The Impact of AI on Professional Training in Moroccan Companies

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Abstract. This study examines the impact of AI on professional training in Moroccan companies, particularly after increased adoption due to COVID-19. While prior research explores AI's role in training, little focuses on specific benefits like cost reduction, employee satisfaction, and gender neutrality in Morocco. Interviews with six professionals reveal AI's technical and social advantages, such as lower costs, reduced training time, improved productivity, and reduced gender bias. AI intervenes in training design, implementation, and evaluation phases. The study highlights key factors for successful AI integration and offers practical recommendations. Its main limitation is the small sample size, calling for future research with broader participation.

Keywords: Artificial intelligence, Professional training, Employee productivity, Gender discrimination, Cost reduction, Training design, Training evaluation

1 Introduction

In a constantly evolving world, the necessity to train staff to adapt to changes becomes an essential priority for companies [1–3]. The acceleration of technological advances [4], market fluctuations [5] and new regulations [6] require organizations to implement continuous training strategies to maintain and enhance their employees' skills. Nowadays, professional training is essential to develop human capital capable of meeting the dynamic demands of the labor market [7].

Professional training plays a fundamental role as a tool facilitating employees' continuous adaptation to changes [8]. According to [9] , the term training is often used informally to describe almost any effort initiated by an organization to foster learning among its members. Professional training within a company aims to enhance knowledge and skills for personal or professional development. It enables individuals to build human capital, as well as social and cultural capital [10]. [11] define human resource professional training as all learning activities aimed at improving employee skills directly related to their current positions. [12] emphasizes that professional training allows for skill updates, performance improvements, and ensures that employees are prepared to face future challenges. Similarly, [13] conducted a study on organizations active in the field of social services. The results illustrate a positive

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correlation between training needs analysis, training transfer, and employee efficiency, indicating that companies introducing personalized professional training programs enable their staff to benefit from relevant and applicable learning. A study by [14] highlights that professional training is a powerful lever to improve productivity and innovation within companies.

The introduction of artificial intelligence (AI) in professional training has brought significant improvements in quality and efficiency [15]. AI allows for personalized training paths [16], analyzing the specific needs of each employee [17]. AI-powered learning platforms can also automate the evaluation and tracking of performance, thereby reducing administrative burdens and allowing trainers to focus on higher-value tasks [18].

[19] identified four factors that allow companies to easily integrate and evaluate artificial intelligence in their professional training processes. The authors emphasize that in long-term managerial missions like establishing and applying professional training, organizations should consider the 4 E's: (a) Environment: creating an environment that facilitates the establishment of adequate technological infrastructures, raises employee awareness of emerging technologies, and promotes a culture of innovation and collaboration. (b) Ecosystem: creating an ecosystem composed of partners, suppliers, and customers aligned with their AI integration objectives. (c) Establishment: Implementing clear policies and well-defined strategies that adapt to the organization's strategy. (d) Expertise: Developing AI skills and expertise within the organization. When implemented consistently, these factors not only enable successful AI integration in complex and lengthy processes like training but also significantly enhance the efficiency and effectiveness of training programs within organizations.

The objective of this article is to determine the nature and extent of the benefits offered by artificial intelligence in professional training within Moroccan companies. This study is based on interviews conducted with professional training experts. We seek to understand the real impact of AI on the effectiveness of AI-supported training programs in Morocco.

The structure of this article is as follows: The first section details the study methodology based on semi-structured interviews with training professionals. The second section presents the interview results, while the third section provides a comprehensive discussion on the role of AI in professional training. Finally, the fourth section concludes the article by summarizing the key findings and proposing avenues for future research.

2 Methodology

This study aims to capture the changes experienced within Moroccan companies during the implementation of AI tools. The methodological approach is based on semi-structured interviews with six professionals directly or indirectly related to professional training in their companies.

The interview is a data collection technique that involves either individual or group interviews, which can be randomly selected (e.g. street interviews) or specific (e.g.

formal interviews) to obtain information or opinions on facts or perceptions. These data are then analyzed in terms of relevance, validity, and reliability concerning the study's objectives [20]. The semi-structured interview method is one of the three categories of interviews widely used in social sciences [21]. We will use this interview method to address six profiles active in the field of professional training, whose organizations have integrated AI tools into the professional training process. We aim to understand the main changes experienced. The interviews were conducted between May 2024 and July 2024. During the interviews, we addressed three key areas:

Axis - 1 Factors that led companies to adopt AI: We refer to the work of [22] on change management to determine the nature of the change that motivated companies to adopt artificial intelligence in their training process.

Axis 2 - Advantages of AI in professional training: We aim to identify the benefits of applying artificial intelligence in the development of professional training, considering the factors influencing the implementation of training.

Axis 3 - Levels of AI intervention in professional training: We based our approach on [23] to determine which phase of the professional training process has benefited from the introduction of artificial intelligence.

3 Results

In presenting the results, we followed the format below: first, we provide an overview of the specific characteristics of our interviewees. Then, we address the main areas of our study, reinforcing our analysis with information drawn from the testimonies of these professionals.

3.1 Profile Presentation

The demographic distribution is as follows: 50% men and 50% women. The average age of the professionals is 41.5 years, with an average of 14 years of professional experience. The total cumulative duration of all participants' interviews amounted to 170 minutes, with an average of 28 minutes per individual. Additionally, 67% of the participants hold managerial positions, distributed as follows: 25% directors, 75% HR managers. These contextual details provide insights into the demographic characteristics of the interviewees and set the stage for our analysis.

3.2 Adoption of Artificial Intelligence in Professional Training

Artificial intelligence has become an omnipresent reality influencing companies worldwide, especially in skill training and performance improvement. Although the reasons for adopting this technology vary, we aimed to understand from our participants the reasons that influenced their adoption of AI in professional training.

The first reason, provided by Interviewee N°1, was that the adoption of AI happened by chance. This type of change falls under continuous change, which emerges in the organization in an unplanned manner.

The second reason, cited by Interviewees No. 3 and 6, was adaptation to circumstances caused by the COVID-19 pandemic. This prompted companies to establish a hybrid form of training based on both in-person and remote sessions. This behavior falls under directed change, where management imposes change authoritatively, with strong implementation constraints and limited consultation with subordinates. In this case, the state of emergency favored immediate action by adopting AI to justify this rapid change.

The third reason, expressed by Interviewees N° 2, 4 and 5, was that the adoption of AI was the result of an innovation strategy implemented by their companies. This behavior falls under proposed change, where management proposes the change, sets objectives, and establishes a timeline. HR agents can choose their methods and decide how to use AI technology and the necessary resources to achieve it.

These three scenarios outline the states of change that often drive Moroccan companies to adopt AI technology, particularly at the operational level, such as in our case of professional training for employees. It is evident that many aspects within companies can be improved through the adoption of AI technology, whether at the strategic, organizational, or operational levels.

Fig. 1. Word Cloud on the Strategic Choice of AI

In terms of word frequencies, the word cloud above shows that the central words in our analysis, « training, AI » are the most prominent. These are followed by words that connect the coupling between these two notions, such as innovation, goal, Covid-19, time, strategy, accidentally, and others ».

3.3 The Advantages of AI in Professional Training

The application of artificial intelligence has provided companies with two types of advantages. First, the technical advantages related to the development and execution of professional training. Second, the social advantages related to the personal and social context of the staff.

- **Technical advantages:**

Regarding technical advantages, our starting point was to determine the impact of AI on the budget, time, and location of training. As we have seen, these three parameters are factors that influence the realization of professional training. Some interviewees perceived a positive effect of AI on the parameters influencing the development of training:

Reducing the training budget:

Interview 1: "*Positive effect on the budget, the implementation of AI resulted in significant savings as it helped towards optimum utilization of resources along with a reduction in expenditure required to develop training materials and deliver the same*".

Interview 4: "*Yes, we've noticed a significant impact on the budget. By minimizing wasted resources on irrelevant content, AI-enabled training platforms can accommodate a large number of employees simultaneously without the need for proportional increases in instructional staff, resulting in economies of scale*".

Interview 5: "*Yes, in that we have seen some positives on our budget. AI has helped reduce burnout of wasted resources on irrelevant content. Because it can be trained by artificial intelligence, the number of employees that one staff member needs to do or put together at the same time is huge, resulting in low costs*."

Reducing training time:

Interview 1: "*The training process is taking much less time when AI is applied and improves itself. It has introduced many mechanisms for rapid development (and update) of training content and consequently enhanced the productivity for delivery and assessment desk, we have blended mode in our delivery. That has so far had HR rather pleased with the staffing-service results*".

Interview 3: "*We still looking to have a significant impact on. Using AI and hybrid mode, has also shortened the time we spend developing training courses - it frees up thousands of hours by pulling together content on demand to meet our people's specific requirements. At the same time, the time taken to process test assessments following the courses has declined by a lot - by 80%. The evaluations can now be processed with a single click by the employees. Importantly, we still work on the impact for that one*".

Interview 4: "*Having AI as part of our professional training process with Classique style of training, helps us save time for example in content creation and updating training material. It encourages microlearning and just-in-time training by offering nice, short braces that your agents can get through quickly in the middle of their workday without requiring huge training sessions*.".

Interview 5: "*The time-saving features of using AI have reduced. It has additionally smoothed out the way toward creating and refreshing instructional materials, empowered microlearning, and given just-in-time training modules. It all balances out in the end for the location. We asked for the opportunity to train in different ways now that AI provided us with expanded options, and we still demanded in-person engagements. This methodology keeps intact the crucial communication between trainers and employees, an integral part of our training approach*".

Interview 6: "*AI has positively impacted the time required for the training process*".

Replacing the training location with an online version

Interview 4: "*Yes, this has helped us save on travel and accommodation costs - particularly for our top management, which was earlier required to fly abroad for training. AI-powered online training and Virtual Classrooms has reduced the necessity of physical travel and accommodation, saving a lot of cost on that*".

Interview 5: "*It has also reduced the costs of travel and accommodation, especially for the top management which has to undergo training that can be done online*".

However, some interviewees did not observe any changes with the implementation of artificial intelligence in their training processes, as shown by the following examples:

Interviewer 1: "*We have not observed any impact of AI on localization costs*".

Interview 6: "*I didn't notice the impact on budget yet. Maybe my colleague in HR can serve you more with this question*".

Interview 2: "*We did not see an actual effect on. We still analyzing the impact, I don't have a clear idea right now. The impact of integrating AI was seen in acceleration of doing the course components, the possibility of making simultaneous trainings for multiple companies individually, but with computer assistance, the speed in testing correction made after training and also on reaching their training expectations by having all process digitalized and separated into sessions. Despite the integration of AI, we have continued to conduct training sessions in-person, maintaining the physical presence aspect of our training programs*".

We observe that AI has allowed for reducing the training budget through optimal utilization of resources and a decrease in expenses related to the development and delivery of training materials, as mentioned in interviews 1, 4, and 5. It has also reduced the time required to create and update training content by introducing mechanisms for rapid content development and facilitating evaluations, as indicated in interviews 1, 3, 4, and 5. Additionally, AI has replaced the necessity for in-person training with online training, reducing travel and accommodation costs, as highlighted in interviews 4 and 5. However, some interviewees did not notice significant changes in their training processes with AI, as indicated in interviews 1, 2, and 6. In summary, AI has streamlined professional training by reducing costs, accelerating the training process, and allowing geographical flexibility, although its impact is not uniformly perceived by all.

Fig. 2. Clouds of keywords on the technical advantages of AI

In the word cloud above, we focus our analysis on words that indicate technical advantages, namely: « time, budget, process » are the most prominent, followed by words related to these factors (reduces, cost, saving).

- **Social advantages**

The implementation of artificial intelligence has also improved the psychological and social situation of the staff. We observed that the integration of this technology has impacted three main aspects:

Improvement in Productivity and Performance:

Interviewer 1: "*Something that I have noted is a happier workforce as the training is more directly related and even targeted to each person's experience. This also has a good influence on their performance and efficiency as well. In the specific case of our personnel administrator, she has finished training in his new CRM and is now able to finalize some processes around 50% faster than before*".

Interviewer 5: "*Employees can complete these short, subject-specific modules at their own pace during the workday, which avoids long training sessions (saving productivity) and increases the overall efficiency of the training [...] We have stand in the past year with steady performance and satisfaction of our employees. We believe this stability is due to our effort in keeping the training content unbiased and pertinent as well as using IA. There have been fewer employee-generated complaints about evaluation results or the training materials themselves and the wording used in it. It suggests a greater degree of embracement and satisfaction with the training program, indicating its success in gender neutrality*."

Reduction of Gender-Based Discrimination:

Interviewer 2: "*With the introduction of AI none of our women or men colleagues have reported facing gender discrimination. Their position is neatly respectful, presenting the neutrality of the training support in service of both meanings*".

Interviewer 6: "*By implanting machinery to evaluate and correct test, we have able acquiesce our students a more precise eval. We have received 80% fewer complaints because of this. Before, we had the issue of our evaluations favoring one gender over another*".

The integration of artificial intelligence has improved the psychological and social situation of the staff. Interviewees 1 and 5 highlighted that AI positively influenced productivity and performance. It also helped reduce gender-based discrimination by offering training programs that adapt to the physical and intellectual capacities of each individual.

Fig.3. AI Benefits Keyword Clouds.

The word frequency analysis shows that the words related to social advantages are: « gender, performance, and neutrality » are the most prominent, followed by other words (satisfaction, results, evaluation).

3.4 Levels of AI Intervention in Professional Training

We identified several key areas to improve staff training based on our interviews: Firstly, Creation of Engaging Content Tailored to Company Needs:

Interviewer 3: "*Yes, a lot of advantages but the most important for us was in the creation of training materials and also in changing the training for this to be at the level of each employee's requirements and understanding, in order that they succeed, or maybe provide fast and certain responses on any queries*".

Interviewer 1: "*... It has introduced many mechanisms for rapid development (and update) of training content and consequently enhanced the productivity for delivery and assessment desk, we have blended mode in our delivery. That has so far had HR rather pleased with the staffing-service results"*.

Secondly, Development of Flexible Programs Allowing Personalization to Meet Each Employee's Unique Needs and Situations

Interviewer 5: "*AI has significantly improved our training approach by personalizing it according to the mental capacities of each employee. Thanks to this technology, we have been able to quickly develop and update training content tailored to the specific needs of each individual"*.

Thirdly, Creation of Neutral Content Adaptable to All Genders

Interviewer 4: "*Seeing our staff performance increase with digitizing training materials - devoid of content favoring one gender over the other. We have also ceased to get complaints on the results of employee evaluations, as well as on the content and transit used. This has kept us happy and performing well for over a year now*".

These results highlight that the use of AI in the training development process is essential to encourage employee development and maximize organizational performance.

Fig.4. Word Cloud on AI Intervention Levels

The word frequency analysis shows that terms related to training improvement are: « content, materials, performance » are the most prominent, followed by other important words such as « personalized, digitalizing ». These words indicate the main

themes addressed in the excerpts, particularly the personalization of training, the impact of AI, and the increase in employee productivity and satisfaction.

4 Conclusion

The integration of artificial intelligence into corporate professional training has seen various approaches, ranging from haphazard adoption to a necessity imposed by the COVID-19 pandemic, and to strategically planned initiatives. Regardless of the method of introduction, companies that have integrated AI into their training programs have observed significant benefits. AI has demonstrated its ability to transform and improve training processes, proving its added value in various contexts.

The technical advantages of integrating AI into professional training are numerous. Firstly, AI significantly reduces the time required to develop training programs by automating the creation and updating of content. This automation also results in cost reductions associated with training, allowing companies to reallocate these resources to other critical areas. The personalization of learning paths made possible by AI ensures that each employee receives training tailored to their specific needs, thus increasing the efficiency and relevance of the learning experience.

Socially, AI helps reduce gender-based discrimination by providing neutral training content and ensuring impartial evaluation of employee performance. This neutrality fosters a culture of inclusion and equality within companies. Furthermore, AI improves staff productivity by offering more engaging and interactive training modules, leading to greater satisfaction among employees and trainers. Freed from administrative tasks thanks to automation, trainers can focus more on supporting and developing their learners' skills.

AI intervenes at three key levels in the professional training process: design, implementation, and evaluation. At the design level, AI helps identify training needs and create tailored content. During implementation, it enables the delivery of personalized and interactive training while collecting data on learners' progress. Finally, at the evaluation level, AI provides precise and instant feedback, allowing for continuous adjustments and constant improvement of training programs.

However, this study has limitations, notably the small number of participants (only six), which may restrict the generalization of the results. To better understand the role of AI in an organizational context, future research should include a larger and more diverse sample. Additionally, it would be relevant to explore in-depth the impact of AI on other aspects of professional training, such as employee engagement, long-term effects on organizational performance, and ethical challenges related to the use of AI in training.

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