Digital Competencies for Human Resource Management Professionals in a Digital Transformational Era: A Systematic Literature Review

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ABSTRACT

The function of Human Resource Management (HRM) within a business is to attract, retain and develop talent and manage people engagement. Over time the role of HRM has also shifted from a talent management role to a strategic business partner role thus broadening the scope of HRM. In the 21st century, the rise in digitalisation has meant that HRM professionals have had to acquire digital competencies to effectively perform their roles as HRM functions have shifted to online platforms. Research to understand the digital skills, knowledge and ability HRM professionals need in the 21st century have been conducted in recent years. Despite this research there is still a gap in the delivery of HRM graduates with appropriate digital competencies. The lack of digital skills has been linked to the slow adoption of digital HRM technology by HRM practitioners. In light of this, this systematic review examines both academic literature and the HRM framework perspectives to identify the digital competencies essential for HRM professionals today. The research question proposed is: What digital competencies are identified as important for HRM professionals according to the academic and practice literature? The introduction section of this dissertation describes the current context of HRM, outlines the research question and the contribution to academic literature.

A systematic literature review technique was used to integrate the academic literature and the HRM competency frameworks on digital competencies between 2019-2024. In addition, competency frameworks from four HRM professional institutions- New Zealand, Australia, Singapore, and the United Kingdom are included in this study. Following the search and selection process, 18 academic articles were located. The articles provide insight regarding the competencies, skills, knowledge, and abilities and digital competencies of each HRM function.

A summary of the academic articles and the HRM institutions frameworks is provided, focussing on key parameters such as the digital competencies knowledge, abilities and skills and the HR function/s. An integration of the information from the academic journal articles and the HRM frameworks is presented to provide a comprehensive understanding of the HR functions: recruitment and selection, learning and development, talent and performance management and HRM analytics with a summary of the digital competencies for each function. A critical review of the academic literature and HRM frameworks outlining the differences and similarities is provided. Future research directions are discussed along with practical recommendations and strategic implications for HRM. Finally, recommendations for HR practitioners, HRM training providers, and professional HRM institutions are provided.

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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 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. In this dissertation I have used ChatGPT to assist with paraphrasing the information extracted from journal articles. I also used ChatGPT to ensure the grammar and writing was of an academic standard.

Author's signature: Date: 17 February 2025

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CHAPTER 1: INTRODUCTION

In Chapter 1, I will first define Human Resource Management and describe the current context of HRM in the digital era. Second, I introduce the dissertation topic, and the research question this dissertation will answer. Third, I summarise the contribution this research will make towards the existing body of knowledge and finally I outline the structure of the dissertation.

1.1 HRM in the Digital Era

Human Resource Management is a function centred around attracting, developing and retaining talent whilst also collaborating with senior management on people strategy, succession planning, and employee relations development (SkillsFuture Singapore, 2018). The functions of human resources include business operations and technology, performance and rewards, talent attraction, employee experience and relations, talent management and learning and organisation development (SSG, 2018). In the 21st century the human resources (HR) profession has shifted its focus from the administrative aspects of talent management to take an active position as a strategic business partner with input to the organisation's strategy at the highest level (Garg et al., 2023; Kambur & Yildirim, 2022; SSG, 2018).

The rise of digitalisation has had a significant impact on the work of HRM departments. Regarding recruitment, digitalisation has facilitated the introduction of electronic recruitment technologies which can access and evaluate candidates' skills and automatically generate online feedback. The automation of this function significantly reduces the amount of time HR professionals spend on planning and reviewing candidates (Kambur & Yildirim, 2022). Recruitment technologies are used to find the right fit between candidates and job requirements in a shorter time period.

The learning and development function has seen a shift from in-person learning to using online platforms, such as electronic learning, thus reducing the administrative burden on HR managers. In addition, the costs associated with face-to-face training programs are reduced (Kambur & Yildirim, 2022). The digitalisation of performance management has meant that an employee's performance can be measured with more variables such as jobs completed, key achievements, time spent on tasks, and error rates (Kambur & Yildirim, 2022). This allows potential problems to be identified quickly. In addition, employees' performance can be monitored more frequently and at a reduced cost (Kambur & Yildirim, 2022). Currently, HRM is the second-highest digitized business function after finance (Chugunova & Danilov, 2023).

This rapid shift in technology has meant that HRM professionals have been required to rapidly upskill and learn to use and apply these technologies, often to keep pace with a broader business agenda regarding digitalisation (Tian et al., 2022; Ruiz et al., 2024; Guerra & Valle, 2024; Zhou et al., 2023). Since managing technology is now a significant part of all HRM roles, it is time to add digital competencies to the required knowledge, skills and abilities HRM professionals need to perform their roles effectively (Gilch & Sieweke, 2021). Additionally, the rapid changes due to digitalisation require the human resources manager to be a change agent, a strategic positioner and to perform a strategic role within an organization (Bogdany et al., 2023).

HRM scholars have also identified competency gaps that exist between organizational needs and the skillset of university HRM graduates and how the profession is approaching the development of digital competency (Bogdany et al., 2023). There is concern that the lack of digital competency

in the HR profession could hinder continued digital transformation (Gilli et al., 2023; Poulose et al., 2024).

Nankervis and Cameron (2023) identified limited digital skills across the HRM profession in Australia and the lack of integrated digital strategies, which lead to minimal uptake of digital technology in HRM. One of the key reasons for this was identified as the lack of support from higher education bodies and the link between the skills needed for new and developing HRM professionals. Digital transformation involves significant change management and a thorough understanding of the digital skills needed by HRM professionals to take full advantage of technological advancements (Nankervis & Cameron, 2023).

A competency model refers to the collection of specific knowledge, skills, abilities and other characteristics (KSAOs) which individuals need to be successful in their role. A competency model allows a business to focus on job related information and key skills of employees whilst following best practices and guidance to support future professional development (Campion et al., 2011). The competency model is also adaptable and can vary depending on an individual's position and the requirements of their role (Campion et al., 2011). Competency models may consider future job requirements either directly or indirectly. Competency models are crucial in HR systems as a business can hire and train employees with the aim of developing certain competencies.

1.2. Research Question

The topic of the dissertation is: The digital competencies required by human resource management professionals in a digital transformational era. The primary research question is: What digital competencies are important for HRM professionals in the academic and practice literature?

In this dissertation I conduct a systematic literature review to identify the digital competencies, skills, knowledge, and abilities that are considered important for HRM practitioners in the 21st century. I will also compare these to HRM competency frameworks that are currently used by professional HRM organisations. I will present an integrative set of digital competencies based on the literature from two perspectives.

1.3. Contribution

Digital HRM is an emerging area of human resources with an explosion of research, however the evidence of what competencies HRM professionals need at a practical level is not clear. This research aims to consolidate the current literature on HRM digital competencies and link it to the HRM frameworks understanding of digital competencies. In doing this, I will achieve two goals, new avenues for further research in the field of human resources management and second, synthesising information from academic literature and HRM frameworks perspectives. This dissertation provides recommendations regarding the competencies current and future human resource professionals will need, to take advantage of digital HRM technology fully.

1.4. Dissertation Outline

The dissertation is divided into five chapters. Chapter 2 details the method I used to conduct the systematic literature review and synthesis. Chapter 3 presents the findings from the systematic search and selection; I will also integrate these findings with the global competency frameworks from HRM professional institutions. Chapter 4 answers the research questions based on the synthesis of the literature, future research directions, strategic implications for HRM, a critical review of academic literature and HRM frameworks and recommendations for HRM professionals, HRM training providers and professional HRM institutions. Finally, chapter 5 provides limitations of the research conducted, summarises the dissertation, outlines contributions to the research and provides a conclusion.

CHAPTER 2: RESEARCH METHOD

This chapter introduces and explains the systematic literature review method used to search, select, and synthesize the literature on digital competencies required by human resources management professionals in a digital transformational era. This chapter lists and explains the five steps used to identify the relevant articles on digital competencies in the HRM profession.

2.1. Rationale for the Systematic Review

I used a systematic literature review as this is a rigorous method for researching the current knowledge in a body of literature (Denyer & Tranfield, 2009). The systematic review provides insights into a topic by synthesizing knowledge across different practices and allowing the development of contrasts and patterns within knowledge communities (Cronin & George, 2020). This method is commonly used in management and organization studies (Denyer & Tranfield, 2009). I chose to conduct an integrative systematic review to synthesize information about digital HRM competencies from both the academic and HRM frameworks and, thereby produce a cohesive framework.

The systematic review method followed five-steps: 1- question formulation, 2-locating studies, 3-study selection, and evaluation, 4- analysis and extraction of information, and 5-reporting findings and results (Denyer & Tranfield, 2009). Each step in the process is detailed below and includes a Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) diagram (Page et al., 2021). This diagram outlines the process and criteria used to select articles used in the report.

2.1.1. Step 1- Question formulation

The initial step involved developing a search question to guide the search and selection strategy in the academic literature (Denyer & Tranfield, 2009). Several test searches were conducted to identify keywords for guiding the Context, Intervention, Mechanisms, and Outcome (CIMO) (Denyer & Tranfield, 2009). The CIMO framework was used to formulate the search key word string used in the database searching process. This also provided areas of focus for the selection process. The CIMO framework contributed to the development of the inclusion and exclusion criteria, for the search string in the databases and the article selection process. Table 1 below summarises the CIMO factors used to build the search strategy and selection criteria.

Table 1: *CIMO framework and areas of focus*

Elements	Definition	Your research focus	Search terms
Context	Which individuals, groups or relationships are you focusing on?	HRM practitioners in organisations using HR technology	Human resource professionals, personnel management, human performance management, talent management
Intervention	What is the intervention or indicator of interest?	Digital technology used to deliver HRM functions	Digital Human resource functions, E-HRM
Mechanisms	What are the mechanisms that explain the relationship between interventions and outcomes?	Competencies- Being the knowledge, skills, and abilities that HR practitioners require to use digital technology effectively	Capabilities or competencies between HRM and employee competencies digital performance, online platforms
Outcomes	What is the outcome of interest?	Performance of HRM functions including effectiveness, efficiency & financial performance	Business performance outcomes including people & profit

Note: This table was developed based on the CIMO framework of (Denyer & Tranfield, 2009)

Inclusion and Exclusion criteria for the Systematic Review

Developing clear inclusion and exclusion criteria for articles is important, as it guides the screening and selection of articles and determines which articles would be applicable to answer the research question. The inclusion and exclusion criteria also aid in finalising the search strategy. Table 2 shows the inclusion and exclusion criteria and how information was organised in the selection process.

The short time period for academic publications between 2019-2024 was chosen due to the rapid advancement of technology in this area. Work published prior to 2019, is unlikely to capture the recent advances in AI technology. Technology is continuously updating and technology dating back more than 5 years could be obsolete. The articles had to be published in reputable journals which were included on the Australian Business Deans Council List (ABDC). This list is a quality ranking of peer reviewed academic journals that is recognised by Australasian universities. I only considered journals ranked on this to be of sufficient quality as potential sources. In addition, the A*, A, B and C ranked journals meet the criteria for peer reviewed academic journals.

Table 2: *Showing the Inclusion and Exclusion Criteria*

Inclusion Criteria		Exclusion Criteria
Context	HRM professionals, human resource consultants, strategic HR management, strategy relating to HRM competencies	Personnel not directly involved in HRM functions, employees who do not work in HRM.
Intervention	Digital HRM functions including recruitment, machine learning, artificial intelligence, development, and training.	Non digital functions including compensation, benefits, health, and safety
Mechanisms	Digital HR functions and digital competencies, talent management, training and development, performance management, onboarding, recruiting and selection, career management, talent management	Non digital functions such as diversity and inclusion, health and safety compliance, employee conflict
Outcomes	Organisational performance, people performance, financial performance	Burnout, technostress, employees' wellbeing, emotions, attitudes, beliefs, feelings, job satisfaction
Additional Criteria	Articles written between 2019-2024 will be included. Articles used must be peer reviewed and written in English. Included articles are case studies, surveys, studies which reported on primary evidence, qualitative and quantitative data studies, questionnaires, focus groups and interviews. Systematic reviews are included are these articles provide synthesised bodies of literature and include information relevant to the specific area of research in human resource management. Articles need to be ranked journal on the ABDC Journal Quality List	Books and conference papers, thesis, and other grey literature with were not peer reviewed. Conceptual papers are excluded. Unranked journals are excluded.

2.1.2. Step 2- Locating studies

The database used for the search is Scopus. Scopus is a "comprehensive, multidisciplinary, trusted abstract and citation database." (Elsevier, 2025). The Scopus database was selected as it has peer-reviewed articles by experts in the field (Elsevier, 2025). Scopus informs strategic research decisions and increases research visibility whilst also allowing for research to be conducted based on multiple criteria such as year of publication, document type, keywords, language and a particular subject area. Test searches were conducted to determine the search terms for building the string to search Scopus. Development of the search string was built from the CIMO criteria in table 1. The search string that was used to conduct my research is as follows:

("Human resource management" OR hrm OR hr) AND (manager* OR consultant OR advisor OR employee OR talent) AND TITLE-ABS-KEY (("digital HRM" OR "e-HRM" OR "HRIS" OR "Human Resource Information System" OR "digital human resource management" OR "HRMS" OR "Human Resource Management System" OR digitisation OR "digital communication" OR ats OR "Applicant Tracking System" OR "Learning Management System" OR lms OR "HR Analytics" OR "HR Chatbots" OR "HR Workflow Automation Tools" OR "Digital Interview" OR "Social Media Recruitment" OR gamification OR "Onboarding" OR "Performance Management") AND TITLE-ABS-KEY ((competen* OR skill* OR abilities OR experience OR capabilities).

To identify the competency frameworks developed by HR professional institutions an ad hoc search strategy was adopted as these frameworks typically are not included in academic databases. A series of Google searches were conducted to locate the competency frameworks from HRM professional institutions in different countries. The inclusion criteria for the frameworks were that

they must be developed by a professional HRM institution, provide a classification of digital HRM competencies and cover a broad range of HRM functions.

2.1.3. Step 3- Study selection and evaluation

The study selection and evaluation process involved developing clear reasons for the inclusion and exclusion of articles. The inclusion and exclusion process enables transparency for readers and allows for the reviewer's evaluation and scrutiny (Denyer & Tranfield, 2009). The search string was input to Scopus and a file of all the potential articles, and their abstracts was generated. I downloaded the complete list of references from Scopus and uploaded this to the citation management software tool Endnote. I used Endnote duplicate identification to remove any duplicate records downloaded. Endnote was also used to record my screening and selection process from screening on title, then screening the abstract to uploading the full text for the final list of articles considered for inclusion.

The PRISMA diagram in Figure 1 illustrates the process of identification of potential references, screening out references that did not meet the exclusion criteria and then the inclusion of those that meet the inclusion criteria (Page et al., 2021).

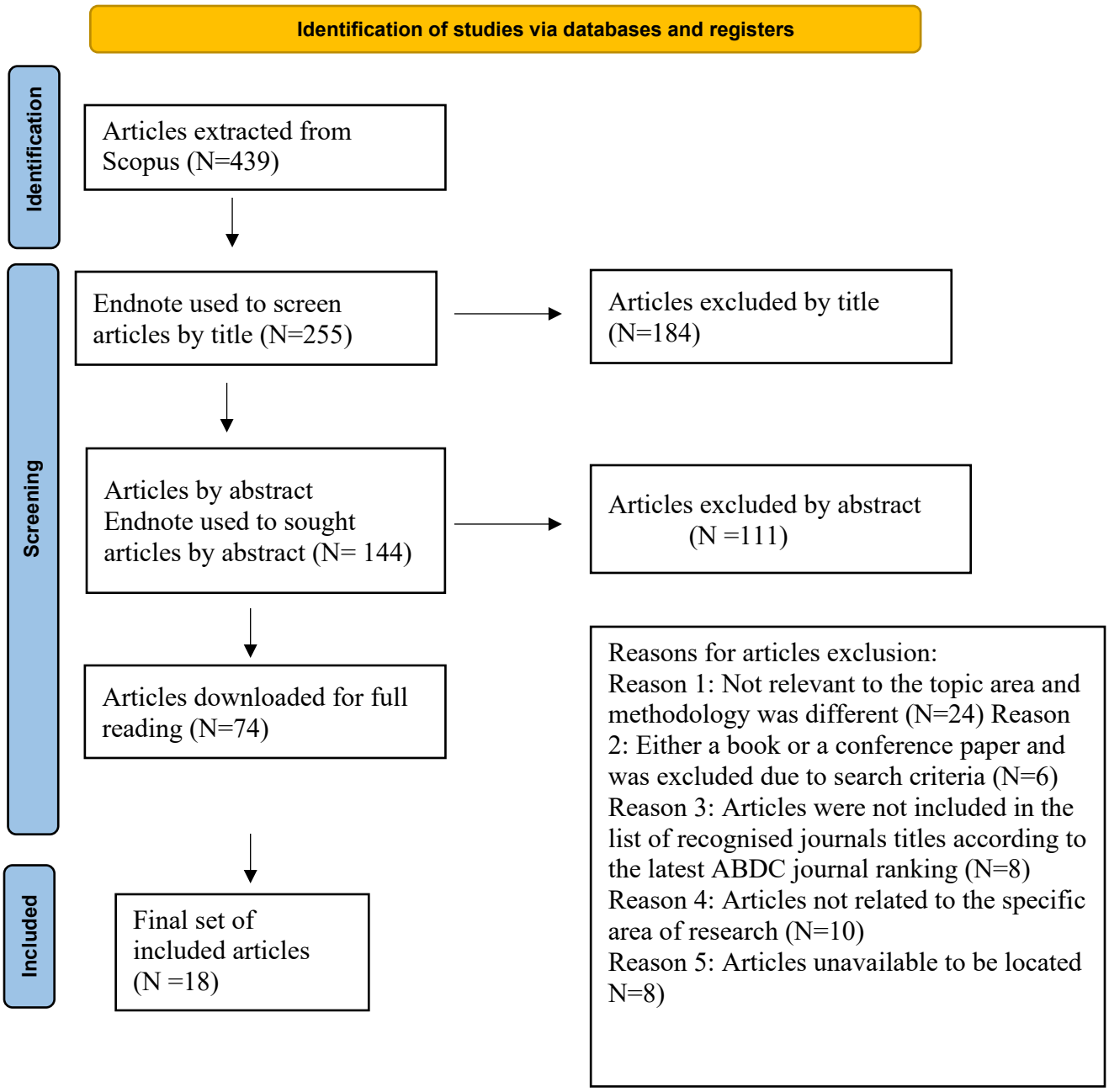
The first step-identification involved extracting the full list of references identified by the Scopus search engine as matching the search criteria (N=439). The second step is screening. Once the full list of references was uploaded to Endnote, references were screened by title and sorted in two categories, either exclude articles by title or include articles by title. I excluded (N=184) articles and included (N=255). Most of the articles were excluded as they were clearly not relevant to the

topic. I then read the abstracts of the remining references, and two additional categories were developed which were exclude articles by abstract and include articles by abstract. The number of excluded articles by abstract were (N=111) and the number of articles included by abstract was (N=144). The main reasons for exclusion were that the abstracts were not relevant to the topic and secondly the mention of digital skills and abilities was not the prominent feature of the articles.

The remaining 144 references were found and added to the Endnote library. Each article was skim-read to determine if the article met the inclusion criteria. After the skim reading process a further 70 articles were excluded. The reasons for exclusion were because there was not enough mention about digital competencies (N=40), and the second reason was that the specific HRM functions were not included (N=30). This reduced the articles to (N=74). A full reading was conducted of the remining 74 articles which resulted in a further 56 articles being excluded.

The reasons for exclusion in the screening process were as follows: Reason 1: Not relating to the topic area and methodology was different (N =24), reason 2: Either a book or a conference paper and was excluded due to search criteria (N =6). Reason 3: Quality screening- to ensure the quality of the articles used were consistent, quality screening was undertaken. Articles from non-ranked journals were excluded (N =8). Reason 4: Articles which were not related to my specific area of research were excluded (N=10). This included whether the article related specifically to HRM functions and referred to the use of technology. The final reason for exclusion reason 5: Full article PDFs were unable to be located and were excluded (N=8). The final number of full articles that met the inclusion criteria was (N=18).

Figure 1: *Prisma Diagram showing the process of article selection*



Note: This Prisma diagram was adapted from (Page et al., 2021).

Locating the HRM Practice Frameworks

I created a separate category for HRM competency frameworks from different countries (N=4). To search for the HRM frameworks, I conducted a Google search and found four HRM competency frameworks. The criteria for choosing the frameworks were that they had to include a variety of digital competencies, skills, HR functions and the HRM frameworks had to be recognised. The four competency frameworks which satisfied the selection criteria were the Australian framework, the Singapore framework, the United Kingdom framework and the New Zealand framework.

2.1.4. Step 4- Extraction of information and Analysis

To perform the extraction process on the selected articles, I read each article in full and extracted the key information and themes relating to competencies, skills, knowledge and abilities that HRM professionals need to have, to work with digital technology in their HRM function. The extraction process resulted in a list of recommended digital competencies, skills, knowledge, and abilities related to HR function/s. The information was stored and recorded on Endnote a reference management tool. I used this list to synthesise the findings. For the HRM competency frameworks, I repeated this process by reading the competency frameworks and supporting information provided by each HR institution. I then extracted the relevant information and themes related to digital competencies. These two files provided the data for the synthesis of the findings.

2.1.5. Step 5- Reporting findings and results

Denyer and Tranfield (2009) recommend that the findings section contains a summary of the data extracted from studies and discusses what is known and unknown about the research question. To

synthesize the findings from the academic literature I developed a table which focused on digital competencies knowledge, abilities and skills and the HR function/s. The HRM frameworks followed a similar layout, data was extracted based on key findings such as knowledge, skills, abilities and digital competencies considered important from different countries as well as the HRM function/s. Integration of information from the academic framework and the HRM institutional frameworks is combined to create a comprehensive analysis of the HRM skills and is discussed according to the four HRM functions.

CHAPTER 3: FINDINGS

In this chapter, I will first introduce the academic literature identified from the systematic search and selection process, this includes the journals used, the rankings of the journals according to the ABDC journal list and the number of articles from each journal. Second, I summarise the key points of each peer reviewed article. Third, I summarise the key findings from four HRM frameworks: Australia, Singapore, the United Kingdom, and New Zealand. Fourth, I will present a synthesis of the findings incorporating academic literature and HRM professional institution frameworks. The findings will be discussed according to the human resource functions: recruitment and selection, learning and development, performance management and talent management and HRM analytics. Finally, I will present HRM competencies which are required for all HR functions.

3.1. Academic Literature

I identified 18 peer reviewed articles in the systematic review based on my inclusion criteria. These articles identified different human resource functions and the associated digital competencies. The academic articles selected were published between 2020-2024. The participants for these studies were recruitment professionals, IT personnel, representatives of the HRM department, HR professionals and experts in human resources analytics (HRA).

Table 3 below is a list of the journals used in this research. I have included the latest ABDC journal ranking and the number of articles used from each journal. The journals are ordered according to the number of articles used, from highest to lowest.

Table 3: *Journal and Rankings*

Journal Title	ABDC ranking	Number of articles
Journal of Organization Change Management	B	3
Personnel Review	A	2
Journal of Organizational Effectiveness: People and Performance	B	2
German Journal of Human Resource Management	B	1
Human Resource Development International	B	1
International Journal of Manpower	A	1
International Journal of Productivity and Performance Management	B	1
Journal of the Knowledge Economy	C	1
Business Process Management Journal	B	1
Employee Relations	B	1
Management and Labour Studies	C	1
Information & Management	A*	1
Economic Studies	C	1
Journal of Management & Organization	B	1

3.2. Summary of academic literature

The eighteen academic articles discussed different human resource functions including recruitment and selection, talent acquisition, talent management, talent attraction, talent retention, human resources analytics, learning and development and performance management. A summary of key information for each HR function is provided.

In table 4 below I introduce the academic articles identified from the systematic review process. In the table I have summarised the research method, identified the country of research, and noted the digital competencies, abilities, skills and the HR function/s the articles discussed.

Table 4*:* Summary of academic articles

Article	Research Method and Country	Digital competencies, Abilities & Skills	HR Function/s
Böhmer & Schinnenburg. (2023)	Research method: Systematic literature review Country: Germany	Digital competencies- Artificial intelligence, algorithms, analytics, natural language processing systems, process automation, chatbots, HR analytics, understanding of software, programming, algorithms and data and analytic techniques AI consisting of machine learning and knowledge-based systems Skills- Developing new AI applications for interviews, interpreting skills	Recruitment Development Deployment Performance
Chugunova & Danilov. (2023)	Research method: Online survey Country: Germany	Digital competencies- Using digital technology to make algorithmic suggestions, artificial intelligence and machine learning Skills- understanding how to use digital communication and data analysis, artificial intelligence and machine learning, IT skills	Talent Acquisition
Dasari & Devi. (2024)	Research method: Systematic literature review, a deductive thematic analysis & semi-structured interviews	Digital competencies- Lack of effective software solutions, improper data, insufficient data sources or resources, absence of strategic thinking and competencies Skills- Analytical skills, change management	Human Resource Analytics

	Country: India		
Garg et al. (2021)	Research method: Semi-systematic approach Country: Not stated	Digital competencies- artificial intelligence and machine learning Recruitment Skills- Artificial intelligence and machine learning algorithms to develop a comprehensive recruitment model to assess candidates' professional skills Knowledge- Pythons Natural Language Processing Toolkit Selection- Machine learning to develop a selection criteria Training and development Skills- Machine learning such as developing chatbots to support training and act as personal career coaches to provide relevant training for employees. Programming skills to deploy chatbots to suggest training for employees. Training employees in AI driven technology Performance management Skills include machine learning algorithms to predict performance, using analysis and natural language processing	Recruitment, Selection, Employee Engagement, Training and Development, Performance Management, Employee Turnover,
Gilch & Sieweke. (2021)	Research method: Semi-structured interviews Country: Germany	Digital competencies- Include statistics skills, analytical skills	Recruitment , digital transformation

Guerra & Valle. (2024)	Research method: Survey Country: Spain	Digital competencies- Knowledge of artificial technology, digital leadership and digital skills including literacy, instrumental and managerial skills Skills- Leadership	Talent Management, Talent Attraction, Talent Retention
Kambur & Yildirim. (2022)	Research method: Literature review Country: Not stated	Digital competencies- AI-supported learning systems to support employees training needs through instructional tools Skills in recruitment- Artificial intelligence and machine learning to be able to conduct online tests. Knowledge in web-based training programmes Performance management- how to use systems to measure performance and write performance results Talent management and using machine learning programmes	Recruitment, Training and Development, Performance Management, Career Management,
Ratnam & Devi. (2024)	Research method: Not stated Country: India	Digital Competencies- Understanding people analytics, programming languages Skills- Statistical skills, data management skills, visualisation techniques, virtual learning Knowledge- Business acumen, understanding new software tools	HR Analytics
Ruiz et al. (2024)	Research method: Survey Country: Not stated	Digital competencies- Technical skills and technical proficiency. Skills- Developing e learning and mobile learning and conducting online training sessions	Digital HR Learning and Development

Shet. (2023)	Research method: Integrative reviews Country: Not stated	Digital competencies- Technical knowledge such as programming for augmented reality and chatbots. Social platforms and collaboration tools to facilitate knowledge sharing and analytics- and data-driven insights to optimise training strategies. Knowledge- Virtual and augmented reality can be used to enable learners to navigate complex scenarios in controlled settings. Video based learning and gamification for personalised content and competencies Learning chatbots to support learners and promote continuous learning Skills- Agility mindset, analytical competencies and problem-solving abilities, cross cultural collaboration and intelligence, continuous learning, cognitive flexibility to help people adapt to changing systems	Learning and Development
Sulej et al. (2024)	Research method: Questionnaire Country: Slovakia, Poland and the Czech Republic	Digital competencies- Include computer literacy, programming languages, and learning about industry specific platforms. Technical skills such as communicating and collaborating in virtual teams Skills required include analytical skills and soft skills	Digital Transformation, Digitalisation, Human Resource Development
Thakur et al. (2024)	Research method: Interviews Country: Not stated	Digital competencies- data analytics, Skills required- Analytical competency, business knowledge	HR Analytics

Tian et al. (2022)	Research method: Literature review Country: Not stated	Digital competencies- Machine learning and artificial technology Knowledge- Understanding machine learning systems & resume screening processes such as natural language processing techniques and data mining methods Skills- Understanding how to do text mining and understanding machine learning processes such as the keyword method and HR analytics and data science.	Recruitment, Staffing, Development, Performance Management and Compensation
Trivedi & Srivastava. (2023)	Research method: Questionnaire based survey Country: India	Digital competencies- Developing operational systems Skills- Training and development, skill-based hiring, employee engagement, organizational goals-based performance, and compensation practices. Control systems	Strategic HR practices
Ulatowska et al. (2023)	Research method: Questionnaire survey & Semi-Structured Interview Country: Finland & Poland	Digital competencies- Artificial intelligence together with cloud computing and big data. Machine learning tools and virtual reality. Skills- Artificial intelligence and Cloud computing, cognitive skills such as critical thinking and decision-making Knowledge- Recruitment tools such as the Robotic process automation (RPA) application, electronic Applicant Tracking System (ATS)	Recruitment
Wesche & Handke. (2023)	Research method: T&D process	Digital skills- Software in algorithms to assess job descriptions faster speech analysis, ability to implement e-learning modules, using content management systems. Knowledge of software systems to create virtual training via video conferencing of	Training and Development

	Country: Not stated	virtual simulations. Software can be used for performance assessment Skills- Conducting analysis regarding development needs, the T&D process includes organisational analysis, job-task analysis and person analysis	
Zhang & Chen. (2024)	Research method: Not stated Country: China	Digital technologies- Using social media platforms to conduct interviews and using intelligent algorithms and artificial intelligence in the field of selection recruitment Skills -adapt design thinking, use integration analysis, and carefully analyse software. Using electronic media and artificial intelligence for digital learning	Talent Selection, Training and Development
Zhou et al. (2021)	Research method: Questionnaires Country: China	Digital technologies- Understanding cloud computing, data visualization. Skills- Using E-HRM to influence employees' behaviour	No particular HR function

Learning and Development

Learning and development, also referred to in the literature as training and development, is "the planned and systematic activities designed to promote the acquisition of knowledge i.e. need to know skills and attitudes" (Wesche & Handke, 2023, p 2). Digitalisation has impacted the learning and development function by introducing modern teaching techniques such as online learning methods. Digitalisation is "the collection, processing, and communication of data in a machine-readable form" (Wesche & Handke, 2023, p3). The digital skill that learning and development professionals require is understanding software systems used for specialised functions. understanding software systems used for specialised functions. Knowledge of software systems are important because AI applications can provide a substantial benefit in HRM regarding educational purposes. This is because AI can provide a high degree of interaction with employees and improve learning opportunities (Kambur & Yildirim, 2022, ; Zhang & Chen, 2023, ; Shet, 2023).

Machine learning algorithm(s) is a digital competency which HRM professionals need to acquire. Machine learning allows the HRM professional to create virtual reality-based inductions for training of employees and to automate some of the training (Garg et al., 2021). Furthermore, machine learning as a digital competency opens new avenues for HRM professionals for example the development of chatbots to suggest training to employees throughout their careers thus acting as personal career coaches (Garg et al., 2021).

E-learning has been defined as training provided simultaneously to learners with instructional tools these being texts, graphics and online learning, video conference and interactive TV (Kambur &

Yildirim, 2022; Wesche & Handke, 2023). Modern learning utilises a broad range of technologies and platforms which have reinvented training therefore programming skills, as a digital competency is a vital tool for HRM professionals. The digital competencies required by HRM professionals for learning and development are machine learning and programming skills (Böhmer & Schinnenburg, 2023).

Talent management

"Talent management focuses on retaining and developing talent that has a positive impact on key employee aspects such as, job satisfaction, motivation, commitment and confidence" (Guerra & Valle, 2024, p7). Digitalisation is likely to change the talent mix within a company's workforce, and this may make talent acquisition difficult when digital skills are scarce (Chugunova & Danilov, 2023). It is essential for the professional to read, interpret and analyse the data and thus the need for technology literacy competencies.

Recruitment and Selection

The HR function which has undergone the greatest transformation by digitalisation is recruitment and selection. Recruitment refers to identifying and attracting potential employees (Gilch & Sieweke, 2020). The HR professional must be competent in programming skills and machine learning in order to navigate programmes and platforms utilised for recruitment and selection.

In recruitment a crucial step is resume screening to find suitable candidates. HR professionals require technology literacy competencies to use specific programmes e.g. use of a programme that can filter resumes. Recruitment and selection has undergone the greatest digital transformation.

Therefore, it is essential for HRM professionals to have digital competencies in machine learning and software algorithms and analytical skills (Garg et al., 2021; Tian et al., 2022). Tian et al., (2022) recommend that HR professionals need competencies in data science and machine learning to fully exploit the capability of AI systems in HR recruiting.

HRM Analytics

Analytics is the "extensive use of data, statistical and quantitative analysis, explanatory and predictive models" to drive fact-based management and guide decisions and actions (Thakur et al., 2024, p2). HRM analytics refers to using information technology to make decisions. Business analytics help in "leveraging opportunities presented by data in specific domains" (Thakur et al., 2024, p2). The competencies required by HRM practitioners include analytical skills and knowledge of interpretation of data.

The digitalisation of HRM has resulted in the development of strategic HR practices which focus on developing operational systems to enhance organisational goals and goal-based performance. Factors hindering the uptake of HR analytics is a lack of managerial buy in and a skills shortage in HRM practitioners (Ratnam & Devi, 2024). HR analytics adoption will allow HR departments to improve strategic and operational performance through more effective management. This includes moving from an instinct-based decision-making approach to a data-driven decision-making approach which supports efficiency (Ratnam & Devi, 2024).

The rate of technological change has created a huge gap between current capability of employees and the rapidly evolving requirements of their roles (Sulej et al., 2024). The digital competencies

required in HR analytics are statistical skills, data management skills, visualisation techniques, data modelling, text mining, understanding machine learning processes and data security (Ratnam & Devi, 2024).

3.3. Summary of HRM Competency Frameworks from HRM Institutes

In this section I summarise each HRM framework with a focus on the HRM function/s and outline the competencies and skills that the framework considers important. Table 5 outlines each HRM professional competency framework, discusses the HR function/s, the knowledge, skills and abilities and digital competencies considered essential. These frameworks were chosen as they provide a comprehensive outline of the essential skills and competencies for HR professionals.

A key finding from all the HR competency frameworks identified in this study was that the digital competencies required included an understanding of digital literacy and HR analytics. A further important finding was that non- digital skills such as business acumen being a change agent, strong communication skills, collaboration skills and problem solving are crucial for HRM personnel to ensure business success alongside all the necessary digital competencies (Department of Employment and Workplace Relations, 2022; SSG, 2018; CIPD, 2024; HRNZ, n.d).

Table 5 outlines the HRM frameworks, the HR function/s, knowledge, skills and abilities and digital competencies considered essential for HRM practitioners.

Table 5: *Summary of the digital competencies from HRM institutions*

HRM Frameworks	HR function/s	Knowledge	Skills and abilities and digital competencies
Australian Digital Capability Framework (Department of Employment and Workplace Relations, 2022)	Recruitment, Learning and Development, Talent Management	Data literacy, communication through digital platforms, technical proficiency and problem solving.	Skills- Problem solving capabilities in a digital environment. Identify capability gaps and developing learning and development actions to close these capability gaps. Abilities- Integrating information into professional practice and guiding others. Solving complex problems with digital information sharing platforms and tools Digital competencies: Data literacy, technical knowledge of digital information platforms and computing knowledge, technical proficiency
The Singapore Framework (SSG, 2018)	Recruitment, Talent Attraction, Talent management, Learning and Organisation Development	HR analytics and insights, human resource digitalisation, business acumen, creative problem solving	Skills in demand- Business and financial acumen, HR analytics and insights, technology integration collaboration Desired attributes- business-minded, change agent Digital competencies: Analytical skills, data mining analytical techniques, technical skills,
The Profession Map (CIPD, 2024)	Learning and Development, Talent Management, People Analytics and Recruitment and Selection	People centred, delivery of digital learning	Skills- business acumen, social media to design assessments to identify candidate suitability. Designing development programmes to ensure long term success for the business and add value to the business Abilities- Communication

			Digital Competencies: Computer programming, artificial intelligence, Data and analytics- people analytics
Human Resource Institute of New Zealand framework (HRNZ, n.d)	Learning and Development and Recruitment and Selection	No mention of digital competencies is outlined	Skills- Environmental awareness and situational assessment solving and design solution, risk management, collaborative problem solving, business acumen and change agent Abilities- Clear communication, solves workplace problems and understands and values people. Digital competencies: Not applicable

Australian Digital Capability Framework (Department of Employment and Workplace Relations, 2022)

The Australian Digital Competency Framework for workforce skills focuses on five digital areas. These are information and data literacy, communication and collaboration, digital content creation, protection and safety, technical proficiency, and problem solving (Department of Employment and Workplace Relations, 2022).

Information and data literacy relates to the human resource functions of recruitment and talent management. The digital competencies an HR professional should have for information and data literacy is technology literacy. By being proficient with various operating systems HR managers can integrate information to contribute to professional practice (Department of Employment and Workplace Relations, 2022).

Communication and collaboration skills include using a variety of communication platforms and methods which require technical competency and knowledge of digital information platforms to guide and collaborate with others (Department of Employment and Workplace Relations, 2022).

Digital content creation can be implemented into the HR function Learning & Development. HR managers must be competent in creating digital content for the purpose of staff training and development (Department of Employment and Workplace Relations, 2022). Digital competencies required by HRM professionals include knowledge of integrating new digital content and a basic understanding of computer programming (Department of Employment and Workplace Relations, 2022).

Protection and Safety refers to knowledge about privacy and confidentiality, protecting devices and digital content, and understanding risks in the digital environment. This is an important consideration for HRM professionals; however, this is not a digital competency (Department of Employment and Workplace Relations, 2022).

Technical proficiency and problem solving refers to analysing technical needs and developing responses to these as well as identifying and resolving problems with digital devices within a digital environment (Department of Employment and Workplace Relations, 2022). Digital competencies include understanding how technology works such as operating digital devices and tools (technology literacy). Technical proficiency and problem solving can be applied to the learning and development function such as analysing gaps in knowledge and providing opportunities for learning and development for employees to reduce digital capability gaps (Department of Employment and Workplace Relations, 2022).

Overall, the Australian Digital Capability framework provides a good understanding of key digital competencies for the workforce. Built into the framework is a proficiency level (level 1 – 8) from foundation to specialised. The skills at each of these levels is explicitly stated. This provides an understanding of an individual's current competency level and the skills that are required to progress to the next level. However, this framework provides a general overview of digital competencies and is not specific to HRM.

Skills Framework for Resources in Singapore (SkillsFuture Singapore, 2018)

The Skills Framework for Resources in Singapore (SSG, 2018) for HR professionals is aimed at supporting continuous learning and professional development. This framework focuses on different roles within the field of HR. The HR fields I will focus on include talent attraction, talent management and learning and organisational development.

Talent attraction involves managing high-performing individuals and developing organisation wide career progression. Talent management also involves succession planning such as identifying individuals to ensure continuity in the business and future growth (SSG, 2018). To be effective in their role, HR professionals must have the following digital competencies: analytics, interpreting business insights and technology operations as their role involves utilising data mining tools (SSG, 2018).

Talent management is developing and implementing talent management programmes in order to fulfil current and future business requirements. An essential digital competency is analytical skills, which involves gathering and analysing talent related data and deriving insights on the effectiveness of talent management programmes (SSG, 2018).

The learning and organisation development function involves designing learning and development programmes to equip individuals with the appropriate capabilities (SSG, 2018). Digital competencies for HRM include analytics and insights such as use of data mining tools and HR metrics benchmarking. Technology and operational competencies are required for learning and organisation development to lead transformation programmes, by incorporating changes in

strategy, structure, people, process and systems, with the goal of achieving operational excellence (SSG, 2018).

The Singapore framework outlines that the digital competencies required by HRM professionals are analytical skills and insights and data mining skills to create management information. The strengths of this framework are that it is comprehensive and outlines the digital skills required by HRM professionals. A disadvantage of this framework is that the technical skills and competencies are arranged according to levels however there is no key which indicates what the different levels mean or the type of requirements at the various levels.

The Profession Map for the people profession (CIPD, 2024)

The Profession Map for the people profession is the HR framework which is used in the United Kingdom. The areas of specialist knowledge include learning and development, talent management, resourcing and people analytics. This framework also examines core knowledge which includes business acumen and technology and people (CIPD, 2024).

The digital competencies which HR professionals require relate to artificial intelligence to create AI strategy and governance processes which promote responsible decision-making (CIPD, 2024). The learning and development function requires human resource practitioners to have digital competencies regarding machine learning, and technology literacy. Digital knowledge of how to use current digital technology is vital.

Talent management is maximising potential through talent identification and engagement (CIPD, 2024). Resourcing involves identifying, attracting, and recruiting the right people (CIPD, 2024). The digital competencies required to perform this function successfully include digital technical competencies for recruitment purposes (CIPD, 2024). Another digital competency required is digital literacy e.g. proficiency in navigating social media platforms for recruitment of candidates (CIPD, 2024).

People analytics uses data about people and the business to help inform business decision-making (CIPD, 2024). Digital competencies for HRM include data analysis such as collecting, organising and understanding data, understanding data technology and platforms, data science and analytical skills. Understanding information technology enables the creation and interpretation of basic people data models to show changes over time.

The profession map outlines the digital competencies required by HRM professionals are understanding artificial intelligence and understanding information technology to enable the creation and the interpretation of basic people data. This framework is comprehensive and outlines digital competencies that HR professionals should be familiar with. A weakness of this framework is that there is limited information that is specific to HR.

Human Resource Institute of New Zealand Framework (HRNZ, n.d)

In New Zealand the HRNZ Framework is aimed at HR professionals. This framework highlights skills which are considered important such as environmental awareness and situational assessment, solving and design solutions, risk management, collaborative problem solving, goal setting,

business acumen and being a change agent (HRNZ, n.d). These skills allow for tasks such as collaborating with different business units to achieve broader organisational goals. The abilities are clear communication skills, solving workplace problems and understanding and valuing people (HRNZ, n.d).

The HRNZ framework outlines skills which are needed by HR professionals. However, this framework does not discuss the digital competencies HR professionals require. This is a concern as the future direction of HRM involves understanding digital competencies. The HRNZ framework has not kept pace with developments in the field of technology and appears to be out of date. A refresh is needed.

A key finding from the Australian framework, the Singapore framework and the United Kingdom framework is that the digital competencies required are digital literacy, machine learning and HR analytics. A further important finding is that non-digital skills (core skills) such as business acumen being a change agent, strong communication skills, collaboration skills and problem solving are crucial for HRM personnel to ensure business success alongside all the necessary digital competencies (Department of Employment and Workplace Relations, 2022; SSG, 2018; CIPD, 2024).

3.3. Digital Competency Literature Synthesis by HRM Function

This section synthesizes the digital competencies for different HRM functions. The HR functions examined are recruitment and selection, learning and development, performance management, talent management and HRM analytics. I will first introduce the HR function, second, I will

integrate knowledge from the academic literature and the competency frameworks to discuss the skills and digital competencies considered important for HR professionals. This synthesis will analyse the key skills, knowledge and abilities required for each HR function.

3.3.1. Recruitment and Selection

Recruitment and selection have been grouped together as the digital skills required for both functions are interlinking. Recruitment and selection have been widely transformed by the introduction of HRM digital technologies which has helped to improve the efficiency and effectiveness (Zhou et al., 2021).

In recruitment and selection, the key skills are digital literacy, understanding and using artificial intelligence and machine learning skills (Tian et al., 2022). Digital literacy is important as recruitment has moved to internet-based platforms such as LinkedIn, Glassdoor, Indeed and Skype (Tian et al., 2022; Zhang & Chen., 2024). The use of social media to source candidates' digital assessment approaches is also vital in recruitment (CIPD, 2024).

Knowledge and skill in harnessing AI technology allows the recruiter to design online interviews and simulations which help to evaluate candidates' critical thinking and decision-making abilities (Kambur & Yildirim, 2022). Recruitment and selection professionals will need knowledge of machine learning and the use of AI in designing aspects of the recruitment and selection process.

Machine learning skills refer to the ability to use specific tools during the recruitment process e.g. electronic Applicant Tracking System (ATS) (Ulatowska et al., 2023). HRM professionals require

skills or at least an understanding of how these tools can be embedded in an applicant track system to gain efficiency.

In addition, communication skills, analytical skills, strong decision-making skills and business acumen are identified as vital skills in recruitment and selection (HRNZ, n.d.; SSG, 2018).

3.3.2. Learning and Development/ Training

Learning and development refer to planned, systematic activities designed to encourage the acquisition of knowledge, skills and attitudes among employees (Wesche & Handke, 2023). The essential digital skills which are required in learning and development are machine learning skills, knowledge of digital technology (SSG, 2018) and artificial intelligence embedded technology to enhance people practices and support responsible decision making (CIPD, 2024).

Machine learning can assist by automating several steps of the training process (Garg et al., 2023). There is also greater use of more applied e-learning and electronic media such as computers for learning (Zhang & Chen, 2024). The use of e-learning has allowed the learning and development process to be continuous and allows employees to learn at a time and location which is convenient. Delivery through different media is instantaneous and the learning process can be more interactive (Kambur & Yildirim, 2022).

Human resource professional need to have knowledge of digital systems and the use of electronic media to facilitate learning. One of the responsibilities of the HRM professional within the learning and development function is to identifying talent gaps and generate learning and post-learning reports. Understanding and using digital technologies will assist the HR professional to create

learning and development programmes. Within the domain of learning and development content curation is a necessary digital skill outlined by the Profession Map (CIPD, 2024). This involves selecting the right digital approach and presenting content to support effective learning (CIPD, 2024).

3.3.3. Talent Management and Performance Management

Talent development is defined as "a process that enables a company's employees to demonstrate their potential, pursue a satisfying career path, and assist the company's development" (Kambur & Yildirim, 2022, p6). Talent management focuses on retaining and developing talent which has a positive impact on key employee factors like- job satisfaction, motivation and commitment (Guerra & Valle, 2024).

The purpose of performance management is to monitor employee behaviour and ensure compliance with organizational goals (Kambur & Yildirim, 2022). Performance management knowledge is understanding machine learning algorithms and how this can be used to collect and process employee data. The data collected can be used to make informed decisions regarding employee behaviour in relation to organizational goals. The development of technologies such as E-Systems has meant that AI can be used to evaluate performance (Kambur & Yildirim, 2022).

The digital skills required for talent management and performance management overlap and therefore the digital competencies have been grouped together. The digital skills required are data technology, including technical and computing knowledge related to data mining tools (SSG, 2018) and analytical skills (Department of Employment and Workplace Relations, 2022). The use

of development programmes ensures that talent develops and creates value for the organisation (CIPD, 2024). By using analytical skills, the talent data, informs the organisation's workforce planning strategy (CIPD, 2024).

Both the academic and the HRM framework indicate the importance of the core skill, business acumen.

3.3.4. HRM Analytics

Human resource analytics (HRA) is a newer term which was coined in 2003 (Dasari & Devi, 2024). Definitions of HRA include focussing on outcomes such as enhancing individual and/or organizational performance, making better decisions related to the workforce, increasing employee productivity, and data-driven decision-making (Dasari & Devi, 2024 ; Professional map, 2024). The key digital skills in HR analytics are statistical skills, data management skills, visualisation techniques, data modelling, text mining, understanding machine learning processes and data security (Ratnam & Devi, 2024).

Data management skills involve data analysis such as collecting, organising and understanding data, understanding data technology and platforms, data science and analytical skills. This prevents instinct-based decisions and allows decisions to be made and communicated in a compelling way (Thakur et al., 2024). Making data driven decisions instead of instinct or experience can add value to the business (Thakur et al., 2024). HRM professionals, whether beginners or experts need a broad range of analytical skills (Ratnam & Devi, 2024).

Alongside the digital skills needed for HRM analytics, business acumen, psychology skills and change management skills are equally valuable (Dasari & Devi, 2024).

Regarding data security, knowledge of safety and privacy laws are essential to mitigate risks in the digital environment (Department of Employment and Workplace Relations, 2022). As digitalisation continues to expand in the coming years, and analytics is fully incorporated in the HRM domain, training and data security will be considered as essential competencies (Department of Employment and Workplace Relations, 2022).

Some of the barriers in HRM analytics is a lack of managerial buy-in and a shortage of skilled professionals in this field (Shanti & Devi, 2024). Perhaps the biggest hurdle that HRM analytics needs to overcome is convincing business management and employees of its value and employee adoption (Ratnam & Devi, 2024). Alongside the above digital competencies HRM professionals should obtain basic digital skills such as computer literacy, and use of specific digital skills, such as programming languages (Sulej et al., 2024). The types of digital skills include using internet-based communications such as videoconferencing as well as online collaboration tools to increase employees' opportunities to learn, communicate and collaborate in virtual teams (Sulej et al., 2024).

3.4. Summary

The HRM competencies according to both the academic literature and the global HR competency frameworks indicate that the essential digital competencies for HRM professionals include understanding machine learning systems which can be used to develop training programmes, computer processing language, use of artificial intelligence and data analytics which includes collecting, interpreting and reporting key findings based on data to make informed business decisions. In the digital era it is important that both the academic literature and the global HR

competency frameworks are integrated as together they provide a comprehensive overview of the skills and digital competencies that are required by the HRM professional in the 21st century.

CHAPTER 4: DISCUSSION AND SYNTHESIS

The discussion and synthesis chapter discusses the findings from chapter three. Firstly, I will provide an answer to address the research question. Table 6 illustrates the core HRM competencies and the digital competencies for HRM professionals in the 21st century. Second, I will discuss future research directions based on the research topic and strategic implications for HRM professionals. Additionally, a critical review of academic literature and HRM frameworks which examines similarities and differences. Finally, recommendations to HR practitioners, HRM training providers and HRM professional institutions are outlined. Table 7 illustrates the core skills and digital competencies required by HRM professionals in relation to different HRM functions.

4.1 Answer to the Research Question based on Synthesis of the Literature

This dissertation aimed to answer the research question: What digital competencies are identified as important for HRM professionals in the academic and practice literature?

According to information from the academic literature and the HRM frameworks the digital competencies for HRM professionals which are considered essential are: analytical competencies such as data skills, machine learning skills, understanding artificial intelligence, computer programming skills and languages. In the 21st century the continuously evolving digital era means that the digital skills which HRM professionals require are continuously changing.

According to the HRM institutional frameworks, the digital competencies that are considered essential are: machine learning systems, basic programming skills and understanding artificial intelligence. An important skill for HRM professionals is developing strong analytical skills

including collecting, analysing and presenting key data findings to assist in the decision-making processes. It is essential for HRM professionals to be proficient with integrating technology into business processes as they take on the role of a strategic business partner.

Table 6 outlines the core HRM competencies and how the digital competencies have been integrated.

Table 6: *Core HRM competencies and the digital competencies*

Core HRM Competencies	Core competencies incorporating digital competencies.
Communication skills	The ability to navigate various digital platforms for the purposes of communicating with others e.g. LinkedIn, Skype and Indeed effectively for attraction of candidates.
Problem solving skills and decision-making skills	Understanding how to use HR analytics together with artificial intelligence to make informed decisions which are data driven.
Business acumen	Knowledge on how to use different online platforms to increase efficiency and effectiveness operate, –having digital skills which can create value for a business.
Strategic thinkers	Aligning the training with the business' strategic goals. This includes future needs of both the business and employees. Understanding digitalisation and future trends in digital HRM.
Skills development	To facilitate the delivery of training through the best media employees need digital skills to understand machine learning systems and programming skills for specific training for different employees. Technical skills are required for developing training programmes. Digital skills also help to identify skills gaps and ways to bridge the gap.

4.2. Future Research Directions

Based on the findings and the limitations of this study I believe areas for future research directions would be to identify which digital competencies improve the performance of HRM professionals. Consideration could also be given to factors that hinder the integration of digital technology in HRM. Research in this avenue may help to explain why digital technology has not penetrated all HRM functions. Another avenue for research is examining which digital competencies are necessary in the field of HRM analytics. Currently, information is limited as HRM analytics is still an emerging field.

4.3. Strategic Implications for HRM

The use of digital tools has become key to ensuring that strategic decisions are made, and value is created for a business (Ulatowska et al., 2023). The use of artificial intelligence technologies complements human employee interactions and provides training and feedback to support employees (Kambur & Yildirim, 2022). To reap the benefits of digitalisation, HRM professionals need to have adequate digital competencies.

Information transformation can be used to actively guide employees and help to guide effective behaviour (Zhou et al., 2021). The utilization of HRM analytics indicated improved job performance, organisational innovation and financial performance (Thakur et al., 2024). It is important that the competencies of human resource managers align with digital transformation and the strategic decisions of the business. Digital technology has allowed the business to access talent gaps and the skills required by different individuals to perform their role more effectively and

efficiently. HRM professionals can develop programmes to ensure individuals have the right capabilities to prepare them for the work they are required to complete (SSG, 2018).

Implementing digital technologies can also reduce costs such as the costs associated with face-to-face training programs and provide feedback during training. Strategic HR practices attract, develop, motivate, and retain the most capable employees and create human resource-based competitive advantage and achieve organizational goals (Trivedi & Srivastava., 2023).

4.4. Critical Review of Academic Literature and HRM Frameworks

From the information collected after reviewing the academic literature and HRM frameworks there are radical changes in the field of human resource management due to the introduction of digital technology. Digital technology is more integrated in some functions of human resources than others resulting in disproportionate research across the various domains of HR. In each article the amount of information provided varies from specific skills to broad overarching skills. The amount of research conducted on recruitment and selection is greater than all the other human resources functions. A possible reason for the gap in research is that digital technology is still being developed and needs to be integrated into the different human resources functions.

The amount of information from each HRM framework differs which makes finding similarities challenging. A common trend from the frameworks was that digital competencies such as data analytics and machine learning are now considered essential skills for an HRM professional. Core skills that are considered essential include business acumen and a change agent.

The New Zealand HR framework was included, as the research is being conducted in New Zealand, and it is important to consider how the local HRM framework compares to other global frameworks. The New Zealand framework does not contain any specific mention of digital competencies rather it outlines core skills that HRM professionals should acquire. This finding is significant as it shows that the framework is not reflecting the digital competencies required by HRM professionals. This framework is simply not keeping pace with the rapidly changing digital landscape.

Both the academic literature and the HRM frameworks consider the following digital competencies key: analytical capabilities, data modelling, artificial intelligence, programming languages and machine learning. The HRM institutional frameworks and the academic literature share common non digital traits-these being critical thinking and problem-solving skills, collaboration skills, business acumen and change management.

One of the differences between the academic literature and the HR frameworks is that some HRM frameworks do not provide context for how the digital skills can be utilised within each HRM function. The academic literature provides more context by outlining the HR function and the required digital skills and competencies. A second difference is that the digital competencies of the HRM frameworks are broad ranging and not specific.

4.5. Recommendations

4.5.1. Recommendations for HRM Professionals

Based on the findings from the academic literature and the HRM frameworks an underlying finding is that HR practitioners need to have a broad range of digital competencies such as analytical skills, machine learning skills, technology skills and technical skills such as programming. HRM professionals need to be proficient in these skills. In addition, HRM professionals also require a strong set of core skills such as communication, problem solving skills and strategic thinking to be effective in their roles.

HRM professionals need to be continuously updating their digital skills to keep abreast of the developments in the digital environment. Learning and development can be through open online course platforms or through universities offering courses to obtain the necessary training and certifications. HR professionals can attend reskilling programmes to help acquire the necessary knowledge and competencies to take on new roles.

4.5.2. Recommendations for HRM education providers

Education providers can partner with businesses to gain a better understanding of real-world digital competencies necessary in the workplace. By incorporating these digital competencies into current curriculum, students will be better equipped with relevant knowledge, skills and abilities to be effective in the workplace. It is vital that the digital competencies that training institutions teach are relevant for current HRM professionals.

4.5.3. Recommendations for Professional HRM Institutions

HRM institutions must ensure that the digital skills required by HRM professionals are continuously updated and relevant to the current needs of businesses and that these frameworks provide a comprehensive overview of each HR function and the digital competencies required. HRM institutions can conduct an analysis to track the latest technology developments in the HRM field and identify digital competencies required. HRM institutions can examine frameworks from other countries to develop a more comprehensive and robust framework which is comparable to other HRM frameworks globally.

In Table 7 I have illustrated the digital competencies and core skills required by each HRM function. The table illustrates that all the HRM functions require a combination of different skills and digital competencies meaning that there is a cross over of skills. This illustrates HRM professionals need to be trained in both core and digital skills.

Table 7: *Core skills and digital competencies required by current HRM professionals*

Digital Competencies & Core Skills	Business Acumen (core)	Problem Solving Skills (core)	Collaboration Skills (core)	Machine Learning (Digital)	Analytical Skills (Digital)	Artificial Intelligence (Digital)	Programming Skills and Language (Digital)
HRM Functions							
Recruitment and Selection	✓	✓		✓		✓	✓
Learning and Development	✓	✓	✓	✓		✓	✓
Talent and Performance Management	✓		✓	✓	✓	✓	✓
HRM Analytics	✓			✓	✓	✓	✓

Note: A tick (√) is used to indicate that a particular digital competency or core skill is needed by the HRM professional

CHAPTER 5: CONCLUSION

This chapter outlines the limitations of the research conducted, provides a summary of the dissertation and the contribution to research in the HRM field. Finally, a conclusion regarding the skills and digital competencies required by HRM professionals for success in their roles in the 21st century.

5.1. Limitations of the research conducted

The primary limitation in my research is the pace of change of digitalisation in the HRM field. This has meant that research completed as recently as 10 years ago could well be out of date today. This means with the lag of completing and then publishing academic research it was very difficult to find current research that reflects current or future HRM technology. My research focused on academic literature from the last 5 years thus excluding articles published prior to 2019 to ensure only the most current research was considered. However, the effect of this was identifying a small number of articles (n=18) that provided insight to the topic and much of this was potentially obsolete due the advancements in AI in 2024.

Further to this I only selected articles from ABDC journal rankings, and this reduced the number of articles available. It was notable that there was a large amount of published literature on this topic that was of poor quality or was published in the grey literature. I would recommend a next step would be to review and integrate the recommendations from the grey literature as much of this was written by practitioners and technology providers. In this study I was only able to identify four HRM competency frameworks, the made mention of digital skills, abilities and knowledge. I recommend that future researchers conduct a more extensive search of the competency

frameworks adopted or being worked on by HR institutions and professional bodies throughout the world. This could be done by contacting each of the organisations directly and asking them to share any current or future plans to include or update their recommendations around digital competencies in HRM.

A final limitation was that the literature I identified only focussed on a limited range of HRM functions, those being recruitment and selection, learning and development, performance and talent management and HRM analytics as these functions are mostly digitised. This could be an effect of these functions being the most digitised or it is possible these are more interesting to research and publish. Therefore, to better understand how digital change is affecting the competency requirements of HRM professionals I recommend conducting empirical research with HR departments and professions.

5.2. Summary of dissertation

From the research conducted- in the field of human resource management, the domain of recruitment and selection is the most digitised HRM function. The role of HRM has changed from a talent management role to a business partner role (Garg et al., 2023). The rise of digitisation has meant that HRM professionals must acquire new digital skills to successfully navigate the continuously evolving field of HRM which is now the second highest digitised business function after finance (Chugunova & Danilov, 2023). Achieving the aim of this study required the following research questions to be addressed: What are the digital competencies for human resource management professionals in a digital transformational era? This chapter collates the key insights from the review in relation to this research question.

A systematic literature review was conducted using the CIMO framework. Inclusion and exclusion criteria were created along with a search string with keywords. Scopus was the database used to select articles. To ensure quality screening, peer reviewed articles according to the ABDC journal ranking were used. Four global HRM competency frameworks were selected, which provided information on the competencies that institutes consider important for HRM professionals. A Prisma diagram illustrates the process used to select the articles.

Eighteen articles from academic peer reviewed journals were analysed and the information synthesised. A summary of the main information from the academic articles was provided. In addition, four global HRM competency frameworks from Australia, New Zealand, the United Kingdom and Singapore were discussed. The four HRM competency frameworks were selected for their comprehensiveness as they provide a broad range of competencies that HRM professionals can be expected to possess. The HRM functions which were examined were: recruitment and selection, learning and development, talent and performance management, and HRM analytics. Each HRM function was discussed outlining the skills, knowledge and abilities and digital competencies according to the academic articles and the HRM competency frameworks. Cross-cutting competencies were discussed regarding skills which are needed across all HRM functions.

The discussion and synthesis chapter presented a table of the core competencies and the digital skills that HRM professionals need to be successful in their roles. In addition to a critical review of the findings from the academic literature describing the differences and similarities among the HRM frameworks, Chapter 4 also discussed limitations of the study, outlining, areas for future

research, as well as presenting insights and strategic implications for HRM professionals and recommendations for HR practitioners, HRM education providers and professional HRM institutions.

5.3. Contribution to research

The research shown in this dissertation underpins that there is a gap in the digital competencies that current HRM professionals have and the competencies that are required. Employers require HRM professionals to have digital skills as well as core competencies to successfully perform in their role. As technology continues to evolve businesses should offer HRM professionals continuous learning and development throughout their careers to ensure that they can perform their role optimally. A suggestion to bridge the competency gap is for universities to incorporate more digital HRM related competencies and skills into their current and future curriculum in addition to the core skills which HRM professionals are required. HRM institutions must ensure that the digital skills required by HRM professionals are continuously updated and relevant to the current needs of businesses and that these frameworks provide a comprehensive overview of each HR function, and the digital competencies required.

5.4. Conclusion

This study has indicted that the role of HRM has evolved in the 21st century and the integration of digital technologies has meant that HRM professionals need a broad range of digital skills to be successful in their role. The academic literature reviewed in the study outlines the core digital competencies for HRM professionals being machine learning skills, an understanding of artificial intelligence, and digital literacy that includes analytical skills, programming skills and an

understanding of programming language. The HR competency frameworks identified digital competencies such as analytical skills and machine learning skills for professionals to be successful in the 21st century. In additional both the academic literature and the HR competency frameworks identified communication, problem solving skills, collaboration skills, strategic decision-making skills and business acumen, as core competencies which can be integrated with new digital competencies. Overall, further research in the field of human resource management is needed to comprehensively understand the requirements in this continuously evolving environment. The findings of the study indicate that HRM professionals will require continuous reskilling and upskilling to be competent in their role in the digital work environment.

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Note: an asterisk * is used to denote which of the following articles was identified in the systematic search process

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