Artificial Intelligence Influenced Learning and Development in Accounting Sector

National College of Ireland

Master of Arts in Human Resource Management

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Abstract

The development of new technologies is going to revolutionise the working environment in the commercial world. Artificial Intelligence (AI), among these various technologies, has already made the most significant impact. It appears that this pattern will continue, as an increasing number of businesses are incorporating it into an essential component of their primary commercial strategy. One aspect of running a business that has not yet had its full impact realised is the function of learning and development in human resources. This dissertation project aims to investigate the effect that the widespread use of AI will have on the efficiency of learning and development in the accounting industry. Because there haven't been many academic investigations into this topic, the findings in the existing literature reveals that there is a significant knowledge gap in this area as a result. In light of this, a research project using mix methods has been designed and carried out among 217 accounting firms in Dublin.

The findings of this research show that AI adoption is positively correlated with the effectiveness of learning and development in the accounting sector. Personalizing the Learning Pathways by AI Adoption, Reinforcing Training and Development by Adoption of AI and Focusing on Virtual Learning by AI adoption have a strong positive correlation whereas Integrating Training Requirements by AI adoption has just a moderate correlation with Effectiveness of Learning and Development. Therefore, it is suggested to invest more on AI stratrgies to improve effectiveness of learning and development.

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In addition, I would like to express my gratitude to the authors of the published articles, books, and other institutions to which I have referred throughout this report. The report's reference list contains the citations for these publications in their respective formats.

I have high hopes that this report will be of assistance to students who are interested in gaining knowledge regarding the application of artificial intelligence to the learning and development process.

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1. Introduction

1.1 Background of the Study

The progression of technology has been considered as a driving force behind the social upheavals that have occurred throughout history. In the past, the term "technology" referred to things like stone tools; today, however, it is used to describe more sophisticated machinery and electronic equipment. In the most recent decades, technological progress has occurred at a rate that has never been seen before. The proliferation of computer technology in particular has had a significant impact, not only in our private lives but also in our working lives. This transformation is not showing any signs of slowing down, and an innovative technology known as artificial intelligence is changing the business operations rapidly.

Humans have been attempting to understand how we perceive, think about, and predict our surroundings for thousands of years. According to Kirchenberger (2017), AI takes this to a new level by attempting to comprehend these phenomena while also producing a new knowledge system. Extensive research has been conducted to determine how artificial intelligence (AI) will alter our personal and professional lives.

The significance of artificial intelligence's impact on businesses has been demonstrated by a large number of studies, and workplaces will not be an exception to this transformation. There is a huge demand for IT related jobs among the young generation and companies take attempts to aquire them by creating new opportunities. As Jha, Sareen and Potnuru (2019) state employee engagement can also be improved with the support of providing individual dashboards, real-time feedback on performance and simplification of works.

It is anticipated that artificial intelligence will add billions of dollars in real gross value to various industries by the year 2035. Vochozka (2018) This is demonstrated by the fact that businesses, particularly tech giants, invested between $26 and $39 billion in AI in 2016. According to Baughin (2017), Google, Microsoft, and Amazon were the companies that created the new era of technology by introducing various innovations in business operations. Even though a great number of companies have followed the same path of tech giants, its full potential has not yet been realised. As a result, the window of opportunity for early adopters to make a profit does not appear to have

closed. In order for their companies to be successful in this new era, many companies are continuously revising their business strategies with these technologies in mind. Inevitably, this is true for many small businesses, which frequently rely on innovations of tech giants to determine potential products and services. One of the most difficult challenges that leaders must face is maintaining an openness to new ideas while also altering the operational model of the company (Lee, 2019).

Many scholars and business experts have been trying to figure out how the emerging technologies will create an impact on the different aspects of business world. Internet of Things (IoT), general robotics, augmented reality (AR), virtual reality (VR), and 3D printing are the examples for technological developments which have changed the business operations dramatically. These are just some examples of what people believe will be the "next big thing" in the future (Weber, 2019). In addition to laying the groundwork for further technological advancements, it is anticipated that AI will play a more significant role in determining how successfully these technologies are integrated into organisations. Puvvada (2019) has shown that integrating these technologies to generate advantages over rivalries and compete in international level is extremely beneficial, so it is almost mandatory to do so.

The vast majority of business sectors have already begun to embrace the integration of technology. However, the impact of this technological revolution on particular business functions has not yet been felt at this point. A large number of companies still adhere to more conventional approaches to human resources management, placing primary emphasis on the element of human interaction. Despite the fact that this is undeniably the most essential component of human resources, artificial intelligence has the potential to complement and cultivate this connection rather than displace or devalue it.

AI has been utilised in human resources (HR) to some extent, but primarily for basic data analysis and profiling future employees. Little research has been conducted into its impact on other aspects of human resources. It has the potential to improve employee relations, collaboration, and general administrative tasks across the entire HR discipline. Despite this, there has not been any significant theoretical progress made regarding the particular relationship between AI and HR (Jatoba, 2019). Learning and development is one of the areas that has received the least amount of research attention regarding the potential impact of AI. Learning new skills and growing professionally are

essential to any organization's long-term success and, ultimately, to the enhancement of its employer brand.

This study aims to analyse and discuss the impact of AI adoption on the effectiveness of learning and development in total of 1413 accounting firms in Ireland. The research is conducted among 217 accounting firms located in four Dublin council areas (Dublin City Council, Fingal County Council, South Doublin County Council and Dún Laoghaire-Rathdown County Council). There is a big research gap in this area as due to lack of academic investigations. Therefore, this research will help to fill that research gap.

According to Chartered Accountants, Ireland (2022), there are 1413 registered accounting firms in Ireland. According to 2020 records (consultancy, 2022), 86% of the annual fees in the accounting sector in Ireland was generated by Big four giants (PwC, KPMG, Deloitte and EY). In Ireland, the accounting profession is mainly regulated by the Irish Auditing and Accounting Supervisory Authority (IAASA). IAASA was formed pursuant to the provisions stated in the Companies Act of 2003. Three Irish accounting bodies are producing qualified accountants in the country: Institute of Chartered Accountants in Ireland (CAI), Institute of Certified Public Accountants in Ireland (CPA) and Institute of Accounting Technicians in Ireland (ATI). According to the Department of Enterprise, Trade and Employment (2022), members of several UK accounting bodies can work and practice in the accounting field in Ireland: Association of Chartered Certified Accountants (ACCA), Association of International Accountants (AIA), Chartered Institute of Management Accountants (CIMA), Chartered Institute of Public Finance and Accountancy (CIPFA), Institute of Chartered Accountants in England and Wales (ICAEW) and Institute of Chartered Accountants in Scotland (ICAC). Accounting firms are mainly engaged in accounting services such as book keeping, financial reporting, internal and external auditing, tax consultation, project evaluations and capital budgeting, risk management, costing and management accounting, due diligence, business valuations etc.

1.2 Objectives and Research Questions

The main research problem of this study is to understand the impact of AI adoption on the effectiveness of learning and development in accounting sector.

Accordingly, following research questions have been formulated to operationalize the research.

1. What are the existing applications of Artificial Intelligence in learning and development in the accounting sector?

2. What is the impact of AI adoption on the effectiveness of learning and development in Accounting sector?

3. What recommendations can be made to improve the effectiveness of learning and development by implementing AI in accounting sector?

Objectives of this study are:

- To identify and discuss the existing applications of Artificial Intelligence in learning and development in the accounting sector
- To identify and analyse the impact of AI adoption on the effectiveness of learning and development in accounting sector
- To discuss the ways of improving the effectiveness of learning and development by implementing AI in accounting sector?

1.3 Structure of the Research

The first chapter introduces topic of the study and the contents of the research. The chapter demonstrates the statement of the problem and background of the AI adoption in Human Resource Management including the learning and development. The first section of the chapter describes the study's objectives and the research questions that must be answered in order to achieve those objectives. In addition, this chapter described the significance of this research and how the findings will be implemented.

The second chapter includes discussion and analysis of the relevant literatures to make a critical evaluation between different views and findings. Existing articles and previous researches were analyzed under this topic. Firstly, a brief introduction is given about the importance and purpose of the literature review and then AI adoption in Human Resource Management. Secondly, a discussion is made on the AI adoption in Accounting sector in the Ireland. Thirdly, the impact of

AI adoption on the effectiveness of learning and development will be evaluated critically with the support of existing literature.

The third chapter of the study is research methodology and different sections of methodology. First section introduces research methodology and highlight on the whole chapter generally. And the research strategy, reasoning and methods were discussed in brief. Moreover, sampling methods, data collection methods and research instruments of the study were highlighted under this section. Lastly, measurement techniques and data analysis tools used in the study were outlined.

The fourth chapter of this study is data analysis, in this chapter quantitative data will be analyzed with the support and selected statistical models. Furthermore, the findings will be discussed to identify their significant and to test the hypotheses.

The fifth chapter is findings of the study is compared with the existing literature to make a proper discussion. It is expected to provide a meaningful ground for this study under this discussion in order to generalize the research findings for the betterment of the HR field.

The last chapter of this study is the conclusion and recommendation, which consist a summary of overall study. The chapter also gives an explanation about findings of the research and reach a conclusion from the findings of the research. Furthermore, limitations and challenges were also highlighted under this chapter and lastly, recommendation for further study on this topic were also discussed.

2. Literature Review

2.1 AI Adoption in Human Resource Management

The development of artificial intelligence (AI) has had an effect on service industries including the hospitality and tourism industries (Sumser, 2017). These interventions have been used by the hospitality industry to find solutions to the daily operational challenges posed by organisations led by AI and Industry 4.0. Among the many applications of artificial intelligence are those that set of rules and standards, provide customized service, customer registrations, waitressing, and virtual voice assistance (Kolbjornsrud, Amico and Thomas, 2016). Additionally, AI has been successfully implemented in airport management systems, such as traveller information desks, in order to automate service delivery. This technical assistance helps to take care of a variety of menial tasks, allowing service provider employees to engage in customer relationships that are profoundly enriching.

Artificial intelligence provides assistance to humans and boosts their performance in a number of operational management domains. For instance, artificial intelligence has the potential to improve organisational efficiencyand effectiveness, product and service quality, customer satisfaction, and wealth maximization, all while developing employees. Sumser (2017) provided evidence that artificial intelligence can be utilised in product inspection through the use of visual recognition assisted audits. It is also possible to use it for enterprise resource planning, which involves assisting managers in making decisions regarding consumers, offering suggestions with regard to the innovative products and processes, allocation of human resources (Wilson and Daugherty, 2018). The process of analysing customer feedback can be sped up with the help of AI algorithms, which can also supply designers with in-depth information and assist managers with positioning, designing and extending of products (Song, 2020).

AI algorithmic system recommendations are the driving force behind customer engagement and customizability of products. As a result, this makes it possible for businesses to successfully leverage their competitive advantages while also improving the experiences of their customers (Florkowski, 2019). In the management of supply chains, AI can assist with both information sharing and coordination (Gulliford and Dixon, 2019). Supply chain operations that are efficient should have as their primary focus the satisfaction of customer requirements (Matiy, 2019). In

most cases, these algorithms are utilised in order to lower budgeted costs such as those associated with resource utilisation and procurement. Although there have been many proposed applications for AI technology, the underlying assumption is that the successful implementation of AI requires a significant relationship between human workers and AI applications.

In the medical field, a variety of online applications have contributed to an increase in operational efficacy in clinical settings, such as the scheduling of surgical procedures and the evaluation of diagnostic images with the intention of diagnosing and predicting the course of disease (Quan and Sanderson, 2018). Innovative manufacturing facilities, such as self-learning plants, have emerged as a result of the digitization and automation of production processes in the manufacturing industry, which has been fueled by big data and machine learning (Coval, 2018). Then there is the application of artificial intelligence in the functioning of retail businesses. When customers do their shopping online, they provide e-retailers with a wealth of information about their browsing behaviours and purchasing tendencies. This provides them with the ability to plan potential promotions and product offerings, as well as effectively manage their working capital (Dogru and Keskin, 2020).

The pervasiveness of information and communications technologies has led to an increase in organisational efficiency by facilitating access to real-time data for the purpose of making educated decisions. Employees are now experiencing technostress as a direct result of all of this (Wang et al., 2008). A number of researchers have put forth a variety of hypotheses regarding the causes and effects of technostress. Accortding to Rabenu et al. (2017), both an excessive amount of work and an excessive amount of information are significant contributors to dissatisfied and unmotivated workers, as well as to poor work performance. It is also known that people's individual personality traits can influence how they react to the stress of their organisations and the coping mechanisms they use (Garg and Dhar, 2017).

In today's world, businesses are under intense pressure to maintain their relevance in the marketplace, which has led to an unhealthy dependence on technological solutions and an urgent requirement to integrate these solutions into their operational procedures. As a direct consequence of this, workers are consistently making efforts to conform to the requirements of these cutting-edge technologies (Ragu Nathan et al., 2008). Staffs in business entities are reporting that the mental and psychological strain required to keep up with the ever-present and pervasive

incorporation of technology in all aspects of their work is causing them to feel overwhelmed (Teich., 2020). The term "techostress" refers to this cognitive response, which can manifest itself as feelings of demotivation and depression (Ragu Nathan et al., 2008). Nevertheless, the clinical psychologist Brod was the first to use the term "technostress" (1984). He referred to it as an illness of today that is brought on by the use of IT technologies and that leads to poor health. This idea was developed further to encompass the stress that can result when an employee is unable to keep up with the demands placed on them by their organisation regarding computer usage (Tarafdar et al., 2007).

This technical stress may have been caused by constant connectivity, new (and sometimes difficult to understand) applications, multitasking, information overload, uncertainty, job insecurity, and technical issues. Multitasking, information overload, and job insecurities may have caused this stress (Chala et al., 2018). These possible factors that contribute to the issue could be of an organisational nature, such as the degree to which an individual is subjected to job-related demands and the amount of job control they have. In addition to factors connected with one's place of employment, an unhealthy dependence on technological devices can be a source of stress in and of itself (technostress). The results of a comprehensive study on technostress that was carried out by Tarafdar et al. (2007) indicate that there are five factors that contribute to it, and these factors are as follows: There are many negative effects of technology, some of which include the invasion of technology, the overloading of technology, the complexity of technology, the unpredictability of technology, and the insecurity of technological systems.

In this increasingly technological era, there has been a rise in awareness of a phenomenon known as technostress, which has prompted an intensive investigation into the factors that contribute to its development and its effects. Research conducted by Tarafdar et al. (2007) looked into how the performance of employees was affected by each of the five factors that contribute to technostress. In addition, they have asserted that technological interventions, such as AI, can exacerbate dysfunctional domains, such as role overload and role conflict. One example of this can be found in the following sentence: These findings lend credence to the hypothesis that the relationship between employee productivity and technostress is inverse.

AI hasn't revolutionised learning and development, but its use in HR has grown. Despite this, senior HR members across many industries resisted AI's introduction. AI's benefits became clear

quickly, and resistance faded (Gulliford & Dixon, 2019). AI has automated many repetitive tasks and goals, speeding up processes. AI has made human resources more people-focused (Wu, 2020). Employees can spend less time on menial tasks, increasing the company's overall productivity (Hebbar, 2017). There is a possibility that AI will boost labour productivity in this industry by nearly forty percent by the year 2035. (Purdy & Daugherty, 2016). This will be achieved not only by conceiving of novel approaches to completing tasks, but also by enhancing and extending the capabilities of existing labour forces through the application of AI technologies (Szczepanski,2019). According to Charlier & Kloppenburg (2017), boosting productivity almost always results in some form of financial gain due to the fact that completing these repetitive jobs more quickly can lead to sizeable cost reductions.

Hmoud and Lazlo (2019) came up with a theory that artificial intelligence would have a big effect on how companies find and hire new employees. AI can help reach this goal because it can get rid of time-consuming tasks like finding and screening applicants and replace them with algorithms. AI can cut down on human error and bias by helping to automate some of the decision-making process. These factors might help contribute to an improvement in the quality of the recruitment process, which would help contribute to a cost reduction as well. The elimination of bias by artificial intelligence should be possible in theory, but in practise, this is not always the case.

It is possible for the output of the AI to be biassed even if the data being used as a source does not contain certain information or if it is unbiased overall. The removal of this kind of prejudice is also of the utmost significance with regard to learning and growth. This may present a challenge in settings in which bias emerges as a result of the preconceptions held by the programmers (Coval, 2018). In addition to that, it is anticipated that AI rather than humans will be in charge of managing things like expense reports, vacation time, and pay (Britt, 2019). It is possible for the HR department to more accurately compensate employees by using AI. It is able to achieve this by evaluating the actual skills and contributions made by the individual, as opposed to merely looking at the level of compensation that is associated with the role that the individual plays in the organisation (Sammer, 2019).

It is reasonable to assume that the vast majority of companies have already incorporated analytics of some kind into the operation of their business model. This will be supplemented by AI, which will build upon previously established structures. This is achieved through enhancements to the

data's description, explanation, prediction, and prescription (Andriole, 2019). Data analytics has a lot of potential in the field of human resources management (HR), as shown by the fact that 96% of learning practitioners think it's important for organisation development and skill-building (Blackwell, Daly & Lancaster, 2019). There's no question that AI has made a big difference in the HR field. Despite this, one aspect of HR, learning and development, has been relegated to the background in terms of the impact that AI has had.

2.2 Learning and Development

After gaining a deeper understanding of what artificial intelligence is and what it is capable of, the next step is to study Learning & Development as a discipline. One definition of "learning and development" is "creating a culture and environment in which individuals and organisations can learn and grow"(Andriole, 2019). Another definition states that learning and development includes "understanding the organization's current and future capability needs, as well as how to create a learning culture that encourages engagement in continuous professional development" (CIPD, 2020). This is done with the help of the right programmes and methods, like coaching, individual and team training, and employee evaluations. People often use the word "learning" to mean immediate instruction, while the word "development" has a longer-term meaning.

Learning is the process of receiving instruction or accumulating knowledge in order to carry out a job or task in an appropriate manner, whereas development transforms learning from a one-time event into a more ongoing process during which you are continually getting better at what you do. Growth, productivity, and performance all see significant improvements when an organisation makes a concerted effort to enhance the abilities and information of its workforce through planned and ongoing training and education opportunities. This pertains to each and every worker, including those in HR who are in charge of designing the training programme (Manresa, Bikfalvi and Simon, 2019). It all comes down to cultivating a culture and atmosphere that encourages learning and growth, both among individuals and among organisations (CIPD, 2020). It provides advantages to the employee in addition to those enjoyed by the organisation. The goal of individual development is to increase a person's knowledge, self-confidence, and career potential, as well as to equip them with the tools necessary to actualize themselves professionally (McGuire, Garavan

& Dooley, 2011). This term has taken the place of "Training and Development" due to the fact that it now refers to a much more comprehensive assortment of pursuits.

In the learning and development process, "creating, disseminating, and embodying knowledge as it becomes a key strategic resource to be leveraged" is a crucial step. This step "holds the key to unlocking an organization's capacity to learn faster than its environment" (Manresa, Bikfalvi and Simon, 2019). The extent to which different kinds of technologies, like AI, are changing the environments in which different kinds of organisations do their work is a demonstration of the significance of this. Over the course of the past few years, there has been an increased emphasis placed on growing and adapting to changes in both the industry and the global landscape. Because not all training practises have the same effect on company performance, it is essential to identify the most appropriate approach for the particular organisation in terms of the sector in which it operates, the type of technology it utilises, and any other relevant factors. (Beardwell and Thompson, 2014).

A "learning and development strategy" is intended to define "the organization's workforce capabilities, skills, and competencies, as well as how they can be developed to ensure a sustainable and successful organisation" (Hayden, 2020). Furtrhermore, learning and development strategies should be in line with the overall strategic plan of the business. These types of development initiatives can be of assistance to organisations in the process of developing core competencies to adapt to the extraordinary pace of environmental change (Garavan et al, 2016).

Continuous education is encouraged through learning and development programmes, which in turn contributes to the development of workers as well as an increase in their workplace competence and productivity. Additionally, it heightens employees' sense of self-worth, focus, and commitment to continuing their education (Fenwick, 2003). People who take part in learning and development activities have a higher level of organisational commitment (Susomrith, Coetzer & Ampofo, 2019). At this point in time, each of these L&D activities as well as the results that they produce have been thoroughly examined and analysed.

2.3 AI in Learning and Development

In terms of improvement and enhancement, the application of AI to learning and development is extremely promising, despite the fact that these benefits pertain primarily to traditional learning and development practises (L&D). Business entities that are aware of this and place a strong emphasis on behavioural intelligence will be in the best position to foster a human-machine collaboration-friendly environment (Song, 2020).

According to Upadhyay & Khandelwal (2019), AI is capable of evaluating a learner's preferences in terms of their behaviour, cognition, and engagement, and then matching those preferences to a learning and development programme. This holds true for numerous approaches to education and personal development. According to research conducted by Smith, Orlando, and Berta (2018), the incorporation of learning models into performance management systems made it possible to take advantage of ongoing educational opportunities. These opportunities were made possible by, among other things, the sharing of knowledge; a deeper understanding of practise and performance patterns; the building of relationships; and the provision of feedback on multiple levels.

One of these strategies is to merely make improvements to E-learning programmes that are already in place. By increasing workers' self-efficacy and providing training that is directly applicable to their jobs, online training can assist businesses in meeting their workforce development needs (Brennan, 2019). E-learning provides numerous benefits, some of which include adaptability, consistency, cost effectiveness, and the removal of requirements or obstacles relating to both time and space (Iansiti and Lakshani, 2020). Traditionally, e-learning initiatives were viewed as one-way communication processes that delivered information without engaging the learner (Weber, 2019). AI should make these systems more effective, provide better accessibility, and adapt to user needs (Davenport and Ronanki, 2018).

Increasing participation in e-learning initiatives has also been shown to be possible through the use of AI-powered gamification methods. The incorporation of elements of game design into settings that are not themselves games is referred to as gamification (Brock and Wangenheim, 2019). It provides interactive and immersive experiences that are comparable to those found in actual video games through the process of turning work-related learning material into a game. In addition to this, it bestows recognition upon the player in the form of in-game badges or points in order to motivate further participation. There is evidence that each of these elements contributes to improved educational outcomes (Armstrong & Landers, 2018). Students are able to practise a

wide range of behaviours in a variety of settings thanks to the incorporation of AI into these simulations. It's also possible that managers will be able to take on a more mentoring or coaching role if they simulate these experiences (Ong & Ramachandran, 2003).

2.4 The Impact of AI on Effectiveness of Learning and Development

2.4.1 Enhancing E-Learning

Through the provision of pertinent training and the improvement of worker self-efficacy, online training can assist businesses in meeting the requirements pertaining to employee development (Brennan et al, 2019). Users of e-learning have access to a number of benefits, some of which include adaptability, uniformity, value for money, and the absence of requirements pertaining to time, space, or obstacles (Jommanop and Mekruksavanich, 2019). The investment on e-laerning initiatives in larger organizations are significant to the smaller entities (CIPD, 2015). These systems should become more interactive with the user's specific knowledge requirements (Atolagbe, 2003). The ability of artificial intelligence to mimic human reasoning and decision making, as stated by Almohammadi et al. (2017), should also improve e-learning platforms according to user preferences and strengths.

In addition, it has been demonstrated that the implementation of gamification strategies that are powered by artificial intelligence can increase participation in online educational endeavours. This is a very positive development. "Gamification" refers to the process of incorporating aspects of game design into environments that are not themselves games (Deterding et al, 2011). It provides an interactive and immersive experience which similar to actual video games, as a result of its transformation of work-related learning material into a game. In addition to this, continued participation in the game may result in the accumulation of points or badges that can be redeemed for various in-game benefits. It has been shown that each of these factors contributes, individually and collectively, to improved learning outcomes (Armstrong & Landers, 2018). Because these simulations are driven by artificial intelligence, students have the opportunity to experiment with a wide range of behaviours and environments. What was once utilised almost exclusively by the

aerospace and military industries is now being adopted by companies all over the world. The simulation of these experiences can also assist managers in taking on a mentoring and coaching role that is more active and engaged (Ong & Ramachandran, 2003).

2.4.2 Knowledge Sharing

According to the findings of Matiy (2019), AI may have a beneficial effect on the employee learning and development process. This artificial intelligence technology makes knowledge and information accessible across the organisation while also facilitating their seamless integration. The utilisation of AI can be of assistance in the processing of information, including the determination of what information is pertinent, who requires it, and how to provide it to those individuals in a manner that meets their needs (Heller, 2019). Because it is applicable to the entire organisation, this AI feature may very well be the single most important one for enhancing learning and development throughout the entirety of the organisation. The vast majority of businesses that are operating in the modern world do not possess the capabilities that are required to deliver the appropriate information to the appropriate person at the appropriate time. The search for the appropriate information can take a considerable amount of time; however, AI should be able to provide it instantaneously in the appropriate context.

AI has the potential to improve communication and coordination on a large scale throughout the organisation, ensuring that individuals always have access to the relevant information. This can be accomplished through the transcription of meetings that individuals are unable to attend, the facilitation of communication between individuals, and the delivery of information through the use of basic chatbots. During the course of the presentation or the meeting, the information will be made almost immediately available. If management has specific workers in mind to carry out a task, then only those workers will receive the relevant information (Wilson & Daugherty, 2018).

New employees might not know where to go to meet other workers and find out more information about the company they just started working for. This is applicable not only to newly hired staff members but also to all staff members, irrespective of how long an employee has been with the company or what position they hold within the organisation. It is expected that as the system develops, additional information will be gathered, and it will become more advanced in general. It

can help employees with any work-related questions or searches, no matter how complex. AI can also help with knowledge. Because implicit knowledge is gained through personal experience rather than reading, it's hard to transfer. AI will be able to assimilate information in unimaginable ways if it can mimic human behaviour. This will help it develop and train new employees quickly (Sanzogni, Guzman & Busch, 2017).

2.4.3 Collaboration

After employees and departments from various parts of the organisation have shared their knowledge with one another, the use of AI can be used to improve or enhance the level of collaboration that exists within an organisation. Metcalf, Askay, and Rosenberg (2019) provided an illustration of this idea by presenting Artificial Swarm Intelligence, which is a form of collaborative technology. In doing so, the authors illustrated the concept of swarm intelligence (ASI). This was used to improve the intelligence of human groups by drawing on the distinct viewpoints of individual members while at the same time removing the constraints that are typically associated with making decisions as a group. This was accomplished by combining the two processes simultaneously.

AI can also improve departmental collaboration. Throughout the course of the history of the HR department, a wide variety of tasks have been accomplished by making use of a wide variety of systems that originated from a variety of sources and vendors. With the assistance of AI, combining all of these separate systems into a single functioning whole is made much simpler. This should result in a more standardised approach, which facilitates departments to pool data and resources more efficiently and transparently (Tambe, Cappelli & Yakubovich, 2019). It is essential for there to be contributions made to the organisation, and learning must come from both individuals and the organisation (Herd, Shuck & Githens, 2018).

2.4.4 Personalized Training

AI has the potential to improve or enhance collaboration within an organisation, which is a natural progression from the sharing of knowledge between different employees or departments. Metcalf, Askay, and Rosenberg (2019) provided an illustration of this when they presented Artificial Swarm Intelligence, a technology that facilitates collaborative work (ASI). By utilising this software, we

were able to not only improve the competence of human groups but also eliminate the limitations that are typically associated with making decisions as a collective. We did this by utilising the various points of view held by individuals.

Throughout the course of HR departments' history, different types of systems originating from various sources and vendors were used for different tasks. The integration of all of these components into a single system is made easier with the assistance of AI. This should result in a more standardised approach, in which different departments will be able to share their information and resources in order to get a clear picture regarding a particular situation (Tambe, Cappelli and Yakubovich, 2019). It is absolutely essential that learning take place at both the individual and organisational levels in ways that are profitable for the organisation (Herd, Shuck & Githens, 2018).

2.5 AI in Accounting and Finance Sector

The field of accounting has recently adopted the use of artificial intelligence in order to make accounting tasks and information retrieval more effective, convenient, and comprehensive through the use of computerised administrative services and the internet. The capability to function, carry out transactions, and share information will directly result from this, and it will be available to all relevant parties, including government agencies, stakeholders, suppliers, businesses and the general public.

Artificial intelligence is a game-changing innovation that has the potential to enable accountants to execute and make strategic decisions more effectively than they have been able to do in the past. This is something that artificial intelligence has the potential to do. It has been more than 25 years since artificial intelligence (AI) made its debut in the field of accounting for the first time (Greenman, 2017). The use of machine learning models, AI enhancements applied to data, and other developments in AI can be used to supplement human thought, which will help to reduce the number of instances of fraudulent activity and an improvement in the accuracy of accounting functions. (Shivani, 2020). Accounting professionals have a responsibility to ensure they do not overlook this aspect of their work.

Businesses are able to expand thanks to developments in technology because of the increased speed with which they can enter new markets, the significant global contributions they can make,

the insights they can gain, and the relationships they can build with current and potential customers (Elliot, 1992). In the future, activities involving artificial intelligence will be essential to accounting practises. The system will assist in the resolution of issues that were either missed or not identified by human input. Accounting managers will no longer be required to perform the laborious and repetitive tasks associated with domestic accounting practises. Practitioners and researchers in the field of accounting can assist in bringing accounting and computer science closer together by combining accounting and computer science under the umbrella of the study of artificial intelligence. This will help bring accounting and computer science more in line with one another. They will be able to close the gap that currently exists between the two industries, which will lead to an increase in the overall productivity of businesses. Because of this, they will be able to narrow the gap that currently exists between the two industries (Francis, 2013).

Accounting, like other areas of the economy that have a significant influence on society, is undergoing significant change as a direct result of the active development of innovative technologies that are being introduced into various production processes by companies. These technologies are being incorporated in a variety of different ways. Cloud technologies, which are one of the most widely used global innovations in accounting, are essentially some servers on the Internet that are used for processing and storing specific data. Cloud technologies are one of the most widely used global innovations in accounting (ICAEW, 2018). Accounting staff members can use this kind of "cloud" not only to access a variety of management systems, but also to easily navigate between their personal and professional e-mail accounts and to access a comprehensive document repository (Astakhova, 2015).

In this study, we investigate the use of cloud computing technologies in accounting, as well as the more recent notion of "cloud accounting," which became popular around the years 2010 and 2011. It is important to point out that despite the fact that it was only recently developed, it has already achieved widespread popularity, which is most likely attributable to the fact that it is simple to utilise. An accounting worker only needs to pay for access to an Internet programme that allows you to increase the productivity of the accounting workflow in an online format in order to begin using cloud technologies. This is all that is required to get started. The implementation of cloud computing significantly simplifies a wide range of responsibilities (Kalyagin, 2009).

The adoption of AI is not an exception to the common practise of accounting firms to develop and utilise cutting-edge tools to maintain a competitive advantage. Combining AI and RPA can assist accounting firms in increasing their productivity and overall performance. However, artificial intelligence is still a developing technology, and not all businesses are willing to devote the required resources to incorporate AI into their business practises. Even though the Big Four are leading the way in the development of AI-enabled tools, it would be a shame if smaller businesses could not take advantage of these developments. By using audit tools that were equipped with artificial intelligence, some accounting firms were able to process a massive amount of client data and find sufficient evidence with regard to criminal frauds (Forbes, 2019).

2.6 Conclusion of Literature Review

Human Resources (HR) is a crucial aspect of any business because it has such a direct impact on the lives of the employees. To be effective and productive in their jobs, employees require a well-communicated and healthy work environment. The application of artificial intelligence (AI), one of the most cutting-edge and rapidly developing technologies currently available, has been of great benefit to the human resources (HR) department. AI is used to automate and complete the majority of low-value HR tasks, allowing for a greater emphasis on strategic work scope. Artificial intelligence (AI) should not be viewed as a substitute for human involvement in works; rather, it should be a supplement to improve the effectiveness of employees. AI facilitates learning and development primarily via the personalization of learning pathways, the reinforcement of training and development, the integration of training requirements, and the emphasis on virtual learning.

3. Methodology

3.1 Introduction

The research methodology is served as a guide for the procedures that will be incorporated into the study as well as to serve as a blueprint for the investigation that is currently being carried out. The methodology of the study explains the research methods and instruments of the study including the population, the size of the sample, as well as the processes for collecting data and analysing it. In addition to that, it talks about the objectives of the research, its methodology, and the tools that were utilised.

This study's aim is to identify and assess the impact that the widespread adoption of AI will have on the effectiveness of learning and development in the accounting industry in Ireland. Specifically, the study will focus on the country of Ireland. A mixed method research is designed to operationalize this research with both quantitative and qualitative techniques.

3.2 Research Objectives, Questions and Hypothesis

The main purpose of this research is to gain an understanding of the effect that the implementation of AI will have on the efficiency of learning and development in the professional accounting industry.

Following sub objectives have been formulated to achieve this main objective.

- To identify and discuss the existing applications of Artificial Intelligence in learning and development in the accounting sector
- To identify and analyze the impact of AI adoption on the effectiveness of learning and development in accounting sector
- To discuss the ways of improving the effectiveness of learning and development by implementing AI in accounting sector?

In order to further operationalize the research, the following research questions have been formulated.

1. What are the existing applications of Artificial Intelligence in learning and development in the accounting sector?

2. What is the impact of AI adoption on the effectiveness of learning and development in Accounting sector?

3. What recommendations can be made to improve the effectiveness of learning and development by implementing AI in accounting sector?

This research follows deductive reasoning. Accordingly, following four hypotheses have been developed with the existing knowledge in this area.

H1: Personalizing the learning pathways by AI adoption has a positive impact on effectiveness of learning and development

H2: Reinforcing Training and Development by AI adoption has a positive impact on effectiveness of learning and development

H3: Integrating training requirements by AI adoption has a positive impact on effectiveness of learning and development

H4: Focusing on virtual learning by AI adoption has a positive impact on effectiveness of learning and development

3.3 Research Philosophy and Research Approach

Research philosophy is "a set of beliefs and assumptions about the development of knowledge". Furthermore, it can be elaborated as the social realities adopted in a study. The research philosophy directs how information is presented and conclusions are drawn by the researcher. As a result, research is open to criticism and debate, resulting in additional research (Saunders, Lewis, and Thornhill, 2019),

Because this is a study that employs both qualitative and quantitative methods, the methodology that underpins the research design takes both of these approaches into consideration. Researchers are able to investigate from both the inductive and the deductive points of view and to combine

theory generation and hypothesis testing within the context of a single study when they use mixed research methods. On a philosophical level, mixed research methods combine paradigms. Mixed methods research can be viewed as a combination of both inductive and deductive approaches (Jogulu and Pansiri, 2011).

In order to generate external validity in the findings and to provide more opportunities for future developments, it is common practise to employ the mixed design in research projects. This is done for the purpose of providing more opportunities for future endeavours. This is done with the intention of enhancing the potential for future endeavours by creating more opportunities. These factors influence whether or not a mixed-methods approach is used, which appears to be a useful tool in terms of diversity, integrity, and comprehensiveness by empirically gathering and measuring objective knowledge via a quantitative method and subjective interpretations of social phenomena via a qualitative method's different logic of research procedure. All of these factors, however, play a role in determining whether or not to use a mixed-methods approach. However, the decision to use a mixed-methods approach is one that must be made after taking into account all of these different aspects.All of these factors, however, play a role in determining whether or not to use a mixed-methods approach. Because of this, the approach taken in this investigation is a hybrid of positivism (the belief that there is only one objective reality) and interpretivism (the reality is dependent on how the research is interpreting findings).

The first and third objectives of the research are aimed to achieve through qualitative techniques whereas the second objective is achieved through quantitative techniques.

3.4 Research Design

The study of the means by which research objectives can be accomplished is referred to as methodology (Malhotra & Dash, 2012). Because this investigation makes use of experiences in a particular field of business and collects primary data, we can classify it as an empirical investigation because it adheres to a particular research strategy.

The qualitative and quantitative methodologies are the two primary approaches that can be utilised when carrying out research. Deductive reasoning is used to direct research in quantitative areas, whereas inductive reasoning is used to direct research in qualitative areas. The vast majority of

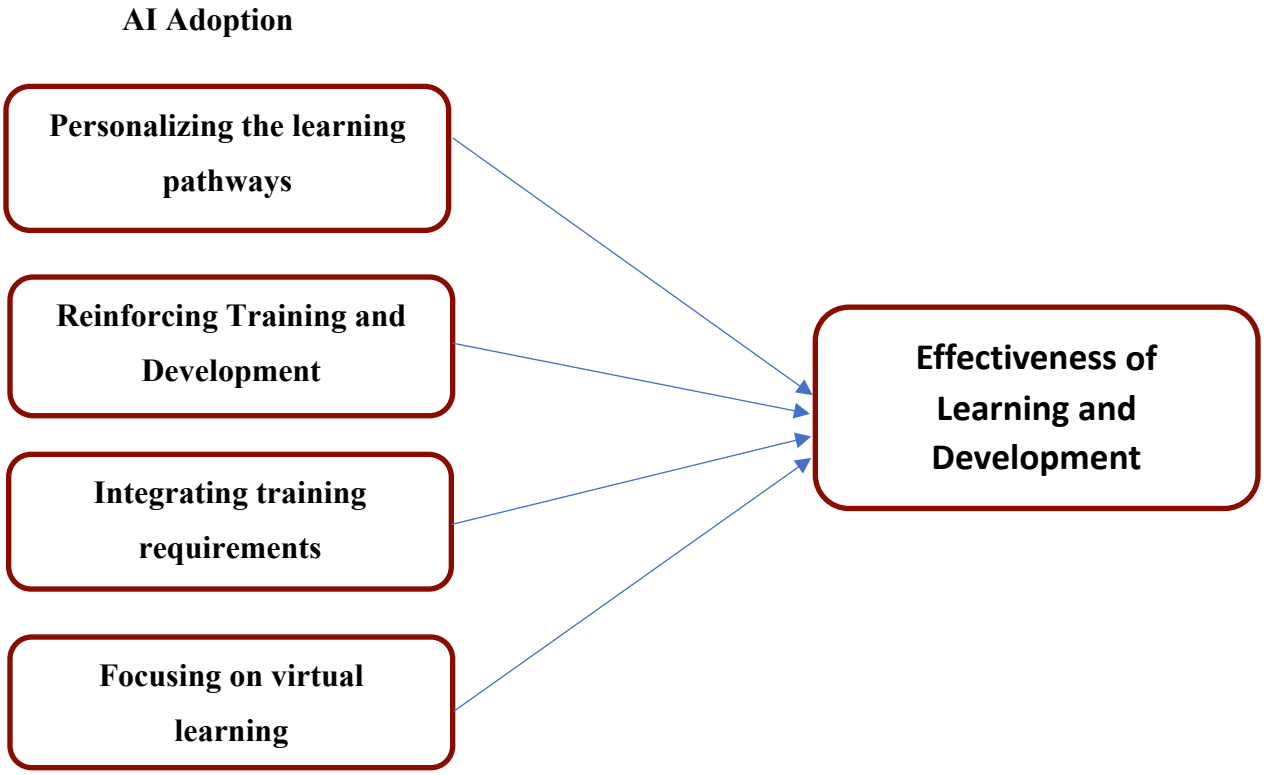
quantitative research is predicated on hypotheses that have already been formulated, and the manner in which those hypotheses are tested—whether they are validated or discredited—is what ultimately determines the findings of the study. When developing hypotheses, it is important to take into account both the previously collected empirical data and any relevant theoretical information. In contrast, qualitative researchers are more concerned with establishing reality without the use of preconceived notions; as a result, the generation of hypotheses is frequently neglected in qualitative research.

Within the scope of this investigation, it has been decided to make use of quantitative in addition to qualitative methods. This is because the study was designed to be exploratory, and also because a significant number of other investigations have already been conducted on the subject at hand. Both of these factors contributed to the lack of conclusive results from the study. Moreover, the subject has been the focus of a great deal of previous research. Because of this, both the alternative hypothesis and the null hypothesis are formulated in a way that is consistent with the prerequisites of deductive reasoning. This is the case because the alternative hypothesis is a consequence of the null hypothesis.

3.5 Conceptual Framework

Personalizing learning pathways, reinforcing training and development, integrating training requirements and focusing on virtual learning have been identified as independent variables which represent the AI adoption in learning and development. Effectiveness of learning and development has been identified as the dependent variable of the study. The conceptual framework has been developed accordingly.

Figure 3.1 – Conceptual Framework



3.6 Population and Sampling

According to Chartered Accountants, Ireland (2022), there are 1413 registered accounting firm in Ireland. According to 2020 records (consultancy, 2022), 86% of the annual fees in the accounting sector in Ireland was generated by Big four giants (PwC, KPMG, Deloitte and EY).

Big four are selected to conduct the qualitative study as they may have benchmarked AI practices in the industry.

Out of 1413 accounting firms, 518 are located in Dublin. The sample of this study is extracted from these 518 firms. According to the Anderson table which was developed by Krejcie & Morgan (1970), the sample size for 518 is 217 firms (95% confidence level, 5% margin of error).

3.7 Data Collection

The primary data, which were gathered using a variety of qualitative and quantitative approaches, are the primary foundation for this study. Interviews with members of the Big Four are being conducted as part of the process of gathering qualitative data. The human resource managers will serve as the primary focus of these interviews, which will be carried out with the assistance of an interview guide.The Interview guide is consisting 08 open-ended questions. which are mainly focused on existing AI strategies on learning and development and possible changes to mitigate drawbacks in future. (Appendix 01)

Quantitative data is collected through a questionnaire which is distributed among 217 accounting firms in Dublin. The questionnaire will be given structured in a google form and the link will be emailed to all HR managers to get their feedback.

The questionnaire is consisting six (6) sections.

- Section A – Personal data of respondents
- Section B – Personalizing the learning pathways
- Section C – Reinforcing Training and Development
- Section D – Integrating training requirements
- Section E – Focusing on virtual learning
- Section F – Effectiveness in Learning and Development

Except for section A, all of the questions are in Likert scale format, which allows for more flexible data analysis with SPSS. The researcher assigned weights to the variables to be measured, as shown below.

	Weight
Strongly Agree	5
Agree	4
Undecided	3
Disagree	2
Strongly disagree	1

3.8 Data Analysis Techniques

The quantitative data that was collected through the use of a questionnaire was analysed with the assistance of Microsoft Excel and SPSS software, whereas the qualitative data was analysed with the assistance of NVIVO software. The following tools for data analysis were utilised during the analysis of the data.

Table 3.1 - Statistical techniques for data analysis

Data Type	**Statistical Techniques**
Univariate Analysis	Frequency analysis, graphs
Multivariate Analysis	Reliability, Multiple Correlation and Regression analysis
Qualitative Data	Thematic Analysis

3.9 Ethical Considerations

In this particular study, ethical considerations were given significant weight throughout the entirety of the research, including the planning, execution, and analysis stages. The importance of ethics in research stems from the fact that it helps to reduce the risk of participants being embarrassed or harmed (Saunders at al., 2019). In order to maintain the ethical standards of research, each participant is given clear and complete information regarding the objectives of the study, and the collected data will be used exclusively for scholarly investigations.

Participants are not required to reveal any personally identifying information, such as their names or the numbers that can be found on their Irish passports or IRP cards. This includes any other information that could be used to identify them. This is due to the fact that it is not a prerequisite for them. The first five questions in the survey were designed to determine the level of expertise that the respondent possessed in the fields of accounting and human resources. Every other question is meant to test the respondent's knowledge of artificial intelligence (AI) as well as the ways in which this technology can be applied in the real world to advance learning and individual growth. The participants were required to select an answer for the remaining questions, with the

majority of the questions asking them to indicate whether they "strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree" with the statement that was being posed (Likert Scale).

3.10 Limitations

The findings of this study are restricted in a number of ways. To begin, there is a limited amount of empirical knowledge that is currently available in this particular field; as a result, when developing hypotheses, the focus is primarily placed on the theoretical knowledge that is currently available. The design of this research was significantly influenced by the dearth of previous studies on the application of AI in learning and development within the accounting industry in particular. However, experience in other industries, in addition to the implementation of AI in other areas of HR, have been taken into consideration as potential solutions to overcome the practical difficulties. The literature that was reviewed consisted almost entirely of studies carried out in countries other than Ireland because there was very little information that was particularly relevant to Ireland. If there had been more research carried out in Ireland, it would have been possible to conduct a more in-depth comparison and analysis of the results.

Both the selection of the samples to use and the collection of the data for this study are restricted to the metropolitan area of Dublin. On the other hand, the fact that the majority of accounting firms, including the "big four," are based in Dublin means that this won't have much of an impact on the final result.

The accounting and finance industry has its own unique organisational framework, and it is subject to stringent oversight from the government as well as from various professional organisations. As a consequence of this, it may be challenging to apply the findings of this research to other business fields or industries as a result of the high level of regulation that exists in these areas. This is because these spheres are subject to a significant amount of regulation, which is the reason for the aforementioned fact. As a result of the integration and automation of business processes, however, the widespread applications of AI in learning and development have the potential to be used in all aspects of a business.

3.11 Summary of Research Methodology

This study's aim is to acquire a comprehension of the impact that the application of AI has on the effectiveness of learning and development processes within the accounting sector so as to better serve that sector's needs. A mixed method study has been designed to achieve this aim. The research design combines qualitative and quantitative approaches to the collection of data and analysis of that data. The qualitative method entails conducting four interviews with human resource professionals who are employed by one of the "big four" audit firms. After that, the information gleaned from these interviews is analysed utilising the thematic method. A total of 217 accounting firms in Dublin are participating in the quantitative study, which has led to the development of four hypotheses and the collection of data at this time. The process of analysing the data makes use of a variety of statistical methods, including descriptive statistics, multiple regression analysis, and correlation analysis.

4. Findings and Discussion

4.1 Introduction

In this section, the results that were obtained from the data collection are discussed. The research goals served as the inspiration for the construction of the data analysis plan. The analysis of the data and the interpretation of the quantitative and qualitative discussion outcomes are the main topics of focus for the discussions that will take place.

Cronbach Alpha test has been carried out on quantitative data to test the reliability of the questionnaire.

Table 4.1 Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.929	.933	20

According to Table 4.1, the Cronbach's Alpha value is 0.929. As per rule of thumb, this value should be greater than 0.7. Accordingly, the reliability of the questionnaire is high and it can be used for the data analysis.

Frequency analysis, graphs and regression analysis are carried out on quantitative data whereas thematic analysis is used to analyse the qualitative data. Sample size for quantitative data collection is 217 accounting firms; however, the number of respondents was 181. Accordingly, response rate is 83%.

4.2 Thematic Analysis

Four semi-structured interviews were conducted with the HR professionals in the Big four Accounting firms in Ireland. Following codes have been given them when analysing interview data.

- HR Professional in PricewaterhouseCoopers – PWC
- HR Professional in KPMG – KPMG
- HR Professional in Deloitte Touche Tohmatsu – DLT
- HR Professional in Earnst and Young – EY

4.2.1 Position in the Firm

HR Managers (or Head of Human Resource) of all four accounting firms were interviewed in this study.

4.2.2 Years of Experience in the HR Field

These HR professionals have different years of experience in the HR field.

"*I joined as HR assistant in 2012*" – PWC

"*I think I have over ten years of experience in HR*" – KPMG

"*I started my career in HR just after completing my undergraduate degree. I think it was 2010*" – DLT

"*I have ten to fifteen years of experience in HR field*" – EY

Accordingly, all of these interviewees have ten or more years of experience in the HR field.

4.2.3 Familiarity with AI technology

Thereafter, family with AI technology was emerged as a theme. How HR managers are familiarized with the AI technology? Their answers were different in this regard.

"*The company has provided a proper training on AI technology. As this area is significantly growing, we had to participate those training sessions more frequently*" – PWC

"*My knowledge in this area was not good. Therefore, I studied a post graduate degree in Artificial Intelligence*" – KPMG

"*Apart to the training sessions provided by the company, out IT team has given a great support to improve my knowledge in Artificial Intelligence*" – DLT

"*I did my master degree in business analytics. It helped me to improve my knowledge in this area*" – EY

Accordingly, they have improved their knowledge in AI by pursing higher studies as well as by participating to the training sessions. However, all of them have identified the importance of AI knowledge for professional growth in HR field.

4.2.4 Continuous Usage of AI for Business Growth

Artificial intelligence has been identified as present and future tool for the business growth. These HR professionals were questioned about their understanding in the importance of AI usage for business growth. All of them gave positive views in this regard.

"Artificial intelligence is the future of businesses. I think this area has been significantly developed due to the Covid-19 pandemic. Most of the people now prefer to work remotely and even education also now mostly virtual or blended. Therefore, we can not stay away from AI. Businesses have started investing on this field" – KPMG

"*We cannot see the future of businesses without artificial intelligence. Most of these tools and platforms are cost-effective and efficient. Customers also now prefer to get their services virtually. Obviously, businesses have to change as per the changes in the market*"- DLT

According to their answers, businesses have to invest on AI to gain advantages from the changes in market. Covid-19 pandemic has triggered the importance of AI in many aspects including the usage of it in remote and virtual services.

4.2.5. Existing AI applications in Learning and Development in Accounting Sector

Learning and development are essential in the accounting sector as similar to other sectors; however, this is a sector where continuous professional development should be taken placed as the accounting profession is characterized by integrity, accuracy and timeliness. The HR managers whom were selected for this study questioned about the existing AI applications in learning and development in accounting sector.

"In this firm, AI applications are used for many areas such as recruiting right people, inductions, providing on-the-job training, identifying further training requirements, providing CPD opportunities, evaluating the outcome of training etc." - KPMG

"We have trainee accountants as well as qualified accountants. Artificial intelligence is successfully used to identify training requirements of these two categories. Furthermore, qualified accountants such as CAs, CPAs and ACCAs should be given CPD opportunities. Our system has been developed to identify and analyze all these different learning and development requirements" – EY

As accounting firms are providing employment opportunities to both trainee and qualified accountants, their learning and development requirements are clearly different. AI enables to identify these different requirements and facilitate them timely.

4.2.6. Areas of Learning & Development which significantly impacted by AI

The respondents were questioned about the areas of learning and development which have been significantly impacted by AI.

"I think data analytics is the most impacted area by artificial intelligence" - PWC

"*Data analytics and performance evaluation of learning and development could be the main areas"* - KPMG

"Data analytics and Intelligent chatbots" -DLT

"As I know, AI facilitates to identify and analyze training requirements and to evaluate the performance of training and development programs" -EY

Accordingly, data analytics, intelligence chatbots, evaluating training and development requirements and performance evaluation are the main areas affected by AI.

4.2.7. Disadvantages of Using AI in Accounting Sector

Privacy concerns, data ownership and security issues and job losses are the main disadvantages of using AI in the accounting sector. Due to the cost effectiveness, most of the firms prefer to provide training and development opportunities for a group rather than focusing on one-to-one programs.

"I think these AI applications have some privacy concerns" - PWC

"Data protection and security are the main concerns in Artificial Intelligence" - EY

4.2.8. Suggestions to improve the AI adoption in Learning and Development

AI not only has the potential to improve an individual's learning and development capabilities, but it also has the potential to improve other facets of human resource management. The most recent recommendations for best practises have centred on the concept that it is essential to make significant investments in the Learning and Development of one's workforce in order to fully realise the potential that each individual possesses. AI has the potential to help human resources departments improve a wide range of processes, including, but not limited to, training, knowledge sharing, e-learning initiatives, and collaboration, to name just a few. The primary distinction that can be made between artificial intelligence and other technologies is that artificial intelligence will not replace currently utilised procedures but rather enhance them.

The quickest way to incorporate these powerful tools into an existing L&D programme is to create new content specifically designed for Augmented Reality (AR) or Virtual Reality (VR) (VR). There are numerous companies that offer production and programming services for virtually any budget. Some are traditional education content providers or agencies that are branching out, while

others are solely dedicated to producing AR and VR content. The following option is to delegate some training to a third-party LMS provider. Newcomers such as Edcast, Grovo, and Axonify provide an AI-enabled platform with a microlearning focus, while well-known names such as IBM are incorporating AI into their latest corporate learning platforms. Most provide a demo to determine whether their platform is a good fit for the organization's needs.

The last option is to improve an existing LMS. Oracle, SAP SuccessFactors, SumTotal, and other well-known platforms are constantly evolving to provide a better user experience and new features. If an organisation already has an LMS, chances are it will soon include AI functionality.

4.3 Frequency Analysis

Table 4.2 Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	74	40.9	40.9	40.9
	Female	101	55.8	55.8	96.7
	Other	6	3.3	3.3	100.0
	Total	181	100.0	100.0	

Table 4.2 shows the analysis of gender of respondents. Female counts 55.8% total respondents, whereas 40.9% of males and 3.3% of other genders were there. The graphical presentation of the gender analysis is given below.

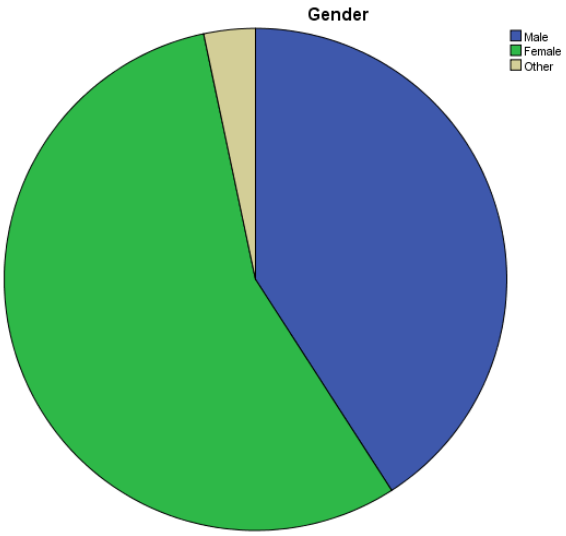


Table 4.3 Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<25	15	8.3	8.3	8.3
	25-30	116	64.1	64.1	72.4
	31-40	20	11.0	11.0	83.4
	41-50	10	5.5	5.5	89.0
	50<	20	11.0	11.0	100.0
	Total	181	100.0	100.0	

According to table 4.3, majority of respondents fall into the age category of 25 to 30 years (64.1%) and same percentage of respondents (11%) were included in age groups 31 to 40 years and above 50 years. Age of 8.3% of respondents is below 25 years and another 5.5% respondents are fallen under the age group of 41-50. The graphical presentation of the age analysis of respondents is given below.

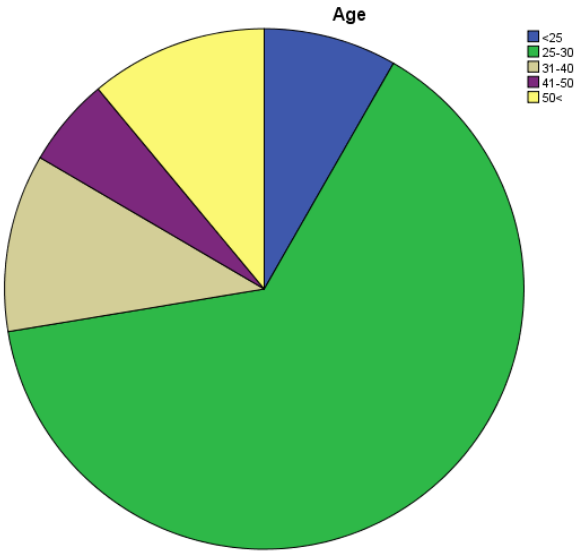


Table 4.4 Experience in HR Field

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5	55	30.4	30.4	30.4
	6-10	121	66.9	66.9	97.2
	11-15	5	2.8	2.8	100.0
	Total	181	100.0	100.0	

According to table 4.4, 70% of respondents have 6 to 10 years of experience in human resource field. Another 305 of respondents have 1 to 5 years if experience in the same field whereas the minority of respondents (3%) has a long-term experience (over eleven years). This analysis is graphically illustrated below.

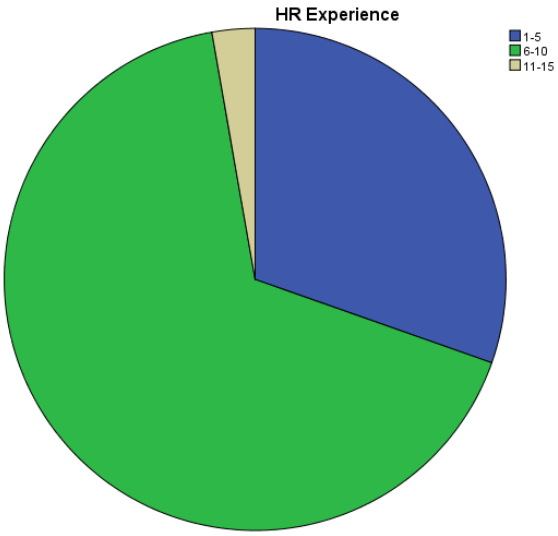


Table 4.5 Experience in Accounting Sector

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5	81	44.8	44.8	44.8
	6-10	80	44.2	44.2	89.0
	11-15	15	8.3	8.3	97.2
	16-20	5	2.8	2.8	100.0
	Total	181	100.0	100.0	

Table 4.5 shows the experience of respondents in the accounting sector. Accordingly, highest number of respondents (45%) has less than 5 years of experience followed by 44% of respondents who have 6 to 10 years of experience in the sector. 8% of respondents count 11 to 15 years of experience whereas the lowest group (3%) has 16 to 20 years of experience. The analysis of experience in accounting sector is graphically illustrated below.

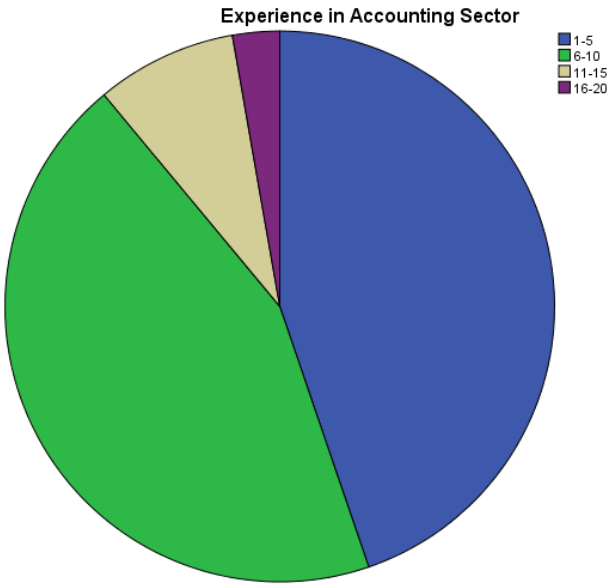


Table 4.6 Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undergraduate	25	13.8	13.8	13.8
	Masters	141	77.9	77.9	91.7
	Professional	5	2.8	2.8	94.5
	PhD	10	5.5	5.5	100.0
	Total	181	100.0	100.0	

Table 4.6 shows the education background of respondents. Accordingly, highest number of respondents (78%) has completed their masters. Only 14% of respondents have completed just undergraduate education and minority of respondents have completed PhDs (5%) and professional education (3%). The analysis of educational background of respondents is graphically illustrated below.

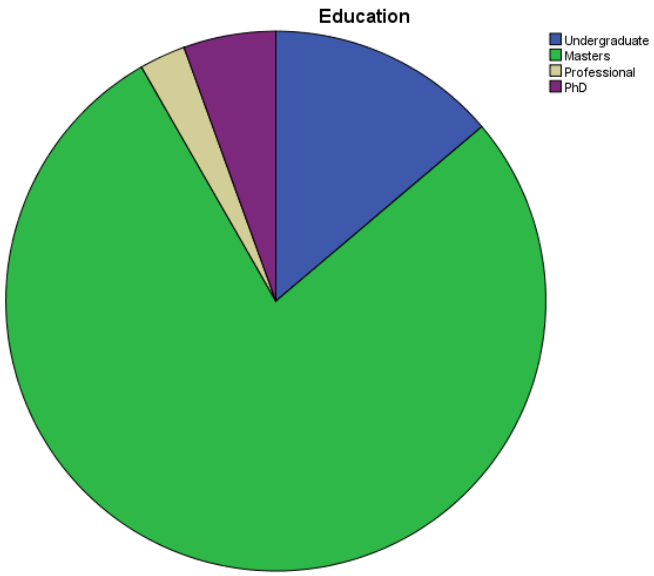


Table 4.7 - Personalizing the Learning Pathways by AI Adoption

Description	SD	D	N	A	SA
AI is provided support to identify personalized learning requirements.	-	2.8%	16.6%	47.5%	33.1%
AI makes it possible for training programmes to be tailored to the specific requirements of each individual worker.	-	5.5%	5.5%	58.6%	30.4%
Employees achieve their learning objectives more quickly because the learing parthways are designed as per personal preferences and objectives.	-	-	8.3%	58.6%	33.1%
AI-powered learning systems analyse each learner and recommend a learning programme based on his or her previous performance and objectives.	-	-	5.5%	61.3%	33.1%

Table 4.7 shows the respondents' views towards the personalizing the learning pathways by AI adoption. Accordingly, 81% of respondents agreed that AI provides supports to identify personalized learning requirements and 89% agreed that AI allows training programs to adopt to the needs of each employee. Over 90% of respondents believe that AI enables employees to achieve their learning goals quickly and propose the best learning programs based on their past performance and objectives.

Table 4.8 - Reinforcing Training and Development by Adoption of AI

Description	SD	D	N	A	SA
Automation of learning and development processes save time.	-	-	11.6%	41.4%	47%
Employee engagement is increased by personalising the learning and reinforcement processes.	-	-	11.1%	53%	35.9%
Increasing completion rates by personalising the learning and reinforcement processes.	-	3.3%	22.1%	44.2%	30.4%
Automation of analytics measure learning effectiveness of employees	-	2.8%	22.7%	52.5%	22.1%

Table 4.8 shows the respondents' views towards the reinforcing training and development by AI adoption. Accordingly, 88% of respondents agree that AI saves the learning and development time and 89% believes that AI enables personalizing the learning and reinforcement processes by boosting the employee engagement. Over 70% of respondents support the matters of improving the completion rate and measuring the learning effectiveness by AI adoption.

Table 4.9 - Integrating Training Requirements by Adoption of AI

	SD	D	N	A	SA
A learning system, powered with AI simplifies the learning and development process	-	5.5%	11.6%	58%	24.9%
Training and development requirements are automatically integrated with the changes of the business environment	-	2.8%	22.1%	53%	22.1%
Time can be saved as minimization of manual works on identifying training requirements	-	-	2.8%	55.2%	42%
The outcome of training can be easily measured with the performance of employees	2.8%	5.5%	16.6%	53%	22.1%

Table 4.9 shows the respondents' views towards the integrating training requirements by the adoption of AI. Accordingly, 83% of respondents agree that AI simplifies the learning and development process whereas 73% believes that AI integrates the training and development requirements with the changes in the business environment. Over 95% of respondents think that time can be saved by minimization of manual works and 75% support the matter of the outcome of training can be easily measured by the adoption of AI.

Table 4.10 - Focusing on Virtual Learning

	SD	D	N	A	SA
AI tutors can take the place of teachers, lecturers, speakers, and coaches.	8.3%	35.9%	17.1%	30.4%	8.3%
Virtual learning flatforms are cost effective.	2.8%	8.3%	39.2%	24.9%	24.9%
Employees can easily find time for virtual learning while performing in their jobs.	2.8%	11.6%	16.6%	47%	22.1%
AI based virtual learning platforms provide continuous support to improve knowledge as well as skills.	-	-	22.7%	49.7%	27.6%

Table 4.10 shows the respondents' views towards the focusing on virtual learning by the adoption of AI. Accordingly, only 39% of respondents believe that AI based tutors can replace the teachers and lecturers. Still 44% think teachers and coaches are needed for learning and development. Furthermore, only 49% of respondents believe that AI platforms are cost effective. These findings are quite different to other aspects of AI adoption in learning and development. However, over 69% of respondents think that employees can easily find time for virtual learning while performing in their jobs and 77% support the matter of AI platforms providing continuous support to improve knowledge and skills.

Table 4.11 - Effectiveness of Learning and Development

	SD	D	N	A	SA
Personalizing the Learning Pathways by AI adoption improves the effectiveness of learning and development.	-	2.8%	19.9%	58%	19.3%
Reinforcing training and development by AI adoption improves the effectiveness of learning and development.	-	2.8%	13.8%	58.6%	24.9%
Integrating training requirements by AI adoption improves the effectiveness of learning and development.	-	2.8%	13.8%	58.6%	24.9%
Focusing on virtual learning by AI adoption improves the effectiveness of learning and development.	-	-	25.4%	47%	27.6%

Table 4.11 shows the respondents' views towards the effectiveness of learning and development by the adoption of AI. Accordingly, 77% of respondents agree that personalizing the learning pathways by AI adoption improves the effectiveness of learning and development whereas 83% believes that reinforcing training and development and integrating training requirements by AI adoption improves the effectiveness of learning and development. Finally, 75% of respondents think that focusing on virtual learning by AI adoption improves the effectiveness of learning and development.

4.4 Hypothesis Testing

Multiple Regression and Correlation analysis has been carried between independent and dependent variables on SPSS to test the hypotheses.

Table 4.12 - Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.894[a]	.799	.795	.27983	2.214

a. Predictors: (Constant), FVL, PLP, ITR, RTD
b. Dependent Variable: ELD

According to Table 4.12, the model's R-square value is 0.799. This means that the study's four independent variables (Personalizing the Learning Pathways by AI Adoption, Reinforcing Training and Development by Adoption of AI, Integrating Training Requirements by Adoption of AI and Focusing on Virtual Learning) can explain 79.9% of the effectiveness of learning and development (the dependent variable). This means, only 21.1 percent of variation in effectiveness in learning and development cannot be explained by these four variables of AI.

Furthermore, Durbin Watson value (2.214) value is 2.214. As the values are closed to 2, it can be assumed that there is no autocorrelation between variables; therefore, regression model can be used for the data analysis.

Table 4.13 – Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.195	.191		-1.019	.310
	PLP	.399	.071	.333	5.623	.000
	RTD	.422	.069	.370	6.137	.000
	ITR	-.046	.049	-.041	-.941	.348
	FVL	.273	.034	.359	8.042	.000

a. Dependent Variable: ELD

According to coefficient table 4.13, the regression between independent variables (Personalizing the Learning Pathways by AI Adoption, Reinforcing Training and Development by Adoption of AI and Focusing on Virtual Learning) and the effectiveness of learning and development is significant as p values are lesser than 0.05. However, the regression is not significant with the Integrating Training Requirements (ITR) as p value (0.348) is higher than 0.05.

Accordingly, the regression model which can be estimated between independent variables (PLP, RTD and FVL) and the dependent variable (ELD) as follows:

ELD = -.195 + 0.399 (PLP) + 0.422 (RTD) + 0.273 (FVL)

Table 4.14 – Correlations

		PLP	RTD	ITR	FVL	ELD
PLP	Pearson Correlation	1	.806**	.539**	.496**	.787**Table
	Sig. (2-tailed)		.000	.000	.000	.000
	N	181	181	181	181	181
RTD	Pearson Correlation	.806**	1	.504**	.566**	.821**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	181	181	181	181	181
ITR	Pearson Correlation	.539**	.504**	1	.568**	.529**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	181	181	181	181	181
FVL	Pearson Correlation	.496**	.566**	.568**	1	.710**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	181	181	181	181	181
ELD	Pearson Correlation	.787**	.821**	.529**	.710**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	181	181	181	181	181

**. Correlation is significant at the 0.01 level (2-tailed).

According to table 4.14, Personalizing the Learning Pathways by AI Adoption, Reinforcing Training and Development by Adoption of AI and Focusing on Virtual Learning by AI adoption have a strong positive correlation with Effectiveness of Learning and Development (0.787, 0.821 and 0.710 respectively). However, Integrating Training Requirements by AI adoption has just a moderate correlation with the Effectiveness of Learning and Development (0.529). All these correlations are significant as the p value is lesser than 0.05.

4.4.1 Hypothesis 01

H1: Personalizing the learning pathways by AI adoption has a positive impact on effectiveness of learning and development

Table 4.15 – Correlation and Regression Results (PLP and ELD)

	Statistic	P value
Correlation	0.787	0.000
Regression	0.399	0.000

Both correlation and regression statistics are significant; therefore, alternative hypotheses can be accepted. Personalizing the learning pathways by AI adoption has a positive impact on effectiveness of learning and development.

4.4.2 Hypothesis 02

H2: Reinforcing Training and Development by AI adoption has a positive impact on effectiveness of learning and development

Table 4.15 – Correlation and Regression Results (RTD and ELD)

	Statistic	P value
Correlation	0.821	0.000
Regression	0.422	0.000

Both correlation and regression statistics are significant; therefore, alternative hypotheses can be accepted. Reinforcing Training and Development by AI adoption has a positive impact on effectiveness of learning and development.

4.4.3 Hypothesis 03

H3: Integrating training requirements by AI adoption has a positive impact on effectiveness of learning and development

Table 4.15 – Correlation and Regression Results (ITR and ELD)

	Statistic	P value
Correlation	0.529	0.000
Regression	-0.046	0.348

Although the correlation value is significant, the regression value is not because the p value is greater than 0.05. Based on the correlation results, alternative hypotheses can be accepted. As a result, incorporating training requirements through AI adoption improves the effectiveness of learning and development.

4.4.4 Hypothesis 04

H4: Focusing on virtual learning by AI adoption has a positive impact on effectiveness of learning and development

Table 4.15 – Correlation and Regression Results (FVL and ELD)

	Statistic	P value
Correlation	0.710	0.000
Regression	0.273	0.000

Both correlation and regression statistics are significant; therefore, alternative hypotheses can be accepted. Focusing on virtual learning by AI adoption has a positive impact on effectiveness of learning and development.

4.5 Discussion

The advent of artificial intelligence (AI) in the twenty-first century has had a profound impact on education and personal growth. Artificial intelligence and machine learning have both made significant contributions to the field of education since the onset of the new pandemic realities that the world has been facing since the year 2020. Learning new things quickly and honing one's skills in a never-ending pursuit of improvement are two of the most vital components of the business world in any organisation.

AI-based solutions are absolutely necessary if you want to make the training process easier for each individual employee. It makes perfect sense to take advantage of AI-powered solutions in order to advance professionally as the rate of technological change quickens. Learning and development are significantly influenced by the increasing prevalence of artificial intelligence across a variety of business sectors. The landscape of learning and development is being radically transformed by AI in a variety of different ways.

People are unique, and as a direct consequence of this, their approaches to and styles of learning are also distinct. As a consequence of this, AI solutions will be able to guide you in the development of a personalised educational experience that is tailored to your specific interests and abilities. Using AI, each employee will be able to select the learning path that is best suited to him or her individually. There is no set path; rather, it is up to the employees to decide how they want to advance in their careers and professions, as well as the methods by which they will educate themselves. AI is capable of providing a number of different options, some of which include predicting the specific needs of a learner, focusing on areas of weakness, and making content recommendations in order to provide the learner with the best learning experience possible.

Everyone in this day and age needs to take precautions to protect their health from the noise of information and the widespread use of digitalization. Users will be able to provide a significant amount of personalised advice as a result of using tools based on AI. Additionally, users will be able to learn to reduce the amount of misinformation and false news in their information field.

Finding the appropriate training programme for each employee can be a time-consuming process. Because of this, many companies have come to the conclusion that it is in their best interest to invest in unified content for their workforce. This tactic may not be successful all of the time, but it does reduce wasted time. There is an alternative available that consists of a solution that is powered by artificial intelligence and helps in the process of producing intelligent content for users. The process of creating content can now be done automatically thanks to AI. The information that the system provides on the matter at hand will be determined by the preferences of the user.

Artificial intelligence is a powerful tool that can evaluate and provide feedback in real time. Learners will be able to evaluate the quality of their own work with the help of automated feedback that is derived from data regarding each learner's performance. In addition, cutting-edge software

enables real-time evaluation and reporting of the performance of learners. This evaluation is fair and accurate because it is founded on real-world evidence. Real-time feedback is objective and does not lead to incorrect interpretations of the results because it is not influenced by human emotions. Using a combination of real-time assessment algorithms and AI tools, employees are able to evaluate both their strong and weak points, as well as come to the appropriate conclusions regarding how to improve their performance going forward.

In a nutshell, the results of this survey are in line with those of other studies that have been conducted in this area in the past. According to what is found in the section of the study that deals with the literature, it was always anticipated that L&D would have a significant impact. In addition, a significant number of the researchers that have been mentioned up until this point have demonstrated the positive impact that AI will have on L&D as a result of the numerous applications and benefits that it offers in a context involving HR. This is in line with the practical implications of these findings, which involve the incorporation of AI technology into the operations of businesses, particularly their efforts to learn and develop new skills. This is consistent with the findings. These findings lend credence to those ramifications. They would tackle it using the same strategy that has been recommended throughout the entirety of the literature review. For instance, Upadhyay and Khandelwal (2019) described how AI can evaluate the preferences of a learner in terms of their behaviour, cognitive abilities, and level of engagement, and then match those preferences to a learning and development programme. Data analytics, which are employed to lend a hand in the process of bettering already established protocols, make this outcome conceivable.

5. Conclusion and Recommendations

5.1 Introduction

This study has been designed to understand the impact of AI adoption on the effectiveness of learning and development in accounting sector. Accordingly, three objectives have been formulated to carry out the research. The conclusion of the study is made accordin g to these objectives.

5.2 Conclusion

The first objective of the study is to identify and discuss the existing applications of artificial intelligence in learning and development within the accounting industry. This will be accomplished through the use of existing case studies. Learning and development are essential in the accounting sector as they are in other sectors as well; however, this is a sector where continuous professional development should take place as the accounting profession is characterised by integrity, accuracy, and timeliness (Upadhyay and Khandelwal, 2019). Learning and development are essential in the accounting sector as they are in other sectors as well. AI applications are currently being utilised to, among other things, personalise the learning pathways, reinforce training and development, implement virtual learning, and integrate training requirements.

It has been demonstrated that artificial intelligence can be used effectively to determine the training requirements of accountants in training as well as qualified accountants. In addition, opportunities for continuing professional development (CPD) should be made available to qualified accountants like CAs, CPAs, and ACCAs. Accounting firms have developed their learning platforms in order to identify and analyse all of these unique requirements for learning and development.

The second objective of the study is to identify and analyse the impact of AI adoption on the effectiveness of learning and development in accounting sector. The impact of AI adoption has been discussed under four areas: personalizing the learning pathways, reinforcing training and development, focusing on virtual learning, and integrating training requirements. Multiple correlation and regression statistics have been calculated between these four independent variables and the effectiveness of learning and development. The regression between independent variables

(Personalizing the Learning Pathways by AI Adoption, Reinforcing Training and Development by Adoption of AI and Focusing on Virtual Learning) and the effectiveness of learning and development was significant as p values are lesser than 0.05. However, the regression is not significant with the Integrating Training Requirements (ITR) as p value (0.348) is higher than 0.05. Personalizing the Learning Pathways by AI Adoption, Reinforcing Training and Development by Adoption of AI and Focusing on Virtual Learning by AI adoption have a strong positive correlation with Effectiveness of Learning and Development (0.787, 0.821 and 0.710 respectively). However, Integrating Training Requirements by AI adoption has just a moderate correlation with the Effectiveness of Learning and Development (0.529). All these correlations was significant as the p value is lesser than 0.05.

On the other hand, Personalizing the Learning Pathways by AI Adoption, Reinforcing Training and Development by Adoption of AI and Focusing on Virtual Learning by AI adoption have a strong positive correlation with Effectiveness of Learning and Development (0.787, 0.821 and 0.710 respectively). However, Integrating Training Requirements by AI adoption has just a moderate correlation with the Effectiveness of Learning and Development (0.529). All these correlations are significant as the p value is lesser than 0.05. In conclusion, there is a positive impact of AI adoption on the effectiveness of learning and development in the accounting sector.

5.3 Recommendations

The third objective of the study is to discuss the ways of improving the effectiveness of learning and development by implementing AI in accounting sector. Not only can AI be used to improve learning and development in HRM, but it also has the potential to improve other aspects of the field. The most effective business practises of the modern era have centred on the notion that making significant investments in employees' Learning and Development is essential to realising their full potential. AI can help HR departments improve a variety of processes, including training, knowledge sharing, initiatives to improve collaboration, and e-learning programmes, among other things. What differentiates AI from other technologies is that it will not supplant existing practises but rather simply improve upon them (Tambe, Cappelli & Yakubovich, 2019).

To integrate these powerful tools into an existing L&D programme as quickly as possible, the company should develop new content that is tailored specifically for augmented reality (AR) or virtual reality (VR) (VR). There is a large number of businesses that are able to accommodate virtually any financial plan with their production and programming services. Others are solely devoted to the production of augmented reality and virtual reality content, while some are traditional education content providers or agencies that are branching out. The next possible course of action is to contract out some of the training to an outside LMS provider. Emerging companies like Edcast, Grovo, and Axonify offer an AI-enabled platform with a focus on microlearning. Meanwhile, established companies like IBM are incorporating AI into their most recent iterations of corporate learning platforms. The majority of providers offer a trial version of their platform so that businesses can evaluate whether or not it meets their requirements.

The final choice is to make enhancements to an already operating LMS. Oracle, SAP SuccessFactors, SumTotal, and many other well-known platforms are continually improving the user experience and adding new features as part of their development processes. In the event that an organisation already possesses an LMS, there is a good chance that it will soon include AI functionality.

6. CIPD Requirements

6.1 Suggessions for Future Research

Future research could investigate the impact of other new technologies on the impact that AI has had on learning and development to further investigate the impact that emerging technologies have on HR functions. How the implementation of artificial intelligence could make the integration of technologies such as augmented and virtual reality, the internet of things, robotics, and 3D printing easier to accomplish. The combination of these technologies might lead to the formation of an organisational technology ecosystem in the future. This is a possibility.

When applied to augmented and virtual reality, artificial intelligence has the potential to create an experience that is more tailored to the individual user and more relevant to their requirements. Combining AI with the other technologies described above is one way to maximise the amount of value that can be created. Artificial intelligence (AI), also referred to as machine learning, is the technology that serves as the basis for all of these other technologies. These two advances in technology are mutually beneficial to one another due to the fact that each one brings out the best in the other. Combining AI and AR, for example, would create a fully immersive and intelligent approach that would improve employees' learning experience. This would help employees learn by viewing and interacting with information. This would be a fantastic way to improve the quality of the learning experience for the student as a whole. This would result in a multitude of benefits for businesses, including an increase in their bottom lines.

When this is combined with the Internet of Things (IoT) and 3D printing in the future, there is a possibility that it will give rise to a technological ecosystem that is interconnected. Using a method called "massive machine type communications," the IoT can connect many different devices. This would be very helpful for an organisation because it would make it easier for people to work together, share information, and build a more technologically advanced place of work. In the not too distant future, it will be possible to investigate not only the effects of each individual technology on L&D, but also the effects of all of these technologies working together to produce those effects.

6.2 Personal Learning Statement

To begin, I am glad that I chose to do my project on artificial intelligence, which is a topic that personally interests me very much, and that I applied it to the aspect of my HRM Master degree that I found to be the most fascinating (learning & development). Because of this, the daunting task of writing the dissertation became less difficult, and it was much simpler to devote so much time to it. If I had chosen a subject that I wasn't interested in researching for this project, I believe it would have been a lot harder for me to do well. If I were to start the project over again, there are probably a few things that I would approach differently.

The first of these is that I want to get better at managing my time, specifically my schedule. During the course of the project, I had the impression that I occasionally took too much time to complete certain tasks that ought to have been completed in a more time- and labor-effective manner. There were also long stretches when I didn't work on the project at all. This was especially true during the second semester, when I was very busy with work and the other parts of my classes. During this time period, I had the impression that I was somewhat losing momentum, which resulted in my work becoming disjointed at various points. Because I had the impression that I lacked competence in the statistical aspect of the project, if I could do it over, I would try to devote more time to enhancing my skills in that particular area. It was never really made clear to me what was expected of me in this regard, and I had the impression that more of an emphasis ought to have been placed on this subject matter while the lectures were being given. Everything seemed rather puzzling and difficult to understand to me. When I was writing, I would also make an effort to narrow my focus.

Specifically, while I was conducting the literature review, I had the impression that I was spending an excessive amount of time talking about anything that was even tangentially related to my topic. This was especially true when I compared the amount of time I spent talking about my topic to the amount of time I spent talking about If I had been more clear about what it was that I wanted to achieve with this project, I would not have needed to eliminate as much of the work, and I would not have wasted as much time. That was time that I could have spent doing something else instead of what I was doing. I sometimes felt like I struggled to make it clear how particular findings related to the literature review, so I would improve the overall synthesis between the sections. I

say this because I sometimes had trouble explaining how findings related to the literature review. In addition to this, it is essential to keep one's attention on the purpose of the research, which serves as the primary concentration of this report. In spite of these challenges, I consider my participation in this project to have been an extremely beneficial learning experience. This experience will serve me well in the future if I am required to participate in the completion of projects of a scale comparable to this one.

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Appendices

Appendix 01

Interview Guide

1. What is your position in the firm?

2. How many years of experience that you have in the HR field?

3. How well do you understand AI technology?

4. Do you think the use of artificial intelligence in business will continue to grow?

5. What are the existing AI applications in learning and development in accounting sector?

6. Which aspect of AI do you believe will have the greatest impact on learning and development in accounting sector?

7. Do you believe that using AI in the accounting sector could have any disadvantages or negative outcomes?

8. What can you suggest to improve the AI adoption in learning and development?

Appendix 02

Survey Questionnaire

Welcome to My Survey!

Thank you for volunteering to take part in this academic research. My name is Tanaya Milind Sathe, and I am an MA in Human Resource Management student at National College of Ireland. Currently, I'm in the final semester of the degree programme and I have to complete a dissertation on a selected area in Human Resource Management.

This research survey is focused on the adoption of artificial intelligence (AI) in learning and development and delimited to the accounting sector. The effectiveness of AI adoption in learning and development is measured under four areas: Personalizing the Learning Pathways, Reinforcing Training and Development, Integrating Training Requirements and Focusing on Virtual Learning.

The survey consists of 25 questions broken out into six (6) parts and takes approximately 10 minutes to complete.

Before you start the survey, please be aware that this survey is completely anonymous, voluntarily and any information provided will remain strictly confidential and will only be used for academic purposes. It will be greatly appreciated if you can complete the entire questionnaire for the accuracy of results.

Once again, I would like to express my sincere gratitude for taking part in my research project.

Thanks and regards,

Tanaya Sathe

A. Background Characteristics of Respondents

Please give your opinion by ticking in the boxes provided.

1	**Gender**	
I	Male	
Ii	Female	
Iii	Other	

2	**Age**	
i.	<25 Years	
Ii	25 - 30 Years	
Iii	30 – 40 Years	
Iv	40 – 50 Years	
V	50< Years	

3	**How long have you worked in the HR field?**	
I	1 – 5 year	
Ii	6-10 years	
Iii	11 – 15 Years	
Iv	16 – 20 Years	
V	Above 21 Years	

4	**How long have you worked in the Accounting sector?**	
I	1 – 5 year	
Ii	6-10 years	
Iii	11 – 15 Years	
Iv	16 – 20 Years	
V	Above 21 Years	

5	**Level of Education**	
I	Diploma	
Ii	Undergraduate	
Iii	Postgraduate/ Masters	
Iv	Professional Membership	
V	PhD	

Indicate the extent to which you agree with the following statement by using a scale of 1 (one) to 5 (Five) where **1= Strongly Disagree – SD, 2 = Disagree – D, 3 = Neutral - N, 4 = Agree – A 5 = Strongly Agree – SA**. Please put ✓ which best describe your opinion of the statement

B. Personalizing the Learning Pathways by AI Adoption

No	Description	SD	D	N	A	SA
6	AI is provided support to identify personalized learning requirements.	1	2	3	4	5
7	AI makes it possible for training programmes to be tailored to the specific requirements of each individual worker.	1	2	3	4	5
8	Employees achieve their learning objectives more quickly because they receive information based on their personal preferences and objectives.	1	2	3	4	5
9	AI-powered learning systems analyse each learner and recommend a learning programme based on his or her previous performance and objectives.	1	2	3	4	5

C. Reinforcing Training and Development by Adoption of AI

No	Description	SD	D	N	A	SA
10	Automation of learning and development processes save time.	1	2	3	4	5
11	Employee engagement is increased by personalising the learning and reinforcement processes.	1	2	3	4	5
12	Increasing completion rates by personalising the learning and reinforcement processes.	1	2	3	4	5
13	Automation of analytics measure learning effectiveness of employees	1	2	3	4	5

D. Integrating Training Requirements by Adoption of AI

No		SD	D	N	A	SA
14	A learning system, powered with AI simplifies the learning and development process	1	2	3	4	5
15	Training and development requirements are automatically integrated with the changes of the business environment	1	2	3	4	5
16	Time can be saved as minimization of manual works on identifying training requirements	1	2	3	4	5
17	The outcome of training can be easily measured with the performance of employees	1	2	3	4	5

E. Focusing on Virtual Learning

No		SD	D	N	A	SA
18	AI tutors can take the place of teachers, lecturers, speakers, and coaches.					
19	Virtual learning flatforms are cost effective.					
20	Employees can easily find time for virtual learning while performing in their jobs.					
21	AI based virtual learning platforms provide continuous support to improve knowledge as well as skills.					

F. Effectiveness of Learning and Development

No		SD	D	N	A	SA
22	Personalizing the Learning Pathways by AI adoption improves the effectiveness of learning and development.					
23	Reinforcing training and development by AI adoption improves the effectiveness of learning and development.					
24	Integrating training requirements by AI adoption improves the effectiveness of learning and development.					
25	Focusing on virtual learning by AI adoption improves the effectiveness of learning and development.					