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Scientometrics and Systematic Trend Analysis of Studies on Human Resource Managers' Competencies: Presenting a Comprehensive Knowledge Network Map

ABSTRACT

In today's dynamic and challenging landscape, human resource managers serve as the operational and intellectual arms of strategic leadership, playing a pivotal role in creating sustainable competitive advantage. This study aimed to develop a comprehensive knowledge network map and analyze research trends in the field of human resource managers' competencies by employing a scientometric methodology and a mixed-methods approach. The qualitative data were collected through a review of domestic and international scientific articles and studies based on the PRISMA technique, while the required quantitative data were retrieved from domestic databases including Magiran and Noormags, as well as international databases such as Scopus and Web of Science, during the period from 1995 to 2025. After applying screening criteria—including thematic relevance, full-text availability, and being research articles—245 articles were ultimately selected for final analysis. Data were analyzed using VOSviewer through co-word and co-citation analyses. Findings revealed that scientific production in this field has accelerated since 2015, and seven main thematic clusters were identified: (1) human resource management in sensitive environments, (2) creativity and innovation strategies, (3) training development and competency assessment, (4) digital-era competencies, (5) soft skills and emotional intelligence, (6) intellectual capital and competitive advantage, and (7) competency development tools during transformational transitions. The Sustainability journal was identified as the most influential source in this field, having published 34 articles and received 574 citations. The study's findings indicate the gradual maturation of the research domain concerning human resource managers' competencies. By providing a comprehensive scientific map, this study offers an appropriate framework for future research and can be utilized by policymakers and managers of service and industrial organizations in designing strategies to develop human resource managers' competencies.

Keywords: Scientometrics, Competency, General Competency, Technical Competency, Human Resource Managers.

Introduction

Competency-based human resource management (HRM) has re-emerged as a strategic lever for organizational resilience, innovation, and sustainable performance in the face of digital disruption, geopolitical uncertainty, and skills turbulence [1, 2]. Building on classic competency theory that linked observable clusters of knowledge, skills, and attitudes to effective performance, contemporary organizations now require integrative portfolios that combine technical depth with behavioral agility and ethical judgment, embedded in data-rich workflows and platformized business models [1, 3, 4]. The present study addresses this inflection point by mapping and synthesizing managerial competency research across sectors and contexts,

with particular attention to digital transformation, Industry 4.0 adoption, public-sector modernization, and crisis preparedness [5-8].

Recent advances in analytics and artificial intelligence (AI) are reshaping the unit of analysis for competencies—from static role profiles to dynamic capability systems that can be inferred, predicted, and continuously developed using organizational data streams [5, 9]. Knowledge graph construction for talent and competency prediction demonstrates how HRM can integrate heterogeneous evidence—projects, credentials, performance artifacts—into explainable, updatable maps of managerial fit and potential [5]. Scientometric reviews of digital technology applications likewise show rapidly evolving research fronts and methodological challenges, including fragmentation across domains and the need for crosswalks among competency taxonomies [3, 9]. Parallel work on large-language-model ecosystems highlights the pedagogical and assessment implications of generative tools, requiring that competency frameworks encompass AI-supported learning, evaluation validity, and responsible use [10, 11].

Sectoral studies underscore that competency demands are context-sensitive and path-dependent. In healthcare, employer evaluations of graduates' competence profiles point to mismatches between curricular outcomes and operational realities, especially in digital health and interprofessional coordination [12, 13]. National surveys reveal development needs among hospital managers that blend systems leadership, analytics literacy, and stakeholder engagement [14]. In energy and utilities, competency models for gas refineries and distribution companies surface capabilities in safety governance, asset integrity, and data-enabled maintenance, coupled with behavioral reliability under risk [15-17]. Defense, logistics, and oil-terminal operations require robust frameworks for mission assurance, secure information flows, and project execution in high-stakes environments [18-20]. Across municipalities and government organizations, competency architectures increasingly emphasize public value creation, ethical stewardship, and crisis leadership, reflecting the governance responsibilities of managerial roles [21-23].

Digitalization intensifies the salience of hybrid profiles that join technical and social competencies. Empirical and review studies in construction, manufacturing, and project-based industries show that managers catalyze Industry 4.0 adoption through ambidextrous behaviors—exploitation of legacy processes and exploration of emerging technologies—supported by communication, learning orientation, and stakeholder alignment [6, 24, 25]. Project managers' digital-era competencies increasingly include data acumen, platform orchestration, and distributed team leadership, blending "hard" methods with "soft" influence mechanisms [24, 26]. Systematic reviews highlight how AI-focused technologies reshape HR roles, displacing routine tasks while elevating design, interpretation, and change-leadership capabilities [7, 27]. In public administration settings, AI-driven HRM correlates with organizational resilience when managerial competencies encompass ethical risk appraisal, stakeholder communication, and adaptive decision cycles [7, 28].

Education and professional development ecosystems are pivotal in generating these competency mixes. Meta-frameworks and scale-development guidance emphasize contextualized measurement, multi-source validation, and alignment with job families to ensure transportability and fairness [28, 29]. Higher education reforms—from competency-based business curricula to DigCompEdu adoption and problem-based learning—report gains in generic skills when pedagogy intentionally integrates reflective practice, interdisciplinary problem-solving, and authentic assessment [30-32]. Engineering education linked to the Sustainable Development Goals and sport/health programs targeting employability further document systematic approaches to transversal skills, including collaboration, systems thinking, and client orientation [33, 34].

Diagnostic instruments and context-based scales are advancing, but they must now incorporate AI-mediated learning pathways and simulation-rich environments [10, 28].

Organizational studies converge on the performance, innovation, and competitiveness payoffs of well-specified managerial competencies. Evidence across SMEs and public entities indicates that strategic orientation, inventory and operations management, and customer-centric design are strengthened when managerial skill portfolios integrate analytics, opportunity recognition, and execution discipline [35-37]. Market dynamism conditions the innovation–performance link, elevating the value of sensing, learning, and recombinative capabilities among managers [38]. In emerging economy contexts, competency impacts have been documented for SME creation, employee performance, and service-sector value realization, with mediators such as motivation, compensation, supervision quality, and work environment [39-41]. Studies of start-up service businesses and urban transport reveal foundational competency models emphasizing entrepreneurial orientation, stakeholder engagement, and digital customer journeys [42, 43]. Within government organizations, structural-equation and qualitative designs point to value-creation logics that connect managerial competencies to process innovation and citizen outcomes [23, 44, 45].

Crisis and paradox features of contemporary management have pushed competency models toward robustness and ethical anchoring. Research on crisis leadership in sports administration and political-sociology analyses of HR competencies in emergencies highlight decision speed, sensemaking, and network mobilization alongside integrity safeguards [8, 46, 47]. Meta-synthesis work on paradoxical competencies suggests that managers must navigate competing demands—centralization versus autonomy, efficiency versus exploration—requiring cognitive complexity and dialogic skills [15, 48]. Ethical and spiritual dimensions of managerial practice, prominently investigated in Iranian public and energy sectors, reveal how value frameworks and workplace spirituality shape prioritization, trust, and purpose, thereby influencing the configuration and salience of competency sets [49-52]. Professional ethics in managerial roles is not merely a boundary condition—it is a core capability that interacts with data governance and public accountability in digital HRM [52, 53].

Methodological and governance advances are enabling more adaptive competency systems. Scientometric mapping techniques visualize domain evolution, detect hotspots, and benchmark influence structures, supplying a meta-evidence layer for curriculum design and organizational capability building [3, 9]. Knowledge-transfer scholarship underscores the role of managerial competencies as conduits for interorganizational learning, particularly where hybrid public–private networks co-innovate under regulatory and societal pressures [54, 55]. In defense and strategic sectors, competency models increasingly codify project governance, security, and contract management, with assessment centers and AI-supported evaluations enhancing reliability and predictive validity [56-59]. Emerging evidence from qualitative and mixed-methods studies in education and public management demonstrates that competency frameworks can be co-created with stakeholders and iteratively validated across role levels, achieving both contextual relevance and scalability [60-63].

At the micro level, soft skills remain durable differentiators, yet they must be recast for digital workflows. Accounting and management education studies report perception gaps in soft-skill development, underscoring the importance of experiential learning and reflective assessment [64, 65]. Pandemic-era delivery experiments suggest that modality per se is less determinative than instructional design that scaffolds collaboration, feedback, and application to authentic tasks [65]. Professional development in sport and hospitality education shows that generic skill sets—communication, teamwork, adaptability—translate into smoother school-to-work transitions when embedded in work-integrated learning ecosystems

[34]. In parallel, competency models for Industry 4.0 quality managers and HR leaders during COVID-19 demonstrate how role redesign and digital business approaches shift the balance toward data literacy, process automation, and resilience behaviors [66, 67].

Regional and organizational case studies extend these insights. Studies in Iranian ministries, municipalities, foundations, and universities have produced tailored competence maps that integrate cultural and institutional factors, including Islamic-Iranian management values, public service ethics, and stakeholder expectations [19, 22, 62, 68, 69]. Work in planning and budget organizations and educational leadership points to meta-competencies in strategic analysis, evidence-based policymaking, and human-capital development [23, 70]. Complementary scholarship in logistics and defense underscores mission-critical coordination, systems thinking, and secure information management as differentiators in complex supply networks [18, 71]. In business administration and retail settings, competencies related to career development, supervision quality, and job training interact to predict employee performance, indicating the multilevel architecture of capability building [40, 43, 72]. Broader strategy work links HRM competence portfolios to competitive advantage through alignment with business models and market positioning [45, 73].

At the frontier, AI-infused HRM raises novel measurement and governance issues. Guidelines for context-based scale development recommend combining psychometrics with job analytics and ethnographic validation to capture emergent constructs such as algorithmic literacy, data ethics, and human-AI teaming [28, 29]. Teacher and manager education literature in the United Kingdom and Northern Ireland contributes frameworks for professional characteristics and competence formation that can inform HR leadership development in other public systems [11]. Cross-country comparisons in Southeast Asia show that managerial competencies can accelerate Industry 4.0 diffusion when policy, training infrastructures, and firm capabilities are co-designed, illustrating macro–micro coherence in capability systems [6]. Scientometric analyses of emergent educational tools (e.g., LLM-based platforms) reveal quickly shifting topic networks, making continuous evidence synthesis an organizational competency in its own right [3, 10].

This study contributes by integrating these strands into a comprehensive knowledge map of managerial competencies for HRM across domains, with three design principles. First, competency architectures should be modular and stackable, enabling recombination as technologies, regulations, and stakeholder expectations evolve [5, 7, 27]. Second, measurement must be context-based and multi-method, spanning behavioral evidence, performance artifacts, and analytics-derived indicators while safeguarding fairness and transparency [10, 28, 29]. Third, development pathways should braid formal learning with project-based practice and interorganizational knowledge transfer to sustain capability flows across ecosystems [33, 54, 74]. By situating evidence from public administration, health, energy, defense, education, and SMEs, the synthesis illuminates how competency systems translate into strategic orientation, operational excellence, innovation capacity, and public value [35, 75, 76]. The agenda that follows prioritizes ethical AI literacy, crisis-ready leadership, and inclusive talent pipelines as cross-cutting managerial competencies for the next decade, supported by assessment centers, AI-enabled diagnostics, and curriculum reforms aligned with national and sectoral strategies [57-59, 77]. This study aimed to develop a comprehensive knowledge network map and analyze research trends in the field of human resource managers' competencies by employing a scientometric methodology and a mixed-methods approach.

Methodology

The methodology of the present study was designed using a mixed-methods research design and a systematic scientometric approach. This study is descriptive-analytical in nature and was conducted through the integration of quantitative and qualitative methods within the framework of a systematic review based on the PRISMA protocol. One of the most critical steps in developing a research field is synthesizing previous findings through scientometric analysis, which is conducted using a systematic literature search. Today, scientometric techniques are widely used to retrieve data from databases and visualize scientific communication networks as an interdisciplinary field. Scientometrics is a popular and precise method for exploring and analyzing large volumes of scientific data, allowing researchers to highlight subtle differences in the evolution of a specific knowledge domain. Scientometrics refers to the visualization or mapping of knowledge domains and is considered a technique for reviewing quantitative research. The scientometric approach, as the main paradigm, enables macro-level analysis of scientific data and the discovery of hidden patterns, trends, and structures within the literature. Researchers in many fields use scientometric methods to map and explore intellectual landscapes and research topics because scientometrics enhances the accuracy and reliability of study results. Essentially, the purpose of scientometrics is to analyze and visualize the knowledge base, research hotspots, and knowledge frontiers within the studied domains. Scientometrics involves three main stages: selecting tools, collecting data, and analyzing data.

The statistical population of this study included all research articles published between 1995 and 2025 in reputable domestic and international databases. The international databases examined were Web of Science and Scopus, and the domestic databases were Magiran and Noormags. The inclusion criteria for articles were as follows: (1) original research articles, (2) articles published in reputable scientific–research journals, (3) articles with full-text availability, (4) articles related to the topic of human resource managers' competencies, and (5) articles published in Persian or English.

The data collection process was carried out in three main stages. In the first stage, an initial search was conducted using a systematic search strategy, employing Boolean operators and considering all synonyms and related terms. In the second stage, the screening process was performed in four steps following the PRISMA protocol, including identification, removal of duplicates, screening by title and abstract, and full-text evaluation. The data analysis methods involved advanced scientometric techniques implemented systematically. These techniques included co-word analysis to identify key concepts, co-citation analysis to detect highly influential articles, cluster analysis to discover thematic clusters, network analysis to map relationships among concepts, and temporal trend analysis to examine the thematic evolution of the field.

The article screening process was conducted according to the PRISMA protocol in four steps. In the first step, 1,250 articles were identified. After removing 185 duplicate articles, 1,065 articles remained. In the title and abstract screening phase, 620 articles were excluded, and 445 articles were selected for full-text evaluation. Ultimately, after the full-text evaluation, 245 eligible articles were identified. The sampling method in this study was purposive sampling based on predefined criteria. Given the qualitative-quantitative nature of the research, the sample size was extended until theoretical saturation was reached, which ultimately resulted in selecting 245 articles for the final analysis.

The tools used for data analysis included the scientometric software VOSviewer, and Microsoft Excel was employed for preliminary data processing. Multiple methods were used to validate the findings, including triangulation (integration of different analytical methods) and expert review. Ethical considerations were strictly observed, including adherence to proper

citation principles, respect for authors' rights, accurate referencing, and maintaining the originality of the texts. Furthermore, scientific impartiality was fully maintained during the data analysis and interpretation process.

Co-occurrence analysis of keywords, co-citation analysis, and cluster analysis were used as the main scientometric techniques. First, using co-occurrence analysis, words that appeared in at least two different documents within a specific time frame were identified. These frequently used words were considered part of the knowledge base. Next, using co-citation analysis, the highly cited articles in this field and the research hotspots were detected. In the third stage, cluster analysis was used to identify the thematic clusters of research. The research topics within each cluster had higher conceptual similarity with each other and were distinct from the topics of other clusters. Therefore, cluster analysis, by uncovering hidden relationships within a large volume of scientific data, enables the identification of coherent knowledge domains and the determination of more active research fronts compared to other scientometric approaches.

Findings and Results

The results obtained from bibliometric analyses (including the examination of publication trends) can reveal the key factors that enhance the contribution of research in a specific scientific field and can guide researchers toward producing impactful and highly cited studies. A keyword search for "general competency," "technical competency," "managerial competency," and "human resource management" in citation databases up to August 29, 2025, revealed the presence of 2,324 scientific documents. As shown in Figure (1), the trend of annual citations in this field clearly indicates the growing scholarly interest in this topic. The publication of articles in recent years has followed a rapidly increasing trajectory, which reflects the deep and widespread attention of researchers to this area of study. This quantitative and qualitative growth clearly demonstrates the strategic importance and prominent position of the topic of general and technical competencies of professional human resource managers.

Figure 1

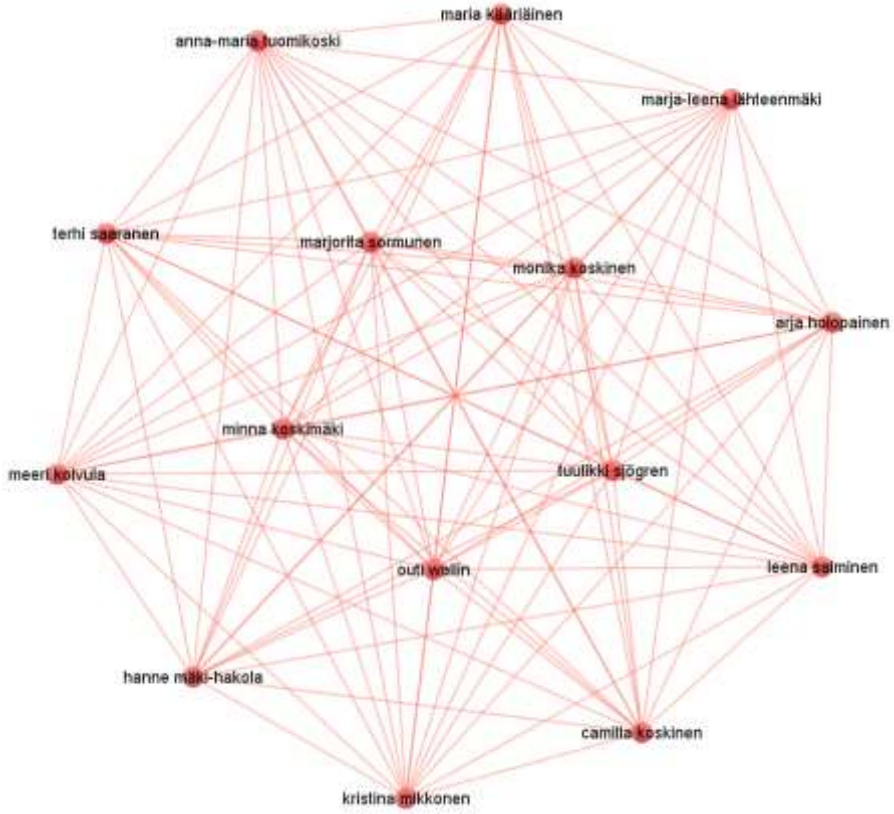
Annual citation trends of articles in the field of "human resource competencies" (as of January 29, 2025)

Scientometrics, as an interdisciplinary field, analyzes and measures scientific outputs using quantitative and statistical methods. One of the main applications of this method is co-authorship analysis, which examines collaboration patterns among researchers to map scientific networks and identify research hubs. This analysis reveals not only knowledge structures

but also influential streams and intellectual leadership in a field. By examining collaboration clusters, a deep understanding of the dynamics of knowledge production, the emergence of intellectual schools, and even research gaps can be achieved. The co-authorship network mapped in the field of human resource managers' competencies shows a pattern of research collaborations concentrated around several key axes in Figure (2).

Figure 2

Co-authorship network analysis in the field of human resource managers' competencies



Co-citation analysis in the field of human resource managers' competencies reveals the presence of several key articles with very different levels of influence. The seminal article by Alda Marques (2016) with 395 citations holds an unparalleled position as the most cited work in this field, indicating its foundational role in shaping the body of literature. However, the zero link count for this article and other highly cited works (such as those by Daniel Belanche and Tatiana Bondarouk) suggests that these articles have been cited as primary and standalone references and have rarely been co-cited together in newer articles. This pattern may indicate that these works have functioned as separate initial cornerstones of this research field. In contrast, the article by Maria Cinque (2016), although ranked lower in citation count (93), has 3 links, showing that it serves as a bridging article connecting different topics within the citation network. This distinction highlights the difference between the "overall impact" of an article and its "structural role" in the knowledge network, suggesting that some articles facilitate the emergence of new interdisciplinary research domains by linking diverse ideas.

Table 1

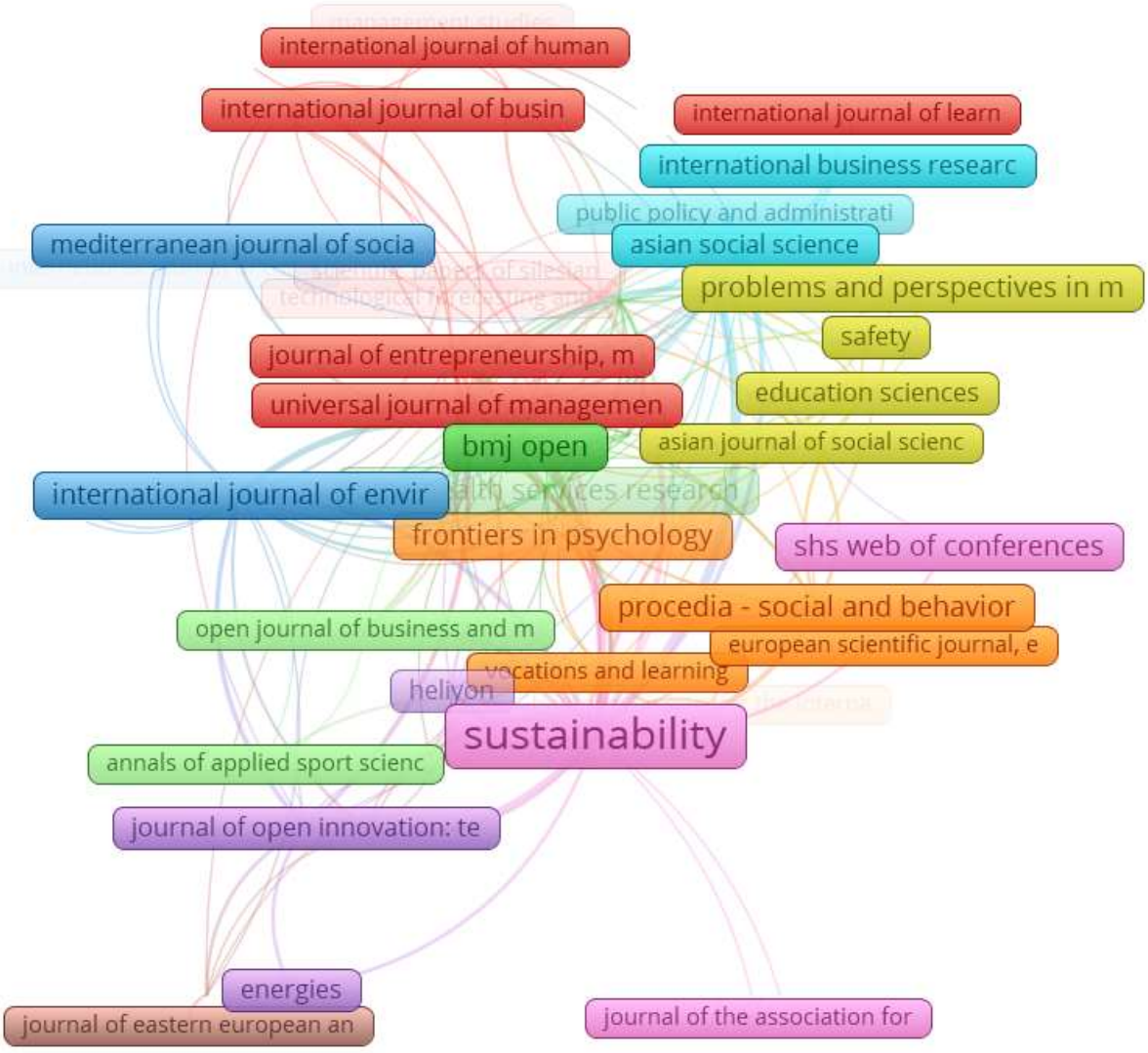
Co-citation analysis of the top 20 authors in the field of human resource managers' competencies based on citation frequency

Rank	Researchers (Year)	Citations
1	Alda Marques (2016)	395
2	Branden Thornhill-Miller (2023)	266
3	Daniel Belanche (2021)	241
4	Tatiana Bondarouk (2016)	218
5	Zara Whysall (2019)	206
6	Lydia Bals (2019)	132
7	Nanja Kroon (2021)	99
8	Maria Cinque (2016)	93
9	Alexander Tittel (2020)	84
10	Andries S. Koster (2017)	79
11	Kathrin Bednar (2019)	78
12	Christian Harrison (2017)	76
13	Christopher J. Colvin (2021)	73
14	Bozena Gajdzik (2022)	71
15	Apocnae Kuzminov (2019)	70
16	Nelesh Dhanpat (2020)	63
17	César França (2020)	62
18	Jaroslav Vrchota (2020)	61
19	Mohammad Salehan (2017)	60
20	Sofia Asontou (2015)	58

The analysis of top journals publishing articles in the field of human resource managers' competencies reveals an interesting pattern of both dispersion and concentration of knowledge dissemination in this field. The journal Sustainability ranks first by a significant margin, both in terms of the number of published articles (34 articles) and citations (574 citations), as well as link strength (132), indicating its central role as the main platform for knowledge exchange in this field and its notable overlap with concepts of sustainability and sustainable development in human resource management. In contrast, the BMC Health Services Research journal, despite publishing only 6 articles, has achieved 495 citations, indicating the very high quality of the published articles and the strong impact of the health domain as a highly influential research context. The Administrative Sciences and International Journal of Environmental Research and Public Health journals, despite having moderate citation counts, have high link strengths (48 and 46, respectively), showing that they have played an important role in connecting studies on managerial competencies with the fields of administrative management and environmental health. Interestingly, highly specialized human resource management journals, such as the The International Journal of Human Resource Management, have a relatively weak presence among the most cited journals, which may indicate the increasing interdisciplinarity of this field and the migration of studies toward journals with integrative approaches such as open innovation, technology, and social sciences.

Figure 3

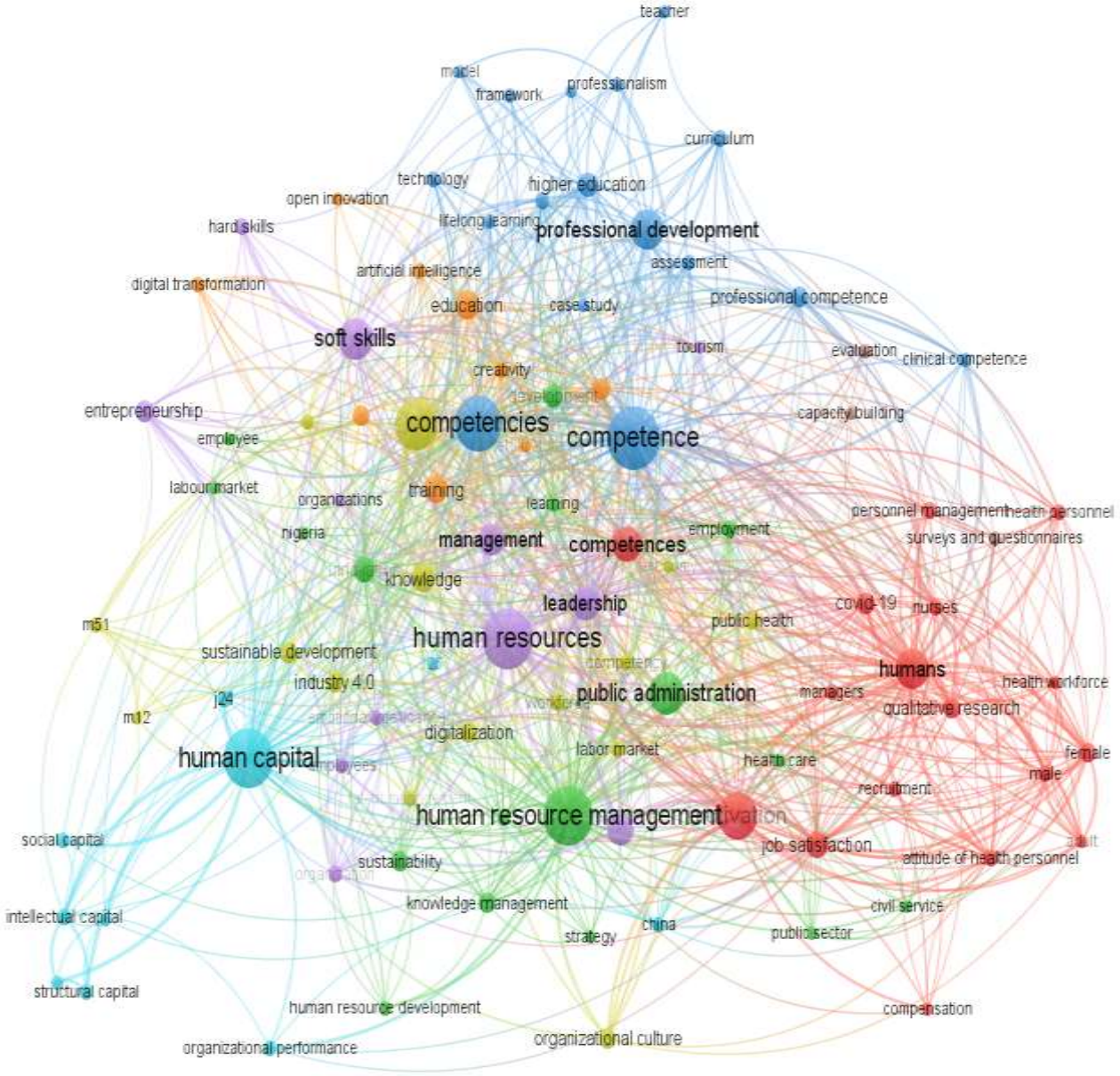
Analysis of journals publishing the highest number of articles in the field of human resource managers' competencies



The analysis shows that studies on human resource managers' competencies are emerging less in traditional human resource management journals and more in journals with interdisciplinary approaches and specific applied domains (such as health, energy, and sustainability). The results of the keyword co-occurrence analysis revealed seven main conceptual clusters in the field of human resource managers' competencies.

Figure 4

Results of keyword co-occurrence analysis with a minimum of 5 repetitions



These clusters clearly demonstrate the evolution of this field from foundational concepts of human resource management and individual competency development to more advanced notions such as digital transformation, intellectual capital, and sustainable development. The simultaneous focus on hard (technical) and soft (leadership and emotional intelligence) competencies, alongside attention to organizational and technological contexts, indicates a comprehensive and multidimensional approach to the topic of managerial competencies. This analysis shows that competency models must establish a dynamic link between individual, organizational, and technological dimensions to meet the complex demands of today's business environments.

Table 3

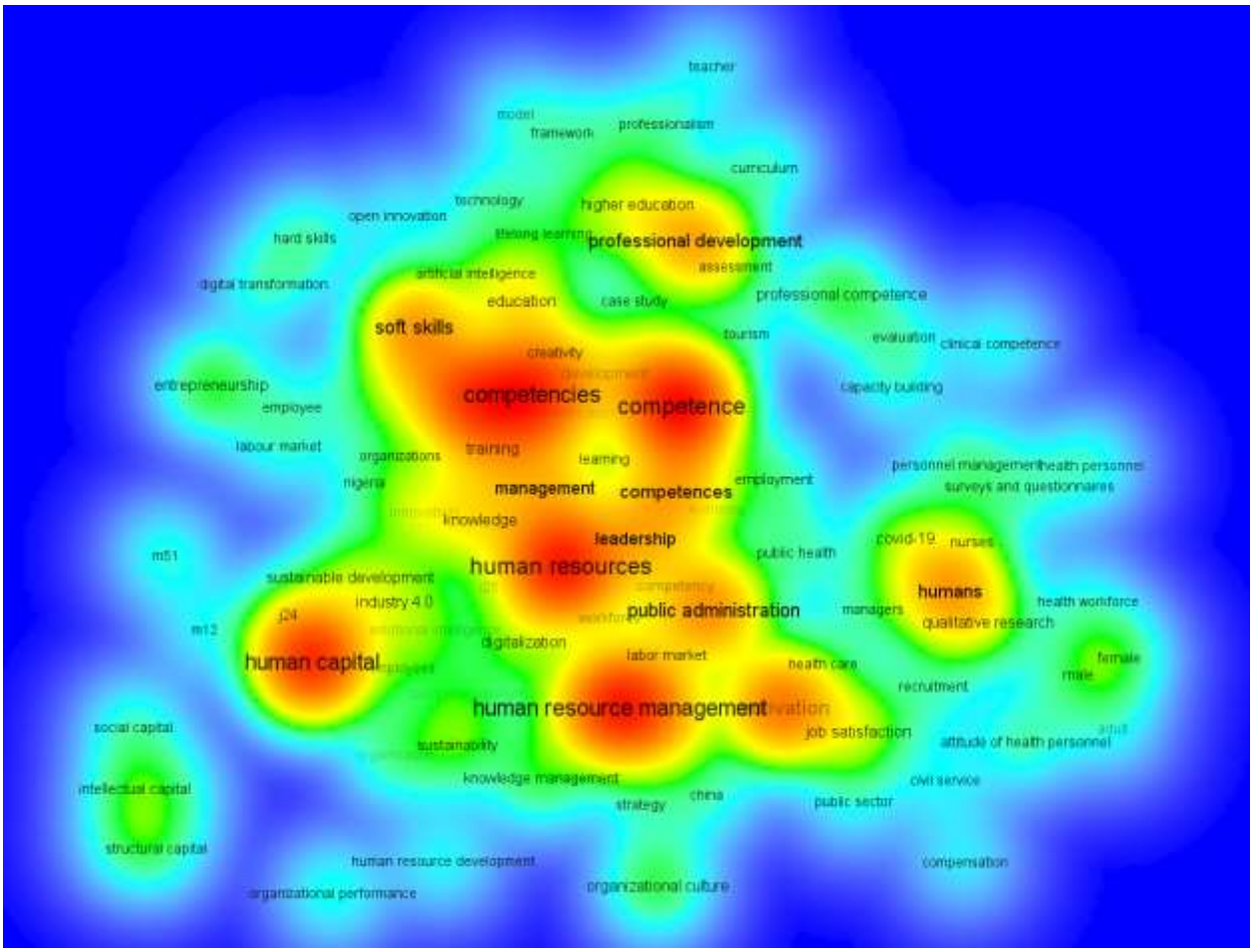
Results of keyword co-occurrence analysis with a minimum of 5 repetitions

Cluster	Title (Core Concept)	Representative Keywords	Description and Relevance to the Study
Cluster 1	Human Resource Management in Sensitive Environments	Environmental health, workforce health, recruitment, compensation, job satisfaction, motivation	This cluster focuses on the specific challenges of human resource management in critical contexts such as workplace health and emphasizes the importance of organizational contextualization in designing competency models. Findings show that the proposed model should accurately reflect industry-specific competencies, including management under complex conditions, security challenges, and contractual requirements.
Cluster 2	Strategy and Innovation in Human Resource Management	Public sector, public administration, strategy, innovation, sustainability, human resource development	This cluster highlights the strategic function of human resource management in achieving overarching goals in the public sector. It underscores the necessity of aligning managerial competencies with the strategic objectives of organizations.
Cluster 3	Training and Assessment of Professional Competency Foundations	Competency, professional competency, curriculum, higher education, lifelong learning, evaluation	This cluster lies at the heart of the research topic and focuses on mechanisms for developing and assessing competencies, including training, curriculum planning, and assessment. These concepts directly address how to develop and measure competencies in managers.
Cluster 4	Required Competencies in the Digital Era and Advanced Industries	Industry 4.0, digitalization, hard skills, talent management, knowledge sharing, competitiveness	This cluster stresses the need to equip human resource managers with modern technical capabilities to keep pace with digital transformations. For industrial managers, this means having competencies in areas such as HR analytics, talent management, and awareness of emerging technologies.
Cluster 5	Soft Competencies and Emotional Intelligence in Leadership	Emotional intelligence, leadership, soft skills, performance, organization	This cluster explicitly emphasizes the general and interpersonal competencies of managers, showing that managerial success is not solely based on technical expertise but is deeply tied to leadership skills, emotional intelligence, and the ability to effectively manage communication and performance.
Cluster 6	Intellectual Capital and Creating Sustainable Competitive Advantage	Human capital, intellectual capital, competitive advantage, organizational performance, social capital, structural capital	This cluster highlights the strategic role of human resource managers in creating organizational value. From this perspective, managers' competencies should contribute to the development and utilization of human capital (individuals' skills and knowledge), social capital (relationships and networks), and structural capital (processes and knowledge systems) to ultimately achieve sustainable competitive advantage and superior organizational performance.
Cluster 7	Tools and Contexts for Competency Development in the Digital Transformation Era	Artificial Intelligence, digital transformation, digital training, development, creativity, communication, project management	This cluster addresses the "how" of competency development in the current era. From this perspective, competency development is no longer achievable solely through traditional training methods but requires leveraging digital tools (such as AI for personalized training), project-based capabilities (such as project management), and fostering creativity and communication within the framework of digital transformation.

The cluster analysis of keywords clearly shows the current research hotspots in the field of managerial competencies. The primary focus is on digital transformation, centered on artificial intelligence, Industry 4.0, and open innovation as the core of current research.

Figure 4

Research hotspots in the field of human resource managers' competencies

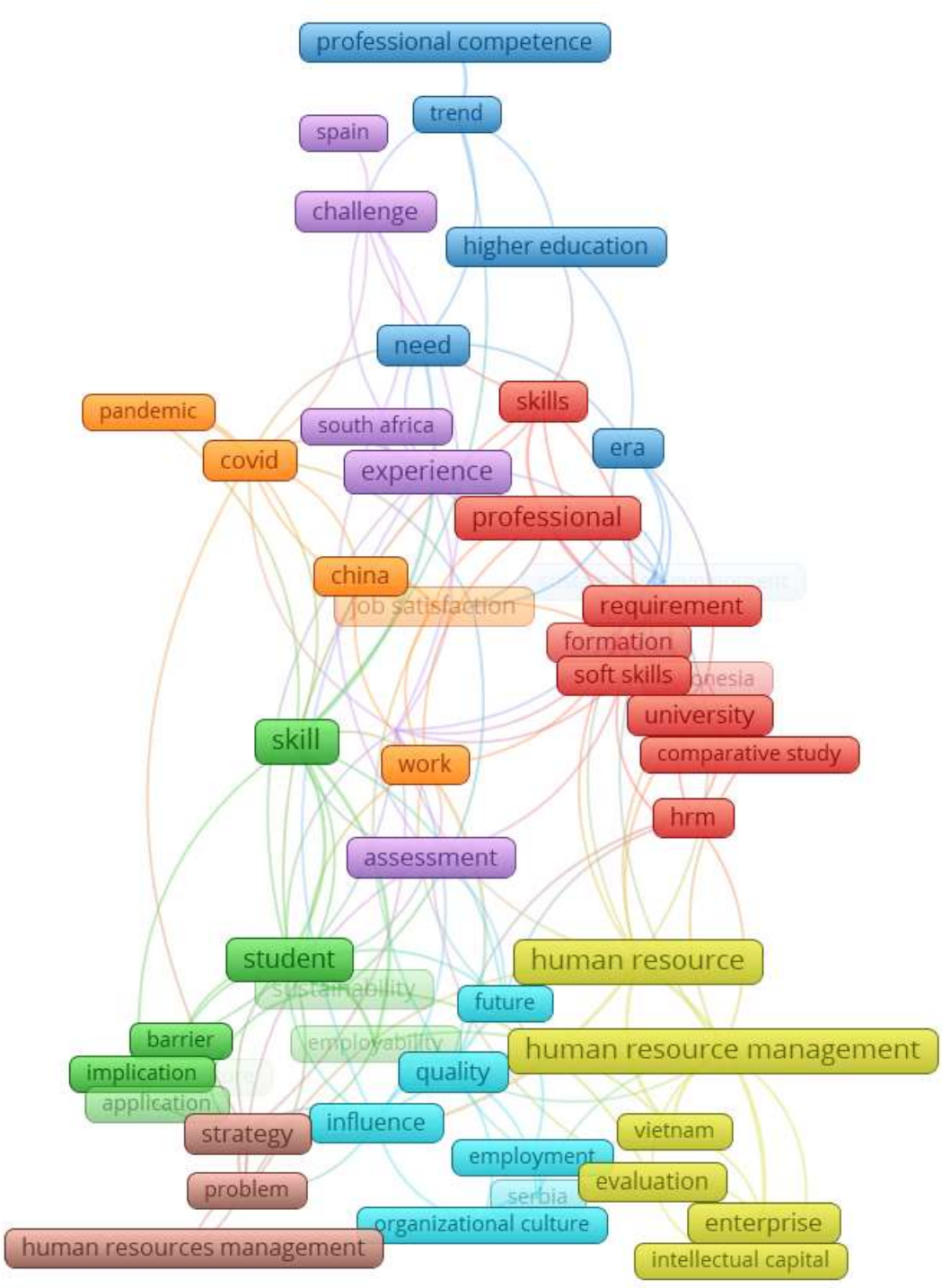


At the same time, intellectual capital (including human, social, and structural capital) has received special attention as a theoretical framework for explaining managerial value creation. Alongside these concepts, sustainable development and its link with human resource strategies in the public sector have emerged as a strong intellectual stream. Additionally, the emphasis on the duality of hard and soft competencies (integrating technical skills with leadership and creativity) indicates a maturation of approaches to competency management. These research hotspots show that future studies must focus on integrating these dimensions and developing comprehensive models that simultaneously address the demands of digital transformation, organizational value creation, and sustainability requirements.

The analysis of high-frequency words in article titles reveals the core conceptual nuclei and research orientations of the field of human resource managers' competencies.

Figure 5

Co-word analysis in article titles in the field of human resource managers' competencies



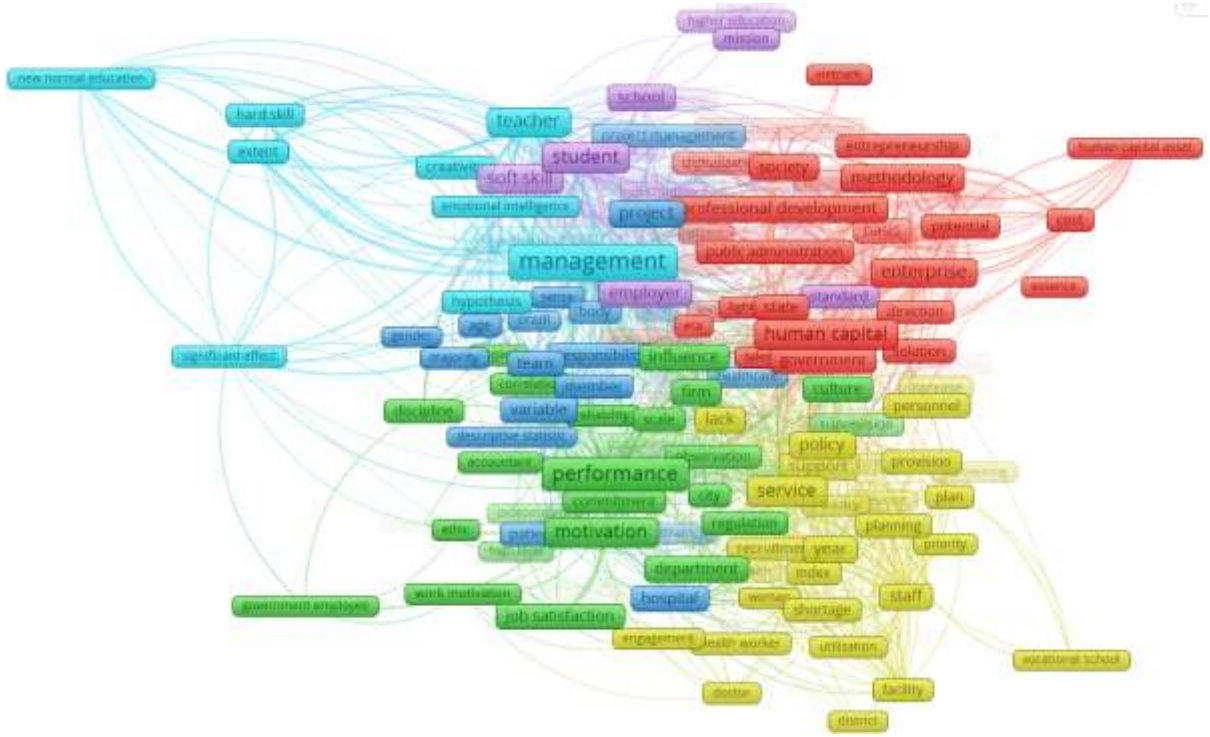
The strong presence of words such as "human resource management" (25 occurrences; relevance score = 1.04) and "human resources" (22 occurrences) clearly shows that this research field still revolves around the central axis of human resource management. The word "skill" (26 occurrences; relevance score = 0.52) stands out as the key concept, emphasizing the importance of operational and practical competencies in this field. Interestingly, the strong presence of terms related to "professional development" (18 occurrences) and "higher education" (9 occurrences; relevance score = 1.48) indicates that a significant portion of studies focus on the role of educational and developmental systems in shaping managerial

competencies. Likewise, the words “need” (14 occurrences) and “requirement” (14 occurrences; relevance score = 1.22) suggest that researchers are paying particular attention to identifying and addressing the real needs of the business environment. The word “COVID” (13 occurrences; relevance score = 0.78) shows the pandemic’s impact on recent research orientations and the necessity of aligning managerial competencies with crisis conditions. The words “challenge” (11 occurrences) and “impact” (10 occurrences) also point to the problem-oriented and applied nature of research in this field.

The analysis of high-frequency words in article abstracts provides a deeper understanding of the key concepts and thematic orientations of research on human resource managers’ competencies. The word “management” (384 occurrences; relevance score = 0.43) appears as the most frequent concept, indicating the centrality of this topic in studies. The strong presence of “performance” (247 occurrences) and “motivation” (159 occurrences) shows researchers’ attention to the outcomes of managerial competencies on organizational outputs. A notable finding is the strong emergence of the concepts of “soft skills” (139 occurrences; relevance score = 0.99) and “human capital” (148 occurrences), which indicates a shift from a purely technical perspective toward a human-centered and holistic approach to managerial competency development. Furthermore, the presence of “professional development” (91 occurrences) and “training” alongside “methodology” (105 occurrences; relevance score = 1.29) suggests that studies are emphasizing the applied and developmental aspects of competencies. The words “project” (109 occurrences; relevance score = 0.99) and “information” (111 occurrences) show the growing orientation of studies toward project management and the informational aspects of managerial competencies. The word “policy” (113 occurrences) also reflects attention to the macro and strategic dimensions of competency development at organizational and national levels. The analysis indicates that studies in this field are moving toward integrating the hardware (technical) and software (human and strategic) dimensions of management while simultaneously addressing individual, organizational, and strategic aspects.

Figure 6

Co-word analysis in article abstracts in the field of human resource managers’ competencies



Discussion and Conclusion

The scientometric findings of this study revealed several critical dynamics in the evolution of managerial competency research within human resource management (HRM). The sharp rise in publications and citations after 2015 demonstrates the field's accelerating maturation and indicates a strategic repositioning of managerial competencies as core drivers of organizational performance and adaptability [3, 9]. This trajectory aligns with the paradigm shift noted in contemporary scholarship, which frames competencies as dynamic capability portfolios rather than static job-bound skill lists, emphasizing their continual redevelopment to match technological disruption, stakeholder complexity, and socio-environmental volatility [1, 2]. The surge in cross-domain publications—in journals concerned with sustainability, health, and digitalization—underscores the interdisciplinary migration of the topic, reflecting the growing expectation that HR managers navigate overlapping institutional logics and socio-technical systems [6, 7].

The co-authorship network analysis showed dense collaboration clusters across diverse regions and sectors, indicating that managerial competency research is no longer confined to single-discipline silos but is developing as an interdisciplinary field anchored in practice-based inquiry [28, 54]. This aligns with evidence that complex competency constructs—such as digital fluency, adaptive leadership, and ethical decision-making—require collaborative theorization and cross-institutional validation [29, 63]. The clustering analysis revealed seven thematic domains ranging from HRM in sensitive environments to digital-era competencies, intellectual capital development, and soft skills integration. These results corroborate prior work showing that managerial competency systems must weave together hard (technical) and soft (behavioral) dimensions to achieve resilience and innovation outcomes [16, 24, 27]. In particular, the identification of soft skills and emotional intelligence as a major cluster mirrors the growing body of evidence that emotional-social competencies amplify the performance impacts of technical and contextual skills, particularly under conditions of uncertainty and rapid change [64, 78].

The co-citation results highlight that while certain seminal articles (e.g., by Alda Marques and Tatiana Bondarouk) anchor the intellectual foundation of the field, their lack of linkage to newer works suggests that the research front is diverging into specialized subfields [3, 9]. This pattern signals a theoretical fragmentation that may compromise cumulative knowledge building—a concern echoed in recent calls for meta-frameworks to unify competency taxonomies across sectors and career stages [4, 28]. At the same time, bridging articles like that of Maria Cinque (2016), which connect disparate clusters, illustrate how integrative scholarship can catalyze conceptual convergence. This dynamic aligns with studies showing that cross-domain models (e.g., combining project governance, digital acumen, and human capital development) drive higher knowledge transfer and innovation rates across organizations [54, 74].

The prominence of journals such as *Sustainability* and *BMC Health Services Research* among the most influential sources supports the interpretation that managerial competency discourse is increasingly embedded in broader agendas of sustainable development, public value creation, and digital transformation [6, 7, 75]. This finding resonates with studies highlighting that HR competencies are now expected to extend beyond traditional personnel administration into domains like environmental stewardship, social responsibility, and technological innovation [73, 76]. The relative underrepresentation of specialized HRM journals reinforces this shift toward interdisciplinarity. It echoes evidence from project-based and construction contexts where digital-era competency frameworks emphasize boundary-spanning leadership and data-driven coordination rather than purely HR-centric functions [24, 26].

Keyword co-occurrence results further deepen these insights. The coexistence of “hard” terms (e.g., Industry 4.0, AI, analytics) and “soft” ones (e.g., emotional intelligence, leadership, communication) among high-frequency keywords confirms the hybridization trend that numerous scholars have observed [27, 66]. This convergence supports arguments that modern managerial effectiveness relies on synergistic integration of technical and interpersonal capabilities, as opposed to treating them as separate domains [34, 64]. The emphasis on “training,” “higher education,” and “professional development” keywords aligns with research showing that competency systems increasingly depend on continuous learning infrastructures, blending formal instruction, work-based learning, and AI-enabled upskilling [10, 30, 32]. Similarly, the recurring presence of “policy” and “governance” terms reflects the institutionalization of competency frameworks as instruments of organizational and national human capital strategies [22, 23, 60].

Interestingly, the keyword “COVID” still appeared frequently, suggesting that post-pandemic recalibrations of managerial competencies continue to shape the research agenda. This is consistent with studies showing how the pandemic accelerated the digitization of HR roles and heightened the salience of resilience, adaptability, and digital collaboration as core competencies [65, 67]. The rise of “project” and “information” in both titles and abstracts reflects a growing focus on project-based structures and information governance in competency frameworks, mirroring broader organizational trends toward platformized, data-driven work models [25, 28]. Furthermore, the cluster on intellectual capital confirms that managerial competencies are increasingly conceptualized as vehicles for building and leveraging human, social, and structural capital to secure sustained competitive advantage [35, 45, 71]. This aligns with findings from health and education sectors showing that HR managers now function as orchestrators of knowledge ecosystems rather than mere supervisors of personnel [63, 75].

Overall, the results suggest that the field is transitioning from a stage of conceptual proliferation to one of integrative consolidation, where competency models are expected to unify technical, behavioral, ethical, and strategic dimensions under conditions of digital transformation and sustainability pressures. The increasing density of global collaboration networks and the rise of interdisciplinary venues provide structural support for this convergence, but the field still faces the challenge of synthesizing fragmented subdomains into coherent frameworks [3, 9, 28]. Addressing this gap will be essential to ensuring that competency systems remain valid, transferable, and developmentally actionable across sectors and contexts.

This study is limited by its reliance on bibliometric data, which prioritizes quantifiable patterns over nuanced contextual interpretations. The inclusion of only published journal articles may have excluded valuable grey literature, practitioner reports, or competency frameworks developed in organizational settings but not indexed in major databases. Language restrictions and database selection may have biased the sample toward Anglophone and highly formalized research contexts, underrepresenting localized or emergent models. Furthermore, citation-based indicators can overemphasize older, foundational works while underestimating the influence of more recent but less cited research, especially in rapidly evolving areas like AI-driven HRM.

Future studies should integrate qualitative meta-synthesis with scientometric mapping to bridge structural patterns with interpretive insights about competency content and contextual contingencies. Longitudinal designs could trace the life cycles of specific competency clusters, identifying how they emerge, diffuse, and evolve in response to technological, institutional, and socio-economic shifts. Comparative cross-sectoral research could clarify how competency architectures vary between public, private, and hybrid organizations and how they adapt to different regulatory and cultural environments. Additionally,

multi-level studies are needed to examine how individual managerial competencies scale into organizational capabilities and system-wide outcomes, incorporating both micro-behavioral and macro-strategic lenses.

Practitioners should approach competency development as a strategic, ecosystem-level endeavor rather than as isolated training initiatives. Competency frameworks should be continuously updated through collaboration between HR leaders, operational managers, and policy-makers to ensure alignment with emerging technologies and societal expectations. Organizations should invest in integrated learning architectures that blend formal training, on-the-job projects, mentoring, and AI-enabled personalized development. Finally, performance management systems should be redesigned to recognize and reward not only technical proficiency but also adaptability, collaboration, ethical judgment, and innovation—the multidimensional attributes that define effective managerial competence in contemporary environments.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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References

[1] R. E. Boyatzis, *The competent manager: A model for effective performance*. John Wiley & Sons, 1982.

[2] B. Townley, "Foucault, Power/Knowledge, and Its Relevance for Human Resource Management," in *Postmodern Management Theory*: Routledge, 2019, pp. 215-242.

[3] C. Chen and M. Song, "Visualizing a field of research: A methodology of systematic scientometric reviews," *PloS one,* vol. 14, no. 10, p. e0223994, 2019, doi: 10.1371/journal.pone.0223994.

[4] M. J. S. Ruiz, R. I. R. Molina, R. R. A. Amaris, and N. D. L. Raby, "Types of competencies of human talent supported by ICT: definitions, elements, and contributions," *Procedia Computer Science,* vol. 210, pp. 368-372, 2022, doi: 10.1016/j.procs.2022.10.166.

[5] B. Yang and Z. Shen, "Knowledge graph construction and talent competency prediction for human resource management," *Alexandria Engineering Journal,* vol. 121, pp. 223-235, 2025, doi: 10.1016/j.aej.2025.02.043.

[6] L. T. N. Le, C. Jeenanunta, Y. Ueki, N. Intalar, and S. Komolavanij, "The Role of Managerial Competencies in Driving Industry 4.0 Adoption: A Comparative Study of Thailand and Vietnam's Manufacturing Sectors," *Sustainability,* vol. 17, no. 1, p. 77, 2024, doi: 10.3390/su17010077.

[7] L. Del Barone, D. de Gennaro, and F. Buonocore, "AI-driven HRM and managerial competencies: strengthening organizational resilience in Public Administration," *Management Decision,* 2025, doi: 10.1108/MD-06-2024-1252.

[8] A. Gholami, N. Jazani, and A. Kazemi, "Competency Model of Human Resource Managers in Crisis Conditions," *Journal of Political Sociology of Iran,* vol. 5, no. 7, pp. 34-52, 2022.

[9] W. Li *et al.*, "Systematic review: a scientometric analysis of the status, trends and challenges in the application of digital technology to cultural heritage conservation (2019-2024)," *npj Heritage Science,* vol. 13, no. 1, p. 90, 2025, doi: 10.1038/s40494-025-01636-8.

[10] Y. Yan, B. I. Edwards, and M. Sanmugam, "Scientometric analysis of emerging trends and research landscape of ERNIE Bot's potentials as an educational tool: A mixed method study of a large language model," *Social Sciences & Humanities Open,* vol. 12, p. 101729, 2025, doi: 10.1016/j.ssaho.2025.101729.

[11] G. Whitty, "Professional competences and professional characteristics: The Northern Ireland approach to the reform of teacher education," in *Developing Competent Teachers*: Routledge, 2024, pp. 86-97.

[12] O. Karaoglu, H. Kamer, and O. Sancar, "Evaluation of competence levels of healthcare management graduates by employers," *Asia Pacific Journal of Health Management,* vol. 20, no. 1, pp. 57-68, 2025, doi: 10.24083/apjhm.v20i1.3717.

[13] E. Jarva, A. Oikarinen, J. Andersson, S. Pramila-Savukoski, M. Hammarén, and K. Mikkonen, "Healthcare professionals' digital health competence profiles and associated factors: A cross-sectional study," *Journal of Advanced Nursing,* vol. 80, no. 8, pp. 3236-3252, 2024, doi: 10.1111/jan.16096.

[14] Z. Liang and E. Kakemam, "Identifying competency development needs of hospital managers in Iran: a national survey," *BMC Medical Education,* vol. 25, no. 1, p. 122, 2025, doi: 10.1186/s12909-025-06721-x.

[15] E. Davoodi, A. Vahidi, A. Rezaiyan, and D. Gholamzadeh, "Designing a Competency Model for Senior Managers of Gas Refineries in the South Pars Gas Complex," *Quarterly Journal of Management and Development Processes,* vol. 33, no. 4, pp. 71-96, 2021, doi: 10.52547/jmdp.33.4.71.

[16] A. Hosseini, H. Mohammadi, Z. Kazemi Saraskaneroud, F. Jafari Baziyar, and M. Yazdanza, "Designing a Human Resource Competency Model for Mazandaran Gas Company: A Multivariate Grounded Theory Approach," *Journal of Sustainable Human Resource Management,* vol. 7, no. 12, pp. 25-48, 2025.

[17] G. Pashaei Vahid, A. Rahimzadeh, and M. Danesh Shakib, "Presentation of a Structural Model of Key Human Resource Competencies in the Kermanshah Power Distribution Company," *Journal of Sustainable Human Resource Management,* vol. 6, no. 11, pp. 71-83, 2024, doi: 10.61838/msesj.6.2.9.

[18] N. Asgari, S. Javashi Jadid, S. F. Ghorrani, and R. Nouri, "Model of Competencies for Logistics Managers in Defense Organizations," *Journal of Defense Technology and Readiness,* vol. 8, no. 25, pp. 199-225, 2025.

[19] A. Kandehani, J. Younesi, E. Zamān Pour, N. A. Faroghi, M. Salimi, and A. Moghadamzadeh, "Designing and Validating a Competency Model for Specialized Managers of Iran's Oil Terminal Companies," *Journal of Educational Leadership Research,* vol. 9, no. 33, pp. 229-258, 2024.

[20] A. Pashaei Holasoo, "Designing a Competency Model for Managers of the Ministry of Defense and Armed Forces Support," *Strategic Defense Quarterly,* vol. 20, no. 78, pp. 75-106, 2022.

[21] S. Pashaei and F. Noorouzi, "Presentation of a Competency Model for Human Resource Managers in the 22nd District Municipality," *Journal of Applied Studies in Management Sciences and Development,* vol. 8, no. 2, pp. 13-20, 2023.

[22] R. Qasemi Imamzadeh, M. R. Mardani, S. A. Mousavi, M. Safiyan, and M. Mohammadi, "Designing a Competency Model for Human Resource Managers of a Military Organization," *Policy Research in Human Sciences,* vol. 3, no. 3, pp. 1-22, 2024.

[23] E. Mohammadi, M. Bagheri, and S. Mohebi, "Presentation of a Competency Model for Managers of Government Organizations (Case Study: The Planning and Budget Organization of the Country)," *Journal of Management, Education, and Development in the Digital Age,* vol. 2, no. 1, pp. 69-87, 2025, doi: 10.61838/medda.2.1.6.

[24] E. Kissi, K. Eluerkeh, C. Aigbavboa, M. N. Addy, and P. Babon-Ayeng, "Project managers' competencies in the era of digitalization: the case of the construction industry," *Built Environment Project and Asset Management,* 2024, doi: 10.1108/BEPAM-03-2024-0051.

[25] R. Van de Wetering, "IT ambidexterity and patient agility: the mediating role of digital dynamic capability," *arXiv preprint arXiv:2105.09013,* 2021.

[26] B. T. Alsulami and M. A. Hamza, "Identifying Project Management Competencies in the Saudi Public Sector," *Journal of Engineering Research,* 2024, doi: 10.1016/j.jer.2024.08.002.

[27] R. Deepa, S. Sekar, A. Malik, J. Kumar, and R. Attri, "Impact of AI-focussed technologies on social and technical competencies for HR managers-A systematic review and research agenda," *Technological Forecasting and Social Change,* vol. 202, p. 123301, 2024, doi: 10.1016/j.techfore.2024.123301.

[28] G. Sesini *et al.*, "How to Measure Managerial Competencies in Contemporary Organizations? Guidelines for the Development and Validation of a Context-Based Scale," *TPM: Testing, Psychometrics, Methodology in Applied Psychology,* vol. 31, no. 1, pp. 81-111, 2024, doi: 10.1037/t91742-000.

[29] M. López-Fernández and P. M. Romero-Fernández, "Competencies and Managerial Skills," in *International Managerial Skills in Higher Education Institutions*: IGI Global Scientific Publishing, 2025, pp. 1-16.

[30] A. Dragoo and R. Barrows, "Implementing competency-based business curricula in higher education," *Journal of Education for Business,* vol. 91, no. 7, pp. 374-379, 2016, doi: 10.1080/08832323.2016.1237932.

[31] E. Bilbao Aiastui, A. Arruti Gómez, and R. Carballedo Morillo, "Una revisión sistemática de la literatura sobre el nivel de competencias digitales definidas por DigCompEdu en la educación superior," *AULA ABIERTA,* vol. 50, no. 4, pp. 841-850, 2021, doi: 10.17811/rifie.50.4.2021.841-850.

[32] A. M. Boelt, A. Kolmos, and J. E. Holgaard, "Literature review of students' perceptions of generic competence development in problem-based learning in engineering education," *European Journal of Engineering Education,* vol. 47, no. 6, pp. 1399-1420, 2022, doi: 10.1080/03043797.2022.2074819.

[33] U. Beagon *et al.*, "Preparing engineering students for the challenges of the SDGs: What competences are required?," *European Journal of Engineering Education,* vol. 48, no. 1, pp. 1-23, 2023, doi: 10.1080/03043797.2022.2033955.

[34] R. Wei and P. Sotiriadou, "Teaching generic skill sets to sport undergraduates to increase their employability and promote smooth college-to-work transition," *Journal of Hospitality, Leisure, Sport and Tourism Education,* vol. 32, p. 100431, 2023, doi: 10.1016/j.jhlste.2023.100431.

[35] A. Barrichello, F. R. Morales, and G. M. D. Freitas, "Managerial competencies determining organizational strategic orientation in micro and small enterprises," *Forensic Research and Criminology International Journal,* vol. 13, no. 1, pp. 1-8, 2025, doi: 10.15406/frcij.2025.13.00431.

[36] A. Ramadan, D. Alkhodary, M. Alnawaiseh, K. Jebreen, A. Morshed, and A. B. Ahmad, "Managerial competence and inventory management in SME financial performance: A Hungarian perspective," *Journal of Statistics Applications & Probability,* vol. 13, no. 3, pp. 859-870, 2024, doi: 10.18576/jsap/130301.

[37] A. Ekpenyong and C. Ojo, "Explicating hearing the voice of the customer as a manifestation of customer focus and assessing its consequences," *Journal of Product Innovation Management,* vol. 29, no. 6, pp. 1012-1030, 2018, doi: 10.1111/j.1540-5885.2012.00954.x.

[38] A. Agyapong, H. K. Mensah, and S. Y. Akomea, "Innovation-performance relationship: The moderating role of market dynamism," *Small Enterprise Research,* vol. 28, no. 3, pp. 350-372, 2021, doi: 10.1080/13215906.2021.1967775.

[39] S. Ogbara and C. Chukwunwa, "Effect of Managerial Competencies on Small Medium Enterprise Creation in Awka South Local Government Area," *TECHNOVATE: Journal of Information Technology and Strategic Innovation Management,* vol. 2, no. 2, pp. 70-77, 2025, doi: 10.2139/ssrn.5204862.

[40] L. Hutabarat, N. S. Sihombing, S. P. Herlambang, P. N. U. S. Siregar, and J. Sitompul, "The Effect of Competence, Compensation, Workload, and Work Motivation toward Employee Performance," *International Journal of Finance, Economics and Business,* vol. 2, no. 1, pp. 84-92, 2023, doi: 10.56225/ijfeb.v2i1.171.

[41] O. Rudyk, J. O. Maksymova, and I. Zaletska, "The importance of developing the professional competences of the staff of service sector enterprises," *Market Economy: Modern Management Theory and Practice,* vol. 21, no. 3(52), pp. 461-475, 2023, doi: 10.18524/2413-9998.2022.3(52).275826.

[42] M. Soleimani, S. M. Khademi, S. Abdolmanafi, and A. Shah Nazari, "Designing a Fundamental Competency Model for Human Resource Managers in Start-up Service Businesses in Urban Transportation," *Quarterly Journal of Managing Government Organizations,* vol. 11, no. 2, pp. 1-20, 2023.

[43] R. N. Parwati, M. R. Rianto, and E. Bukhari, "The Effect of Competence, Job Training, Career Development and Supervision on The Performance of Indomaret Employees in East Bekasi (Case Study of Ritail Company)," *IJESM Indonesian Journal of Economics and Strategic Management,* vol. 1, no. 02, pp. 82-49, 2023.

[44] S. M. Hakim and M. R. Soltani, "Development of Managerial Competencies Using Structural Equation Modeling Method," *Journal of Strategic Management Perspective,* vol. 1, no. 3, pp. 68-113, 2023.

[45] S. Balazadeh, "Managerial Competencies: A Framework for Value Creation of Human Resources in Government Organizations," *Journal of New Approaches in Management Sciences,* vol. 4, no. 3, pp. 133-140, 2023.

[46] R. Rezanejad, M. H. Seyed Amiri, and I. Hoseinpour, "Design and Development of Professional Competencies of Managers in Crisis Management in Sports with a Grounded Theory Approach," *Journal of New Approaches in Sports Management,* vol. 10, no. 39, pp. 83-101, 2023.

[47] R. Rezanejad, M. H. Seyed Amiri, and I. Hoseinpour, "Design and Development of Professional Competencies of Managers in Crisis Control in Sports with a Grounded Theory Approach," *Journal of Sports Science,* vol. 15, no. 52, pp. 113-143, 2024.

[48] S. Sahat, Z. Dehdashti Shahrak, M. A. Seyed Naqavi, and H. Nayebpour, "Exploring the Content of Human Resource Managers' Competencies Based on Paradox with a Meta-synthesis Approach," *Journal of Advertising and Sales Management,* vol. 4, no. 1, pp. 340-360, 2023.

[49] Z. Qamushi, J. Pourkarimi, and M. Izadi, "Ethical Competencies of Academic Managers: A Meta-synthesis Study," *Journal of Cultural Strategy,* vol. 14, no. 54, pp. 161-190, 2021.

[50] H. Mohammad Qasemi, S. Shajai, and M. B. Gorji, "Ranking of Components of Human Resource Managers' Competencies Based on Spirituality in the Workplace," *Journal of Strategic Studies in Oil and Energy Industry,* vol. 13, no. 49, pp. 47-68, 2021.

[51] H. Mohammad Qasemi, S. Shajai, and M. B. Gorji, "Presentation of a Human Resource Managers' Competency Model Based on Spirituality in the Workplace," *Quarterly Journal of Education and Human Resource Development,* vol. 9, no. 32, p. 3, 2022.

[52] A. Abdollah Tabaq Qasemia, "Explanation of Professional Ethical Competencies in Managers," *Journal of New Research Approaches in Management and Accounting,* vol. 8, no. 94, pp. 69-78, 2024.

[53] S. H. R. Salehi, "Identification of Human Resource Managers' Competencies Responsible for Establishing Data-Driven Human Resource Management," University of Tehran, 2022.

[54] A. Domaradzka and A. Sulich, "The role of managerial competencies in interorganizational knowledge transfer: a hybrid literature review," *Zeszyty Naukowe. Organizacja i Zarządzanie/Politechnika Śląska,* 2024, doi: 10.29119/1641-3466.2024.201.7.

[55] H. Sukier, R. I. Ramírez Molina, M. Parra, K. Martínez, G. Fernández, and N. Lay, "Strategic Management Human Talent from a Sustainable Approach," *Opción: Revista de Ciencias Humanas y Sociales,* vol. 36, no. 91, pp. 929-953, 2020.

[56] F. Akbari Pashem, "Presentation of a Value Chain Model for the Competencies of Human Resource Managers in Government Organizations Based on Professional Competencies," Lorestan University, 2022.

[57] M. Yarahmadi Khorasani, N. S. Naseri, and E. Faribərzi, "Designing a Conceptual Model for Assessment Center and Development of Managers' Competencies with an Approach to Achieving an Optimal Performance Improvement System Organizationally with a Qualitative Approach," *Research Journal of Transformation Management,* vol. 13, no. 2, pp. 125-156, 2022.

[58] A. Zamaniyan, M. Jahangirfar, and F. Haj Aliyan, "Designing a Competency Model Based on the Results of the Excellence Organizational Model (EFQM) Using Artificial Intelligence for Gas Industry Managers in Iran," *Quarterly Journal of Education and Human Resource Development,* vol. 9, no. 34, pp. 73-100, 2022.

[59] P. Tuning, *Meta-perfiles y perfiles. Una nueva aproximación para las titulaciones en América Latina*. Universidad de Deusto, 2014.

[60] H. Khonifar, S. Ebrahimi, S. Saadat, N. Nadari Bani, and A. Seyfi, "Model of Competencies and Abilities of Middle Managers in Education: A Mixed Research Study," *Quarterly Journal of Educational Studies,* vol. 10, no. 26, pp. 163-193, 2021.

[61] H. Khonifar, S. Ebrahimi, F. Mohammadasmaeili, and B. Gholami, "Designing a Model for the Development of Islamic Iranian Managers' Competencies in Government Organizations: A Qualitative Study in Education," *Quarterly Journal of Education and Human Resource Development,* vol. 8, no. 30, pp. 47-72, 2021, doi: 10.52547/istd.31331.8.30.47.

[62] S. Farahani, V. Ghorbani Zadeh, M. T. Taqvi Fard, and H. Rangriz, "Model of Competencies for Human Resource Managers in Top Universities of Iran," *Journal of Public Management Research,* vol. 13, no. 50, pp. 93-116, 2021.

[63] F. Einaity Zadeh and D. Ghoroneh, "Professional Competencies of Managers of Educational Groups in Universities and Higher Education Institutes: A Systematic Review Study," *Journal of Management in Organizational Education,* vol. 13, no. 3, pp. 13-49, 2024, doi: 10.61186/meo.13.3.13.

[64] R. Berry and W. Routon, "Soft skill change perceptions of accounting majors: Current practitioner views versus their own reality," *Journal of Accounting Education,* vol. 53, p. 100691, 2020, doi: 10.1016/j.jaccedu.2020.100691.

[65] S. DeArmond, B. L. Rau, J. Buelow-Fischer, A. Desai, and A. J. Miller, "Teaching professional skills during the pandemic: Does delivery mode matter?," *The International Journal of Management Education,* vol. 21, no. 2, p. 100770, 2023, doi: 10.1016/j.ijme.2023.100770.

[66] R. Shakeri, "Industry 4.0: Developing a Professional Competency Model for Quality Managers," *Quarterly Journal of Education and Human Resource Development,* vol. 10, no. 39, pp. 176-198, 2023.

[67] A. Koushki Jahromi, "Identification of Competencies of Human Resource Managers for Success in the COVID-19 Crisis with a Digital Business Approach," *Quarterly Journal of Resource Management in Law Enforcement,* vol. 9, no. 33, pp. 207-238, 2021.

[68] M. H. Hoseinshahrastani, "Identification of Key Competencies of Human Resource Managers in Companies of the Iran Khodro Industrial Group and Presentation of a Proposed Model," Shahid Beheshti University, 2021.

[69] S. Maghsoodi, A. Khorshidi, B. Faqih Aram, N. Borzgar, and M. Rezai, "Designing a Competency Model for the Shahid Foundation and Veterans Affairs Managers (With a Qualitative Approach)," *Journal of Educational Management Research,* vol. 15, no. 4, pp. 35-53, 2024.

[70] M. Hoseinpour, R. Hemmati Poor Khatbesara, and S. Satari, "Presentation and Validation of a Model for the Competencies of Managers in Education in Gilan with an Approach to Human Resource Value Creation," *Journal of New Approaches in Educational Management,* vol. 13, no. 6, pp. 1-21, 2023.

[71] Y. Arafat and T. Darmawati, "The Influence of Competence and Leadership on Job Satisfaction and the Implications for Performance," *KnE Social Sciences,* pp. 639-653, 2022, doi: 10.18502/kss.v7i14.12017.

[72] I. N. T. Sutaguna, M. Yusuf, R. Ardianto, and P. Wartono, "The Effect of Competence, Work Experience, Work Environment, And Work Discipline On Employee Performance," *Asian Journal of Management, Entrepreneurship and Social Science,* vol. 3, no. 01, pp. 367-381, 2023.

[73] K. Agustian, A. Pohan, A. Zen, W. Wiwin, and A. J. Malik, "Human resource management strategies in achieving competitive advantage in business administration," *Journal of Contemporary Administration and Management (ADMAN),* vol. 1, no. 2, pp. 108-117, 2023, doi: 10.61100/adman.v1i2.53.

[74] L. Osuala, "Advising upwards: Managing the perceptions and expectations of senior management stakeholders," *Management Decision,* vol. 49, no. 6, pp. 1001-1023, 2018, doi: 10.1108/00251741111143658.

[75] I. Mazrouei Nasrabadi, Z. Sadeqi Arani, and A. Sadeqi Arani, "Dimensions and Components of Managers' Competencies for Competitiveness in the Health Sector," *Journal of Human Resource Management Research,* vol. 16, no. 4, pp. 11-34, 2024.

[76] I. Vakeelzadeh, A. Manzari Tavakoli, R. Pour Rashidi, and A. Nikpour, "Designing a Competency Model for Managers in the Health Sector of the Ministry of Health, Treatment, and Medical Education," *Journal of Green Management,* vol. 3, no. 3, pp. 80-103, 2023.

[77] E. Shadanfar, "Identification and Ranking of Competency Indicators of Human Resource Management for Managers of Government Organizations," Semnan University, 2020.

[78] M. Mohammadi, Q. Salimi, and Z. Mokhtari, "The Role of Emotional-Social Competencies of Managers in Enhancing the Technical, Contextual, and Behavioral Competencies of Employees from the Perspective of Human Resource Development," *Quarterly Journal of Organizational Resource Management Research,* vol. 6, no. 3, pp. 195-214, 2016.