Digital Human Resource Management:

Emerging Technologies in Talent Identification and Development and Their Strategic Adoption

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Abstract

In the rapidly evolving field of Human Resource Management (HRM), organisations must stay relevant in the business environment by following recent trends and best practices. Further, with abundant workforce data, especially in large organisations, embracing emerging technologies and having a competent system for managing the HR processes is essential. Based on resource-based, human capital theories and high-commitment HR strategies, this research focuses on identifying and developing valuable HR processes to gain a competitive advantage for organisations.

The study begins by analysing the gaps in the previous literature and discusses the two main objectives drawn from it. The first objective was to understand how digitalisation is influencing the talent management processes of talent identification and development, and the second was to explore ways for successfully adopting digital human resource strategies within an organisation. Based on these objectives, two research questions were designed:

RQ1: How is digitalisation influencing organisations' talent identification and development processes and their effectiveness?

RQ2: How can digital human resource strategies be adopted successfully?

A flexible narrative literature review research method was employed to merge academic and practical insights from recent literature published since 2019. The findings of the study were derived from thematic analysis to uncover the role of emerging technologies, like AI, HR analytics, and VR/AR technologies, with their unique strengths, positively transforming talent identification and development processes, providing a clear roadmap for organisations to decide which technologies to leverage to earn maximum return on investment. Additionally, this study demonstrates how digital HR strategies can be successfully adopted, considering the barriers to technological adoption. Against this backdrop, the study proposes a 4C model comprising four interconnected elements of commitment, culture, change management and collaboration, derived from previous research studies.

Then, the discussion section analyses the findings and identifies theoretical and practical implications. The analysis highlighted several limitations, including the scope of the study, lack of empirical studies in AR/VR, HR analytics, AI, and selection bias. Consequently, proposed future studies focus on robust ethical systems, employee well-being, and the need for more empirical evidence to evaluate and develop AI, HR analytics and AR/VR technologies in HR.

Lastly, this dissertation provides actionable recommendations for employees, HR practitioners, and organisations, and it discusses the key contributions to theoretical knowledge and implementation within HR digitalisation and beyond.

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor used artificial intelligence tools or generative artificial intelligence tools (unless it is clearly stated, and referenced, along with the purpose of use), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

4 February 2025

Signature Date

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Chapter 1 Introduction

The introduction chapter provides an overview of the study's topic, purpose, and objectives. It outlines the key research questions and defines the scope of this narrative literature review, studying the gaps from past literature. Additionally, this chapter introduces critical concepts explored throughout the review, highlights significant developments in Human Resource Management (HRM), and examines emerging technologies shaping the discipline. This groundwork sets the foundation for an in-depth exploration of the evolving landscape of digital HRM.

1.1 Background Information on the Topic

In today's competitive world with the rising "volatile, uncertain, complex, and ambiguous (VUCA)" environment, organisations must stay relevant in the business environment by following recent trends and best practices through experimentation and agility (Bennett & Lemoine, 2014, p. 311). Further, organisational structures and work practices are evolving rapidly, especially in HR. For example, innovative technology transforms traditional HR activities and enhances HRM capabilities (Kambur & Yildirim, 2023). During these times, it becomes essential for organisations to identify the finest talent and ensure their employees learn and develop continuously to remain competitive, effective, and productive (Wesche & Handke, 2024). Additionally, with the abundance of workforce data, especially in large organisations, it is necessary to embrace emerging technologies and implement a competent system to manage HR processes like talent identification and development seamlessly. Past research has found that emerging technologies, like Artificial Intelligence (AI) and HR analytics, are helping to manage a high volume of employee data smoothly (Arora et al., 2021; Stewart & Brown, 2019). Thus, adopting emerging technologies in HRM is crucial for organisational survival and growth in a fast-changing VUCA environment.

1.2 The Rationale of the Study

A strong commitment to HR strategies that are difficult to imitate, along with investments in digitalising HR practices for talent identification and development, fosters the creation of differentiated value for an organisation, enabling it to outpace competitors effectively. Drawing from a resource-based view and human capital perspective, both relevant to this study, researchers in Strategic Human Resource Management (SHRM) argue that HR strategies, such as a high-commitment HR strategy, can develop differentiated and valuable employee resources, providing organisations with a competitive advantage (Collins, 2022; Gerhart & Feng, 2021). Empirical data and other work from scholars support this notion by claiming that creating and implementing unique and functional strategies and practices different from current or potential competitors and prioritising employee investment leads to increased business performance, reputation, and sustained competitive edge (Collins, 2022; El Nemar et al., 2022; Gerhart & Feng, 2021; Kambur & Yildirim, 2023).

Moreover, digitalisation in HRM enables organisations to enhance strategic advantage by optimising HR processes and improving efficiency (Collins, 2022; El Nemar et al., 2022; Gerhart & Feng, 2021; Kambur & Yildirim, 2023). Integrating emerging technologies into digital human resource strategies and practices can be achieved effectively by leveraging human capital and resources, making them different (Collins, 2022; El Nemar et al., 2022; Gerhart & Feng, 2021).

Thus, acknowledging HR digital transformation as a competitive driver and further exploration is needed to understand how emerging technologies contribute to talent identification and development and strengthen organisational competitiveness. This study will highlight how emerging digital tools and technologies enhance process effectiveness in talent management processes and strategies for successful adoption, helping organisations to develop high-potential human capital.

1.3 Research Gaps Identified in the Literature

Three main gaps were identified in previous literature. First, previous studies have outlined the need for exploration within the area of talent management and deeper analysis of emerging technologies like HR analytics, Virtual Reality (VR), and Augmented Reality (AR), which signals a research gap (Cruz et al., 2023; Gurusinghe et al., 2021; Khandelwal & Upadhyay, 2021). For example, Khandelwal and Upadhyay (2021) propose further research on adopting VR for training (i.e., talent development) in organisations. On the other hand, the study by Gurusinghe et al. (2021) on HR analytics and talent management suggests further research on how data-driven talent decisions impact organisational performance, and it underscores the potential of HR to boost company performance by developing employee knowledge and skills for competitive advantage.

Second, prior research has focused on individual technologies within HRM, such as AI, HR analytics, or VR/AR, but lacks a comparison of the impact of these technologies on talent management (Gurusinghe et al., 2021; Malik et al., 2023; Steffen et al., 2019). Furthermore, the scope of these studies is also often restricted to specific organisations or regions (Ashtari et al., 2020; Cayrat & Boxall, 2022; Malik et al., 2023; Wiblen & Marler, 2021). For instance, Ashtari et al. (2020) and Steffen et al. (2019) focus on VR/AR technologies, while Wiblen and Marler (2021) conducted their case study on a multi-business-unit professional service firm in a particular region. These limitations of scope draw attention to a significant gap in understanding the effectiveness of these technologies across organisational and regional contexts.

The third identified gap is the limited focus on developing strategies for successfully incorporating emerging technologies within organisations amid continual technological advancements. For example, according to Khandelwal and Upadhyay (2021), VR technology offers immersive, engaging, and cost-effective training solutions that enhance memory retention, making it highly promising for Human Resource Development (HRD). However, it raises the question of how an organisation should adopt VR for training. This gap calls for an understanding of strategies for organisations to integrate emerging technologies.

Hence, this study aims to address these gaps by adopting a holistic approach that examines the roles of AI, HR analytics, VR, and AR in talent identification and development. It will go beyond specific organisational and regional boundaries, identify strategies for smooth adoption, and contribute to advancing theoretical knowledge and practical solutions in HR technology. This study will integrate insights from academic literature and practitioner sources, such as professional HR associations, media articles, and multinational organisations, bridging the perspectives and acknowledging that scholarly research may not always keep pace with the rapid progression of technological innovations.

1.4 Research Objectives

After examining the identified research gaps, this dissertation has two important objectives:

This study first aims to analyse the role and impact of digitalisation, especially the emerging technologies such as AI, HR analytics, and VR/AR, on key talent management processes, specifically focusing on identifying and developing talent from a broad and balanced perspective. The second objective is to explore ways and strategies for successfully adopting digital human resource strategies within an organisation.

This narrative review will address the following two key research questions based on the objectives:

1.4.1 Research Questions

RQ1: How is digitalisation influencing organisations' talent identification and development processes and their effectiveness?
RQ2: How can digital human resource strategies be adopted successfully?

This review will present insights from academic literature and real-world HR practitioner sources. It will examine HRM digitalisation holistically without restricting the analysis to one specific technology, geographical region, or perception. Additionally, it will explore the evolving role of HR professionals and the strategic approaches necessary for effectively adopting digital technologies, tools, and applications in talent management.

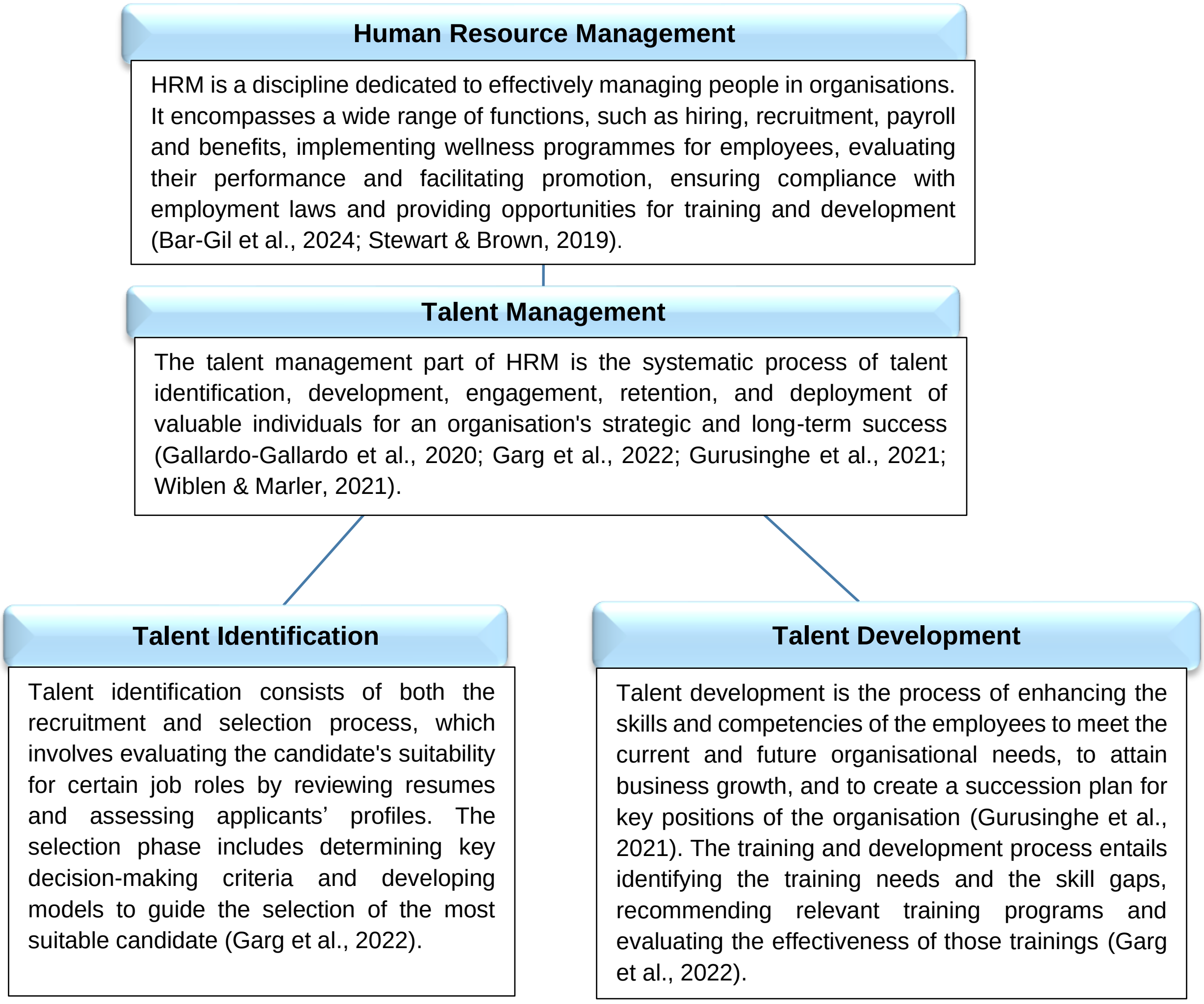
Finally, the research will explore prominent transformations and impacts of the application of emerging technologies in the HR domain from a multilevel perspective: at the individual level on employees and HR leaders, at the group level, and at the organisational level, focusing on the impact on processes, culture, performance, and strategies for adoption.

1.5 Key Concepts: HRM: Talent Identification and Development

The concepts below (See Figure 1) provide an overview of the human resource management field, which involves functions of talent management that include talent identification and development, which are the critical components of this research.

Figure 1

Key Concepts: HRM: Talent Identification and Development



1.6 Development of HRM

Over the past few decades, there have been substantial advancements in HRM. Before the late 1990s, traditional methods were used for various HR processes. In earlier recruitment and selection processes, HR professionals were responsible for identifying and attracting job applicants, conducting manual reviews of applications, and evaluating candidates to determine suitability for progression through the hiring stages or for final selection. However, this conventional approach to the hiring and selection method proved labour-intensive and frequently revealed intentional and inadvertent prejudices held by HR professionals (Rigotti & Fosch-Villaronga, 2024).

As technology advanced in the 1990s, HR professionals evolved their roles to an electronic setting (Kambur & Yildirim, 2023). Electronic recruitment and learning functions of E-HRM primarily used recruitment sites, organisation's HR pages, and websites (Kambur & Yildirim, 2023). Then, more recently, the emergence of disruptive technologies like AI, HR analytics, VR, and AR are transforming how people work, recruit, learn, lead, manage, and interact (Arora et al., 2021; da Silva et al., 2022; Kambur & Yildirim, 2023).

Earlier, "HR technology developers focused on automating individual HR functions, such as payroll, recordkeeping, learning management, resume selection, interviewing, hiring, evaluation, performance review, and compensation" (Khandelwal & Upadhyay, 2021, p. 220). However, the focus has now shifted to integrating these components into a single system. The emerging era of human resource technologies is rapidly introducing novel capabilities to human resources (Khandelwal & Upadhyay, 2021).

Digital transformation is a comprehensive change in the organisation, involving the creation of new business models specifically tailored to the contemporary digital environment, as a digital strategy of the organisation, which can greatly influence the types of jobs available, their nature, and how employees are managed (Guerra et al., 2023). Driven by this digital transformation, organisations are now evolving their HR departments by integrating digital trends like AI, analytics and VR/AR to improve essential HRM functions such as talent identification, hiring and selection, career management, training and development, performance and reward management, retention, and engagement, making it crucial to adopt effective strategies for the transformation (Arora et al., 2021; da Silva et al., 2022; McLean & González Ortiz de Zárate, 2024; Steffen et al., 2019; Thite, 2022).

The HRM function in organisations has transitioned from a passive, reactive, and administrative role to one that is strategic and agile in response to external environmental factors like digital transformation (Arora et al., 2021; Thite, 2022).

> Strategic HRM is influenced by external factors like competitive market dynamics, such as market forces and demands linked to specific product-market combinations and adapting relevant and appropriate technologies that promote organisational efficiency, effectiveness, flexibility, quality, innovation, and speed. Additionally, institutional pressures arise from the social, political, cultural, legal, and regulatory contexts in which a firm is operating. Internally, strategic HRM is determined by a firm's unique organisational heritage, encompassing its history, strategy, structure, culture, and human capital (Gallardo-Gallardo et al., 2020, p. 460).

Furthermore, the COVID-19 pandemic has been one of the key triggering external factors for adopting new technologies and tools, whereby shifting the HRM field to find novel solutions for the smooth running of organisations and assist their employees in overcoming this unprecedented catastrophe to promote more efficient coordination and collaboration (Harney & Collings, 2021; Kambur & Yildirim, 2023; Thite, 2022; Vecchi et al., 2021; Wirges & Neyer, 2023). This digital transformation also influences talent management activities (Guerra et al., 2023).

Despite positive developments and opportunities in the digitalisation of HRM, many challenges are ahead. For example, overreliance on technology in HR can have unexpected implications, including a loss of personal touch, a divide in digital access, and temporary solutions that become lasting issues. HR service delivery is becoming increasingly impersonal, leading employees and consumers to rely on self-service and shared options. HR professionals face difficulties balancing their roles as strategic corporate partners and employee champions (Thite, 2022).

The role of HR practitioners ranges from tactical to strategic. It involves managing people and processes, such as hiring, motivating, and training the best resources to maintain high skill levels and fairness. Modern organisations must manage vast amounts of information for survival, with the support of technological competency. HR specialists use technology themselves and facilitate its use by others. Several HRM functions benefit significantly from adopting appropriate and suitable technologies (Stewart & Brown, 2019).

1.7 Emerging Technologies of AI, HR Analytics, VR/AR

As this study will undertake three emerging technologies of AI, HR analytics, and VR/AR, defining them is crucial. Table 1 indicates the definitions from academic and practitioner perspectives.

Table 1

Emerging Technologies Defined from Academic and Practitioner Perspectives

Technology	Description / Definition	Source	Author and Year
AI	“AI refers to a broad class of technology that allows doing tasks that normally require human cognition, including decision-making.”	Academic	(Kambur & Yildirim, 2023, p. 431)
	"The application of machine learning (ML), natural language processing (NLP), and other AI technologies to human resources duties and decision-making is known as AI use in HR. It makes possible a data-driven strategy for hiring, promoting, and retaining people that aims to reduce bias and improve the experiences of both job searchers and workers."	Multinational organisation	(IBM, 2024)
HR analytics	“HR analytics is a proactive and systematic process for ethically gathering, analysing, communicating and using evidence-based HR research and analytical insights to help organisations achieve their strategic objectives.”	Academic	(Falletta & Combs, 2020, p. 53)

Technology	Description / Definition	Source	Author and Year
	“HR/ People analytics is defined as the extensive management and use of people and HR data, statistical and quantitative analysis, explanatory and predictive models, and fact-based action to improve performance, drive better decisions around your workforce, and proactively put humans at the centre.”	Multinational organisation	EY (Locher, 2024)
VR and AR	“Virtual reality is immersion in entire environments or even entire virtual worlds and is excluded from immediate physical reality. Entire environments can be created with beings and objects with no physical world counterparts, allowing for activities such as flying on a dragon” and “Augmented reality strikes a balance between the advantages of context in physical reality and highly adaptable virtual presentations."	Academic	(Steffen et al., 2019, pp. 689, 690)
	“Virtual reality is a technology that offers total immersion and benefits from capabilities like enhanced finger tracking (with haptic gloves), input based on finger movements and gestures, and tracking of the eye, face, and body depending on the hardware used.” "Augmented reality" (AR) technology is a partial immersion system that uses physical markers, such as objects, patterns, and forms, to identify pertinent 3-D content that must be displayed in preset settings.”	Magazine (Forbes)	(Fonarov, 2022), (Forbes Council member and founder, CEO of Programme-Ace)

Understanding these emerging technologies in talent identification and development from the perspective of academics and practitioners showcases the need to explore various perspectives. The academic perspective provides a detailed, in-depth theoretical foundation, while the practitioner-oriented sources focus on answering "how" these emerging technologies work and can be applied in organisations to enhance efficiency. Practitioners emphasise the technologies' ability to reduce bias, improve experiences for job seekers and HR users, drive better workforce decisions, and benefit organisations. Additionally, practitioner sources are often more recent than academic sources, which progress slowly due to the lengthy publication and peer review processes.

The following technologies are selected based on evidence from recent research, which shows they are evolving rapidly and significantly impacting HRM processes. Together, they provide a comprehensive view, allowing for an integrated understanding of how these tools can collectively enhance talent identification and development (Cruz et al., 2023; Gurusinghe et al., 2021; Kaushal et al., 2023; Steffen et al., 2019).

1.7.1 AI

“McCarthy et al. (1955/2006) first defined AI as causing a machine to behave in ways that a human would consider intelligent if they had the ability, which has gained prominence due to the global technological revolution” (as cited in Kaushal et al., 2023, p. 457). Over the last decade, AI has reshaped HRM, revolutionising work, resource optimisation, and organisation decision-making (Budhwar et al., 2022). AI in HRM streamlines tasks, reduces workloads, errors, and bias while automating repetitive processes. It enhances productivity, resolves workplace issues, supports employee identification and development, promotes alignment with business goals, and enables focus on strategic priorities (Kambur & Yildirim, 2023). However, despite its transformative potential, research on AI-driven HRM practices remains scarce and fragmented, presenting significant opportunities for deeper investigation (Budhwar et al., 2022).

1.7.2 HR Analytics

HR analytics, a branch of management analytics, is a rapidly emerging area to achieve competitiveness (Gurusinghe et al., 2021). Academic and professional interest in HR analytics is growing as a new discipline. Even though HR analytics has been the subject of discussion among academics for about 20 years, there has been a noticeable surge in interest in this area recently driven by the application of analytical methods to HR data and the publication of books and special journal issues on the topic (Edwards et al., 2024).

The literature describes different analytical models. First is descriptive analytics, which can be used, for example, to find information on absentee and turnover rates and cost-per-hire. It also includes techniques like data visualisation for analysis (Mohammed, 2019).

The second type is predictive analytics, which analyses past data to foresee future behaviour or results and current data to project future outcomes. It uses tools like pattern identification, forecasting, root-cause analysis, and predictive modelling to understand what might occur next. HR managers can use predictive modelling to estimate attrition rates and predict that employees will succeed based on the recruitment and selection strategies they have employed. It can also be used to identify which applicants are most likely to develop into high performers (Mohammed, 2019; Peeters et al., 2020). Additionally, predictive analytics identify patterns and relationships, enabling HR to determine appropriate actions and allocate resources effectively to address strategic human capital challenges, ultimately achieving a competitive advantage (Gurusinghe et al., 2021).

The third model of analysis is a prescriptive model, which uses available data and advises managers on what course of action to pursue (Peeters et al., 2020). However, according to past literature, prescriptive methodology receives less attention in HR studies than descriptive or predictive approaches, although prescriptive solutions can still benefit organisations and serve as an optimisation tool for the planning and implementation of recruitment (Pessach et al., 2020).

1.7.3 VR/AR

The fields of VR/AR are expanding and provide opportunities to transform how we study, work, and engage with the world. The capabilities of VR and AR technology have the potential to grow over time, and they will undoubtedly continue to do so (Cruz et al., 2023; Grensing-Pophal, 2022; Steffen et al., 2019).

Since the middle of the previous century, researchers have been working on AR (Cruz et al., 2023). Due to its utility, its use has been expanding; nevertheless, more recently, due to the extensive use of mobile platforms and reachability. Additionally, software and hardware have been created for AR, such as head-mounted displays (HMDs), development tools, haptic gloves, and visual aids, to name a few (Cruz et al., 2023). However, according to Steffen et al. (2019), widespread acceptance has often lagged behind expectations about VR and AR. Although the use of VR and AR in HR processes is still in its infancy, it holds tremendous potential in HR activities such as hiring, onboarding, training, and virtual workspaces (Grensing-Pophal, 2022).

VR and AR provide exciting prospects for new interactive applications, immersive and personalised experiences for applicants, and the development of existing staff (Forbes, 2023; HRNZ, 2023). As VR and AR have witnessed growth in attention and development by researchers and practitioners, it is crucial to understand them.

1.8 Contributions

This research will first contribute to understanding the role of digitalisation in HRM, with a particular focus on emerging technologies, such as AI, HR analytics, and VR/AR, in talent identification and development processes. Second, theoretical knowledge needs to be merged with practical insights, offering a holistic view and structured model for successfully integrating these technologies within organisations by identifying the associated challenges and their implications. Finally, it is expected to suggest areas of future research and contribute by proposing practical recommendations for employees, HR practitioners, and organisations to drive continuous progress in digital HR.

1.9 Overview of the Dissertation

Chapter 1, the Introduction of the dissertation, outlines the topic, purpose, importance, objectives, and research questions. It covers key concepts and technologies and provides an overview of the transition of human resource management over the years. Next, Chapter 2 on research methodology will present the methodology for conducting this review, the rationale for the adopted method, the search strategy, the inclusion and exclusion criteria, and the research procedure. Chapter 3 will elaborate on the essential findings and themes found during the literature study after analysing and synthesising the data and addressing the study's research questions. Then, Chapter 4 contains the discussions, implications, limitations, and areas for future research. The review will conclude with Chapter 5 by summarising key results, recommendations, and this study's contribution to the literature and practice.

In summary, this chapter discusses the study's objectives, scope, and significance of digitalisation in HRM. Furthermore, technological use and digitalisation in HRM were explored, along with the main concepts in talent identification, development, and emerging technologies. The following chapter will state the methodology used in this study and the methods used to select, analyse, and synthesise relevant data.

Chapter 2 Research Methodology

This chapter elaborates on the research methodology and design of this dissertation. It outlines the rationale for selecting the specific approach and explains the narrative literature review process followed in the study, involving search criteria, data extraction and further analysis and synthesis of the relevant data.

2.1 Narrative Literature Review Method and Rationale

A narrative literature review is “a comprehensive narrative synthesis of previously published information or past studies and aims to develop theories widely used in the humanities and social sciences, including management research” (Juntunen & Lehenkari, 2021, p. 330). It enables researchers to share their unique perspectives on the research subject and is commonly used in academic disciplines to evaluate and synthesise available evidence. The characteristic features of narrative literature reviews are that they are non-systematic, flexible, require continuous writing, and provide thoughtful and rigorous interpretations of a body of knowledge, unlike systematic literature reviews (Juntunen & Lehenkari, 2021; Sukhera, 2022; Theile & Beall, 2024). The systematic literature review follows a predetermined, sequential series of structured steps to gather data, interpret, analyse, synthesise, and evaluate the literature. This method is designed to test theories and is commonly used in the natural sciences (Juntunen & Lehenkari, 2021; Sukhera, 2022).

The reason for choosing a narrative literature review for this research is that narrative reviews provide a clear, easy-to-read, thoughtful, and practical synthesis of a research topic. Further, it incorporates many studies and offers an overview, interpretation and critique. In contrast, a systematic review often focuses on a particular subject or issue in a defined context and follows a predetermined procedure to synthesise data from associated studies (Sukhera, 2022).

A narrative literature review is ideal for evaluating information from various domains, including HRM. On the other hand, the standard literature review is a necessary part of scholarly study, but it needs to be more concise and may misrepresent the complex topics covered in HRM. Additionally, it may overlook important or nuanced findings (Madden et al., 2018). Narrative reviews, commonly used in academic disciplines, enable researchers to present innovative ideas while interpreting, analysing, and summarising relevant material (Sukhera, 2022; Theile & Beall, 2024). This narrative review will provide valuable insights to both scholars and HR professionals.

2.1.1 Process Followed in a Narrative Literature Review

There are four vital iterative processes followed in a narrative review: “exploring the literature, (re)defining the focus, analysing, synthesising, and writing” (Juntunen & Lehenkari, 2021, p. 340). These four steps have been followed in this research study.

Exploring the Literature

"Exploring the literature refers to familiarising oneself with the existing literature on the topic. The narrative review involves an intertwined combination of searching, evaluating, selecting, pre-analysing, and reading the literature" (Juntunen & Lehenkari, 2021, p. 337). This initial step of exploring the literature is crucial for building the foundation of the research and defining the topic.

(Re)defining the Focus

"(Re)defining the focus refers to (re)formulating the objective and the research question(s)" (Juntunen & Lehenkari, 2021, p. 338). Even though narrative reviews normally do not adhere to strict, predefined inclusion or exclusion criteria, it is nonetheless advised that researchers explicitly describe the parameters and the extent of the topic being studied. Important terms related to the topic, research question, and any definitions used should also be clearly stated (Sukhera, 2022). Unlike a traditional review or responses to unplanned questions in reaction to results, narrative synthesis is guided by specific research questions that focus on selecting and evaluating data. After establishing a research question, the researcher might develop a search strategy (see Chapter 1 for the research questions and definitions). The search engines or databases are used depending on the specifics of the narrative review search process (Madden et al., 2018; Theile & Beall, 2024).

Analysing and Synthesising

Rearranging the dispersed data is known as synthesising and analysing data. It entails dissecting and examining the data. As stated, analysis can be viewed as a separate process that follows literature exploration or as part of it (Juntunen & Lehenkari, 2021). Previous studies need to be meticulously extracted, reviewed in depth, coded, and analysed using thematic analysis before being synthesised into a narrative.

Writing the Narrative Review

Writing is the ongoing activity of creating many different kinds of writing, ranging from handwritten notes to well-edited studies (Juntunen & Lehenkari, 2021). Following checklists are an excellent resource for simplifying intricate writing tasks, especially when preparing a work of literature. They assist writers in making sure that every vital facet of their work, including the introduction, structure, analysis, and conclusion, is covered (Theile & Beall, 2024).

2.2 The Search Method Used for the Study

The study conducted an exploratory search with purposeful sampling to collect relevant information from peer-reviewed journals, professional associations, and credible media sources (Bozzon et al., 2013; Suri, 2011). Exploratory search refers to an information-seeking behaviour where users endeavour to gain an in-depth understanding of a topic of interest. This process involves conducting multiple searches, often spanning several sessions and utilising various sources of information. It combines both exploratory activities and targeted information-gathering efforts. The search goals may also be adjusted or refined throughout the search process. This flexible strategy enabled the researcher to identify valuable sources while adhering to the inclusion criteria (Bozzon et al., 2013). Considering the broader scope, the study employed SCOPUS and Google Scholar databases to search for peer-reviewed and relevant academic articles. Other sources, such as news and company reports, practitioner-written articles published by professional associations, and others, were searched by standard internet searches. The reliance on these databases was sufficient, given the scope of the study, multiple search terms used, and the search capacity of Google Scholar. It was ensured that relevant and high-quality recognised studies were included to provide a balanced perspective between academics and practitioners, sufficiently addressing the research questions.

Its inclusion criteria were peer-reviewed journal articles, conference papers, and reputable, relevant media articles published by professional associations and organisations since 2019 and in English. The emerging technologies included in this narrative review are AI, HR analytics, and VR/AR technologies, which are growing substantially in the HRM field. Excluded were studies not related to HR digitalisation published before 2019, duplicates, and those not in English. Further, the initial screening was conducted by reviewing the title and an abstract of the peer-reviewed articles and the grey literature. “The grey literature refers to publicly accessible, open-source information, whether domestic or international, that is typically only accessible through specific routes and that might not usually be methods or channels for book dealers or subscription agencies to use for publication, distribution, bibliographic control, or acquisition” (Benzies et al., 2006, p. 12). The grey literature from trusted sources was investigated because it tends to be much more contemporary than academic articles in the fast-growing area on digitilasation.

The keywords used to explore literature revolved around the paradigm concepts of digitalisation in HRM, for instance, Digital HRM, HR Strategy, digitalisation in “talent management”, “talent identification”, “talent acquisition” or "recruitment and selection", "talent attraction" and the emerging technologies in HR as follows "artificial intelligence" or "HR analytics" or “People analytics”, “Virtual Reality” or “Augmented Reality” in “HR” or "hiring" or "talent identification" or "talent development".

2.3 Data Extraction

Using a data recording sheet, the researcher systematically recorded relevant information from selected sources in the initial stage. This process facilitated the organisation and segregation of findings, making it easier to analyse and synthesise the information. Examples from data extracted from the peer-reviewed journal articles and conference papers included the title, source, and author; the study's aim or objective; the methodology employed; key findings, including challenges and limitations; area of future research, implications and significant contributions to the field. Meanwhile, data was categorised by source, year published, and critical findings from the media, magazines, professional associations, and organisations.

The data was categorised into distinct sheets, each coded with essential details. For this dissertation, data was extracted from a total of 56 journal articles, 2 books, 3 conference papers, and 6 industry-backed sources, including reports from companies like EY, PWC, IBM, and McKinsey. Further data was gathered from 5 references across 2 news media sources, primarily from Forbes and The Washington Post, and 7 references from 4 professional websites, such as CIPD, SHRM, HRD and HRNZ. Information was also sourced from 4 references linked to 2 official New Zealand Government sources. The accuracy and relevance of the recorded data were ensured through extensive reading, followed by the manual coding of the information. This structured approach enabled the unambiguous identification of emerging themes and created the base for deeper analysis in subsequent stages of the review.

2.4 Data Analysis

As stated earlier, the second data analysis stage was conducted using thematic analysis, which "is a process of encoding qualitative information" (Boyatzis, 1998, p. 4). "It is a qualitative method for identifying, analysing, and reporting patterns (themes) within data" (Braun & Clarke, 2006, p. 79). The reason for choosing thematic analysis is because it is flexible, organises, and describes the data set in detail. Additionally, it can help provide an extensive overview of the dataset or summarise essential aspects of an enormous amount of data, and the researcher can quickly draw attention to similarities or differences throughout data collection (Braun & Clarke, 2006). Previous studies with similar research areas have used this effective method for the analysis of the data; for example, Peeters et al. (2020) have used thematic analysis to understand people analytics effectiveness, while Wiblen and Marler (2021) in their qualitative case study systematically coded and themed data.

The analysis involved shifting between the data collection, coded extracts, and analysis of the produced data. The phases designed by Braun and Clarke (2006, p. 87) were followed for data analysis. Phase one was about "familiarising with the collected data", transcribing data, reading and re-reading, and taking notes on early ideas. Second, "generating initial codes" was achieved by systematically coding relevant data aspects across the whole dataset. A well-written code is one that fully reflects the complexity of the phenomenon (Boyatzis, 1998). Phase three involved "searching for themes" by organising codes into potential themes and collecting the relevant information for each. "A theme is a significant aspect of the data regarding the research topic, indicating a pattern or meaning within the data set" (Braun & Clarke, 2006, p. 82). According to Boyatzis (1998), it is the pattern detected in the information that essentially describes potential findings and substantially interprets elements of the phenomena.

Further, the “reviewing themes” stage was implemented to ensure they aligned with the extracted codes and the complete data set, resulting in a thematic analysis map. The fifth phase of “defining and naming themes” involved continuous study to refine their specifics and the broader narrative, resulting in clear definitions and topics. The final phase of “producing the report” is the final analysis stage. It primarily involved selecting extracted data, analysing it, linking it to the research question and literature, and writing an academic report (Braun & Clarke, 2006, p. 87). Thus, following this process, the data was analysed by identifying and categorising crucial, recurrent information relevant to the research objective and question into codes, subthemes and then further into themes, thereby producing an academic report reflecting different perspectives from different sources.

Tables 2 to 4 present the thematic analysis related to research question one. Refer to Tables 2, 3 for digitalisation and key impacts on Talent identification and Table 4 for talent development. Refer to Table 5, which represents the thematic analysis of strategies for successful adoption related to research question two. Table 2 below reflects the analysis of codes, sub-themes and themes on how digitalisation influences the talent identification process within three major areas, such as talent strategy and planning, talent acquisition and evaluation and talent engagement.

Table 2

RQ1: Themes: The Influence of Digitalisation on Talent Identification Effectiveness

Themes	Sub-themes	Codes
Talent strategy and planning	Predict the recruitment outcomes.	Make informed judgments and projections. Leveraging technological prediction
	Strategic objectives and planning	Talent decisions align with company objectives. Improved planning and strategic approaches
	Make talent decisions	Shift talent decision-making Smooth decision-making Unbiased talent decisions
Talent acquisition and evaluation	Recruitment	Attract talent Talent sourcing
	Selection through profile matching and assessment	Candidate’s capability Candidate’s reactions and personality Alignment with company culture and objectives
Talent engagement	Candidate experience	Personalisation Open communication Feedback mechanism
	Collaboration	Involvement Interaction Empowerment

The following Table 3 highlights data categorised as the other impacts of digitalisation in talent identification, which outlines positive outcomes on improving efficiency, employer branding and managing data, by reducing administrative burden, bias, time, costs and efforts.

Table 3

RQ1: Themes: Digitalisation in Talent Identification: Other Impacts

Themes	Sub-Themes	Codes
Impact	Efficiency	Reduce time, costs, and efforts
		Improve accuracy
		Consistency
	Employer branding	Strategic approach, gain a competitive edge.
	Data Management	Handle vast amounts of data.
		Reduces administrative burden
		Transparency
		Reduces bias
		Promotes inclusion

Table 4 shows the analysis of talent development. It demonstrates that digitalisation influences talent development effectiveness at different phases, initially in the pre-training phase, during training needs analysis, in identifying skill and performance gaps and designing training. Second, the training phase improving the learning experience with convenience. Third, the post-training phase includes assessing training effectiveness by analysing employee reactions and traits, collecting feedback and evaluating employee performance at work. Further, it also depicts other impacting characteristics that last across different phases of talent development.

Table 4

RQ1: Themes: The Influence of Digitalisation on Talent Development Effectiveness

Themes	Sub Themes	Codes
Pre-training phase	Training needs analysis	Identification of skill gaps
		Identification of performance gaps
	Designing Training	Recommend training programmes
		Designing training programmes and content
		Arrangements and preparation of training
Training phase	Learning experience	Personalisation
		Fills the information gap
	Convenience	Training employees in safe working conditions
		Access training
		Time and cost
Post-training phase	Assessing training effectiveness	Employee reactions and traits
		Feedback
		Performance evaluation
Continuous process and other impacts		Foster employee engagement and experience
		Boosts collaboration and interaction
		Retention of talent
		Avoidance of biases
		Enhance performance and productivity
		Career development
		Shift in organisational culture

Table 5 highlights key codes and sub-themes that were analysed and categorised into four recurring crucial aspects, defined as themes on commitment, culture, change management and collaboration in relation to addressing research question two on successful strategic adoption of digital human resource strategies.

Table 5

RQ2: Themes: Successful Adoption of Digital Human Resource Strategies

Themes	Sub-themes	Codes
Commitment	Committed leadership, management and employees for digital change	Strong visionary and transformational leadership Support digitalisation Commitment to solving challenges Responsive leadership Top-down strategy Secure financial budget and resources Validate digital tools Two-way commitment
	Ethics and governance	Protect employee privacy Ensure compliance Transparency Reducing bias Address ethical concerns Fostering trust
Culture	Data-driven	Accuracy Informed organisational decision-making
	Inclusive	Promoting diversity Fairness
	Learning and development	Train on digital technologies Reskilling Holistic learning culture and development opportunities Upskilling
	Adaptable and flexible	Organisations are agile Enables adaptability among employees
	Transparent and open	Clear communication Encourage employee experimentation and expression.
Change management	Align with strategic objectives	Setting clear objectives Achieving strategic outcomes
	Engagement	Gain support Educate people and communicate regarding change.
	Need for training	Elevate digital literacy
	HR professionals and managers	Lead the change process. Active role in digital integration
	Manage resistance	Difficult to embrace

Themes	Sub-themes	Codes
Collaboration	Stakeholder engagement	Collaborate with universities and institutes
		HR co-creation
		Cross-departmental collaboration
	Employee connectedness	Interactions among employees
		Employee connectivity
		Placing people at the forefront
		Knowledge sharing
	Feedback mechanism	Transparency
		Employee feedback
		Line manager feedback

Chapter 3 Findings

Digitalisation influences the process and effectiveness of talent identification and development processes in organisations in several ways. Each technology, whether AI, HR analytics, or VR/AR, increases process effectiveness with unique features. This chapter presents the study's findings in response to the research questions. The first research question is: How is digitalisation influencing organisations' talent identification and development processes and their effectiveness? The analysis addresses this question in two sections: The first section studies how emerging digital technologies impact talent identification, and the second section examines the impact on talent development. It will also discuss the challenges in adopting digitalisation, leading to the analysis of the second research question: How can digital human resource strategies be adopted successfully?

3.1 Research Question 1: How is digitalisation influencing organisations' talent identification and development processes and their effectiveness?

Although the impact of digitalisation on talent identification and development has been well-researched, a deeper understanding is needed. It has been revealed that attracting and identifying qualified applicants for open positions is essential yet challenging. Some research findings indicate that most organisations often use outdated methods, like web searches, to find possible applicants, which is difficult and time-consuming because the companies and applicants utilise different terminology, resulting in mismatches and involving a significant quantity of paperwork (Kaushal et al., 2023; Tambe et al., 2019). However, digitalisation is fundamentally transforming the talent identification process within organisations by adopting emerging technologies like AI, HR analytics, and VR/AR. To quote an example, according to Kaushal et al. (2023) and Pereira et al. (2023), studies on AI and HR found that integrating AI and HR processes can benefit an organisation in making better managerial decisions, reducing time and cost, more efficient hiring procedures and enhanced workplace learning.

Similarly, academic studies and practitioners have highlighted that HR analytics improves HR processes (Locher, 2024; White, 2024; Wirges & Neyer, 2023). In a manner that no other data can, HR analytics offer insights into the organisation and provide information about how employees perform and respond to the company's initiatives. Without appropriate people analytics tools, it would not be easy to adequately comprehend the hiring process's progress or boost team morale and performance (White, 2024).

Finally, the emerging VR and AR technologies in talent identification create immersive experiences that engage job seekers and existing employees, which will be discussed further (Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019; Steffen et al., 2019). VR is a cutting-edge technology. Consequently, it is reasonable to assume that it could enhance the recruitment process if the HR team understands how to incorporate it to refine their present techniques (HRNZ, 2023). Thus, these studies outline the contributions of digitalisation to talent identification and development.

3.1.1 The Influence of Digitalisation on Talent Identification Effectiveness

This first section will focus on how each emerging technology contributes to essential aspects of talent identification, starting with talent strategy and planning, talent acquisition and evaluation, talent engagement, understanding the impact on efficiency, employer branding, and data management. It leads to understanding how digitalisation handles vast amounts of data, reducing routine manual activities, which leads to a greater focus on strategic activities. Refer to Table 6 for the findings on digitalisation influencing the effectiveness of the talent identification process.

Talent Strategy and Planning

Predicts Recruitment Outcomes and Crafting Talent Decisions

Crafting well-informed talent decisions is made smoother by leveraging technological predictions and HR analytics support, which assist in talent strategy and planning. Implementing technologies within an organisation can shift talent decision-making between humans and technology. Incorporating AI into HR processes has transformed decision-making on talent identification by prioritising technology-driven assessments and enhancing the effectiveness of talent identification through improved planning and strategic approaches. As the need to involve HR managers in strategic decisions has grown, businesses have realised how vital it is to avail modern technology to support HR systems for various purposes. Some research findings outline how AI can help in predictions and making unbiased talent decisions like deciding whom to hire (Allal-Chérif et al., 2021; Garg et al., 2022; Kambur & Yildirim, 2023; Kaushal et al., 2023). For example, text categorisation and decision trees help make talent decisions by collecting information from resumes and analysing application profiles (Garg et al., 2022). Similarly, an article published in Forbes on "How AI Is Primed to Disrupt HR and Recruiting" mentions that AI enhances HR activities and recruitment by predicting talent needs within departments, allowing HR teams to prioritise hiring (Maskey, 2022).

Despite these reports, other scholars like Tambe et al. (2019) outline the issue in the outcome of HR decisions that need explanation, for example, who gets employed and who gets dismissed, which have significant ethical, distributive and procedural justice ramifications for employees, organisations and society. Employers are also held responsible for lawfully making such decisions under the regulatory frameworks. The issue of explainability, or understanding the qualities that influence the decisions, is at the heart of those frameworks. Many cutting-edge prediction algorithms often lack explainability in their underlying techniques (Tambe et al., 2019). Thus, these research findings reflect the problem that although AI aids in unbiased talent decisions and streamlines HR operations, it still raises ethical concerns, particularly regarding decision explainability and fairness for the candidates on the HR outcomes, which are crucial for regulatory compliance and organisational reputation.

Table 6

Summary of Findings: The Influence of Digitalisation on Talent Identification Effectiveness

Themes	Technology	Digitalisation influencing the effectiveness of the talent identification process	Sources
Talent strategy & planning	AI	AI can help in predictions and making unbiased talent decisions like deciding whom to hire. However, it may lack explainability in decisions and fairness.	(Allal-Chérif et al., 2021; Garg et al., 2022; Kambur & Yildirim, 2023; Kaushal et al., 2023; Tambe et al., 2019)
	HR analytics	HR analytics empower organisations to predict employment needs and plan recruitment strategies by examining employee data trends and making evidence-based talent decisions. It helps predict whether an applicant is an ideal match for the role.	(Arora et al., 2021; DiClaudio, 2019; Gurusinghe et al., 2021; Locher, 2024; Pessach et al., 2020)
Talent acquisition and evaluation	AI	AI helps increase the effectiveness of attracting, determining high-potential talent, screening, and evaluating recommendations.	(Garg et al., 2022; Kambur & Yildirim, 2023; Kaushal et al., 2023; Maskey, 2022; Tambe et al., 2019)
	HR analytics	Analytical tools provide parameters to discover quality candidates for effective hiring and to develop an adequate talent pool.	(Arora et al., 2021; Gurusinghe et al., 2021)
	VR/AR	VR/ AR gives job seekers a more accurate picture of the company and the role, which can be helpful to prospective employees and organisations and enhance the experience of talent identification and the application process.	(HRNZ, 2023; Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019)
Talent engagement	AI	AI chatbots improve the candidate experience, personalisation, and engagement by automating communication and improving moral value alignment.	(Allal-Chérif et al., 2021; Douglas, 2024; Ore & Sposato, 2022)
	HR analytics	Analytics can foster empowerment, engagement, and collaboration among HR professionals and job candidates, enhancing employer branding and retention.	(Arora et al., 2021; DiClaudio, 2019)
	VR/AR	360-degree informational videos with interactive job assignments in VR enhanced individuals' engagement in their workplace and career, while interactive job assignments were described as attractive, enjoyable, and inspiring. Candidates of high quality can be identified swiftly by the HR team.	(HRNZ, 2023; Prasolova-Førland et al., 2019)

Similarly, HR analytics enable organisations to predict employment needs and plan recruitment strategies by examining employee data trends and historical data. It helps predict if an applicant is a good match for a job by using decision-support analytical tools, using the candidate's information and applied position (Arora et al., 2021; DiClaudio, 2019; Gurusinghe et al., 2021; Locher, 2024; Pessach et al., 2020). Analytics in HR helps to make evidence-based decisions and manage people with an approach centred around data (Giermindl et al., 2022). Drawing from the empirical study on employee recruitment and prescriptive analytics, it is possible to forecast the successful recruitment of a candidate in a position during the pre-hire stage using employee data (Pessach et al., 2020). In planning HR strategies and adopting HR analytics, for instance, it is essential for sectors facing a talent shortage to develop plans to draw in and keep qualified personnel (Gurusinghe et al., 2021).

Taking a practitioner's perspective from EY, predictive analysis enables firms to foresee their future personnel requirements. HR professionals can use historical data to make informed judgments and projections regarding recruitment, succession planning, and workforce development (Locher, 2024). Further, organising the workforce is an agile approach to employee planning that employs advanced analytics to forecast required skills and positions. Organisations can modify workforce structures and capabilities to meet changing demands and disruptions by establishing an adaptable workforce composition that includes full-time employees, contingent labour, and automation. This approach ensures alignment with company objectives and needs (DiClaudio, 2019). Nevertheless, academic scholars like Wirges and Neyer (2023) argue that HR faces a challenge in converting accessible data sources into significant strategic value.

Talent Acquisition and Evaluation

Talent Attraction, Sourcing, and Assessment

The primary responsibilities of the HR functional area where AI helps in increasing the effectiveness include attracting, determining high-potential talent, screening and evaluating recommendations as quickly as possible, assessing the suitability of whether the candidate's description and designation are appropriate, and estimating their additional value to the company (Garg et al., 2022; Harwell, 2019; Kambur & Yildirim, 2023; Kaushal et al., 2023; Tambe et al., 2019). Once the talent needs are identified through predictive capabilities, AI can source candidates through tailored advertisements, effectively improving candidate tracking compared to traditional manual methods. Further, AI-powered automated application tracking systems in the hiring process become more manageable through resume scoring and ranking (Maskey, 2022). Qualitative research was conducted by Allal-Chérif et al. (2021) through a multiple case study approach about how digital technologies contribute to improving the recruitment process. They found that digital technologies transform recruitment by locating and connecting with passive candidates. It also emphasised that organisations must change their perspective to attract and retain the best talent. To gain competitiveness, they must present themselves as desirable employers and focus on meeting the needs of talented individuals and reaching them. Further, candidates' compatibility with the organisation's culture and the position they are applying for is assessed using AI and data analysis, making it easier for recruiters to match depending on the candidates' objectives, personality, and the company's culture and strategy.

From another practitioner's example, HireVue's Chief Technology Officer, Harwell (2019), shares insights in a *Washington Post* article, highlighting how AI algorithms have revolutionised talent identification by achieving levels of precision and impartiality that were once unattainable. These advanced systems meticulously analyse the minute aspects of candidates' reactions, like their gestures, expressions of face, eye contact, and perceived excitement, to generate reports organisations can leverage to select candidates. Moreover, it identifies subtle indicators a recruiter may miss (Harwell, 2019).

HR analytics provide insights on attrition, diversity, employee happiness, and workforce demographics. These insights can help create a compelling employee proposition, attracting and retaining the most talented employees. Moreover, analytical tools provide parameters to discover quality candidates for effective hiring (Arora et al., 2021). A high-performing talent pool is developed through HR analytics and strategic human resource management, which enhances the organisation’s performance (Gurusinghe et al., 2021).

VR and AR technologies have unique attributes which enhance the experience of the identification of talent and the application process for the candidate (HRNZ, 2023; Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019). To quote an instance, VR tools make the job search process for job applicants more stimulating, giving them a more accurate picture of the company and the role, which can prove helpful to prospective employees and organisations (Prasolova-Førland et al., 2019). Similarly, a study by Khandelwal and Upadhyay (2021) outlines VR as a novel, engaging, cost-effective technology for onboarding employees. New Zealand's unemployment rate was 3.6% in the second quarter of 2023, representing a historically low level (Stats NZ, 2023). Given the highly competitive job market, applicant sourcing and attraction have become increasingly important. In such a scenario, HR professionals may use VR gamification to attract youthful or tech-savvy candidates (HRNZ, 2023).

Talent Engagement

AI not only helps HR professionals in the selection of a candidate but also enables the evaluation of emotional intelligence, moral value alignment, and increased engagement and experience for the job applicants (Allal-Chérif et al., 2021; Douglas, 2024; Ore & Sposato, 2022). For example, AI-powered chatbots significantly improve candidate experience and differentiation. Employers may enter descriptions of jobs, education, expertise, and information about previously selected candidates into AI systems, which will filter, rate, and identify suitable candidates. These AI technologies do more than just process applications; they diligently explore career sites and resumes to find possible individuals who may not have submitted applications directly. Once the candidate pool is filtered, AI can engage with potential hires significantly using automated communications and chatbots (Douglas, 2024). Sharing the interview feedback during the recruitment process helps facilitate open communication throughout the application procedure. The challenges of the recruitment process may not faze successful candidates. However, those not selected and receiving delayed or no feedback may form negative perceptions of the organisation, potentially affecting the company's reputation through word-of-mouth. For this reason, many organisations are leveraging AI to improve the candidate experience, personalisation and engagement (Ore & Sposato, 2022).

In the same vein, HR analytics can foster empowerment and engagement of the candidates and HR professionals by proper placement and generating employment opportunities through recruitment campaigns, assessment, and collaboration (Arora et al., 2021; DiClaudio, 2019). For instance, HR analytics solutions can assess metrics such as the number of times applicants visit the career page and the percentage of those visits that result in a successful conversion. It is also beneficial to focus on fostering job opportunities through referrals and involving current employees in recruitment campaigns (Arora et al., 2021). The development in advanced analytics enables HR professionals to strategically deploy the right individuals to the most appropriate roles at the right time, resulting in an empowered and engaged workforce, which improves the retention of talent and overall company performance (DiClaudio, 2019).

VR and AR technologies, too, have an exceptional, engaging influence on organisations and job seekers. In the conference proceedings, Prasolova-Førland et al. (2019) examined VR prototypes with 70 young aspiring job applicants, students from high school, and over 45 various practitioners and experts, using questionnaires and interviews, responded vigorously to mixing 360-degree informative videos and interactive job assignments in VR. The VR system records users' spoken responses to enhance realism and allow self-assessment by replaying the full interview. On the other side, the users respond, and a looped 360-degree video clip depicts the interviewer listening intently. The design prioritises a realistic, personalised experience. These 360-degree films helped individuals feel engaged in their professional environment and career, while the interactive job assignments were described as engaging, enjoyable, and inspiring (Prasolova-Førland et al., 2019). Such interviews also help the HR team quickly identify quality candidates (HRNZ, 2023).

Other Impacts

(See Table 7) Digitalisation in talent identification: Other impacts

Reduces Administrative Burden and Enhances Efficiency

Technologies like AI and HR analytics help manage vast amounts of data, reducing administrative burdens and saving time, cost, and effort (Arora et al., 2021; Ore & Sposato, 2022). AI minimises repetitive administrative activities of HR professionals, enabling them to focus on strategic HR activities (Bar-Gil et al., 2024; Kambur & Yildirim, 2023; Kaushal et al., 2023; Ore & Sposato, 2022; Rigotti & Fosch-Villaronga, 2024). As per Rigotti and Fosch-Villaronga (2024), AI-driven solutions can ease the administrative burden of interview scheduling and coordination, which are often demanding and unsatisfying components of the recruitment process. Automating these tasks improves efficiency and responsiveness for both organisations and job seekers. These findings were also mirrored in a qualitative study conducted by Ore and Sposato (2022), collecting data from semi-structured, face-to-face interviews with ten professional recruiters from a multinational firm has shown that AI makes it easier to carry out repetitive operations efficiently by automating them. It also helps increase effectiveness and efficiency by saving time and cost by increasing focus on the strategy. For example, AI-driven chatbots can proceed with the hiring process for each candidate, including interviews, according to their availability and responsiveness at all times, every day of the week, until a human recruiter who manages the process regains authority to perform more important and decisive responsibilities. It also provides feedback for every candidate and can be customised according to the organisation's communication strategy (Ore & Sposato, 2022).

On the other hand, from academic and practitioner perspectives, HR analytics can also effectively provide insights into vast amounts of data, sorting potential prospects of employees using data analytics and reducing administrative and hiring costs (Arora et al., 2021; Gurusinghe et al., 2021; Locher, 2024; White, 2024). AI integrated with HR analytics enhances the proficiency of the HR function, including talent identification and development, making it capable of handling vast amounts of information and predictive capabilities (Arora et al., 2021; Bar-Gil et al., 2024).

However, in the empirical qualitative study by Wirges and Neyer (2023) on HR analytics, 17 HR analytics experts who participated in the research said they were sceptical of using external analytical tools because they needed clear information on how they analysed data. For instance, tools that use speech analysis to predict a candidate's suitability were mentioned, but they do not offer strong proof that these predictions are accurate. Interviewees in the study highlighted that using such tools can be counterproductive for organisations and create anxiety among HR users (Wirges & Neyer, 2023).

According to the study, the VR tool helps to save time and cost and prevent possible unpleasant psychological implications and efforts among job seekers (Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019). From an organisational and practitioner point of view, in New Zealand, recruitment costs are estimated to average $23,860 per candidate, partly due to rising wages and training costs. VR offers HR a cost-effective solution, using simulations to assess candidates' skills accurately and save time by replicating actual job functions (HRNZ, 2023; White, 2022).

Competitive Advantage and Employer Branding

The findings from several studies indicate that AI, HR analytics and VR help to create a competitive advantage and improve an employer brand to attract competent resources (Allal-Chérif et al., 2021; Arora et al., 2021; Gurusinghe et al., 2021; HRNZ, 2023; Ore & Sposato, 2022; Ratnam & Devi, 2024; Wirges & Neyer, 2023). As an example, with the ability to communicate with all candidates both upstream and downstream in the hiring process, AI chatbots assist businesses in enhancing their employer brands through personalisation (Allal-Chérif et al., 2021). Likewise, Wirges and Neyer (2023) indicate that HR analytics aims to help firms accomplish the organisation’s strategic objectives (Wirges & Neyer, 2023).

According to practitioners' reports, professionals reject approximately 20% of employment offers, usually due to pay or culture (HRNZ, 2023; Sockin & Zhao, 2020). HRNZ (2023) suggests that personalised, immersive VR encounters may be the solution to make remote applicants or others feel connected and valued, giving HR a memorable alternative to phone or email for cultivating great candidate relationships and uplifting employer branding.

Table 7

Summary of Findings: Digitalisation in Talent Identification: Other Impacts

Themes	Technology	Digitalisation influencing the effectiveness of the talent identification process	Source
Impact on cost and efficiency	AI	AI minimises repetitive administrative tasks for HR professionals, enabling them to focus on strategic initiatives and increase effectiveness and efficiency by saving time and reducing costs.	(Bar-Gil et al., 2024; Kambur & Yildirim, 2023; Kaushal et al., 2023; Ore & Sposato, 2022; Rigotti & Fosch-Villaronga, 2024)
	HR analytics	HR analytics handles vast amounts of data, sorting potential prospects of employees using data analytics and reducing administrative and hiring costs.	(Arora et al., 2021; Gurusinghe et al., 2021; Locher, 2024; White, 2024)
	VR/AR	VR tools help to save time and cost and prevent possible unpleasant psychological implications and efforts among job seekers.	(Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019)
Competitive advantage and employer branding	AI, HR analytics and VR/AR	Digitalisation helps to create a competitive advantage and improve the employer brand to attract resources.	(Arora et al., 2021; Gurusinghe et al., 2021; HRNZ, 2023; Ore & Sposato, 2022; Ratnam & Devi, 2024; Wirges & Neyer, 2023)
Data management	AI, HR analytics	Digitalisation through AI and HR analytics can mitigate bias and enhance diversity and transparency. Analytics contributes to diversity metrics, but biased training data can reinforce prejudice if not audited.	(Albaroudi et al., 2024; Bar-Gil et al., 2024; Chamorro-Premuzic et al., 2019; Giermindl et al., 2022; Ore & Sposato, 2022; Pessach et al., 2020; Wiblen & Marler, 2021)

Data Management

AI has played a critical role in curbing bias and ensuring inclusion, diversity, and transparency (Albaroudi et al., 2024; Bar-Gil et al., 2024; Chamorro-Premuzic et al., 2019; Ore & Sposato, 2022; Wiblen & Marler, 2021). For example, according to Chamorro-Premuzic et al. (2019), many AI systems use humans to simulate performance in diverse occupations. A training data set includes managers or employees who have been identified as high achievers. These AI algorithms then compare job candidates' profiles to those of the model employee created from the training data, providing the firm with a predicted estimate of how closely a candidate's qualities match the ideal employee. This strategy can accelerate and improve the efficiency of selecting the ideal candidate for the post. When the training set is diverse, the data is demographically fair, and the algorithms are bias-free, this technique can reduce human subjectivity and promote diversity and socioeconomic inclusion more successfully than human recruiters. Nevertheless, AI could aggravate the problem of bias in hiring and homogeneity within organisations if the training set, data, or both are biased and the algorithms are not thoroughly audited (Chamorro-Premuzic et al., 2019). Further, the qualitative case study on digitalised talent management and automated talent decisions by Wiblen and Marler (2021) emphasised that collaborative and open processes are crucial for ensuring talent identification is linked with the organisation's operational and strategic goals.

Other studies mirrored these findings, which show that HR analytics enhances effectiveness by enhancing diversity and reducing bias. According to Pessach et al. (2020), applying prescriptive analytics leads to high recruitment success and diversity. However, Giermindl et al. (2022) analysed many challenges and ethical implications when applying analytics' efficiency-focused approach to managing employees. Additionally, some studies and practitioners argue that the results generated using AI and HR analytics may not always be accurate and question the data quality (Giermindl et al., 2022; Ore & Sposato, 2022; Ratnam & Devi, 2024; Wirges & Neyer, 2023).

3.1.2 Summary of Findings: The Influence of Digitalisation on Talent Identification Effectiveness

Findings reflect that digitalisation has transformed talent identification through automation and refining key areas in the talent identification process. AI-driven screening tools help improve accuracy and personalisation and reduce biases, whereas HR analytics aligns with predicting talent needs and effectively designing talent identification strategies. VR and AR enable better candidate engagement by creating immersive experiences that enhance employer branding and candidate experience.

HR analytics and AI contribute to activities like data management and employer branding, along with three significant themes of talent identification: talent strategy and planning, talent acquisition and evaluation and talent engagement. VR/AR also plays a substantial role in talent acquisition, evaluation, and in engaging talent. However, in VR/AR, no significant contribution has been made to predicting talent needs, planning stages, or data management. In summary, these technologies are improving the process's effectiveness by contributing to a range of activities, resulting in increasing competitiveness, efficiency and accuracy; however, there are challenges to data quality, transparency and ethical considerations that need responsible integration to optimise effectiveness and fairness in the talent identification process.

3.1.3 The Influence of Digitalisation on Talent Development Effectiveness

Emerging technologies contribute to identifying and developing existing internal talent in organisations to create differentiated value for their competitors. This study has identified various activities in the stages of development to which digitalisation impacts (See Table 4 for thematic analysis, Tables 8 and 9 for the findings). The first stage is pre-training, during which the skills or knowledge gap is identified, training is designed, and necessary actions are recommended. The second stage involves training implementation, where the employee accesses and completes the training within the time. Following this, in the post-training stage, the effectiveness of the training is assessed through various methods such as feedback, performance monitoring, and observation of employee behaviour. The impacts and outcomes studied, including continuous learning, knowledge transfer, engagement, innovation, retention and reducing bias, contribute to ongoing talent development. Ultimately, this will lead to the growth of the employee, the team, and the organisation.

Table 8

Summary of Findings: The Influence of Digitalisation on Talent Development Effectiveness

Theme	Digitalisation influencing the effectiveness of the talent development process	Technology	Source
Pre-training phase	AI aids in identifying skills gaps, developing training designs, and suggesting customised courses related to their work and experience.	AI	(Budhwar et al., 2022; Garg et al., 2022; IBM, 2024; Kaushal et al., 2023; Pereira et al., 2023; Tambe et al., 2019)
	HR analytics supports making effective data-based decisions regarding the development and training needs, designing a customised training programme, and aligning employee rewards to meet the set performance.	HR analytics	(Arora et al., 2021; Cayrat & Boxall, 2022; Israrul Haque, 2022; Ratnam & Devi, 2024)
Training phase	AI in training activity boosts HRM efficacy by helping employees conveniently access training anywhere at any time. It also leverages personalisation according to the needs of the employees.	AI	(Garg et al., 2022; Kambur & Yildirim, 2023; Malik et al., 2023; Vrontis et al., 2023)
	VR/ AR technologies facilitate skill transfer, enhance engagement, and overcome barriers related to safety, time, location, and accessibility, ultimately improving the efficiency and effectiveness of talent development programmes.	VR/AR	(Cruz et al., 2023; Khandelwal & Upadhyay, 2021; McLean & González Ortiz de Zárate, 2024; Prasolova-Førland et al., 2019; PWC, 2020, 2022)
Post-training phase	**Assessment of training programmes**: AI helps automate the assessment of training effectiveness based on performance, emotional and intellectual ability, and employee behaviours or reactions.	AI	(Budhwar et al., 2022; Garg et al., 2022; Kambur & Yildirim, 2023)
	HR analytics helps to analyse the training effectiveness through data-driven development decisions, succession planning, training costs, and turnover rates for smooth alignment of the development process.	HR analytics	(Arora et al., 2021; Israrul Haque, 2022; Ratnam & Devi, 2024)
	Real-time feedback: Useful for real-time customisation, improving engagement and personalisation.	AI, VR/AR	(Kambur & Yildirim, 2023; Khandelwal & Upadhyay, 2021; Malik et al., 2023; Steffen et al., 2019; Vrontis et al., 2023)
	Performance evaluation: Unbiased, real-time performance evaluations, redefining appraisal processes.	AI, HR analytics, VR/AR	(Arora et al., 2021; Garg et al., 2022; Kambur & Yildirim, 2023; Kaushal et al., 2023; Khandelwal & Upadhyay, 2021)

Key Themes Identified

Pre-Training Phase

Research studies have shown that digitalisation through AI and HR analytics has streamlined identifying skill gaps during the pre-training phase, making the process more accurate, unbiased, and data-driven. It aids in effectively designing and suggests personalised training that aligns with the organisational objectives. Budhwar et al. (2022) discuss in their study how AI supports talent development and identification activities by saving e-resumes of current employees and creating an electronic inventory for the organisation, which assists in identifying skill shortages and developing appropriate training programmes, helping employees complete training. AI can also predict which training approaches are relevant for particular individuals and how well they can impact their performance (Tambe et al., 2019). Similar findings were uncovered in the study of Kaushal et al. (2023) through bibliometric analysis and systematic literature review, which discusses how AI, with other modern technology, helps to identify personnel skills and actively encourages customised courses. Thus, through insights from these studies, we get a better understanding of how AI has transformed effectiveness by identifying the skills gaps, training design and suggesting customised courses related to their work and experience (Budhwar et al., 2022; Garg et al., 2022; Kaushal et al., 2023; Pereira et al., 2023; Tambe et al., 2019).

These findings correspond with the practitioner's view; according to IBM (2024), AI can help offer individualised training modules for job advancement. By examining data on each employee, such as their abilities and preferences, AI may personalise the training to their individual goals. AI can also help HR managers find untapped talent or employees ready for promotion.

HR analytics enhances organisational talent development by enabling data-driven decision-making processes. Research has identified that HR analytics supports making effective data-based decisions regarding the development and training needs, designing a customised training programme and aligning the rewards for the employees on meeting the set performance (Arora et al., 2021; Cayrat & Boxall, 2022; Israrul Haque, 2022; Ratnam & Devi, 2024). HR analytics in talent development helps organisations anticipate skill needs, enabling informed decisions on training existing employees or hiring new staff. Assessing short- and long-term skill requirements guides hiring and training investments, making employee training a cost-effective alternative to recruitment (Arora et al., 2021). In addition to forecasting potential developments, prescriptive analytics suggests recommendations and decisions after evaluating the previous data and future possibilities (Giermindl et al., 2022).

Furthermore, a study conducted by Cayrat and Boxall (2022), an abductive approach to assessing data from semi-structured interviews with HR analytics leaders and specialists from 40 large organisations, highlights that prescriptive analytics appears to be in its beginnings. However, an algorithm can identify skill gaps and career goals, enabling customised training, tailored appraisals, and individualised compensation, especially rewarding employees with critical skills. These findings from past research provide strong evidence that HR analytics assists in identifying employee training needs, designing customised development programmes and coordinating materials needed for the training ahead of time by a data-driven approach to learning and development (Arora et al., 2021; Cayrat & Boxall, 2022; Giermindl et al., 2022; Ratnam & Devi, 2024).

Training Phase

Automation and immersive technologies, particularly AI and VR/AR, improve the efficacy of talent development by allowing for individualised and accessible training methods. For instance, research findings demonstrate that automation through AI in training activity boosts HRM efficacy by helping employees access training anywhere, at any time, at their convenience and focusing on the training needs of the employee by leveraging personalisation (Garg et al., 2022; Kambur & Yildirim, 2023; Malik et al., 2023; Vrontis et al., 2023). Garg et al. (2022) suggest that personalised training material and timings based on employee needs and availability can boost HRM efficiency. Additionally, research by Vrontis et al. (2023) states that AI-driven simulations and intelligent characters enhance interactive learning, allowing employees to adapt decisions in dynamic settings. AI systems also make it easier and faster to get training for personnel development.

On the other hand, Kambur and Yildirim (2023) found that AI-enabling data analysis can deliver real-time feedback during training. Meanwhile, Malik et al. (2023) found that AI increased customisation in learning and development. These findings have drawn attention to how AI-driven automation enhances the effectiveness of employee development by providing personalised, on-demand training and real-time feedback.

It has been demonstrated in the studies that VR/AR technologies facilitate skill and knowledge transfer, enhance engagement, and overcome barriers related to safety, time, location, and accessibility, ultimately improving talent development process (Cruz et al., 2023; Khandelwal & Upadhyay, 2021; McLean & González Ortiz de Zárate, 2024; Prasolova-Førland et al., 2019; PWC, 2020, 2022). Research indicates that VR facilitates engaging learning experiences, collaboration, visualising complex concepts, and simulating challenging learning scenarios (Prasolova-Førland et al., 2019). VR and AR also enhance knowledge transfer by simulating work environments, making training safer, more effective and cost-efficient (Khandelwal & Upadhyay, 2021; McLean & González Ortiz de Zárate, 2024). For illustration, integrating VR with HRD offers the possibility to replicate unsafe events and offers a more participatory, pleasant, and cost-effective learning experience (Cruz et al., 2023; Khandelwal & Upadhyay, 2021; Zahabi & Abdul Razak, 2020).

Additionally, the authors claim that the use of VR and AR fills the information gap and provides real-time personalised and effective learning solutions, eliminating time and distance barriers and promoting easy access (Cruz et al., 2023; Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019; Zahabi & Abdul Razak, 2020). Steffen et al. (2019) state that using visual cues and statistics to communicate training information can improve learning outcomes without breaking physical laws. Furthermore, Cruz et al. (2023) indicated in their studies that AR technology provides an immersive learning experience along with attractive content, adds missing information, and is easy to access, which can also prove helpful to people with disabilities in accessing appropriate learning opportunities.

For example, from the organisational point of view, according to the PWC 2022 US metaverse survey, 34% believe that metaverse benefits the development and training of people. VR provides an affordable, effective, and remote-friendly alternative to teaching employees technical and soft skills like leadership and adaptability (PWC, 2022). In another instance, PWC (2020) surveyed VR's effectiveness in training new managers on inclusive leadership, comparing results across classrooms, e-learning, and VR formats. The findings revealed that VR training accelerates skill-building by four times, with learners being 275% more confident to act. VR training outperformed classroom and e-learning by 40% and 35%, respectively. Furthermore, learners were 3.75 times more emotionally engaged than in classrooms. VR also boosted focus four times more than e-learning, resulting in 52% cost savings for 3,000 trainees (PWC, 2020).

These notable technological advancements during the training stage emphasise the importance of AI and VR/AR in personalising training and development programmes based on employee needs and availability and enhancing efficiency and engagement in talent development.

Post-Training Phase

Assessing Training Effectiveness

In the post-training phase, several studies acknowledge that AI and HR analytics are automating and improving training effectiveness, evaluation and programme optimisation. According to Kambur and Yildirim (2023), AI tools effectively provide feedback to assess employee performance improvement post-training and analyse its effectiveness. AI helps automate the process of assessing training effectiveness based on performance, emotional and intellectual ability and post-training reactions of employees (Budhwar et al., 2022; Garg et al., 2022). For example, Budhwar et al. (2022) state that AI helps HR managers analyse training effectiveness and assign employees to relevant positions based on their emotional and intellectual traits and experience. These studies show that AI improves training programme assessment and effectiveness (Budhwar et al., 2022; Garg et al., 2022; Kambur & Yildirim, 2023).

Equivalently, HR analytics helps to analyse the training effectiveness to ensure data-driven and smooth alignment of the development process (Arora et al., 2021; Israrul Haque, 2022; Ratnam & Devi, 2024). Analytics assesses the effectiveness and efficiency of training programmes, including succession planning, to ensure seamless processes (Arora et al., 2021). By leveraging learning and development analytics and a data-driven approach, HRD professionals can make informed training decisions and evaluate their impact on bottom-line performance (Ratnam & Devi, 2024). Analytics can provide insights into how training affects employee retention, such as comparing training costs to turnover rates and identifying programmes that benefit employees with the longest tenure (Arora et al., 2021). These findings demonstrate how AI and HR analytics are crucial in assessing training and making informed data-driven decisions.

Real-Time Feedback

Intelligent agents powered by AI offer feedback and real-time customisation, improving engagement and reducing isolation in online training (Kambur & Yildirim, 2023; Malik et al., 2023; Vrontis et al., 2023). Malik et al. (2023) discuss how a technology-mediated feedback approach allows employees to offer input anytime, eliminating the need for annual feedback and climate surveys. A dipstick and pulse check allows programme teams to gauge employee attitudes and tailor future actions accordingly. However, Vrontis et al. (2023) also reflect the concern over higher costs incurred for the technology.

Benefits of integrating VR with HRD include virtual learning, extending reach to numerous locations, replicating unsafe circumstances, and providing real-time feedback and evaluation (Khandelwal & Upadhyay, 2021; Steffen et al., 2019). However, regarding adaptive VR-based training, Zahabi and Abdul Razak (2020) suggest outlining the importance of feedback. VR training must be modified as per the user's requirements, performance, and capabilities. The findings revealed that real-time kinematic/kinetic data and physiological measurements from the user, offline measurements like the details of the trainee's profile, adaptations on controlled simulation features, and changes to the type, timing, and content of feedback can all enhance adaptive VR-based training. In conclusion, AI and VR technologies provide real-time feedback and immersive experiences for online training, helping firms adapt and improve HRD efforts despite high costs.

Performance Evaluation

Research findings have identified that AI and advanced analytics can lead to unbiased, real-time performance evaluations, redefining appraisal processes effectively. AI has evolved to evaluate performance levels using technological advancements (Kambur & Yildirim, 2023). As an illustration, AI-powered intelligent decision support systems facilitate more effective use of experimental evaluation methodologies such as 360-degree appraisals (Garg et al., 2022; Kaushal et al., 2023).

Whereas analytics tools allow for tracking high-performing versus non-high-performing employees, identifying training requirements, measuring performance enhancements, and analysing the impact of certification and training programmes on organisational financial performance (Arora et al., 2021). Performance feedback and appraisals are standard parts of many workplaces. Some firms continue to rely on old appraisal techniques, which may not demonstrate an employee's true potential. Appraisal also involves several prejudices, as management may grade an employee based on preference. Consequently, it is vital to adopt data-driven strategic technologies such as analytics and AI (Arora et al., 2021).

Next, VR in virtual learning also provides real-time performance evaluation (Khandelwal & Upadhyay, 2021). Thus, incorporating AI, HR analytics, and VR into performance evaluation results in a more accurate, unbiased evaluation that aligns employee development with organisational objectives.

Other Impacts

Digitalisation has interesting outcomes that contribute to increasing the effectiveness of talent development (See Table 9). The transformation benefits the employees, teams, and overall organisations by enhancing the performance and productivity of employees, engagement, and development of their skills, career, and job satisfaction, eventually encouraging an organisation's cultural shift towards prospering collaboration, innovation, and learning. However, there are several challenges. For illustration, IBM (2024) highlighted the challenge of reskilling employees.

Enhance Productivity, Performance, and Skill Development

AI technologies have developed employees’ skills and enhanced employees’ and organisational performance (Kambur & Yildirim, 2023; Pereira et al., 2023; Vrontis et al., 2023). For illustration, a study shows that AI computer agents have proven beneficial in training employees' strategic and negotiation skills, allowing for higher performance with less effort and fostering employee engagement and personalisation (Vrontis et al., 2023). Meanwhile, Pereira et al. (2023) emphasise that AI helps improve decision-making and problem-solving skills and knowledge, ultimately benefiting both employees and the organisation.

On the other hand, findings show that HR analytics reduces training time and costs while improving learning transfer, HR decision-making and the impact on job and organisational performance (Cayrat & Boxall, 2022; Israrul Haque, 2022). Similarly, Giermindl et al. (2022) noted that HR analytics can increase performance, productivity, and job satisfaction. Thus, these findings help in understanding that HR analytics helps enhance the effectiveness of talent development by reducing time and costs, improving decision-making, and elevating the performance of employees and organisations as a whole (Cayrat & Boxall, 2022; Giermindl et al., 2022; Gurusinghe et al., 2021; Israrul Haque, 2022). According to the practitioner’s view on people analytics, Locher (2024) illustrates that HR specialists may identify high-performing employees, identify areas for growth, and provide tailored training and development opportunities. This data-driven approach improves staff productivity and helps to achieve larger organisational goals.

In addition, VR and AR also enhance trainees' task performance and accuracy to achieve the company's strategic goals (Khandelwal & Upadhyay, 2021; Locher, 2024; Zahabi & Abdul Razak, 2020). In a nutshell, AI, HR analytics, and VR/AR complement one another to increase employee performance, connecting talent development with strategic goals.

Table 9

Summary of Findings: Digitalisation in Talent Development: Other Impacts

Impacts	Description	Technology	Source
Improve performance	Enhance productivity, performance, and skills development.	AI	(Kambur & Yildirim, 2023; Pereira et al., 2023; Vrontis et al., 2023)
		HR analytics	(Cayrat & Boxall, 2022; Giermindl et al., 2022; Gurusinghe et al., 2021; Israrul Haque, 2022)
		VR/AR	(Khandelwal & Upadhyay, 2021; Locher, 2024; PWC, 2020; Zahabi & Abdul Razak, 2020)
Career development	Positive impact on career development with reliable predictions, personalisation, designing and delivering career development plans.	AI	(Budhwar et al., 2022; Garg et al., 2022; Kambur & Yildirim, 2023; Malik et al., 2023)
		HR analytics	(Cayrat & Boxall, 2022; Israrul Haque, 2022)
		VR/AR	(Khandelwal & Upadhyay, 2021)
Shift in organisational culture.	Shift in the organisational culture focusing on collaboration, transparency, psychological safety, feedback and leveraging personalisation, continuous learning, knowledge transfer and innovation.	AI, HR analytics	(Arora et al., 2021; Cayrat & Boxall, 2022; Giermindl et al., 2022; Malik et al., 2023; Pereira et al., 2023; Ratnam & Devi, 2024)
	Organisational culture and learning experiences can be more engaging.	VR/AR	(Cruz et al., 2023; Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019)
Promoting employee engagement, retention and reducing bias	Fostering employee engagement and knowledge sharing, fairer decisions, mitigating bias, increased transparency, and retention.	AI, HR analytics	(Cayrat & Boxall, 2022; Ferrer et al., 2021; Giermindl et al., 2022; Israrul Haque, 2022; Pereira et al., 2023)
	It improves efficiency, engagement, and retention among employees.	VR/AR	(Cruz et al., 2023; Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019)

Career Development

Due to AI-driven tools, employees can now manage their prospective careers (Budhwar et al., 2022; Kambur & Yildirim, 2023). AI helps employees receive career guidance and relevant training during their tenure with the organisation with the help of predictions (Garg et al., 2022; Malik et al., 2023). Moreover, AI can enrich talent analytics by supporting promotions and recruitment based on their abilities by evaluating social media, performance outcomes, training, and finding non-resume qualities (Kambur & Yildirim, 2023).

Similarly, HR analytics with personalised employee experience and training practices can engage the employees to achieve their career aspirations by deploying algorithms that outline the skill gap in an employee, helping the organisation tailor a career plan per employee and organisational needs

(Cayrat & Boxall, 2022). According to Israrul Haque (2022), workforce analytics helps operational and strategic performance and employee career development.

Moreover, VR tools can help design and deliver programmes for developing human resources throughout their careers, from onboarding to retirement (Khandelwal & Upadhyay, 2021). Further, VR interventions can develop the learning capacity and opportunities for individuals, groups, and organisations (Khandelwal & Upadhyay, 2021). Hence, these insights demonstrate that emerging technologies positively impact employees' careers, which has helped in organisational development through reliable predictions, personalisation, and the design and delivery of career development plans.

Shift in Organisational Culture

Studies uncover that digitalisation in AI leads to a shift in the workplace culture focusing on collaboration, transparency, psychological safety, feedback and leveraging personalisation. These characteristics increase exit barriers and foster an environment for employees to grow and innovate (Malik et al., 2023). AI has been linked to improved workplace outcomes, including learning and skill development and promoting knowledge transfer (Pereira et al., 2023).

Implementing data-driven analytics in learning and development empowers organisations to build a culture of continuous learning and growth (Ratnam & Devi, 2024). The research on people analytics, carried out by Giermindl et al. (2022) and Cayrat and Boxall (2022), have found that by increasing employee collaboration and using their creativity and skills, organisations can meet the necessity for knowledge-intensive, adaptive, or even new, fluid organisational structures. For instance, Cayrat and Boxall (2022) outlined how the HR analytics team's recommendation after collecting employee performance and promotion data caused an internal mobility and rotation programme to be implemented, which reduced turnover and boosted performance by encouraging knowledge sharing and innovation across projects. Thus, research shows that HR analytics helps to boost collaboration and innovation, and fosters a culture of continuous learning and growth (Arora et al., 2021; Cayrat & Boxall, 2022; Giermindl et al., 2022; Ratnam & Devi, 2024). However, it is a challenge for the HR department to improve employee skills and team performance in HR analytics and AI (Arora et al., 2021). Finally, VR and AR boost organisational culture and enhance the learning experience, making it engaging (Cruz et al., 2023; Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019).

Continuous Development by Promoting Employee Engagement, Retention and Reducing Bias

Further, it has been observed that AI, HR analytics, and VR/AR technologies impact the development and retention of employees through continuous learning and engagement, as well as by reducing bias. Regarding AI, Pereira et al. (2023) mention that fostering and implementing employee engagement and knowledge sharing throughout the employee learning cycle results in the development at employee, team and organisation levels. Furthermore, it is essential to utilise AI responsibly to mitigate bias at every step of hiring and development. For illustration, AI can be used to analyse past cases of discrimination to help identify similar issues in the future. Additionally, AI systems can be designed with built-in rules and principles, such as non-discrimination norms, to make fairer decisions based on ethical and legal standards (Ferrer et al., 2021).

HR analytics also leads to increased transparency and retention and encourages employee engagement, which could strengthen employees' voices and boost their confidence (Cayrat & Boxall, 2022). Similarly, Giermindl et al. (2022) found that HR analytics reduces biases, transparency, and fairness in decision-making and increases retention. However, Israrul Haque (2022) argues that although analytics boosts employee engagement and development, its implementation requires effective integration of organisational change strategies that must be considered for continuous development.

Likewise, studies have demonstrated that VR and AR help foster employee engagement and contribute to employee and organisational development (Cruz et al., 2023; Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019). For illustration, according to Khandelwal and Upadhyay (2021), VR-driven development improves employee efficiency, engagement, and retention.

3.1.4 Summary of Findings: The Influence of Digitalisation on Talent Development Effectiveness

In summary, emerging digital technologies are transforming talent development, particularly AI, HR analytics, and VR/AR. By automating processes, personalising learning experiences, and offering data-driven insights, these technologies can significantly improve employee performance, engagement, and overall organisational talent development. Each emerging technology has the potential to efficiently contribute to different phases and areas of the process, improving every aspect of talent development.

The above findings show that AI contributes to all three phases: pre-training, training and post-training. AI and HR analytics are best suited for pre- and post-training phases in delivering data-driven requirements assessment and outcome evaluation insights. VR/AR and AI excel in the training execution phase, providing personalised, interactive learning experiences. Finally, AI, HR analytics, and VR/AR encourage ongoing learning, engagement, retention of employees and knowledge sharing. It is evident from the findings that digitalisation leads to an increase in the performance and productivity of employees, engagement, and development of their skills, career, and job satisfaction, eventually encouraging an organisation's cultural shift towards prospering collaboration, innovation, and learning. As digital transformation accelerates, strategically leveraging these technologies will be critical to managing a talented, motivated, and engaged workforce. Considering the potential challenges associated with these technologies is crucial to mitigate risks and maximise benefits by adopting appropriate strategies.

3.2 Research Question 2: How can digital human resource strategies be adopted successfully?

Before delving into the second research question, it is essential to establish the context by identifying the potential challenges that serve as barriers to adopting digitalisation and emerging technologies.

3.2.1 Challenges in Adopting Digitalisation in HR

Table 10 reveals several challenges to adopting digitalisation.

Table 10

Challenges in Digitalisation and Adopting Emerging Technologies

Challenges	Sources	Technology
Barriers to the adoption of technology	(Arora et al., 2021; Giermindl et al., 2022; Ratnam & Devi, 2024)	AI, HR analytics, VR/AR
Lack of knowledge and skills; need training	(Arora et al., 2021; Ashtari et al., 2020; Cayrat & Boxall, 2022; Giermindl et al., 2022; IBM, 2024; Kambur & Yildirim, 2023; Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019; Ratnam & Devi, 2024)	
Lack of resources, infrastructure and organisational support.	(Arora et al., 2021; Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019; Ratnam & Devi, 2024)	
Lack of human capabilities	(Allal-Chérif et al., 2021; Bar-Gil et al., 2024; Rigotti & Fosch-Villaronga, 2024)	AI, HR analytics
Ethical concerns, bias and privacy	(Arora et al., 2021; Cayrat & Boxall, 2022; Chamorro-Premuzic et al., 2019; Giermindl et al., 2022; IBM, 2024; Peeters et al., 2020; Pessach et al., 2020; Ratnam & Devi, 2024)	
Poor data management	(Arora et al., 2021; Cayrat & Boxall, 2022; Locher, 2024; Peeters et al., 2020; Ratnam & Devi, 2024; Wirges & Neyer, 2023)	
Incomprehensible decisions, algorithms, and inaccuracy	(Giermindl et al., 2022; Ore & Sposato, 2022; Wirges & Neyer, 2023)	
High cost	(Khandelwal & Upadhyay, 2021; Peeters et al., 2020; Prasolova-Førland et al., 2019; Rigotti & Fosch-Villaronga, 2024)	AI, VR/AR
Need more research	(Khandelwal & Upadhyay, 2021; Pessach et al., 2020; Steffen et al., 2019; Zahabi & Abdul Razak, 2020)	HR analytics, VR/AR
Development and technical challenges make it difficult to use. High complexity	(Ashtari et al., 2020; Khandelwal & Upadhyay, 2021; Pessach et al., 2020)	VR/AR
Feedback mechanism missing	(Prasolova-Førland et al., 2019)	
Less effective compared to real-world experience; unrealistic experiences	(Prasolova-Førland et al., 2019; Steffen et al., 2019)	
Scepticism and stress	(Kambur & Yildirim, 2023; Ore & Sposato, 2022; Pereira et al., 2023)	AI
A threat to existing jobs and job replacement	(Arora et al., 2021; Kambur & Yildirim, 2023; Ore & Sposato, 2022; Pereira et al., 2023)	

The common challenges throughout AI, HR analytics and VR/AR adoption include barriers to adopting new technology, resistance, and a lack of resources and organisational support.

Additionally, the need for training due to a lack of technical knowledge indicates that organisations must focus on upskilling their workforce. AI-specific concerns such as scepticism, job displacement fears, ethical issues, and data quality highlight the need for robust ethical guidelines, quality assurance, and transparent communication. For illustration, according to Kambur and Yildirim (2023), AI can replace routine tasks and reduce employees in some areas while creating new opportunities at the same pace; however, without proper technical training, employees may feel uncertain, resist change, view digital technologies as threats, and potentially lose trust in their managers. Likewise, the challenges highlighted by IBM (2024) in AI are employee privacy and cybersecurity, reskilling and change implementation. This global study conducted by the IBM Institute for Business Value (IBV) surveyed executives who were of the opinion that 40% of their workforce will need to be reskilled as a result of integrating AI and automation in the next three years, while on the other hand, 87% of respondents held the view that generative AI would complement rather than replace staff responsibilities, with the effects varying depending on the job type, creating more job opportunities.

Significant concerns exist regarding the data quality and governance of HR analytics and AI. EY noted that data quality is the main challenge in implementing AI and HR Analytics in HR processes, and to deal with these problems, organisations need to emphasise data quality and people data governance activities in HR (Locher, 2024). Furthermore, HR analytics and VR/AR confront issues of insufficient research and technical complexities, requiring user-friendly and simple procedures, solutions, and evidence-based research (Khandelwal & Upadhyay, 2021; Pessach et al., 2020; Steffen et al., 2019; Zahabi & Abdul Razak, 2020).

VR/AR faces high costs, limited feedback mechanisms, and doubts about its effectiveness compared to real-world applications, necessitating cost optimisation and the undertaking of initiatives to build confidence (Fonarov, 2022; Prasolova-Førland et al., 2019; Steffen et al., 2019). Overlapping issues like cost and ethical concerns further highlight the importance and need for collaborative, cross-functional strategies.

Numerous academic studies believe that many jobs are at risk of being automated (Arora et al., 2021; Kambur & Yildirim, 2023; Ore & Sposato, 2022; Pereira et al., 2023). Nevertheless, IBM (2024) and CIPD (2024) illustrate that, while there are risks, considerable potential exists to expand the number and quality of jobs. Moreover, new technologies will transform the nature of work. This shift necessitates a comprehensive people strategy managed by people professionals. Hence, addressing these challenges through robust strategies becomes imperative to foster greater adoption and effective integration of these technologies, leading to the analysis of the second research question of this study: How can digital human resource strategies be adopted successfully?

3.2.2 Successful Adoption of Digital Human Resource Strategies: The 4C Model

Organisations must first understand the business needs and objectives when adopting HR technologies. Technologies that best suit their needs and strategic plans must be adopted. After more research, they must prepare for the technological implementation within the organisation. Fonarov (2022), Forbes Council member and CEO of Program-Ace company, suggests that while making business decisions, organisations should not try to emulate other competitors; instead, they focus on the requirements of the business and establish technologies that allow them to meet them to the fullest. If the results are satisfactory with the solution or technology chosen, it can be extended to other business areas.

Given that the successful adoption of HR technologies requires a strategic plan to negotiate the challenges outlined in Table 10, a model has been built around four key themes: commitment, culture, change management, and collaboration. These core themes emerged from the comprehensive review of existing literature (See Figure 2).

1. Commitment

Commitment of Leadership, Management and Employees

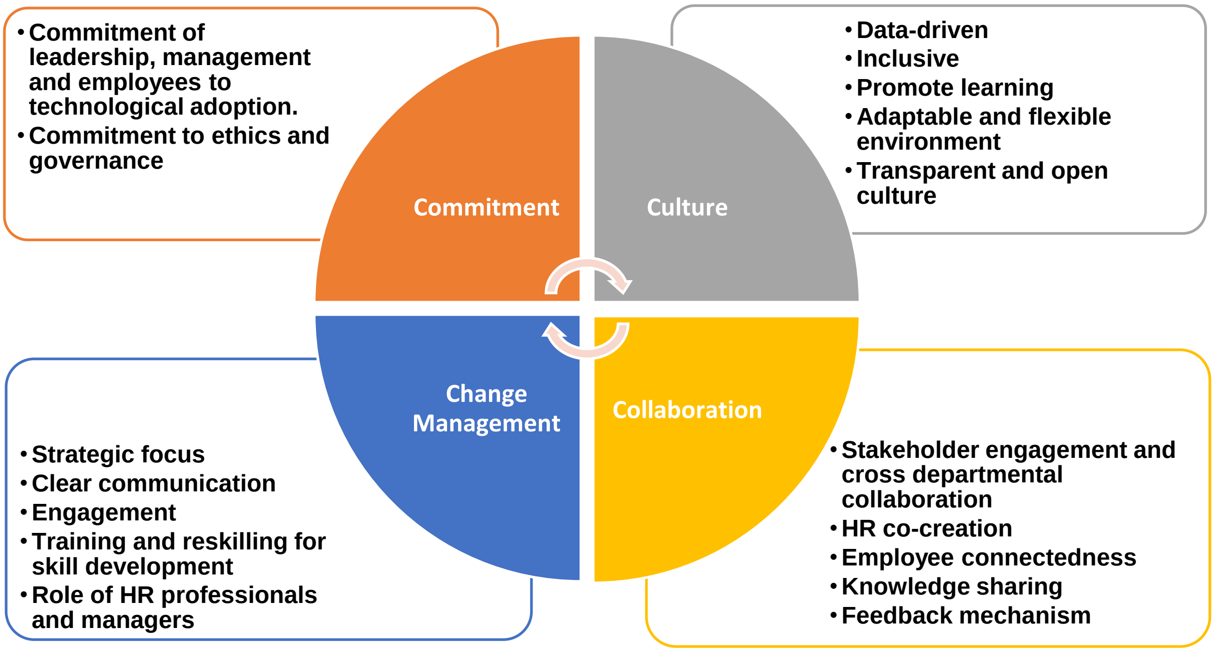
Research highlights that digital transformation requires strong leadership and commitment to solving problems and challenges (Gallardo-Gallardo et al., 2020; Guerra et al., 2023; McLean & González Ortiz de Zárate, 2024; Ratnam & Devi, 2024; Thite, 2022; Wiblen & Marler, 2021). Digital transformation generates internal resistance within an organisation. Strong leadership is needed to address this opposition to change, as employees may not always embrace new digital technologies (Guerra et al., 2023). Gallardo-Gallardo et al. (2020) noted that the transformational leadership style matches the organisation and talented employees, while Thite (2022) outlines the importance of responsive leadership, which focuses on improving employee experience. Further, to succeed in the digital age, leaders must be visionary, motivating, competent, and supportive of digital projects, investments, and experiments (Thite, 2022). For instance, as per Durth et al. (2023), McKinsey & Company mentions that organisational leaders' task is to demystify technology and address employees' persistent anxieties about replacement and loss of employment by emphasising generative AI's potential for augmentation and improvement, as well as its ability to improve the employment experience. However, it also notes that leaders must commit to developing the necessary positions, skills, and competencies within an organisation for now and in the future to gain a competitive advantage. This commitment, however, may create uncertainty in employees' minds if not effectively managed and communicated.

Management should also help the HR team secure a financial budget and other resources and validate the legitimacy of introducing digital tools as well as establishing credibility and an appropriate governance framework (Cayrat & Boxall, 2022; Peeters et al., 2020; Ratnam & Devi, 2024). Thus, these findings demonstrate that the leaders' and management's role, commitment, and robust and responsive leadership are vital for incorporating HR technologies, overcoming resistance and cost barriers, securing resources, and ensuring compliance and data governance. However, factors and characteristics of the top management, such as their knowledge, awareness, and attitude towards new technologies, influence the commitment of top management to embrace them (Gurusinghe et al., 2021).

Moreover, it was found that successful change requires active participation and commitment from employees. A top-down and two-way strategy may lead to successful digital adoption, but it is unlikely to be implemented and sustained without employee commitment (Ratnam & Devi, 2024).

Figure 2

Successful Adoption of Digital Human Resource Strategies: The 4C Model



Source: Author

Commitment to Ethics and Governance

Due to digitalisation, the significant challenges are about ethics, employee privacy, and the lack of trust and transparency within the organisation (Chamorro-Premuzic et al., 2019; Cheng & Hackett, 2021; Locher, 2024; McLean & González Ortiz de Zárate, 2024; Rigotti & Fosch-Villaronga, 2024; Wesche & Handke, 2024). For example, automated data collection and analysis may lead to lower perceived fairness, increased privacy concerns, employee stress, and a perception of mistrust and unfairness (Wesche & Handke, 2024). Hence, organisations are recommended to take the following measures and initiatives to mitigate bias and commit to ethical practices. First, research has found that using cross-disciplinary perspectives can enhance fairness in AI applications by integrating diverse viewpoints and expertise to effectively identify and mitigate biases (Rigotti & Fosch-

Villaronga, 2024). Second, organisations must develop open-source systems and maintain applicant anonymity to safeguard personal data and ensure compliance with the GDPR (General Data Protection Regulation), California privacy laws, and other requirements. GDPR was enacted in May 2018 to harmonise data protection regulations throughout the European Union (EU). The EU agencies covered by GDPR must ensure they have the right systems and processes to meet all relevant criteria (New Zealand Digital Government, 2020). Implementing open-source systems and third-party audits provides accountability and transparency in AI technology by allowing external audits and reducing bias in proprietary and non-proprietary components (Bar-Gil et al., 2024; Chamorro-Premuzic et al., 2019). Cheng and Hackett (2021) argue in their studies that under GDPR principles, HR algorithms should also be regulated to mandate openness in algorithmic decision-making, give individuals the chance to contest such decisions and guarantee businesses have the expertise to deal with challenges to algorithmic decision-making. Illustrating an example of open data systems, New Zealand is adapting to the principle that information should be made publicly available without waiting for a request and lawfully reusing government content for personal use that extends beyond openness and transparency (New Zealand Digital Government, 2024). However, MacDonald (2020) acknowledges that data champions have informed that without compelling reasons to disclose data it should not be shared. Similarly, many others oppose the idea that data should be accessible and open. Third, adopting ethical AI methods consistent with traditional employment regulations can eliminate bias, mitigate ethical concerns, improve meritocracy, bring transparency, and promote socioeconomic balance, eventually helping organisations and the global economy (Chamorro-Premuzic et al., 2019).

According to McLean and González Ortiz de Zárate (2024, p. 12), to achieve responsible AI, AI systems must follow five pillars: “explainability and interpretability, bias mitigation and fairness algorithms, data robustness and granularity, data quality and rights, and accountability through regular audits and monitoring of decision-making processes”. On the other hand, Falletta and Combs (2020) state that developing evidence-based and ethical HR analytics necessitates trust, transparency, and careful consideration of how insights are created, shared, and properly applied. Further, they suggest that organisations must go beyond broad data governance policies to ensure the ethical use of HR analytics, addressing when specific technologies, procedures, and data should or should not be utilised.

From an organisational perspective from EY, Locher (2024) states that data governance acts as a compass, navigating organisations through the intricacies of data management and preparing them for excellence. Standardisation ensures data consistency, while data security protects against costly breaches. Organisations should prioritise data quality and people data governance initiatives within human resources. This includes frequent data validation, auditing, and ensuring data accuracy and consistency. A robust data quality foundation is vital when adopting AI-driven HR solutions (Locher, 2024). Thus, these findings help us understand that fostering ethics, trust, and robust data governance in digital HR practices is essential to mitigate biases, enhance fairness, and ensure responsible technology adoption.

2. Culture

Findings suggest that to remain competitive amid rapid technological advancements, firms must embrace digital transformation by cultivating a suitable culture that is engaging, flexible, and data-driven, promoting learning, innovation, and inclusion (Chamorro-Premuzic et al., 2019; Kaushal et al., 2023; Khandelwal & Upadhyay, 2021; Locher, 2024; Thite, 2022). Digitally established organisations are agile and adaptable and encourage employee experimentation and expression (Thite, 2022). A flexible culture enables employees to adjust to the environment quickly. The study by da Silva et al. (2022) highlights the need to establish a digital culture as the employees trained with digital technologies and relevant skills boost productivity. According to EY, HR analytics creates a data-driven culture encouraging informed organisational decision-making and fostering efficiently-led people function (Locher, 2024). Chamorro-Premuzic et al. (2019), in their study on ethical AI for talent management, state that investing in systems that balance fairness and accuracy can help create an inclusive culture by promoting diversity while maintaining effective hiring decisions. However, achieving this balance is challenging due to the trade-off between fairness and accuracy, which requires thoughtful system design to avoid biases without compromising job performance predictions.

Additionally, employing a wide variety of AI technologies enables businesses to create a holistic learning culture within the company, shunning the traditional teaching design approach based on the model's capacity for conventional gap analysis (Kaushal et al., 2023). Likewise, VR interventions will continue to play an essential part in developing and redesigning workplaces to promote holistic learning and development opportunities. It will also increase efficiency in communication, collaboration, cooperation, and connectivity (Khandelwal & Upadhyay, 2021). Thus, the above analysis indicates that AI and HR analytics promote a more data-driven culture, while VR majorly contributes to developing a collaborative and engaging culture. Further, AI and VR enable organisations to foster a learning culture. These findings emphasise the necessity of creating and embracing an engaging, digitally driven, inclusive, adaptable, and learning culture by integrating technologies to acquire the needed skills, resulting in sustained organisational success during technological adoption.

3. Change Management

Technology adoption goes more smoothly when change is managed well. Studies reveal that driving innovation requires effective change management, which calls for managers and HR professionals to work together and tailor upskilling and reskilling programmes that elevate digital literacy (Cetindamar et al., 2022; Ferrer et al., 2021; Jaiswal et al., 2023; Peeters et al., 2020; Ratnam & Devi, 2024). First, setting clear objectives, gaining employee and managerial support, and demonstrating outcomes through small projects all help improve confidence. Additionally, before addressing more significant business concerns, HR departments can find champions to lead the change process (Ratnam & Devi, 2024).

Second, HRM practitioners can play a proactive role in digital integration, shifting the focus from operational efficiency, effectiveness, and data-based decision-making to achieving strategic outcomes and establishing conditions that support them (Cetindamar et al., 2022). In a study on the effectiveness of HR analytics, Peeters et al. (2020) contend that not only HR professionals, but managers also need to take ownership of the change process with people analytics insights.

Third, however, Peeters et al. (2020) state that many people find it challenging to embrace data-driven decision-making and oppose depending on statistical models while making choices like hiring or promotions. To tackle this issue, people analytics teams need to focus on comprehending managers' difficulties, explaining the advantages of analytics, obtaining input to enhance subsequent initiatives, and exhibiting practical previous projects. This strategy emphasises how important it is to educate people and ensure that analytics tools are relevant for successful adoption (Peeters et al., 2020). On the other hand, sharing inaccurate or misleading insights can result in poor workforce decisions and significant organisational consequences (Falletta & Combs, 2020).

Fourth, there is a need for reskilling, upskilling and AI literacy for the workforce to manage change effectively (Ferrer et al., 2021; Jaiswal et al., 2023; Ratnam & Devi, 2024). For example, in a qualitative analysis where 20 experienced professionals were interviewed to study upskilling for artificial intelligence in multinational corporations, Jaiswal et al. (2023) found that AI requires employees to upskill themselves. HR professionals must also develop skills and knowledge to prepare for technological change and its efficient use. For instance, with the proper knowledge, HR development specialists can organise VR interventions for teams and individual training and development throughout an employee's professional life (Khandelwal & Upadhyay, 2021).

Further, IBM (2024) asserts that organisations must be adaptable and flexible to change and adjust as needed. Insights from previous research highlight that successful technological adoption requires effective change management and addressing resistance. Key factors include collaboration between HR professionals and managers, clear communication about the change and addressing the doubts, promoting digital literacy, upskilling and reskilling to meet evolving technological demands. Lastly, it explains that strategic alignment of HR practices with organisational goals helps businesses build a workforce equipped to adapt to technological advancements.

4. Collaboration

Research has shown that collaboration is essential for adopting technological change and helps promote value creation, data exchange, and skill development (Garg et al., 2022; Harney &

Collings, 2021; Peeters et al., 2020; Ratnam & Devi, 2024; Rigotti & Fosch-Villaronga, 2024; Thite, 2022). At first, collaboration with universities and institutes helps organisations develop expertise in digitalisation by providing training and certifications essential for workforce readiness. Second, after adoption, collaboration between departments is necessary for data and skill development. It provides data from many departments, such as finance, marketing, and sales, for analysis and additional assistance in areas beyond HR's expertise (Ratnam & Devi, 2024). With HR co-creation, HR and stakeholders can collaborate to create value by designing and implementing HR practices that better meet business demands (Harney & Collings, 2021). Next, HR leaders must collaborate with domain experts to enhance data analysis competencies, embrace evidence-based decision-making, and address data security concerns (Garg et al., 2022). Cooperation between experts and stakeholders fosters knowledge sharing, human empowerment, and capacity building (Rigotti & Fosch-Villaronga, 2024). Third, employee connectivity is recognised as a vital strategy for fostering meaningful interactions among employees, customers, and stakeholders and sharing key resources such as information and ideas. This approach emphasises building relationships and collaboration, consistently placing people at the forefront rather than prioritising metrics, data, or rigid processes (Thite, 2022). Lastly, having a feedback mechanism aids in fostering trust and participation. For example, Peeters et al. (2020) suggest concerns about data privacy obstructing the successful adoption of HR analytics. Organisations should foster transparency about data usage, gather employee and line managers' feedback, and communicate the advantages of the technology. Thus, the findings suggest that by promoting cooperation and collaboration between employees, departments, stakeholders, institutions, and domain experts, as well as providing transparency and feedback mechanisms, organisations can empower employees, establish trust, and successfully handle technological incorporation.

3.2.3 Summary of Findings: Successful Adoption of Digital Human Resource Strategies

The 4C model (Commitment, Culture, Change Management, and Collaboration) offers a comprehensive framework for successfully implementing a digital HR strategy (see Figure 2). The element of commitment covers the commitment of the leadership and management team to overcome the resistance to organisational change. The leadership and management team must be visionary and supportive during the transformation phase. It has been found that transformational and responsive leadership are the most effective styles for managing change. A top-down, two-way approach with employee commitment shows how to manage and adapt technology successfully. Thus, the literature highlights the role of leaders, management and employees; their commitment towards incorporating technologies and adopting HR strategies is vital, along with securing resources, costs, compliance and data governance.

Furthermore, commitment to ethics, employee privacy, trust, and transparency is crucial. Research outlines how to develop open-source systems and maintain the anonymity of personal data to reduce bias and promote transparency. Second, the cultural element in the literature highlights the importance of fostering an engaging, digital, inclusive, adaptive, and learning-oriented culture to develop essential skills, which ensures ongoing organisational success amid technological adoption in HR. Third, change management emerged as another theme crucial to technological adoption. It focuses on having clear goals and support, demonstrating outcomes through small projects, reskilling, upskilling and identifying change champions to lead change. Finally, collaboration in the form of partnerships with universities, domain experts, stakeholders and employees aids in skill development and decision-making. Additionally, having a transparent feedback mechanism fosters empowerment and the successful management of technological integration.

Thus, adopting this model and considering these crucial indivisible elements can address challenges discussed earlier, such as ethics, data management, employee-related factors like scepticism or fear of job loss, and organisational adaptability, to ensure that technological change is implemented and sustained successfully. However, future research could be conducted empirically to evaluate the 4C Model of Commitment, Culture, Change Management, and Collaboration and how various tools, platforms, and technologies can be integrated into it. This focus may improve the framework's practicality in managing technological barriers and opportunities in HRM.

Chapter 4 Discussion

In Chapter 4, the findings are critically examined and interpreted to uncover their broader implications. The discussion will focus on strategic and practical considerations for organisations navigating digital transformation in HR processes. Furthermore, this chapter will acknowledge the limitations of this study and explore the possible areas for future studies.

4.1 Analysis and Interpretation of Findings

This study aimed to analyse the role and impact of digitalisation and emerging technologies, like AI, HR analytics, and VR/AR, on talent management processes of talent identification and development and their effectiveness. The review intended to focus on a broad yet balanced perspective, merging academic and practitioner views and exploring the strategic approach necessary for effectively adopting digital HR strategies within an organisation during HR digitalisation. Based on these aims, the study addressed the two research questions:

RQ1: How is digitalisation influencing organisations' talent identification and development processes and their effectiveness?

RQ2: How can digital human resource strategies be adopted successfully?

Additionally, the research explored prominent transformations and impacts of emerging technologies by examining the individual implications for employees, HR leaders, teams, and overall organisational influences, focusing on the impact on processes and strategies for successful adoption.

The results of the first research question depicted how digitalisation profoundly influences organisations' talent identification and development processes and their effectiveness. The first research question was divided into two sections: the first on digitalisation influencing talent identification and the second section on digitalisation influencing talent development.

The findings of the first section indicate that digitalisation has revolutionised talent identification by automating and improving crucial phases, such as the planning and designing strategy phase of talent identification, talent acquisition and evaluation and talent engagement throughout the process. During the study, two perspectives were revealed regarding data being used for making talent decisions during the talent identification process using emerging technologies on the one hand and data quality on the other.

It has been found that AI-driven screening technologies help increase accuracy in predictions and decrease bias (Albaroudi et al., 2024; Bar-Gil et al., 2024; Chamorro-Premuzic et al., 2019; Ore & Sposato, 2022; Wiblen & Marler, 2021). Similar outcomes were noted for HR analytics. HR analytics assists in planning and forecasting using employee data trends and making evidence-based talent decisions (Arora et al., 2021; DiClaudio, 2019; Gurusinghe et al., 2021; Locher, 2024; Pessach et al., 2020). These findings reveal how data using technological tools influences talent identification in phases like planning, talent acquisition and evaluations.

On the other hand, some scholars argue that data derived from AI and HR analytics may not always be accurate, potentially leading to incomprehensible decisions and poor data management and quality (Giermindl et al., 2022; Ore & Sposato, 2022; Ratnam & Devi, 2024; Wirges & Neyer, 2023). For instance, Tambe et al. (2019) raised the issue of explainability and argued that many cutting-edge prediction algorithms lack explainability in their underlying techniques. Further, professional associations like CIPD (n.d.-a) claim that generative AI creates new material from existing data patterns such as text, photos, voice, and video and can produce rapid and personalised results at scale, but it sometimes produces inaccurate results. This results in a risk of disseminating misinformation and bias on a mass scale and has a wide-ranging impact on jobs that require synthesising existing data, such as when HR experts are creating a first draft of a job description (CIPD, n.d.-a). These findings help us infer that managing data and emerging technologies efficiently within an organisation is paramount, as it requires committing to data governance and ethical practices, improving data quality, and transparency in HR systems and algorithms.

In the second section of research question one, digitalisation affecting talent development, the key findings demonstrate that emerging digital technologies like AI, HR analytics, and VR/AR dramatically reshape talent development by automating processes, personalising learning, and providing data-driven insights. Digitalisation benefits at an individual level, enhancing employee performance, engagement at the team or group level, and organisational growth. Each technology plays a unique role across various phases of talent development, contributing to more efficient and impactful training and development programmes.

This study helped to understand how VR/AR technologies aid in personalisation and talent engagement during the identification and development of talent. For illustration, it was found that the distinctive features of VR and AR technologies improve the candidate application process and enhance the experience of identifying talent (HRNZ, 2023; Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019). Moreover, Khandelwal and Upadhyay (2021) stated that VR is cost-effective. Thus, studies have indicated that VR and AR help to create immersive experiences for job applicants and enhance employer branding.

In contrast, some studies highlighted concerns over the cost and technical challenges associated with VR/AR (Ashtari et al., 2020; Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019). Thus, we can infer from these results that although VR/AR technologies have enormous potential to transform talent identification and development, they still have cost and technical drawbacks. Furthermore, organisations and leaders must consider the need, budget, and return on investment rate before considering these technologies. Those considering and incorporating them must find solutions to technical challenges and resolve them by collaborating with the different stakeholders and teams and resolving the technical concerns.

There are divergent conclusions regarding the impact of emerging technologies in minimising administrative burden, focusing on strategic goals, the scarcity of knowledge, and the skills needed to apply them in practice. For example, findings regarding the positive impact of digitalisation indicate that it helps reduce the administrative burden and helps HR practitioners focus on strategic tasks (Bar-Gil et al., 2024; Kambur & Yildirim, 2023; Kaushal et al., 2023; Ore & Sposato, 2022; Rigotti & Fosch-Villaronga, 2024). However, other studies have highlighted challenges regarding the lack of knowledge and skills that restrict the utilisation of the potential of digitalisation to the fullest and underscore the need for training, including for HR practitioners (Arora et al., 2021; Ashtari et al., 2020; Cayrat & Boxall, 2022; Giermindl et al., 2022; Kambur & Yildirim, 2023; Khandelwal & Upadhyay, 2021; Prasolova-Førland et al., 2019; Ratnam & Devi, 2024). These findings suggest that, though digitalisation has many benefits that shift to focus on strategic activities, a lack of necessary skills and knowledge creates a gap in practice. This gap can be addressed by effective change management initiatives, where HR practitioners and concerned managers are reskilled and upskilled to make a smooth transition and are trained to harness emerging technologies in HR.

This review began with understanding the need for digitalisation and technological development, particularly in HR, in response to the rapidly changing VUCA world (Bennett & Lemoine, 2014). The findings from some academics show that HR digitalisation is transforming the HR processes and the world of work (Arora et al., 2021; Kambur & Yildirim, 2023). Yet, other studies have acknowledged that its adoption is slow and hindered by different challenges in the HR field. For example, according to Arora et al. (2021), while technology aids HR, adoption is slow due to concerns about automation and AI affecting jobs. Thus, this study discloses that these findings from some academics ascertain that while HR digitalisation is transforming processes, its adoption remains sluggish due to various challenges, including its impact on the workforce and their jobs.

While building the foundation for the second research question, this study identified the challenges of adopting emerging technologies. This research study listed challenges from existing literature, including a lack of knowledge and skills, resource constraints, ethical concerns, data management and quality issues, technical challenges, scepticism and stress, and the threat to existing jobs. These factors are among the primary impediments to technological development within an organisation (see page 36, Table 10). The differing viewpoints on the threat to existing jobs have been noted. Many believe that AI will lead to job replacement and may disrupt existing jobs, including that of an HR professional (Arora et al., 2021; Kambur & Yildirim, 2023; Ore & Sposato, 2022; Pereira et al., 2023). To quote an example, Kambur and Yildirim (2023) revealed that repetitive tasks require neural networks, which are confined to certain forms of pattern recognition, to undergo extensive longduration training to perform effectively. This extended training time can endanger employees' positions, as AI tools enable the completion of these tasks with a reduced workforce. Nevertheless, technical issues exist, such as bias in the training process and incomplete explanations of the decisions made by the neural network (Kambur & Yildirim, 2023).

Further, researchers mention that not all jobs may be replaced by technology. It has also been stated from an optimistic view that it will lead to job creation, and HR involvement is required during job losses (CIPD, n.d.-b). It is also thought that people are not being displaced by technology and that adopting innovation as a source of opportunity and prosperity requires a change in viewpoint (Arora et al., 2021). These findings highlight emerging technologies' dual impact on job security, particularly AI, emphasising the risks of job displacement and job creation opportunities. The findings suggest the need for organisations to proactively address these concerns by upskilling, providing relevant training and adopting change management strategies like effectively communicating and redefining the role of HR in supporting the workforce and their transitions during technology adoption.

The next objective of this study, addressed by the second research question, was to understand how digital HR strategies can be successfully adopted. It was revealed after an in-depth analysis of the literature that the four essential pillars of commitment, culture, change management and collaboration, named the 4Cs, help adopt and incorporate digital HR strategies (see Figure 2). At first, studies outlined how a committed leadership and management team that is motivated, visionary, and dedicated to supporting and resolving employees' issues and resistance during digital change is necessary for managing and leading the adoption of emerging technologies in HR (Guerra et al., 2023; Thite, 2022). They also need to aid the HR team in securing the financial budget and resources and, most importantly, build an ethical culture following compliance and data governance (Cayrat & Boxall, 2022; McLean & González Ortiz de Zárate, 2024; Ratnam & Devi, 2024; Wiblen & Marler, 2021). Further, there should be commitment towards ethical practices, compliance with the regulatory laws, protecting applicant privacy and maintaining anonymity. Additionally, studies emphasise the importance of eliminating bias, enhancing transparency, and promoting socioeconomic balance to facilitate the successful adoption of HR strategies during digitalisation (Chamorro-Premuzic et al., 2019; Cheng & Hackett, 2021; Rigotti & Fosch-Villaronga, 2024). Thus, this study supports the employees, leadership and management team's critical role and commitment to ethical practices and data governance.

Second, regarding culture, the study disclosed that AI and HR analytics foster a data-driven culture that promotes evidence-based decision-making in talent management. AI and VR/AR cultivate a culture of engagement, learning and innovation by providing immersive and interactive experiences for learning and development. If integrated, AI, HR analytics, and VR/AR can foster an organisation's data-driven, engaging culture, supporting learning and innovation. Furthermore, an adaptable and inclusive culture must be established to implement digitalisation and innovation (Chamorro-Premuzic et al., 2019; Kaushal et al., 2023; Khandelwal & Upadhyay, 2021; Locher, 2024; Thite, 2022).

Third, regarding change management, studies suggest that effective change management is necessary to drive innovation. To achieve this objective, managers and HR specialists must collaborate and design upskilling and reskilling programmes that improve digital literacy (Cetindamar et al., 2022; Ferrer et al., 2021; Jaiswal et al., 2023; Peeters et al., 2020; Ratnam & Devi, 2024). The analysis underscores the importance of managing change through effective communication with stakeholders, understanding their needs, and improving the digital literacy of the employees by taking initiatives for training, upskilling and reskilling staff as needed to integrate digital HR strategy fluidly.

Lastly, the fourth theme of collaboration, studies identified how engaging with educational providers and institutes contributes to skill development (Ratnam & Devi, 2024). Moreover, Harney and Collings (2021) mentioned in their study that collaborating and engaging with cross-functional teams may benefit from creating and bringing digital HR strategies that better meet business objectives into effect. Organisations should also empower staff and build trust by offering feedback channels and transparency. These findings imply that engaging and collaborating effectively with various stakeholders, educational providers, domain experts and cross-functional departmental teams can drive skill development and align digital HR strategies with business goals by fostering trust, transparency, and open feedback channels, empowering employees and enhancing overall effectiveness.

4.2 Implications of the Study

4.2.1 Theoretical Implications

This dissertation helps bridge important gaps, delves deeper into understanding, and makes a substantial theoretical contribution to digitalisation in HRM. This review analyses emerging technologies like AI, HR analytics, and VR/AR, which give a holistic view of digitalisation within talent management areas of talent identification and development and how digital human resource strategies should be successfully adopted.

As a result, the research gap of the need for exploration within the area of talent management outlined by previous studies is addressed (Cruz et al., 2023; Gurusinghe et al., 2021; Khandelwal & Upadhyay, 2021). Additionally, this study rigorously analyses and evaluates key emerging technologies in HRM for talent identification and development. It addresses the gaps in previous studies by carefully examining and comparing the impact of these emerging technologies on talent identification and development, which was previously insufficiently explored (Gurusinghe et al., 2021; Malik et al., 2023; Steffen et al., 2019).

The third gap highlighted by Khandelwal and Upadhyay (2021) was diligently attended by introducing the 4C model in the second research question, which relates to successfully adopting digital human resource strategies. This model emphasised the previously limited focus on developing effective strategies for integrating emerging technologies within organisations amid continuous technological advancements. Lastly, as highlighted in the limitations, many studies call for further research on HR analytics and VR/AR (Edwards et al., 2024; Giermindl et al., 2022; Khandelwal & Upadhyay, 2021; Mohammed, 2019; Pessach et al., 2020; Wirges & Neyer, 2023). Consequently, incorporating these technologies into this review has contributed to a deeper understanding of their impact on talent management and development processes. In conclusion, this dissertation significantly enhances the understanding of advancing digitalisation in HRM by addressing key research gaps and comprehensively analysing emerging technologies in talent management.

4.2.2 Practical Implications

The subsequent practical implications are outlined from the findings and theoretical insights. The findings of this study reflect practical implications for employees, HR professionals, and organisational leaders. Firstly, employees need to develop human-centric skills that are crucial for sustaining themselves in a challenging VUCA digitalised environment. For example, according to Jaiswal et al. (2023) and Pereira et al. (2023), employees need to upskill themselves and develop skills that are difficult for technologies like AI to replace. Second, the study's findings support the development of customised and adaptive systems for training employees for better talent development (Wesche & Handke, 2024; Zahabi & Abdul Razak, 2020).

Similarly, HR practitioners at the centre for managing and developing talent must develop their competencies and ensure ethical practices. According to studies, HR professionals are advised to develop human capital analytics skills and concentrate on relationship building, critical problem solving, and innovation (Harney & Collings, 2021; Malik et al., 2023). Further, Wirges and Neyer (2023) note in their study on HR analytics that to ensure usability and efficacy, HR analytics software solutions must be customised to match the skills of HR business partners. It also suggests that HR business partners become aware of analytics and participate in conversations and decision-making processes regarding data-driven insights. As recruitment and selection technology disrupts the work culture, HR needs to adapt to the changes. Instead of worrying about becoming victims of technology, they must embrace emerging tools such as AI to enhance job performance (McLean & González Ortiz de Zárate, 2024).

Organisational leaders play a crucial role in digital transformation and are responsible for various aspects of the business, including operations, profitability, ethical compliance, and the welfare of their talent. Leaders can create an adaptable and innovative environment by redesigning job roles and descriptions and transforming the organisation's culture and values. This approach helps ensure that organisations stay competitive and can effectively navigate the challenges and opportunities of digital transformation. Organisations must proactively revamp their policies, practices, and philosophies to embrace new technologies. For workers to be ready for and thrive in the digital era, managers must explicitly increase their abilities in these areas and focus on attracting talent with the right skills to align with company needs (Guerra et al., 2023; Jaiswal et al., 2023). Second, the organisational leaders and HR professionals must plan and consider redesigning company and job roles and support employee well-being through new work arrangements (Harney & Collings, 2021; Pereira et al., 2023). Lastly, organisations and HR professionals must ensure that their technological solutions maintain equity in the hiring process and talent management activities, ensuring human judgment at the core (Malik et al., 2023; Wiblen & Marler, 2021). From the practitioner's perspective, Durth et al. (2023) highlighted the importance of leaders within an organisation who need to evaluate risks and potential for sectors and business structures or the strategic ramifications of generative AI and stated that different companies may make different decisions about structure and operating model design, but regardless of the format, affirms that with digital transformation, value creation must always be at the forefront.

Thus, the findings of this study will offer HR practitioners and organisational leaders a better understanding of emerging technologies like AI, HR analytics and VR/AR, and the 4C model derived from the literature will also supplement comprehension of how digital human resource strategies should be successfully adopted, allowing them to gain a competitive edge.

4.3 Limitations

Despite the significant outcomes of this study, it is crucial to recognise the limitations and constraints that may have affected its scope and findings. At the outset, certain limitations were observed regarding the study's scope. The study focuses on AI, HR analytics, and VR/AR, but the rapid pace of digitalisation may have excluded other emerging technologies like blockchain and robotics, requiring periodic updates to stay current. Additionally, the study being of a broader scope has led to a limitation regarding less focus on one geographical area or industry.

Second, there is a lack of rigorous quantitative and qualitative empirical investigations of emerging technologies such as AI, HR analytics and VR/AR. For example, Giermindl et al. (2022, p. 412) claim a "lack of rigorous quantitative and qualitative empirical research on consequences of people analytics and limited analysis of more advanced forms of people analytics usage". Some scholars believe that combining quantitative and qualitative research methods is better for understanding the links between HR Analytics and organisational outcomes (Cayrat & Boxall, 2022; Giermindl et al., 2022). By employing this approach, the contextual factors that may influence the relationship can also be studied. Thus, current literature suggests more qualitative and quantitative empirical studies for understanding and developing technologies of HR Analytics, AI and VR/AR (Edwards et al., 2024; Giermindl et al., 2022; Khandelwal & Upadhyay, 2021; Mohammed, 2019; Pessach et al., 2020; Vrontis et al., 2023; Wirges & Neyer, 2023).

Third, this study adopts a narrative literature review, which lacks a systematic approach to selecting resources, presenting it explicitly and following the prescribed procedure, recommending that scholars clearly define the boundaries and scope of the topic since narrative reviews do not usually follow rigid, predefined inclusion or exclusion criteria (Juntunen & Lehenkari, 2021; Sukhera, 2022). Further, this study utilised Scopus, Google Scholar, and internet search engines to extract academic and practitioner data from reputable and credible sources. Given the vast literature, using more databases and sources might have revealed additional relevant practitioner and academic studies. It is to be noted that no particular rule has been found regarding the criteria for selecting the grey literature (Madden et al., 2018). Hence, there could be potential bias in selecting sources based on relevant material and significance. Thus, this subjectivity in the selection and synthesis of literature may result from the narrative review process's flexibility.

4.4 Areas of Future Research

After carefully analysing the literature gaps, findings, and limitations, this study identifies four potential areas for future research. Firstly, significant challenges regarding ethical concerns, bias, and privacy were identified in AI and HR analytics (Arora et al., 2021; Cayrat & Boxall, 2022; Chamorro-Premuzic et al., 2019; Giermindl et al., 2022; IBM, 2024; Peeters et al., 2020; Pessach et al., 2020; Ratnam & Devi, 2024). Thus, future research must focus on interdisciplinary studies on ethics and technology to address concerns related to privacy, ethical violations, and data regulations. Moreover, it will explore how organisations can develop more ethical and transparent HR systems and ensure regulation compliance (Bar-Gil et al., 2024; Malik et al., 2023).

Second, this study explored how to adopt HR strategies successfully. However, recognising the challenges of stress, scepticism and redundancy for HR professionals and other employees impacted by AI, a crucial area for further research is the impact of technological change in HRM on employee well-being and HR professionals' outcomes (Kambur & Yildirim, 2023; Ore & Sposato, 2022; Pereira et al., 2023). For example, Jaiswal et al. (2023) suggest that academics investigate AI's social and psychological influence on individuals whose jobs become redundant due to emerging technologies.

Third, reflecting on the limitations of this study suggests more empirical qualitative and quantitative studies for evaluating and developing HR analytics, VR/AR and AI technologies (Edwards et al., 2024; Giermindl et al., 2022; Khandelwal & Upadhyay, 2021; Mohammed, 2019; Pessach et al., 2020; Vrontis et al., 2023; Wirges & Neyer, 2023). For instance, empirical studies in HR analytics and VR/AR can be conducted on how they can effectively contribute to different HR functions.

Lastly, this study has found that emerging technologies like VR offer personalised and adaptive training opportunities. Hence, future talent development studies can investigate the impact of adaptive training and explore strategies for enhancing trainee learning and performance through emerging technologies like VR (Zahabi & Abdul Razak, 2020). Thus, addressing these research gaps and building on the study’s findings will provide deeper insights into the responsible use of emerging technologies, their social and psychological impacts, and their role in advancing digitalisation in HRM. Future studies can guide organisations toward more ethical, sustainable, and innovative HR practices.

In a nutshell, this discussion chapter explored various perspectives and critically examined the study's findings. Interpreting these findings from existing literature provided insights into the theoretical and practical implications. The limitations and constraints of the study were also discussed, giving further directions for areas of future studies. This analysis establishes a strong foundation for assessing the dissertation's contributions and formulating actionable recommendations to drive digital transformation in HRM.

Chapter 5 Conclusions and Recommendations

Chapter 5, the concluding chapter, will synthesise the study's findings concerning the research questions drawn and the objectives. It will summarise and provide a comprehensive view of the essential elements, including the implications, acknowledging the study's limitations and suggesting future research areas. Furthermore, this chapter will delve into contributions and practical recommendations for practitioners and pave the way for future advancements in the transformation of HR digitalisation.

5.1 Summary of Findings

This narrative review addressed two research questions.

Research Question 1: How does digitalisation influence organisations' talent identification and development processes and effectiveness?

The first section's analysis of digitalisation influencing talent identification effectiveness revealed that digitalisation has influenced the process of talent identification in three main areas or themes: Talent strategy and planning, Talent acquisition and evaluation and Talent engagement.

In the first theme, Talent strategy and planning, AI and HR analytics assist in predicting recruitment needs and outcomes, planning strategies, and making talent decisions based on projections. This thus helps in planning and developing talent identification strategies. The second theme is talent acquisition and evaluation. Emerging technologies like AI and HR analytics are crucial in attracting and sourcing talent, and assessing and evaluating them by setting parameters and data-driven insights. VR/AR attracts candidates, giving job seekers a better picture of the organisation and prospective job roles. Thus, understanding the unique features of technologies benefits different tasks.

Within the third theme of talent engagement, it was found that enhancing candidate experience through personalisation, open communication, effective feedback mechanisms, and collaboration is crucial and can be leveraged using emerging technologies. For instance, AI-powered chatbots and 360-degree informative videos with interactive job assignments in VR helped individuals feel more engaged and assisted HR professionals in swiftly identifying quality candidates. Lastly, the effectiveness of digitalisation is also evident when the study analysed the positive impacts of AI, HR analytics and VR/AR on reducing the administrative burden by handling vast amounts of data with accuracy and consistency and shifting the focus on strategic aspects, saving time, cost and efforts, ultimately building a competitive edge and elevating the employer brand.

The second section demonstrates how emerging technologies influence talent development within three phases. Firstly, the pre-training or development phase; secondly, during the training and development process; and finally, the post-training phase. Findings indicate a significant role of AI and HR analytics in the first stage, where AI helps identify skills gaps, develop training designs, and suggest customised courses based on employees' work and experience, and HR analytics supports these activities by enabling effective data-driven decisions for understanding training needs, designing tailored programmes, and aligning employee rewards with performance targets.

AI and VR/AR technologies contribute substantially during the training and development phase. AI deals with personalisation and makes it easy to access. VR/AR improves talent development during training by facilitating skill transfer and engagement and overcoming many barriers related to safety, time, location, and accessibility, thereby improving the efficiency and effectiveness of talent development programmes.

Finally, the findings identified that in the post-training phase, AI helps automate training assessment, and HR analytics evaluates training effectiveness by leveraging data-driven development decisions, succession planning, training costs, and turnover rates to promote seamless alignment of the development process. AI and VR technologies provide real-time feedback and immersive experiences to online training, helping firms adapt and improve HRD efforts despite high costs. Overall, findings reveal that AI, HR analytics and VR/AR redefine performance assessment and appraisal. Integrating these technologies increases efficiency through improved performance, career and skill development, a shift in organisational culture, enhanced employee engagement, retention, and collaboration, and reduced bias.

Overall, the findings for the first research question indicate that AI and HR analytics significantly influence the talent identification process across various activities. AI notably impacts all three phases of talent development, and HR analytics influences the pre- and post-training phases of talent development. VR/AR technology plays a prominent role in talent attraction during talent identification and in the training phase in talent development. Thus, digitalisation through emerging technologies influences organisations' talent identification and development processes and effectiveness. Organisations can leverage and implement these technologies and their strengths by analysing their organisation's needs, which may help improve the weaker areas that need upliftment.

Research Question 2: How can digital human resource strategies be adopted successfully?

The challenges associated with adopting emerging technologies were analysed and identified, laying the foundation for answering the research question. The four pillars for adopting digital HR strategies, known as the 4C model, are commitment, culture, change management, and collaboration. These themes emerged from the key findings of previous studies. The first pillar of commitment focuses on committed leaders, management, and employees for technological adoption, ethics, and governance. The second pillar of culture highlighted the need for organisations to embrace and cultivate a culture that values engagement, flexibility, learning, innovation, and inclusion.

Interestingly, it was uncovered that different technological adoption fosters unique organisational environments. For Example, AI and HR analytics foster a data-driven culture, promoting evidence-based decision-making in talent management. VR/AR cultivates a culture of engagement and innovation by providing immersive and interactive experiences for learning and development. The third pillar of change management calls for overcoming resistance and strategic alignment of HR practices, collaboration between HR professionals and managers, clear communication about the change and addressing the doubts, promoting digital literacy, and reskilling to meet evolving technological demands. The last fourth pillar of collaboration is collaboration with universities and institutes, sharing ideas and fostering interaction between employees, stakeholders and domain experts. It also suggests bringing transparency and feedback mechanisms to promote trust and adopt digital HR strategies successfully.

Limitations of the Study and Suggestions for Future Research

The crucial limitations acknowledged in the study are, at first, the limited scope, as the study mainly focused on AI, HR analytics, and VR/AR; it may have excluded other emerging technologies. Second, rigorous empirical research on AI, people analytics and VR/AR technologies is lacking. Third, the narrative literature review approach might have introduced some selection bias as narrative reviews do not usually follow rigid, systematic processes with predefined inclusion or exclusion criteria. Consequently, the flexibility of the narrative review process may introduce subjectivity in the selection and synthesis of literature.

Thus, future research might explore crucial challenges of technological adoption, such as ethical concerns. For example, this raises the question of how organisations can develop more transparent HR systems and ensure regulatory compliance. Additionally, it is required to fully understand the implications of technology on employee well-being, particularly the psychological well-being of those who have been made redundant due to technological integration. Finally, more rigorous empirical studies of AI, HR analytics and VR/AR technologies are needed.

5.2 Recommendations of the Study

Theoretical and practical implications of the study have been clearly outlined, demonstrating the significant contributions for academic and real-world application. The theoretical implications discussed in the study were that it contributes by addressing the important gaps in previous research and provides a holistic view with the assessment of emerging technologies like AI, HR analytics, and VR/AR within talent management. Additionally, the study introduces the 4C model for successfully adopting digital HR strategies, addressing the previously limited focus in the literature and offering a structured approach to effective technological integration in HR.

Based on the implications and limitations discussed in the earlier chapter, here are the actionable recommendations for employees, HR practitioners, and organisations. First, the organisations need an ethical framework, including a transparent HR system, standard operating procedure and a dedicated ethical and compliance committee to ensure the regulations are followed (Bar-Gil et al., 2024; Malik et al., 2023). This will help foster trust and transparency, reduce bias, and ensure privacy and ethical use of technologies. Additionally, a culture of open communication must be cultivated to bridge the gap between the management and the employees.

Second, it is recommended that organisations and HR practitioners understand their changing role and focus on the development of empathetic and emotional dimensions of their work, consider reskilling them and employees and design programmes to develop human-centric skills like critical thinking, problem-solving, and relationship-building (Harney & Collings, 2021; Malik et al., 2023; Pereira et al., 2023). Customised and adaptive training programmes will benefit their development by providing personalised learning experiences.

Third, employee well-being is important to organisations, as technological change may lead to scepticism and stress (Kambur & Yildirim, 2023; Ore & Sposato, 2022; Pereira et al., 2023). The job roles need to be redefined or considered for internal transfers or job rotations before considering them for redundancy. Initiatives like workshops for elevating employees' mental health and well-being should be arranged frequently.

Fourth, the 4C model can practically be implemented by leveraging elements of commitment, culture, change management and collaboration, which can aid the company in addressing challenges like lack of management support, resistance to chance, bias and resource management. Thus, it is recommended that this model be implemented to leverage the opportunities, gain a strategic competitive advantage, and offer valuable insights to academic researchers, employees, HR professionals, organisational leaders and other stakeholders like consultants and policymakers.

5.3 Contributions

5.3.1 Theoretical Contributions

Thus, reflecting upon this narrative literature review, it holds significance in rapidly evolving digitalisation, especially in HR. The theoretical contributions are as follows: First, the study provides a multi-level evaluation, focusing on how digitalisation affects the effectiveness of talent identification and development process and challenges at the individual, group, and organisational levels considering emerging technologies.

Second, it merges academic and practitioner perspectives, offering an integrated view that connects theoretical concepts with practical applications. This approach provides a comprehensive framework for understanding digitalisation in talent identification and development, addressing the challenges of HR digitalisation, and ultimately merging the perspectives between research and practice.

Third, the study identified the important pillars of 4C for successfully incorporating technology within HRM and overcoming the challenges. The 4C model is a theoretical framework of commitment, culture, change management, and collaboration elements that can help organisations adopt digital HR strategies successfully. It is a robust model that has practical application to enhance its effectiveness by mitigating the barriers to HR digitalisation adoption as it focuses on the core interconnected elements essential to integrate emerging technologies in HR processes for the smooth adoption of digital human resource strategies.

5.3.2 Practical Contributions

The practical contribution of this review is that it gives an understanding of how emerging technologies can add value to the existing processes of identifying talent and their development. It highlights the key phases and areas of these processes where emerging technologies like AI, HR analytics, and VR/AR are the most effective. For instance, we identified that AI and HR analytics play a significant role during the talent strategy and planning in talent identification and the pre-training phase in talent development (Budhwar et al., 2022; Giermindl et al., 2022; Kaushal et al., 2023; Maskey, 2022). They are also responsible for managing data efficiently and providing data-driven insights (Arora et al., 2021; Pessach et al., 2020). While AI and VR/AR have a crucial influence in the training phase of development, boosting personalisation and overcoming barriers to safety and accessibility during training (Kambur & Yildirim, 2023; Khandelwal & Upadhyay, 2021).

Second, the study identifies key challenges regarding ethical, bias and privacy concerns with AI and HR analytics (Arora et al., 2021; Cayrat & Boxall, 2022; Chamorro-Premuzic et al., 2019; Giermindl et al., 2022; IBM, 2024; Peeters et al., 2020; Pessach et al., 2020; Ratnam & Devi, 2024). Moreover, it suggests practical recommendations for the employees, HR practitioners and organisations. For instance, it supports ethical practices throughout the organisation, evolving the responsibilities of HR professionals and employee well-being with the 4C model, outlining the commitment of leadership, and highlighting the importance of change management practices and collaboration. It further recommends establishing an ethical committee, having a Standard Operating Procedure to deal with such instances, and having management support, reskilling and arranging well-being workshops and other toolkits to reduce stress, anxiety and fear during the transition. Thus, the dissertation contributes to theoretical knowledge, practical comprehension, and implementation.

5.4 Final reflections

This narrative literature review aimed to analyse the role of digitalisation and emerging technologies, like AI, HR analytics, and VR/AR, in transforming key talent management processes of identifying and developing talent from a broad, balanced perspective. This objective has been achieved by the key themes found for talent identification, namely, talent strategy and planning, talent acquisition and evaluation, and talent engagement, which demonstrate how digitalisation using AI, HR analytics, and VR/AR is used to streamline recruitment, enhance candidate experiences, and provide valuable workforce insights. The findings proved that digitalisation significantly improves time, cost, effort, accuracy, and consistency while promoting diversity and transparency, ultimately giving organisations a competitive edge through enhanced employer branding. At the same time, findings related to talent development were mapped across three stages- pre-training, during training, and post-training phases. The study's outcome shows that these technologies elevate the efficiency and effectiveness of talent development programmes, leading to improved performance, career growth, organisational culture shifts, and increased employee engagement, retention, and collaboration while reducing bias.

Furthermore, the second objective to explore ways and strategies for successfully adopting digital human resource strategies within an organisation was fulfilled by unveiling the 4C model of commitment, culture, change management, and collaboration, which can lead to the seamless adoption of digital human resource strategies. In conclusion, by achieving the objectives of this study, the research effectively merges the perspectives of researchers and practitioners, thus contributing to overall theoretical knowledge and comprehension, highlighting its implications, providing recommendations, and acknowledging its limitations while suggesting areas for future research, and encouraging continued exploration into the evolving landscape of HR digitalisation.

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