Key elements in transferring knowledge of the AI implementation process for HRM in COVID-19 times: AI consultants' perspective

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Abstract
Although artificial intelligence (AI) is transforming the workplace structure, very little is known about the strategy that facilitates AI implementation in organizations. The purpose of this paper is to explore key elements in transferring knowledge of the AI implementation process in human resource management (HRM) from the perspective of AI consultants. This study utilizes qualitative data analysis techniques. We first review the literature and then conduct in-depth semistructured interviews with eight AI consultants. We analyze transcripts using the ATLAS.ti software. First, this research reveals that AI implementation is affected by a shortage of employee data, no clear vision, a limited understanding of the AI decisions framework and managers' desire to bypass AI decisions. Second, the combination of an intensive training program and assigning AI specialists is the best way to transfer the knowledge of AI implementation processes to HR managers. Third, HR managers should create communication channels and enhance employees' awareness of the positive impact that AI solutions have on smooth collaboration with AI-employees. The paper also reveals that accelerating the process of implementing AI applications has no negative impact in COVID-19 times. However, an AI bias may be considered a potential threat for AI implementation. This paper attempts to provide a practical understanding of the elements that facilitate AI implementation in the HRM process. It provides vital insights for HR managers and AI developers to benchmark their activities when designing and adopting AI solutions. It also contributes to the literature by responding to the question of how AI implementation should be provided to HR managers and employees.

Keywords: Artificial Intelligence, Implementation, HR Manager, Employee, COVID-19

1. INTRODUCTION

Data is becoming the most valuable asset for any organization and might be its only truly inimitable asset (de Medeiros et al., 2020). Organizations have ample access to massive volumes of data from several sources, which, when reliably and quickly processed, significantly increases the likelihood of obtaining valuable insights to guide decision makers and employee performance in the HR department (Wan & Liu, 2021). HR data plays a crucial role in guiding the performance measure in a competitive business environment. This includes employee data, such as employee performance, employee behavioural patterns, attendance, compensation and other personal data (Pillai & Sivathanu, 2021). Researchers have noticed that data strongly influences strategy formulation because the increase in data and analytical capabilities is redefining innovation, competition and productivity (Nisar, et al., 2021). According to an interview published by the McKinsey Global Institute, conducted by Barr Seitz and Rob Roy: "Having a data-first mentality is a crucial first step, but then you need to put in place the processes and capabilities to be able to use this data" (Seitz & Roy, 2018). Therefore, HR data needs to be appropriately managed to maintain data quality depending on two assets: emerging technology and human asset (Yablonsky, 2021).

Artificial intelligence (AI) is considered the most advanced technology that transforms the nature of the workplace and the relationships among employees. Based on a study conducted by McKinsey and Company in 2020 about the state of AI, revenue increased from adopting AI in human resources by 55% and adopting AI across several teams led to 33% increased team efficiency (McKinsey, 2020). These advantages of AI depend on a large set of technologies that allow the computer to perform many HR tasks that generally require human intervention. These tasks extend to covering data mining in recruitment and selection (Allal-Chérif et al., 2021), employee turnover (Zhang et al., 2021) and data extraction, with an emphasis placed on employee performance and productivity (Arslan et al., 2021). For instance, IBM and Microsoft are using AI and data mining to identify suitable candidates for particular jobs by standardizing candidate sourcing and C.V screening methods for all their subsidiaries (Garg et al., 2021). Similarly, Human Capital Management (HCM) from Oracle is using data-driven insights, which help with talent acquisition and advanced HR metrics as a part of AI–HR process integration (Fernandez J. , 2019).

HR data-driven solutions have a constructive effect on survival during times of crisis and pandemics (Vahdat, 2021). COVID-19 is a contagious infectious pandemic that negatively influences major economic sectors globally. This influence is driven by a series of widespread lockdowns of various sizes, marking it as the first crisis and life-changing phenomenon of its type for nearly 7 billion people around the world (Nguyen et al., 2021; Nizamidou & Vouzas, 2018). This crisis has, in turn, posed financial challenges for organizations as a result of a massive decrease in product demand and sharp declines of in-house employee numbers due to isolation and social distancing, which inevitably leads to fewer investments (Adikaram et al., 2021). On the one hand, companies are concerned to ensure their employees' health and safety. On the other hand, curtailing the spread of this virus means having to make drastic changes in the workplace structure and employee performance (He et al., 2021).

Disruption in the workplace, such as that caused by COVID-19, prompts the need for a novel solution to facilitate remote working options. The AI-powered solution is bridging the physical world and the digital world by strengthening human-machine interactions and fostering automation through integrations between smart machines and HR tasks (Pereira et al., 2021). Accordingly, AI is considered the recent key answer in the unexpected situations faced by individuals and corporations related to business survival in disasters (Kashyap & Raghuvanshi, 2020). In fact 52% of US companies are accelerating their AI investments in the wake of the COVID-19 crisis in different company areas (PwC, 2020). One international bank has created a source of truth from datasets and launched an AI-powered chatbot to respond to customer queries. These efforts not only helped customers, but also demonstrated to employees the role of AI in facilitating job demands (McKinsey, 2020). Therefore, AI implementation acts as the optimum solution for organizations and technology developers to bypass COVID-19 challenges.

On the other side of the story, human assets, HR managers and employees are playing a crucial role in maintaining the quality of data and uploading these data in AI-powered solutions to leverage these solutions (Wiblen & Marler, 2019). Both HR managers and employees have witnessed the advanced role of AI applications in several human resource management (HRM) functions. From a manager's perspective, AI facilitates the functions of collecting, managing, analyzing and visualizing large amounts of data to generate recommendations and insights (de Medeiros et al., 2020). From an employee's perspective, AI enables employees to work in both physical and virtual spaces. These facilities will help employees to save useless commuting time, provide them with more flexibility, enable them to manage work and collaborate with no time and place constraints (Malik et al., 2021).

Organizations have taken advantage of AI in different ways, which has led to a massive change in the landscape of HR processes. However, there are still challenges and difficulties to be addressed with AI advantages (Tambe et al., 2019), for instance: the data generation stage, employees' learning capabilities, the accountability questions associated with fairness and ethical constraints, possible adverse employee reactions to management's decisions via data-based AI (Harney & Collings, 2021). These challenges have brought about a need to enhance HR managers' knowledge about AI and how this technology should be adopted among their employees. Kolbjørnsrud et al. (2017) report that managers are not confident enough about AI. Their readiness and enthusiasm for AI may vary extensively across organizational levels, which raises serious questions about the optimum strategy for sharing knowledge of the AI implementation process.

The importance of extending HR managers' and employees' knowledge about AI implementation has been further highlighted by Chang (2020). He calls for further studies to investigate the best HR manager-employee balance for AI implementation and how knowledge about AI implementation processes can be provided to HR managers and employees. At the same time, the current massive challenges posed by COVID-19 provide an opportunity for management scholars to extend research efforts and turn them into actionable insights. These initiatives will support organizations in handling one of the greatest challenges in modern history by identifying the potential impact of COVID-19 on AI implementation (Hamouche, 2021).

Despite several studies having been conducted on AI implementation in HR tasks, such as recruiting, selecting and performance management (Wall & Schellmann, 2021; Tuffaha & Perello-Marin, 2021; Xiong & Xia, 2020), there is still a gap in the literature in terms of understanding the best HR manager-employee balance for AI implementation. To overcome these gaps, the following research questions (RQs) are raised:

RQ1: How can the knowledge of AI implementation process be transferred to HR managers?

RQ2: What kind of strategies can HR managers adopt for smooth AI implementation among employees?

Our analysis contributes to the literature about HRM in AI in several ways. First, we develop a practical understanding of the elements facilitating AI implementation in the HR department during a pandemic. Second, our study responds to Chang's (2020) request to research the best-demand balance for AI implementation. Finally, this novel research will be beneficial for HR managers and AI developers when designing and adopting AI solutions.

The article is organized as follows. We first provide a literature review. Then we discuss the methods. Next we analyze the categories reported by the participants. This is followed by a section with discussion and implications. The final section offers some conclusions.

2. LITERATURE REVIEW

This section attempts to look closely at what is currently known about AI solutions in HR, the role of AI in COVID-19 times and the effects of AI implementation on HR managers and employees. We review the literature and technical reports on AI and HRM. HRM and COVID-19 are also considered.

2.1. Impact of technologies on HRM

For several decades, scholars have been studying the impact of information technology (IT) on HRM. One of the main study areas is E-HRM: the planning and implementing of IT among employees for collective actors of HR activities (Poba-Nzaou et al., 2020). Subsequently, scholars have focused on big data and the development of HR analytics in organizations (Dahlbom et al., 2020). Later scholars have centred on the implementation of AI, data mining, HRM cloud computing and algorithms in functioning HR tasks (Alrashedi & Abbod, 2021; Black & van Esch, 2021; Marin et al., 2021), and access to and the creation of structured and unstructured HR-specific datasets with growing dependence on advanced digitalized HRM and AI applications to generate insights, solve issues and participate in HR decision making (Caruso, 2018; Prikshat et al., 2021; Vrontis et al., 2021). The diffusion and applications of AI-innovated database management are demonstrated by emergent AI-HR solutions, such as SAP SuccessFactors, ERP and CloudHR (Oracle, 2022; SAP, 2022). Google, Microsoft, IBM and LinkedIn are among the IT behemoths that have also created such applications. The job of HR professionals involves redefining and restructuring as a result of greater digitization and data utilization by AI-powered HR solutions (Qamar et al., 2021).

AI is defined as a smart machine-based system's ability to correctly interpret data, find patterns and adopt the resulting information to fulfill specific goals and to perform tasks (Arslan et al.,2021). AI uses several techniques, such as the Internet of Things (IoT), deep learning, pattern recognition,

machine learning and artificial neural networks (ANN) (Ali & Frimpong, 2020; Lu, 2021). The main advantages of AI, such as high-speed processing, big data mining and sophisticated prediction and analysis, differentiate AI from existing heritage IT applications (Cheng & Hackett, 2021). These advantages help HR managers to save time and to make accurate decisions (Borges et al., 2021) in critical tasks like recruitment and selection, performance management and workforce planning (Black & van Esch, 2021; Santana & Valle-Cabrera, 2021).

2.2. AI in HR amid COVID-19

The COVID-19 pandemic has created uncertainty in not only firm productivity and operational terms, but also in HRM efficiency terms. Therefore, significantly increased attention has been paid to AI during COVID-19. This demand is related to several novel applications with the abilities to facilitate virtual workplaces. Organizations have leveraged AI in HRM during COVID-19 in several dimensions. For instance, first AI-powered chatbots have facilitated the role of the HR department in conducting virtual recruiting and to arrange interviews without candidates having to physically travel to the workplace (Sowa et al., 2021). Second, AI plays an advanced role in training and development by analyzing the data collected from employees and test results, and then building individual development programs based on these results (Boiral et al., 2021). Third, AI also plays a role in monitoring and analyzing employees' cultural enrollment and engagement by identifying behavioural patterns (Rao & Krishan, 2021). To illustrate all this, AI-enabled automation tools can handle and analyze massive volumes of data, recommend courses of actions and carry out these recommendations (Vahdat, 2021). As a reflection, HR managers can virtually operate HR departments.

AI applications in HR tasks during COVID-19 have raised employees' concerns about their existence (Mohamadou et al., 2020). Many scholars argue that fully adopting AI applications will reduce aggregate labour hours (Frey & Osborne, 2017), which will imply fewer employees, while others claim that many AI applications are useless without employees intervening (Dwivedi, et al., 2021). Employees are required to analyze and confirm AI recommendations, convert recommendations into courses of action and offer backup if an AI solution fails. As a result, a new trend of an AI implementation scenario is formulated that depends on boosting employee productivity by AI-enabled technology rather than replacing them (Dwivedi, et al., 2021).

The opportunities for AI are numerous. To accomplish the potential leverage of these applications, organizations should maximize "AI-human integration". This integration should be based on detailed information about the AI implementation process (Wilson & Daugherty, 2018). Therefore, this paper attempts to bridge the following gap: in what circumstances and to what extent can organizations transfer knowledge about AI implementation processes to HR managers and employees? It also studies the impact of COVID-19 on AI implementation.

3. RESEARCH METHODOLOGY

3.1 Data collection

The study took a qualitative approach to examining the data collected from eight AI consultants experienced in implementing AI in HR projects in multi-international firms. These professionals were identified using LinkedIn (see Table 1) to obtain a more holistic overview of the research questions. LinkedIn has had major implications for recruiters, hiring managers and job seekers. It is used by over 40% of potential job seekers and 85% of hiring managers for the purposes of screening applicants and other recruitment processes (Collmus et al., 2016; Cubrich et al., 2021).

As the table shows, interviewees' average work experience is 13.87 years. During the interviews, we asked questions about how the AI implementation process can be provided to HR managers and employees, and then about the impact of COVID-19 on AI implementation.
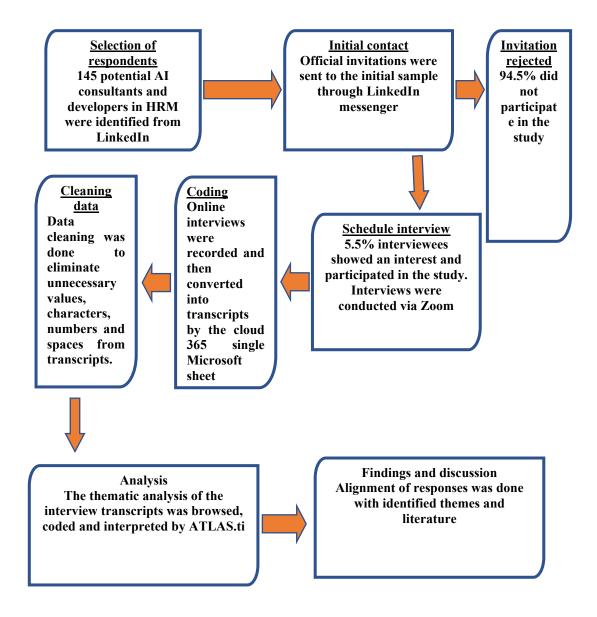
Table 1. Interviewees' profiles

Num.	Title / Position	Years of experience	Area of experience	Company Size	Interview style
1	Senior Artificial Intelligence and SAP Consultant	over 16 years	Technology leader with expertise in NLP, Deep Learning, Analytics and SAP.	More than 1000 employees	Online interview (via Zoom)
2	Co-founder of impress.ai	over 14 years	AI-Powered Chatbot Platform for Recruiters	84 employees	Online interview (via Zoom)
3	Senior Artificial Intelligence (AI) Developer at Cloud Solutions	13 years of experience	Specialist in: AI in healthcare Business Analyst Full-stack Development (Web & Mobile)	More than 500 employees	Online interview (via Zoom)
4	HR & Talent Tech Start-up Advisor, AI Educator and Organizational Consultant	15 years' experience	Businesses Adviser for AI and emergent technology in HRM functions		Online interview (via Zoom)
5	SAP Success Factors Consultant	11 years	SF/SAP solution consultant, business process analyst, team leader, integration consultant, trainer, onsite service coordinator and career counselor. Senior system engineer at IBM	Around 200 employees	Online interview (via Zoom)
6	Director Solutions Consulting (Gulf region) HCM at Oracle	over 16 years	AI in HRM implementation consultant Solution orientated for HRM project	110 employees	Online interview (via Zoom)
7	Hiring Solutions Selling Professionals (Cloud, CyberSec, & AI)	10 years of experience	Cybersecurity & compliance Software Engineering (Custom Applications Development - Enterprise) Cloud & Infrastructure Data Science and Advanced analytics	400 employees	Online interview (via Zoom)
8	Director, AI & FinTech Leader in PwC	over 16 years of experience	Helping PwC and its clients benefit from global AI insights and expertise Leading the development of AI-enabled products and solutions		Online interview (via Zoom)

3.2 Data analysis

To evaluate the data collected, we used the following procedure (see Figure 1). In the first step, interviews were coded into text and turned into a transcript by compiling replies on a single response sheet for each research question individually. In the next step, the transcript was cleaned of special characters, numerical values and spaces. Finally, these transcripts were imported to the ATLAS.ti qualitative data analysis software (Paulus & Lester, 2016). The team working on establishing reliability and validity consisted of two researchers. Each one has prior research experience and works as an Associate Professor in a management college. A word cloud was created, which was then utilized to extract the major content from the analysis. A mixture of text mining and qualitative content analysis (Using ATLAS.ti) was applied so that thematic convergence was evident from the data collected from the interview transcripts.

Figure 1: Data collection and analysis process

Selection of respondents
145 potential AI consultants and developers in HRM were identified from LinkedIn

Initial contact
Official invitations were sent to the initial sample through LinkedIn messenger

Invitation rejected
94.5% did not participate in the study

Schedule interview
5.5% interviewees showed an interest and participated in the study. Interviews were conducted via Zoom

Coding
Online interviews were recorded and then converted into transcripts by the cloud 365 single Microsoft sheet

Cleaning data
Data cleaning was done to eliminate unnecessary values, characters, numbers and spaces from transcripts.

Analysis
The thematic analysis of the interview transcripts was browsed, coded and interpreted by ATLAS.ti

Findings and discussion
Alignment of responses was done with identified themes and literature

4. FINDINGS

Data analysis has been done with the help of statistical tools like Statistical Package for the Social Sciences (SPSS) and Structural Equation Modelling using AMOS version 21. To ensure the validity of the Information quality measures (adapted scale), Exploratory Factor Analysis (EFA) was conducted. The EFA result showed a one-dimensional scale of information quality. The total variance explained was 67.20%. Further to establish convergent validity, mainly three criteria are used: "Factor loadings >0.7>, Average Variance Extracted (AVE) >0.50 and Composite Reliability (CR)>0.7" (Sarstedt, Ringle and Hair, 2017; Hair et al., 2018). The results are under the prescribed threshold limits. Table 2 displays the factor loadings along with Cronbach's Alpha values. The correlation matrix, composite reliability (CR), and AVE of the study variables are shown in Table 3.

The analysis of interviewees' responses revealed three major categories: 1) challenges associated with AI implementation in the HR process in COVID-19 times; 2) transfer of knowledge about AI implementation processes to HR managers; 3) HR managers' strategy for smooth AI-employees interaction (Figure 2). The first two categories addressed the first question, while the third category dealt with the second question.

Figure 2: Key elements to transfer knowledge about AI implementation processes for HRM in COVID-19 times

4.1. Challenges associated with AI implementation in HR processes in COVID-19 times

The word cloud for the first research question indicates that "AI Data" is the word that was highlighted the most by the interviewees, followed by vision, clear, accept, solution, bypass, infrastructure, etc. The thematic analysis of the first research question indicated some barriers and challenges for implementing AI in the HR process (see Table 2). Interviewees highlighted weak employee datasets, which minimized the efficiency of AI functions. Data and AI are merging into a synergistic relationship, where AI is useless without HR data sources like personal employee data, employee performance and financial data. In contrast, mastering these data is difficult without AI solutions. This idea comes over in the following remarks:

Interviewee 5: "Of the key challenges for AI we find data availability in organizations. If it's available, it might not be central enough".

Interviewee 2: "Data collecting and processing speed have enabled the development of AI. This development leads to an analysis of the data, which help to assess and predict employee performance".

Interviewee 7: "Massive volumes of data would be worthless unless AI models unlock the potential of these data and turn them into information".

Table 2: Themes identified for Research Question 1 (RQ1) (Part 1)

S. No	Themes	Frequency	Percentage
1.1	Employee data and data quality	10	20.5
1.2	Companies have no clear vision or no clear understanding of the AI decision framework	9	16.66
1.3	Managers' desire to bypass AI decisions	8	11.2
1.4	Weak infrastructure	7	7.6
1.5	Limited integration between departments	3	5.1
1.6	Understanding the client's requirements	2	4.5

Note: Only themes with a frequency of more than two were included

The next theme was the unclear vision on the areas where AI is used to support organizational performance (16.6%), which resulted from the ambiguity as to how AI is building its decisions or predictions. HR managers frequently lack an understanding of the assumptions and decisions made by AI. They also need standardized assessments of the overall risk and financial metrics of AI like return on investment (ROI). Additionally, tools that explain how AI systems make decisions could enable managers to better understand the potential risk associated with AI implementation. Quoted below are some instances from interviewees' answers:

Interviewee 3: "One organization manager told me: we are facing problems to build a clear vision for the future of AI in our company resulting from the ambiguous process of the AI decisions".

Interviewee 4: "HR managers need a clear conceptual model to analyze the ROI when adopting AI in their departments; such as potential risks and financial impacts. We know the features of AI, but managers are unaware of the disadvantages of AI in their departments".

Another theme is that managers wish to have the authority to bypass AI solutions (11.2%). AI has wide applications for integrating information, analyzing data and using the insights gained to improve employee performance. However, interviewees admitted that their organization's manager wishes to have the upper hand in the final AI decision related to employees. Some instances from interviewees' answers are quoted below:

Interviewee 6: "Another challenge that we are facing is: to what extent should AI be involved in decision making? Some HR managers would like to use AI internally but, at the same time, they want the authority to bypass AI solutions".

Interviewee 3: "Some companies are not responding to AI recommendations, which poses obstacles to machines toward generating correct decisions in the future".

Finally, another aspect worth highlighting is that all interviewees shared the same impression: AI is the best solution that organizations should adopt to manage their employees and to minimize the influence of uncertainty and confusion. Therefore, AI-powered solutions and implementation are in great demand in COVID-19 times. These responses are reasonable if we analyze the advantages of AI in the virtual workplace. These advantages include but are not limited to: 1) the role of AI-powered solutions in effectively achieving employees' tasks; 2) helping the HR department to follow up the analysis of the sentiment of employees and to flag up employees' concerns; 3) detecting employee engagement trends across specific employee segments (PwC, 2020)

Along similar lines, all the interviewees also reported that accelerating AI implementation during pandemics does not have a negative impact on organization performance. However, interviewees voice a concern about the negative impact of AI bias on organizational performance.

An AI algorithm decision is based on training data, which may either include biased human decisions or reflect historic or social concerns, even if sensitive variables like gender, race or sexual orientation are removed. Algorithm biases reduce employees' ability to participate in developing their organization by encouraging mistrust, which may produce inadequate results.

Business and organizational leaders need to ensure that the adopted AI system is free from algorithm bias to maintain the quality of the decision-making process. They have the responsibility to encourage the progress of research and standards that reduce any bias in AI to eliminate potential negative impacts from implementing AI. The following remarks made by AI consultants reflect this approach:

Interviewee 3: "if we have an algorithm that is biased toward women because of training data, this will be reflected in the determinant of women's future success, and women who have trained will be subject to an AI algorithm bias because most leading positions have to be for men".

Interviewee 6: "The role of imbalanced data is vital for introducing bias. Feeding AI with the correct dataset is vital to maintain the perfect image in the face of our employees. Otherwise AI implementation will collapse".

Based on our data, it would appear that while AI is a tempting next step toward creating value for organizations and employees, shortage of data and the relationship of mistrust between AI and managers have been considered a barrier for AI implementation. These challenges are boosting the need for initiatives that eliminate the risk of users being threatened by AI implementation. This message is similar to a project launched by the European Union called "TRUST-AI" (European, 2020) to develop trust in AI adequacy to tackle predictable.

4.2. Key factors in transferring knowledge about the AI implementation process to HR managers

Another word cloud created for the first research question showed that "AI training" and "AI specialist" were the words highlighted by most interviewees, followed by knowledge, technical, consultant, person, function, etc. The thematic analysis revealed two main defined themes (see Table 3). According to interview data, interviewees took two different points of view about the best way to transfer knowledge about AI implementation processes to HR managers.

The most prominent ones were that transferring knowledge about AI implementation depends on two key factors: offering a training program for HR managers and assigning AI specialists (67%) to follow AI implementation progress.

Table 3: Responses for Research Question 1 (RQ1) (Part 2)

S. No.	Themes	Frequency	Percentage
2.1	AI provided for HR managers by Internal training and AI consultant/specialist	32	67.3%
2.2	AI provided for HR managers by internal training only	14	22.2%

Note: Only the themes with a frequency of more than 2 were included

AI's contribution to the organization's performance depends, on the one hand, on enhancing HR managers' knowledge by an intensive training program and, on the other hand, appointing an AI specialist in the organization. Quoted below are some instances from interviewees' answers:

Interviewee 1: "If I need an AI solution for interviewing candidates, this kind of solution needs the recruiter to be familiar with the AI system. At the same time, AI technicians should be available in the organization to maintain data and to cover any problems if the system collapses."

Interviewee 7: "I believe that internal training is not enough alone. The organization should assign an AI specialist who is aware of this recently emerged technology to maintain the follow-up of data in the AI solution".

To maintain the quality of the first point of view (Theme 2.1), and to explore the potential negative impact on the organization's performance, the authors followed interviewees' answers with another question: "If AI specialists are hired, could the role of AI specialists overlap that of decision makers?". The first point of view believed that AI specialists would have no reflection on HR decisions for two reasons: 1) AI specialists do not work for the HR department only, but facilitate AI implementation for other departments within the organization; 2) AI specialists work as consultants only because HR managers have the qualitative and quantitative skills which are difficult for AI specialists to acquire. Some instances from interviewees' answers are quoted below:

Interviewee 7: "AI specialists should do cross-company work, and not just deal with HR. They are solutions-oriented and AI specialists perform cross-domain functions".

Interviewee 4: "AI specialists provide and explain why this recommendation is proposed. They play no role in final management decisions".

The second point of view (Theme 2.2) emphasizes that the training program is a sufficient way to transfer knowledge about the AI implementation process (22%). Here it was argued that personal data and employee performance data should remain confidential and not be exposed to any third party. Quoted below are some instances from interviewees' answers:

Interviewee 2: "We should not accept the AI specialists' point because [1] of data privacy, and [2] they could guide us in the wrong direction, which could affect on the functionality of the HR department".

Interviewee 4: "Training is key for AI implementation. We can't expose our employee data to a third party. We can go for some kind of external support, but only at the beginning. But, in the end, you have to manage the whole process".

The first point of view is in line with the finding reported by Khabiri et al. (2012). They claimed that the most important aspect of technology transformation is how to transfer technology and which mechanism offers the transferee more benefits. Collaboration between the transferer (the AI specialist in our case) and transferee (HR managers in our case) is essential for the smooth implementation of new technology. Therefore, in parallel to what is noted above, the authors decided to follow the first point of view as a key factor for transferring knowledge about the AI implementation process to HR managers.

4.3 HR managers' strategy for smooth collaboration with AI-employees

A word cloud was generated for the second research question, which indicated that "communication" is the most frequent word used in the responses, followed by awareness, acceptance, collaborative, orientation, partners, integrate, help, future, efficiency, etc.

The thematic analysis for the second question revealed some definitive themes related to smooth AI implementation among employees (see Table 4). Themes were categorized as creating communication channels (19.4%). This implies that HR managers can gain insights into what things are threatening employees from implementing AI by expressing their ideas and perspectives without criticism. These HR manager-employee discussions and communications are the best way to build a strong relationship, remove ambiguities and increase the efficiency of AI-driven solutions. Aligning the AI-business goals with the capital strategy in a wide range of attitudes, behaviours and intentions could strongly impact smooth AI implementation among employees. Quoted below are some instances from interviewees' answers:

Interviewee 2: "Communication is essential in this sense because it is a key to solve the problem of mistrust, preconceived ideas on AI implementation. This kind of communication will promote the idea that employees are more valuable than AI".

Interviewee 3: "Open dialogue between managers and employees is the best recipe for integrating these systems in ways that actually enhance the quality of work".

Table 4. Themes identified for Research Question 2 (RQ2)

S. No.	Themes	Frequency	Percentage
3.1	Create communication channels	28	19.4
3.2	Enhance the awareness of the positive impact of AI on employee performance	17	14
3.3	Collaboration with AI-employees maintains a balance among job demand, professional development and social life	9	8.5

Note: Only the themes with a frequency of more than 2 were included

Another dominant theme was enhancing awareness about the positive impact of AI on employee performance (14%). AI plays a role in accelerating the achievement of employees' daily tedious work by providing a powerful database and analytical support for their decisions. To rule out alternative explanations, the dominating idea spread among employees that AI-powered solutions are machine-oriented and have difficulties in understanding human perceptions. To eliminate negative perceptions, HR managers should offer practical evidence to convince employees of the abilities of AI-powered solutions in customized recommendations depending on the tasks demanded. Quoted below are some instances from the interviewees' answers:

Interviewee 1: "HR managers should make employees aware of the usefulness of AI; it's here to support them, not to disturb them, as well as sharing the message that employees could promote themselves by focusing on developing their skills. On the one hand you improve your performance and, on the other hand, it could minimize your routine".

Interviewee 2: "Promote awareness with real examples. For instance, if you would like to speak with HR staff, obviously you have to talk during working hours. But if you're talking to AI-powered chatbots you can talk at night once you're back home after work. So this atmosphere should be dominant among employees. AI minimizes employees' routine tasks and maintains the organization's reputation".

Therefore, employees collaborating with AI maintains the balance among job demand, professional development and social life (8.5%). AI is led to constantly change in the jobs conducted by employees. Combining the rapid speed of AI development with changes in employees' lifestyles gives a balanced job-social life a whole new meaning. AI implementation will offer employees new opportunities to develop their skills and to spend time with their families as a result of achieving deadlines more quickly. Therefore, sharing the message with employees that AI complements human productivity and, unlike the normal perception, poses no threats, will facilitate AI implementation strategies. Quoted below are some instances from interviewees' answers:

Interviewee 8: "We have to build confidence. What is the benefit of the intention of using new technology? We should send to employees the notion that AI reduces their workload and helps to strike a balance between job demands and social life demands. This kind of balance will add value to their job and family. On the one hand, relieving employees from tedious tasks and providing them with easier access to information. On the other hand, employees will have time and effort to invest in their children and family. It's about these kinds of benefits and how they will impact their lives, and not about taking their job away but, instead, AI will reduce their work so they can concentrate on somewhere else".

Interviewee 2: "HR managers have to share the message that AI is here to support employees and for them to reach their targets, which will definitely be reflected in social life".

These results fall in line with the findings reported by Dabbous et al. (2021), who claimed that employees' acceptance of new technologies depends on several factors. Individual factors are major determinants of employee acceptance. They also added that the organization's social environment, culture and HR strategy are technology acceptance parameters. Therefore, HR managers should integrate organizational culture, social environment and technology acceptance factors when implementing AI-powered solutions.

5. DISCUSSION

The present study makes some significant contributions with consequences for both research and practice. This section highlights the areas in which we extend the boundaries of current knowledge and the ramifications of our findings.

5.1. Research implications

Several studies in the academic literature have dealt with the relation between HR managers and emerging technology. Previous scholars have identified the crucial role of AI techniques in HR manager activities, such as supporting complex HR managerial decision making (Reddy et al., 2019) and assisting HR managers in performing productive big data analyses to achieve the desired outcomes (Qamar et al., 2021). In contrast, other scholars have advised HR managers to update their technical skills and enhance their knowledge about data privacy and AI ethical issues (Stahl et al., 2021). These skills play a role in spreading "AI-enabled-HR services" technology (Qamar et al., 2021).

Scholars have also been advised to identify the keys that facilitate leveraging the AI-powered applications in HR tasks (Fernandez & Gallardo-Gallardo, 2021). In line with this, the present study performed an in-depth analysis to understand the key elements for transferring knowledge about the AI implementation process to HR managers. The findings identified the following challenges associated with AI implementation: potential risks resulting from data shortage; ambiguous vision of the emerging technology; mistrusting AI recommendations, which leads to fewer advantages of AI applications.

According to these results, companies that seek to adopt AI solutions in HRM should pay attention to these elements to ensure the successful knowledge transfer about the AI implementation process. In order to do so, they should: 1) offer intensive training programs for HR managers that cover the AI

implementation process, 2) assign AI specialists to follow up implementation progress and to eliminate any potential collapse in AI-powered solutions.

After the present study performed a detailed analysis of the key elements to transfer knowledge about AI implementation processes, it provides a comprehensive view of the COVID-19 impact on AI implementation. There are many advantages from accelerating AI implementation during a pandemic. However, this usefulness is affected by the potential threat associated with an AI bias to the performance of both employees and organizations. Prior research on AI implementation during COVID-19 has demonstrated that making investments in AI can represent a successful approach to limit disruptive impacts (Acciarini et al., 2021). Accelerating AI implementation may enhance employee welfare in many ways, such as improving productivity, performance and learning. However, AI misuse due to an algorithm bias and lack of governance could inhibit employees' rights and result in a high turnover, customer dissatisfaction and employee retention (Yang et al., 2021).

Second, this paper presents the steps carried out by HR managers to ensure smooth AI–employee collaboration. The study proposes a list of factors to ensure positive collaboration, such as: establishing communication channels; highlighting the positive impact of AI on employee performance; examining the role of AI in maintaining employees' job demands, professional development and social life. Prior research works have indicated that AI-powered technology interventions are seen as being relatively complex, and this does not pose only a challenge for an organization to implement it, but is also difficult for employees to accept it (Dabbous et al., 2021). It is HR managers' responsibility to spread to employees a sense of trust, morality, transparency and value in relation to AI (Papagiannidis & Marikyan, 2020). This effort depends on collaboration across several departments because the premise behind AI implementation is not to replace employees, but to enhance employee performance. A high transparency level is particularly important when new technology affects the HR process (Lichtenthaler, 2020).

5.2. Practical implications

AI implementation processes consist of: data input (e.g., software-readable data about employees' attitude and performance); data analysis (e.g., analysis of the structured and unstructured data); results generated from data analyses (e.g., information, statistics or predictions) (Meijerink & Bondarouk, 2021). Thus HR managers need to understand the functionality of each stage and improve their technical skills to obtain utilitarian benefits from AI-powered solutions. For instance, acquiring essential knowledge on data mining, programming, big data analytics and robotics could be the backbone of emerging AI technology (Pereira et al., 2021). These skills will help HR managers to understand the AI implementation process and, at the same time, to protect AI specialists from any potential employees' resistance to AI applications affecting and eliminating their decisions. For instance, one requirement of a new AI system involves making certain modifications to the job specification and performance appraisal system, which may bring about mistrust in of an organization's decision making if it is performed by an AI specialist instead of the HR manager.

The advantages of HR managers acquiring essential knowledge about the AI implementation process will facilitate the functionality of HR department during crises and pandemics. COVID-19 and the consequences of lockdown have threatened companies in different ways, such as sacking many employees, losing financial funds and income, and changing the workplace structure. AI has acted as a magic wand to solve most of these abnormal circumstances. Companies with a higher AI maturity level have greater flexibility to adapt to these challenges by protecting employee well-being, having personalized internal communication, reducing costs and providing differentiated user experience (Abed, 2021). To leverage AI-powered solutions, organizations have to be aware of managing different types of AI risks, such as: 1) insufficient data security precautions; 2) insufficient data analytics processes; 3) AI scripting errors; 4) lapses in data management; 5) misjudgments in the training data model (Cheatham et al., 2019).

The AI training data bias is considered another type of risk that has an impact on the whole performance of both employees and the organization. A training data bias may come from algorithms, data input, or from the interaction between both (Sun et al., 2020). Ignoring potential risks associated with AI implementation can easily compromise employees' fairness, privacy, security and compliance.

Second, motivating employees toward using AI should be driven by practical incidents. For instance, combining the speed of AI to collect and process data and to achieve employees' tasks and responsibilities are drivers to minimize employees' resistance to AI implementation (Jarrahi, 2018). Demotivated employees toward adopting AI applications could harmed AI functionality in two ways: through non-cooperation and data obfuscation (Newlands, 2021). Non-cooperation entails ignoring AI directions and recommendations. For instance, AI is able to boost employee productivity by recommending various solutions to a single problem. Ignoring these recommendations may affect the

overall performance evaluation. Data obfuscation is described as any process that hides sensitive data while retaining certain aspects of usability. For example, when employees create an alternate version of data that is not easily identifiable or reverse-engineered they, therefore, seek to manipulate the generated results using AI-algorithmic control mechanisms (Kellogg et al., 2020). HR managers have to deploy a sequential AI implementation process by first selecting pilot employees, followed by analyzing the reflection of AI solutions on the selected sample and, finally, deploying training with a wide range of employees. The symbiotic interaction between employees and AI solutions is critical for successful AI implementation (Grover et al., 2022).

6. CONCLUSION

The evolving and mutual relation between the implementation of emerging technologies and the HR process can be lucidly explained by an in-depth qualitative study. This exploratory study builds on two recommendations made by Chang (2020), namely: 1) key factors in the successful knowledge transfer of the AI implementation process to HR managers; 2) HR managers' strategies for smooth AI implementation among employees. By building further on these earlier contributions, we offer a deep understanding of the challenges associated with AI implementation in the HR process and the impact of COVID-19 on AI implementation. These contributions help in building the key elements to transfer knowledge about AI implementation processes for HRM in COVID 19 times.

Such a study provides a comprehensive understanding in addition to the considerable existing literature on AI implementation and the AI-HR manager-employee interaction. The study is one that focuses, on the one hand, on the challenges that affect AI implementation and, on the other hand, on particular strategies for managers and employees to undertake digital transformation.

The bottom line is that this study's findings provide valuable details for AI developers and HR managers when digitalizing the HR process. It calls for a wide range of organizational activities that come in the form of developing HR managers' technical and soft skills, such as data analysis, digitalization trends, basic AI core concepts, communication skills, critical thinking, team building and leadership skills. All these soft skills are lifesavers in today's technology-driven environment because they allow employees to accept HR managers' guidance to implement emerging technologies (Caputo et al., 2019).

7. LIMITATIONS AND FUTURE RESEARCH

The present study is subject to limitations. Due to the novelty of this study, a qualitative study was performed and the sample of respondents is relativity small. Using different meta-analyses and extending the number of interviewees could generate new areas to transfer knowledge about the AI implementation process.

Different future research work could be carried out in several directions to open up new avenues for the complex interrelations among AI transformation, management and employees. For instance, examining if HR managers' academic background could become the key factor for successfully transferring the AI implementation process. Second, analyzing if HR managers with IT experience have enough skills to cover the needs of the AI specialists in their organization. Third, empirically validating the impact of transparency against employee fears about AI implementation. In addition, it will be interesting to test moderate factors, such as employees' age, experience, seniority and academic background, and their influence on HR managers accepting activities leading toward smooth AI-employee collaboration.

Bearing in mind the fear of the unknown that has been raised from the AI bias, future research could investigate the legislation and constraints on AI-trained data, as well as the level of dependence on AI's judgment for employee professional development-related issues.

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