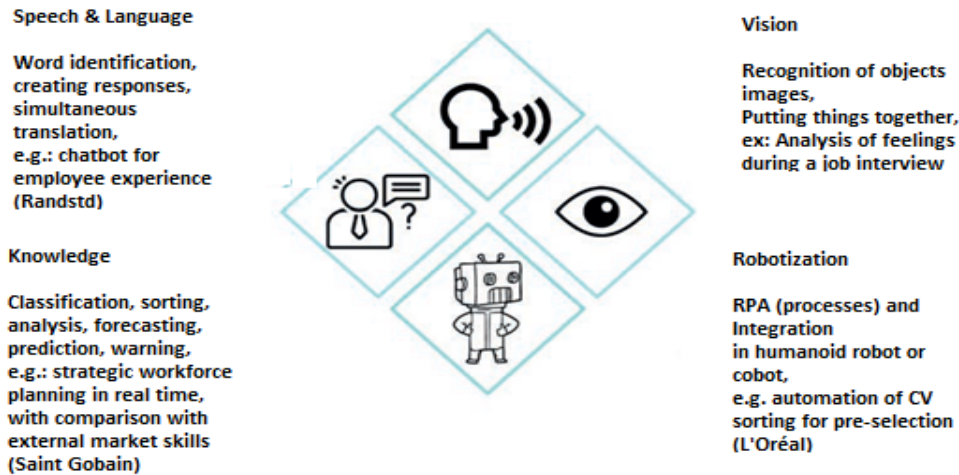


Figure 2. AI Technologies (Source : Chevalier and Dejoux (2021))

The impact of AI on the HR function

Today, all the major decision-makers in organizations are aware of the need for digital transformation. The question they're asking themselves is how to apprehend new work trends in the face of the accelerating solutions that artificial intelligence offers (Dejoux & Léon, 2018).

Indeed, AI is capable of analyzing a quantity of data that is difficult for human beings to grasp. As a result, repetitive tasks can be entrusted to it, enabling HR professionals, but also teams and managers to focus on more complex tasks paving the way for "an augmented employee experience" (Dejoux, 2020; Dejoux & Léon, 2018).

Administrative and organizational support

Several HR practices in their administrative and legal aspects are today concerned by AI solutions (virtual assistants, chatbots). These take care of global issues around absence management, leave requests, payroll and salary policy, requests related to the regulatory aspects of human resources management (Chevalier & Dejoux, 2021).

Examples of AI deployment in the legal sector include EDF in France, which has chosen to create a legal chatbot to provide automated answers, in real time and regardless of location, to questions posed by employees ("what's the status of my training request?", "how many days of leave am I entitled to?"). The aim is to improve the company's performance in relation to its users, and enable its lawyers to refocus on higher value-added cases.

Recruitment

The field of recruitment, and more specifically, that of candidate pre-selection and interviewing, represents a field of experimentation for AI. Using affinity matching (clustree), predictive matching (HireSweet) or the construction of smart data (Goshaba), AI makes it possible to pre-select candidates from social networks such as LinkedIn, or from open databases, and to find atypical profiles. Algorithms can be used to predict who will be the best candidate for a given position, and to prospect for new profiles and new skills. AI is also opening up new opportunities by creating "smart data", enabling pre-selection based on the creation of new data in terms of experience, technical skills and interpersonal skills, by asking questions, administering tests, having candidates play video games to assess their soft skills, and processing pre-selection in flow mode with continuous feedback for managers. Their credo is "recruiting without CVs". The idea is to use digital technology and AI to identify new types of profiles for jobs where there are no candidates.

When it comes to job interviews, AI solutions provide additional information on emotion detection and personality analysis. For example, IBM's Watson analyzes candidates' emotions on the basis of their video CVs or computer interviews, and predicts a percentage of the candidate's suitability for the job. Unilever has also tested this practice to analyze the language, tone and facial expressions of candidates when they are interviewing via their telephone or computer. As a result, it recruited more quickly, with the hiring rate rising from 63 % to 83 % in 2017 (Dejoux, 2020).

Training and skills management

With AI, training is poised to evolve from a logic of acquiring business skills to a personalization of pathways (Chevalier & Dejoux, 2021). Training techniques are evolving thanks to AI with learning analytics (Dejoux, 2020), which make it possible to track how employees learn and individualize skills development proposals according to their centers of interest, taking into account past training history and the training needs to be met for each employee. It's a personalized, individualized training path. To date, AI solutions that really work are few and far between. Examples include Kneeton and Edcast (Dejoux, 2020).

A project team made up of a wide range of profiles (HR, data scientists, legal experts, business professionals, etc.) was set up with two objectives: to use AI to identify talent not detected by HR and management teams, and to detect talent at high risk of leaving. Confidentiality is guaranteed, and no decision has been delegated to the machine (Starwen, 2020). AI is also used to make internal mobility proposals to employees based on their wishes, skills and opportunities within the company (Chevalier and Dejoux, 2020).

When it comes to talent management, AI solutions in HR focus on optimizing the HR experience to attract, capture and optimize talent management. French company Saint-Gobain, for example, decided to use the opportunities offered by machine learning to improve its talent management. A project team made up of a wide range of profiles (HR, data scientists, legal experts, business professionals, etc.) was set up with two objectives: to use AI to identify talent not detected by HR and management teams, and to detect talent at high risk of leaving. Confidentiality is guaranteed, and no decision has been delegated to the machine (Starwen, 2020). AI is also used to make internal mobility proposals to employees based on their wishes, skills and opportunities within the company (Chevalier and Dejoux, 2020).

Compensation

Compensation is also optimized by AI solutions that offer information chatbots designed as self-service personal assistants. For example, the Beqom cloud solution integrates directly into the HR suite, whatever the initial HRIS. The question is then to identify the new areas of added value for the people who will have their time freed up. Figure 3 below summarizes the fields of intervention of AI for HR.

HR fields	HR activity enhanced by AI	HR applications created by AI
Recruitment	Preselection	Affinity Matching Predictive Matching Smart data Character trait analysis Smart Assistant
	Interviews	Individual and group training based on VR, AR and social learning techniques Digitizing group interviews Predicting recruitment in technical professions
Training	Individualized content	Learning analytics Creation and distribution of virtual reality educational experiences
	Skills and talent management	Individualized career paths Optimization and individualization of skills, talents, training and career paths
Workforce management	Indicator tracking	Payroll, recruitment, career and workforce management
Compensation	Chatbot Payroll management Employee savings	Answering questions SaaS tool for better management of employee payment services, including vacations, absences, expense reports, etc. Transparency and management of employee savings schemes

Source: Adapted from C Dejoux, Chapter 1 La GRH à l'ère du numérique et de l'intelligence artificielle in Fonctions RH 5e Ed: Des stratégies, métiers et outils en transformation, 2020

Figure 3. Impact of AI on HR practices

Collective intelligence: a new HR practice

The HR function must find the necessary responses to maintain many unstable balances (Gréselle-Zaïbet, 2020) . Organizational transformations challenge the way actors think and act in the face of uncertainty, and push them to be innovative (Gréselle-Zaïbet, 2017). As a result, they are seen as activators of the collective intelligence process (Gréselle-Zaïbet, 2017). In the organizational field, managerial innovation is a process of transforming management modes in a sustainable and seamless way that creates new modalities of cooperation between people in line with societal evolutions (Autissier et al., 2018) . It enables the emergence of new practices such as collective intelligence (Gréselle-Zaïbet, 2017) .

Collective intelligence: Defining the concept

Collective intelligence is a working method that is innovative in its implementation but old in its practice (Gréselle- Zaïbet, 2020). It can be defined as “a set of capacities for reflection, understanding, decision-making and action on the part of a restricted work collective, resulting from the interaction between its members and implemented to deal with a given present or future complex situation” (Gréselle-Zaïbet, 2007). In the information and communication sciences, it is defined as “the ability to use all the company’s resources to their full potential in order to ensure the production of quality goods or services, to create and maintain a balance between missions-structures-resources-results, and between the strategic and operational dimensions of the company. It is best expressed in terms of ‘adaptation and flexibility’”(Meunier & Péraya, 1996).

By researchers and practitioners alike, collective intelligence is presented as a human-oriented social technology that promotes the work and interaction of individuals (Gréselle-Zaïbet, 2020). It refers to a community’s ability to bring together intelligence and knowledge to advance towards a common goal (Frimousse & Peretti, 2019). Seen as a lever for creativity, innovation and organizational agility, collective intelligence is emerging as a new issue for organizations. It calls into question the dominant models of the industrial age, and leads to further reflection on new methods of collective work (Moral & Lamy, 2013). The development of CI and collaborative work has become an important issue in terms of management in general and human resources management in particular. With this in mind, companies need to foster the emergence of collective intelligence, in particular by developing a management style based on autonomy, power-sharing, collaboration, etc. Here, the human resources function mobilizes talent by facilitating the sharing of information, involving them more closely in the decision-making process, and above all encouraging them to speak out and be bold. The deployment of tools helps to promote exchanges while breaking down silos.

Evolution of the HR function thanks to CI

The HR function is defined as a set of coordination and harmonization practices (Dejoux, 2020). Collective intelligence and organizational agility are two such practices (Gréselle-Zaïbet, 2020). So what role does collective intelligence play in the development of HR practices?

Employee commitment

The challenge for human resources teams is to bring together different personalities, all driven by a shared, collective commitment to the company. This means capturing the attention of others, inspiring changes in mindset, acculturating them to new working methodologies and making collective learning a reality. In this context, collective intelligence represents an HR lever for both the function and its practices, enabling the development of both methodological and behavioral skills. Its development within organizations contributes to employees’ commitment to a better acceptance and understanding of their level of responsibility (Gréselle-Zaïbet, 2020).

Supporting change

In this context of transformation, the challenges facing the HR function are numerous: adapting skills and working on employee attractiveness, anticipating the impact of AI on professions, making a success of digital transformation while ensuring the interests and respect of everyone, transforming organizations through the quality of social dialogue, creating a collective that is a guarantee of respect and a new work ethic, supporting the ecological transition, etc., and all these challenges cited need to be accompanied (Gréselle-Zaïbet, 2020).

Collective intelligence calls into question the evolution of the managerial position as well as the company’s HR culture, particularly with the impact of digitalization and the introduction of AI within organizations. The collaborative component of employees is a sine qua non condition for the successful completion of an organizational transformation project, since it requires agility, initiative-taking, autonomy and responsibility on the part of the various stakeholders. Through all these components, the HR function plays a pioneering role in transformation, since it is called upon to play the role of change facilitator, particularly when it comes to business transformation (Gréselle-Zaïbet, 2020). To do so, HR must review these managerial practices so that employees mobilize and adhere to the digital culture with the introduction of new AI-related tools.

Furthermore, as mentioned above, employee buy-in and cooperation can be a barrier to commitment. This is why the role of the HR function in the transformation process takes on its full significance, insofar as it is called upon to provide training, and therefore to integrate this component into its training plan.

Collaborative skills

CI development can involve a number of HR practices: training, diversity management, recruitment, appraisal, talent management, and so on.

The importance of choosing diversity in the recruitment process

CI places the employee at the center of its process as an actor and co-actor of this change, giving them greater autonomy to the point of taking the initiative in their career paths (Gréselle-Zaïbet, 2019). Collective intelligence thus appears as a sustainable dynamic that makes sense of “complex” situations (Weick, 1995). Linking players’ areas of expertise and levels of intervention is essential. It is the size of the collective and the variety of members within it that enhance collaborative productivity and learning (O’Leary et al., 2011). According to Jeanteur, member diversity is a source of creativity and innovation. “The responsibility of the manager or team leader is essential. The first thing to do is to ensure this diversity by recruiting the right profiles”.

Training, acculturation

Training not only contributes to the development of employees’ skills, but also to that of common, shared values to create a shared sense of purpose (Gréselle-Zaïbet, 2020). Acculturation is a decisive factor in the success of a collective intelligence project.

Reinventing performance management with a collective assessment system

When it comes to continuous assessment in collaborative participation, managers lack tools because the HR tools that do exist only assess individual performance. Rigid procedures and traditional systems are a demotivating factor for HR stakeholders in identifying possible solutions (Kristy Anamoutou, Les Echos, March 16, 2018) collective practices must be in line with the company’s management systems.

CONCLUSION

The HR function is even more useful today than it was in the past, positioning itself as a strong proposition player. If it knows how to reinvent itself, it can become the star of the company (Dejoux, 2019). It’s at the heart of acceptability, i.e. getting people to accept continuous change and learning. The idea is to use AI to optimize low value-added tasks and tasks that can be automated. The HR function is at the crossroads of the expectations of new and potential employees.

Artificial intelligence (AI) and collective intelligence (CI) are two forms of innovation that need to be thought through synchronously. They have become a key factor in the transformation of managerial practices, enabling better decision-making in HR strategies in the face of organizational complexity (Agrawal, Gans and Goldfarb 2017).

Collective intelligence and collaborative practices in general benefit from the solutions that AI can provide, namely flexibility, the reduction of spatial and temporal boundaries, and the fragmentation of workplaces by optimizing spaces. As a result, we can see that artificial intelligence and collective intelligence are seen as levers of innovation and organizational support in the face of an uncertain and complex environment. These two forms of innovation are complementary. Together, they encourage collective decision-making and improve collective performance. However, the articulation between AI and CI can also lead to information and communication overload, i.e. information obesity. This can lead to disorders and psychosocial risks (burn-out, suffering in the workplace, etc.). Faced with the rapid pace of AI-related applications in all these fields, and even more so in HR management, it is vital for every manager to understand AI in order to properly inform their employees (Dejoux, 2020). Today, every company has a societal responsibility to train its employees to understand AI and its implications. Indeed, faced with the rapid evolution of AI’s influence within organizations, understanding its implications is a must (Dejoux, 2020). The HR function will have to introduce two new societal responsibilities into the company: the ethics of algorithms and private data, and the “QWL of transformation” in order to preserve the pace and specificities of humans in the face of AI.

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