The Relationship Between Human Resource Management Practices and Organizational Innovation: The Mediated Role of Human Capital Within the Banking Sector in North Iraq

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Article

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Abstract

In the world of globalization and increasing business competition, innovation has become a significant component of the sustainability of an organization. One of the important components affecting an organization's ability to innovate is human resource management (HRM). This study analyzes how HRM practices relate to banking sector sustainability, testing theoretical pathways through organizational innovation and human capital as potential mediators. SPSS v25 was used to analyze data collected from 207 banking sector employees. The results demonstrate that the human capital of an organization can be increased by the practices of human resource management, which stimulates organizational innovation in the same fashion. This study also shows that human capital is a partial mediator of the relationship between human resource management practices and organizational innovation, highlighting its importance for converting human resource management activities into innovative results. Considering these results, banks are advised to implement complete human resource management strategies that combine operational efficiency with workforce capacity development to create a dynamic banking environment allowing for continued innovation. The proposed mediation model based on empirical data contributes to the literature and provides insights for banking institutions, which can use human capital to drive innovation in difficult situations.

Keywords: sustainability; human capital; organizational innovation; human resource management practices; banking sector; North Iraq

1. Introduction

In today's interconnected and competitive business world, innovation is widely seen as a key ingredient for an organization's survival and success [1]. The rapid pace of technology, changing market conditions, and the constantly evolving business environment highlight the urgent need for companies to continually reinvent themselves and discover relevant new solutions. As a reaction to these challenges, human resource management (HRM) has emerged as a prime mover in enhancing the innovative potential of an organization. Rather than merely overseeing employee-related activities, HRM seeks to establish an environment conducive to creativity and innovation within the organizational framework. It is thus important to explore the role of HRM in achieving innovative performance given the challenges facing modern businesses. Although the effects of HRM on organizational sustainability have been studied in a variety of industries, a wide research gap remains regarding the explicit investigation of its effects in the banking sector [2,3]. This knowledge gap relates to the intricate interdependencies between HRM, organizational innovation, and human capital as mediators in banking. Sustainability is extremely important in banking as banks are placing a growing focus on green agendas, providing sustainable financial products and services, and

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creating value via sustainability-driven initiatives. Further studies are required to test the mediating effect of human capital between HRM practices and organizational innovation, especially in the banking sector. Organizations that aim to create and implement strategies to foster sustainable innovation should be aware of the mechanisms through which human resource management (HRM) creates and accumulates human capital in this sector [4–6].

HRM is crucial in embedding long-lasting resilience into a company's foundation [7]. This entails integrating sustainability into the fundamental elements of strategic planning and aligning human resource practices with the firm's sustainability objectives; for example, reducing the carbon footprint, enhancing social responsibility, and promoting ethical governance. By using this framework, the human resource department can help develop a workforce that not only possesses the necessary skills and motivation but also demonstrates a strong commitment to the long-term sustainability objectives of the firm. A critical catalyst for increasing sustainable resilience is the integration of interdisciplinary training and education, where human resource departments design and enact programs that instill sustainability values across sectors [8,9]. Integrating principles of environmental management into leadership development programs can prepare leaders with the suitable knowledge to make decisions that strengthen organizational performance, along with environmental sustainability. Studies have shown that companies with comprehensive sustainability training programs experience higher levels of employee engagement and innovation. Organizational innovation refers to the implementation of new structural methods, managerial practices, workplace organization, or external relations that differ substantially from current organizational norms [10]. The authors of [11] hold the view that organizational innovation is more than just jargon; instead, it is a new business model that drives the translation of knowledge into innovative solutions. Organizational innovation cannot be undertaken in isolation; it must be set in the broader cultural tradition of appreciating flexibility. It involves aptly investing in resources to facilitate dynamic business plans as well as provide novel, competitive solutions [12]. The sustainability dimension introduces crucial considerations for banking innovation. As financial institutions increasingly prioritize , HRM must evolve to cultivate workforces capable of driving both financial and sustainable innovation [13,14]. This includes developing financial products, implementing sustainable operational practices, and fostering ethical governance - all of which require specific human capital competencies [15]. Recent studies suggest that HRM systems aligned with sustainability principles can enhance organizational resilience while driving innovation [16–18]. For instance, banks incorporating sustainability-focused training programs report higher levels of employee engagement in innovation initiatives [19]. Similarly, performance management systems that reward sustainable innovation behaviors demonstrate stronger human capital development outcomes [20]. In the fast-evolving banking sector, sustainable innovation is known to be the driver of competitive advantage and long-term success [21]. The industry is confronted with dual pressures from digitalization and increasing customer expectations, leading to a demand for ongoing sustainable innovation in products, services, and back-office operations. Yet, the impetus for sustainable innovation in the banking sector cannot be explained by technological change or restructuring efforts alone, as it is driven by the knowledge and abilities of human capital in financial institutions [22]. While human capital—comprising employees' collective knowledge, skills, and competencies [23]—is widely recognized as a driver of innovation [24,25] , its mediating role between HRM and innovation has been empirically examined in multiple contexts [26,27]. However, banking-sector studies remain disproportionately focused on direct HRM-innovation links [28,29], neglecting how financial regulations reshape HRM's human capital development efficacy and the interplay between digital transformation and human capital utilization. This study extends prior mediation research by contextualizing it within banking's unique constraints.

Prior research has established human capital's role in organizational resilience and innovation [30,31], Banking-specific studies remain underrepresented in two key aspects: the contingent effects of macroeconomic instability (e.g., North Iraq's regulatory-technological landscape) and HRM systems optimized for financial sector innovation. Recent work by [32] and [33] has begun addressing

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these gaps, suggesting the field is evolving rather than neglected. This study builds on their foundations by examining how high-uncertainty environments moderate HRM's effectiveness in developing sustainability-oriented human capital, and how human capital configurations differentially enable process innovations versus product innovations in the banking sector. This research addresses a pivotal moment in HRM, where labor market volatility, demographic transitions, digital transformation, and accelerating sustainability mandates collectively necessitate new organizational approaches to human capital development. Specifically, this study investigates how banks can cultivate workforce capabilities that simultaneously address disruptive technological change and growing requirements for sustainable finance expertise, particularly in service sectors facing these compounded pressures. In this evolving environment, it is essential to leverage the possibilities of human resource management (HRM) to motivate and engage staff and facilitate their growth as drivers of innovation [5,34]. This study takes a broader perspective, examining not only how organizational changes affect businesses but also how HRM can be one of the drivers in creating a workplace in which there is a positive attitude toward employees who are involved in the innovation process. This extensive understanding provides organizations with a sound foundation to face future challenges, ensuring that human resource management solutions not only meet current needs but also lay the groundwork for a flexible and forward-thinking future [1].

This study fills existing gaps by examining these relationships empirically in the context of North Iraqi banks. It combines human resource management practices, organizational innovation, and human capital with the consideration of sustainability in the banking sector. This study examines the theoretical mediating role of human capital in the association between HRM practices and organizational innovation in the banking sector of North Iraq. The purpose of this study is to contribute to the literature by providing practical and theoretical evidence on how HRM practices can be designed to facilitate sustainable human capital innovation in the banking sector. Beyond its usefulness for academic work, this study has practical implications for managers. Combining ideas from the Resource-Based View (RBV), Knowledge-Based View (KBV), and Human Capital Theory, it theoretically expands on the current body of literature and provides empirical support for the idea that human capital mediates the relationship between HRM and innovation [35–37]. From a practical perspective, the findings will offer actionable recommendations for banking institutions, particularly those in emerging economies such as North Iraq, on how to design and implement HRM strategies that enhance human capital and drive innovation [38–40]. Additionally, given the increasing emphasis on human capital development in financial sector policies, this study provides insights that could inform HR policies and innovation-driven regulatory strategies. The goal of this study is to further academic knowledge and real-world applications by examining the mediating function of human capital in HRM-driven innovation. This will provide important insights for banking institutions operating in difficult contexts, such as North Iraq.

2. Literature Review

This study draws on three interconnected theories—the Resource-Based View (RBV), the Knowledge-Based View (KBV), and Human Capital Theory (HCT)—to explain how human resource management (HRM) practices foster organizational innovation by developing human capital. The authors will now outline the core principles of each theory, how they work together, and why they're relevant to our study's variables. The RBV suggests that companies gain a lasting competitive edge by utilizing resources that are rare, valuable, difficult to imitate, and non-substitutable (VRIN) [41]. HRM practices, such as careful hiring and training programs, build firm-specific human capital, a VRIN resource that's hard for competitors to copy. Innovation happens when HRM systems uniquely shape human capital to tackle new challenges [42]. While RBV provides the broad justification for investing in HRM, HCT and KBV clarify how human capital becomes a valuable asset. The KBV builds on RBV by highlighting knowledge as the most important strategic resource. Innovation arises from the creation, sharing, and application of both unspoken and documented knowledge [43]. HRM practices, for instance, teamwork incentives and knowledge-sharing platforms, improve employees'

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ability to generate knowledge (through learning) and share it (through collaboration). Human capital acts as an intermediary between HRM and innovation, transforming individual knowledge into company-wide innovation [44]. KBV explains the "knowledge" side of human capital, while HCT explains how it's built up. HCT [23] proposes that investments in education, skills, and health (human capital) lead to financial benefits for both individuals and organizations. HRM practices like training and career development directly enhance employees' skills (human capital), which then increases their capacity to innovate [45]. Essentially, human capital bridges the gap between HRM systems (the input) and innovation (the output). Researchers have extensively studied the interplay between these components, highlighting how good HRM practices support knowledge generation, skill development, and an innovative workplace. This section looks at the empirical evidence and theoretical foundations for these connections.

2.1. Human Resource Management and Human Capital

Human capital is demonstrably influenced by HRM practices, as noted in [46]. This notion is reinforced in [47], which showcases the significant effects of HRM methods on organizational dynamics. Specifically, effective recruitment strategies can attract skilled individuals, thus bolstering the overall human resource capacity. The Resource-Based View (RBV) theory [48] posits that relevant experience and skill sets, cultivated through human capital, represent unique and advantageous resources essential for achieving a competitive position in the market.

HRM may encourage training and development to improve human capital, which bolsters the Knowledge-Based View (KBV) theory's assertion that knowledge and knowledge creation are critical to achieving organizational success [49]. This is because HRM is responsible for designing and implementing training and development programs [47]. These initiatives aim to upskill employees, improve their performance, and enhance their human capital by equipping them with new knowledge and capabilities. The author of [47] further adds to this by providing a possible indication of HRM practices' potential effects on human capital through performance management. This mirrors the notion in [50] that HRM practices, including performance evaluations and feedback, help identify areas of improvement for employees. As a result, addressing performance gaps and providing constructive feedback can lead to enhanced human capital through continuous development. Along similar lines, the role of employee engagement in enhancing human capital development is also outlined [50]. As such, engaged employees are more likely to invest time and effort in their roles, leading to higher levels of human capital. Human resources are utilized to reap the maximum benefit from strategies devised and implemented by the management for securing sustainability in terms of green goals [28]. Organizations diversifying their product lines, services, and value chains should look to principles underlying nature and ecological balance systems, as these are the ingredients credited with attaining sustainability [29]. In addition, increasing profits, creating value for human resources, catering to societies, and raising environmental awareness facilitate the attainment of sustainability [30]. Moreover, [51] examines the sustainable HRM, Green HRM, and Environmental HRM, which are terms that have been increasingly used in the field of human resources. This study aims to analyze how these terms are being used in the literature to identify if there are conceptual differences between them. Human resources, according to [52], encompasses the skills, knowledge, and awareness that employees bring to an organization. In service industries, HR specifically refers to the expertise and capabilities of the service provider's workforce. Research in Human Resource Management (HRM) suggests a positive link between human capital (the intellectual capital of HRM service providers), internal clients of HRM services, and employees' perception of the value of HRM services [53]. The connection between HRM and human capital has been extensively studied. For instance, [54] found that strategic HRM can boost employee human capital and an organization's ability to generate knowledge, especially in high-tech companies. Furthermore, [55] have shown that various HRM practices can foster employee creativity, and [56] argue that a high-performance work system can improve employee well-being and engagement.

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Therefore, HRM practices that foster employee engagement contribute to a motivated and productive workforce. In this regard, the following hypothesis was formulated:

H_1: There is a positive relationship between HRM practices and human capital.

2.2. Human Resource Management and Organizational Innovation

A robust body of research demonstrates that strategic HRM practices significantly influence organizational innovation capacity, ultimately enhancing performance and competitive advantage [57,58]. Scholarly consensus positions HRM as a critical enabler of innovation through multiple pathways, including knowledge management systems, cultural development, and capability building [59]. Particularly compelling evidence comes from [60] , whose findings in IT sector studies reveal that HRM-induced innovative climates directly improve innovation performance metrics. This aligns with more recent confirmations that high-involvement HRM systems positively correlate with enhanced innovation capabilities [61]. In this context, several channels through which HRM practices and strategies with organizational innovation have been neglected in these examinations. Hence, as a contribution to the existing literature, these possible avenues were considered.

The author of [47] highlights that RM plays a crucial role in shaping an organization's culture. A culture that values innovation, risk-taking, and continuous improvement is essential for nurturing and sustaining innovation within the organization. The author [47] further highlights that effective HRM encourages knowledge-sharing and collaboration among employees. By breaking down silos and promoting cross-functional interactions, HRM facilitates the exchange of ideas, leading to a higher likelihood of innovation. In [50,62], the authors highlight that HRM practices that empower employees by granting them autonomy and decision-making authority can stimulate creativity and innovative thinking. In [50], the authors held that HRM plays a crucial role in providing employees with training and development programs, while it is asserted in [63,64] that HRM is responsible for recruiting and developing a skilled and diverse workforce. Thus, when the workforce is effectively trained and developed, fostering innovation becomes highly achievable. Moreover, organizations that focus on hiring employees with innovative mindsets and provide opportunities for their continuous growth are more likely to foster a culture of innovation. All these insights reinforce the notion that there are numerous avenues through which HRM practices and strategies positively impact organizational innovation. In [1], the authors discuss how HR practices are linked to innovation, which helps organizations build expertise aimed at achieving business objectives, such as enhancing performance through innovation. To drive this innovation, companies can categorize and apply strategic HR practices that encourage and motivate employees to engage with these initiatives [65]. Hence, HR practices play a crucial role in fostering innovation activities. Notably, an increase in sustainable innovation can boost an organization's overall innovative efforts, ultimately leading to improved performance. The authors of [66] highlight the core idea of sustainability, which encompasses the connection between financial outcomes and sustainable practices. This concept has been echoed by several scholars who emphasize an efficiency–innovation approach. They argue that understanding efficiency and innovation revolves around two main goals: either reducing costs or enhancing "resource efficiency" through innovative solutions. Thus, sustainable HR practices are essential for promoting innovation activities [67]. However, their limited coverage has been the norm in several past studies, and they have been fully explored in this review. As a result, the following hypothesis was formulated:

H_2: There is a positive relationship between HRM practices and organizational innovation.

2.3. The Mediating Role of Human Capital in Human Resource Management and Organizational Innovation

When viewed through the RBV framework, human resources need to be unique and irreplaceable, allowing organizations to stand out in a competitive landscape. As noted in previous research, when employees change jobs, they take their human capital with them, which can be a loss

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to their former employers [68]. Human capital is arguably the most vital intangible asset, as it contributes to job satisfaction and enhances both individual and organizational performance [9]. It has been suggested that green skills can be developed through targeted training, which means that human capital plays a crucial role in helping organizations recognize their intangible assets and promote environmentally friendly practices. A stronger emphasis on human capital could lead to more sustainable organizations, as employees who possess greater knowledge and awareness of environmental issues tend to give their companies a competitive edge [69]. From the RBV perspective, resources must be distinct, scarce, and irreplaceable for organizations to gain a competitive advantage. Human capital is integrated within employees, and when they leave, that valuable knowledge goes with them. Therefore, companies should focus on retaining this vital asset. The connection between green intellectual capital and sustainability is significant, with human resources playing a key role in promoting sustainable practices. Research indicates that human capital is instrumental in improving an organization's performance across the triple bottom line. Furthermore, a positive correlation has been identified between employees' environmental knowledge and their green behaviors. Earlier studies have also highlighted a direct link between sustainability efforts and green human capital [70–72].

One of the key concerns surrounding the HRM, human capital, and organizational innovation debate is the issue of mediating effects. Specifically, there is a lack of consensus regarding the exact variable mediating HRM and organizational innovation. In support of this notion, the results in [60] highlight that connections between HRM practices and innovation performance in the IT industry are moderated by an innovative climate and mediated by organizational innovation capability. It was established in another study [73] that tacit and explicit knowledge-sharing mediate high-involvement HRM practices' impact on organizational innovation capability. Contrary to other related studies, this study argues that human capital acts as a mediator in the relationship between HRM practices and organizational innovation. In this context, mediation means that HRM practices impact organizational innovation not only directly but also indirectly through their relationship with the development and enhancement of human capital. When HRM practices effectively foster and nurture human capital, it, in turn, leads to a more innovative workforce and organizational culture. This is because human capital, which comprises employees' knowledge, skills, and experiences, influences their ability to engage in innovative behaviors, generate creative ideas, and implement new initiatives [46,50]. Consequently, this led to the formulation of the following hypothesis:

H_3: Human capital mediates the relationship between HRM practices and organizational innovation.

2.4. Human Capital and Organizational Innovation

The RBV, as articulated by [48], posits that an organization's resources—whether tangible or intangible—are central to its ability to achieve and sustain a competitive advantage. According to this viewpoint, human capital—which includes the knowledge, abilities, and experience of employees—is a vital resource that is both priceless and challenging to replicate. According to this perspective, banks that successfully cultivate and utilize their human capital are better equipped to innovate and maintain a competitive edge in a setting that is becoming more dynamic and sustainable [8].

The KBV expands on the RBV by emphasizing the value of knowledge as a strategic asset. Knowledge production, sharing, and utilization are critical to corporate performance, especially in knowledge-intensive businesses such as banking, according to [49]. According to the KBV, businesses that can effectively manage their knowledge resources through human capital development are more likely to foster sustainable innovation. This argument is especially applicable to the banking industry, where innovation capability is most closely related to the management of sophisticated information and knowledge systems.

Human Capital Theory prioritizes employee improvement as a strategy for organizational performance and sustainability [7]. As argued in [29], human capital, being the accumulation of the skills, knowledge, and abilities of employees in an organization, plays a significant role in

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determining its overall performance. It contends that education, training, and developmental investments are very important in improving employees' performance and thus an organization's capability to innovate. The banking industry, characterized by complex products and stringent regulatory environments, demands high degrees of expertise and relies heavily on the strategic evolution of human capital in its bid to drive innovation.

Meanwhile, adaptability and flexibility also have a crucial role to play in the human capital and organizational innovation debate. As outlined in [50], human capital that is adaptable and flexible allows an organization to respond quickly to market changes and emerging opportunities. Therefore, employees with a diverse set of skills can be more easily redeployed to address new challenges and explore innovative solutions. By deriving insights such as the implementation of innovations, human capital's positive effects can be supported in this regard [46]. High-quality human capital possesses the expertise required to implement innovative ideas. Skilled employees can overcome obstacles during the implementation phase and ensure the successful execution of innovative projects. In connection with [46] ideologies about the absorption of external knowledge, another possible channel through which human capital's effects are transmitted to organizational innovation is evident in this regard. The current study argues that human capital can serve as a bridge for integrating external knowledge and ideas into the organization. Therefore, employees with strong human capital are more adept at assimilating and applying knowledge from collaboration with other organizations, industry conferences, study papers, and other external sources [63]. Consistent with human capital theory, organizations with higher levels of human capital demonstrate a stronger association with organizational innovation compared to those with lower levels. Based on the above discussion, the following hypothesis was formulated:

H_4: There is a positive relationship between human capital and organizational innovation.

To visually represent these relationships, a conceptual model is introduced, theorizes how HRM practices directly and indirectly associate innovation through human capital. This model integrates insights from the existing literature, aligning theoretical frameworks with empirical findings. The diagram in Figure 1 illustrates the relationship between HRM practices, human capital, and organizational innovations through the four key hypotheses.

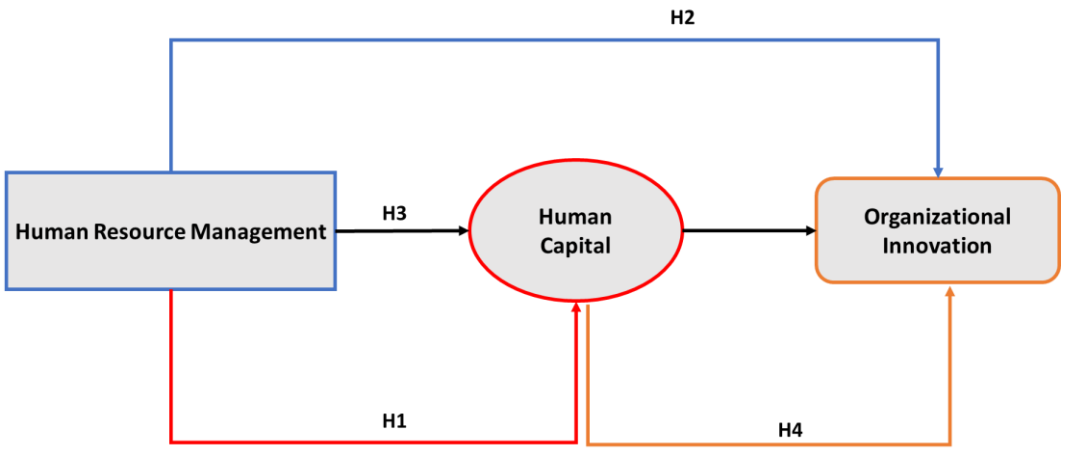

Figure 1. Conceptual framework diagram.

3. Methodology

This study aims to explore the mediating role of human capital in the relationship between human resource management (HRM) practices and organizational innovation in the banking sector, specifically within the context of North Iraq's banking sector. This section outlines the study design, population and sample, data collection methods, and analysis procedures used to address the study questions and test the hypotheses.

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3.1. Study Design

A quantitative study design was adopted, which is suitable for investigating relationships between variables and testing hypotheses. The study examines the associations between HRM practices, human capital, and organizational innovation, testing whether the data align with a theoretical mediation model in which human capital mediates the relationship between HRM practices and innovation. A cross-sectional survey method was employed to gather data from bank employees in multiple organizations within the banking sector in North Iraq for two months from June 2023 to August 2023. This design was selected for its ability to capture data from a large sample at a single point in time, making it efficient for testing the relationships outlined in the proposed model.

3.2. Population and Sampling

The population of this study includes all the banks in Erbil. According to the North Iraq Region Chamber of Commerce, as of the beginning of 2023, there are a total of 34 banks in Erbil. Thus, the study participants were employees working in these banks. The total number of employees working in the 34 banks in Erbil was 1365. A convenience sampling method was employed, where participants were selected based on their accessibility and willingness to participate. Unlike simple random sampling, which requires a complete list of the population and random selection, convenience sampling allowed the data to be gathered efficiently from a diverse group of banking professionals in North Iraq. This approach ensured the inclusion of participants from various organizational levels, including HR managers, mid-level operational managers, senior executives, and front-line staff. While convenience sampling has limitations in terms of generalizability, it was deemed appropriate for this study due to practical constraints and the need to capture insights from professionals directly involved in HRM practices and innovation processes. Using an online sample size calculator, a sample size of 300 participants was established [74]. Data were collected using a structured questionnaire distributed to 300 banking professionals, with 207 valid responses received.

3.3. Study Instruments

A questionnaire presented in [75] and [72], based on theories and prior measurement data, was used in the study's survey. To gauge participants' opinions on HRM procedures, human capital, and innovation, a five-point Likert scale from 1 ("strongly disagree") to 5 ("strongly agree") was employed in the questionnaire. More accurate answers are possible since this scale guarantees a neutral and balanced midway point. Depending on participants' accessibility, the questionnaire was given out both in person and electronically. While in-person distribution was utilized for bank personnel who might not have had easy access to digital platforms, electronic distribution was carried out through email and online survey tools.

As seen in Table 1, the questionnaire asked for five demographic details: gender, age, position, experience, and educational attainment. According to the study's findings, 58% of participants were female, 45% were in the 31–39 age range, 56% had bachelor's degrees, 29% were perceptive, and 28% had one to four years of experience. Cronbach's alpha values were 0.857 for the seventeen HRM practice items created in [75], 0.911 for the five human capital elements created in [75], and 0.936 for the twelve organizational innovation items created in [72]. Cronbach's alpha for the 34 total components was 0.873. According to [76], for a study to be recognized as valid, its Cronbach's alpha needs to be at least 0.7. This demonstrates the reliability of every variable employed in this study.

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Table 1. Demographic characteristics of participants.

Gender			
		Frequency	Percent
Valid	Male	112	54.1
	Female	95	45.8
	Total	207	100.0
Age			
		Frequency	Percent
Valid	18-24	9	4.3
	25-30	59	28.5
	31-39	93	44.9
	40-49	35	16.9
	50-59	11	5.3
	Total	207	100.0
Education			
		Frequency	Percent
Valid	High School	41	19.8
	Diploma	41	19.8
	Bachelor's Degree	116	56.0
	Master Degree	8	3.9
	PHD	1	.5
	Total	207	100.0
Position			
		Frequency	Percent
Valid	Managing director	2	0.97
	Senior manager	10	4.83
	Branch managers	5	2.48
	Other managers	37	16
	Cashier	40	20
	Chief foreman	12	5.5
	General employees	89	45
	Engineer	5	2.42
	Programmer	3	1
	Project managers	2	0.9
	Translators	2	0.9
	Total	207	100
Experience			
		Frequency	Percent
Valid	Up to 1 year	7	3.4
	1-4 years	58	28.0
	5-10 years	53	25.6
	11-15 years	42	20.3
	16-20 years	26	12.6

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More than 20 years	21	10.1
Total	207	100.0

3.4. Data Analysis Procedures

Once data collection was complete, the responses were processed and prepared for analysis. Missing data were addressed using mean imputation or removed if necessary. Descriptive statistics were generated to provide an overview of the sample demographics and the distribution of responses. Data analysis was conducted using SPSS v25 for descriptive statistics and preliminary correlations, AMOS v24 for confirmatory factor analysis (CFA) and structural equation modeling (SEM), and the PROCESS macro v4.3 [77] to estimate indirect effects consistent with the proposed mediation model. Before testing the structural relationships, the measurement model was assessed for convergent validity, discriminant validity, and reliability. The criteria for evaluation include factor loadings, average variance extracted (AVE), and composite reliability (CR).

4. Results

4.1. Factor Analysis

Researchers can determine relationships between observed variables and reduce their number by using exploratory factor analysis (EFA) [78]. The factors were extracted using principal components analysis (PCA), which was based on Promax with Kaiser normalization rotation. As suggested in [76], items were only included if they loaded 0.4 or above on a single item. Bartlett's Test was significant at $P<0.05$, and the KMO was 0.849, which successfully reaches the necessary sample value [79].

Three separate factors that accounted for 60.80% of the variance were identified using EFA. The twelve items in OI explained 25.79% of the variance and had a loading range of 0.682 to 0.822. Eleven of the seventeen items in the HRM practices survey loaded between 0.581 and 0.844, and the construct accounted for 22.63% of the variation. Five items were eliminated due to low loadings. With five items loading between 0.837 and 0.870, the HC construct accounted for 12.38% of the variation. The results of the exploratory factor analysis are shown in Table 2.

Table 2. Exploratory factor analysis results.

Factor	Factor Loading	% of Variance Explained	Initial Eigenvalues	Cronbach's Alpha
Factor 1: Organizational Innovation				
OI1	.739			
OI2	.776			
OI3	.800			
OI4	.768			
OI5	.745			
OI6	.682	25.79%	7.222	0.936
OI7	.805			
OI8	.811			
OI9	.822			
OI10	.800			
OI11	.705			

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OI12	.762			
Factor 2: HRM Practices				
HRM1	.740			
HRM2	.695			
HRM3	.767			
HRM4	.795			
HRM5	.723			
HRM6	.785	22.63%	6.336	0.917
HRM7	.844			
HRM8	.643			
HRM9	.728			
HRM10	.829			
HRM11	.581			
Factor 3: Human Capital				
HC1	.856			
HC2	.870			
HC3	.870			
HC4	.853	12.38%	3.466	0.911
HC5	.837			

4.2. Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was employed to ensure that the collection of measurements had a single dimension to guarantee the unidimensionality of identified constructs. AMOS v24 was utilized for this purpose. The researchers employed a convergent validity test to evaluate the study's validity. The authors of [80] and [76] suggest that factor loading can be used to analyze convergent validity. According to [80], composite reliability (CR) should be >= 0.6, and the average variance extracted (AVE) should be 0.5 or above to attain validity. The CFA results are summarized in Table 3, which also demonstrates that every concept satisfies the validity requirements and is dependable.

Table 3. Confirmatory factor analysis results.

Construct	Items	Factor Loading	CR	AVE
OI (Factor 1)	12	0.634 - 0.830	0.933	0.54
HRM (Factor 2)	11	0.540 – 0.890	0.924	0.53
HC (Factor 3)	5	0.650 – 0.770	0.836	0.51

Note: HRM: human resource management; HC: human capital; OI: organizational innovation.

The CFA diagram (Figure 2) validates the a priori measurement model, testing how well observed indicators (rectangles) map onto their hypothesized latent constructs (ovals). This aligns with classical test theory, where latent variables represent unobserved theoretical dimensions [81,82]. Furthermore, AMOS v24 was utilized as indicated in Table 4 stated in [83] [51], the six measures of the quality of the model fit are Chi-square/degrees of freedom (CMIN/DF), Comparative Fit Index (CFI), Normative Fit Index (NFI), Incremental Fit Index (IFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). The current

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study's CMIN/DF value was 1.726, which completely satisfies the criterion in [84]. Likewise, the CFI, NFI, and IFI values were, respectively, 0.956, 0.904, and 0.957. The values of each of these indicators were near 0.9 and met the standards of [85–87]. Additionally, the benchmark values were met by the RMSEA value of 0.059 and the SRMR value of 0.057. It can be concluded that the model fits the data well based on the findings of these fit markers.

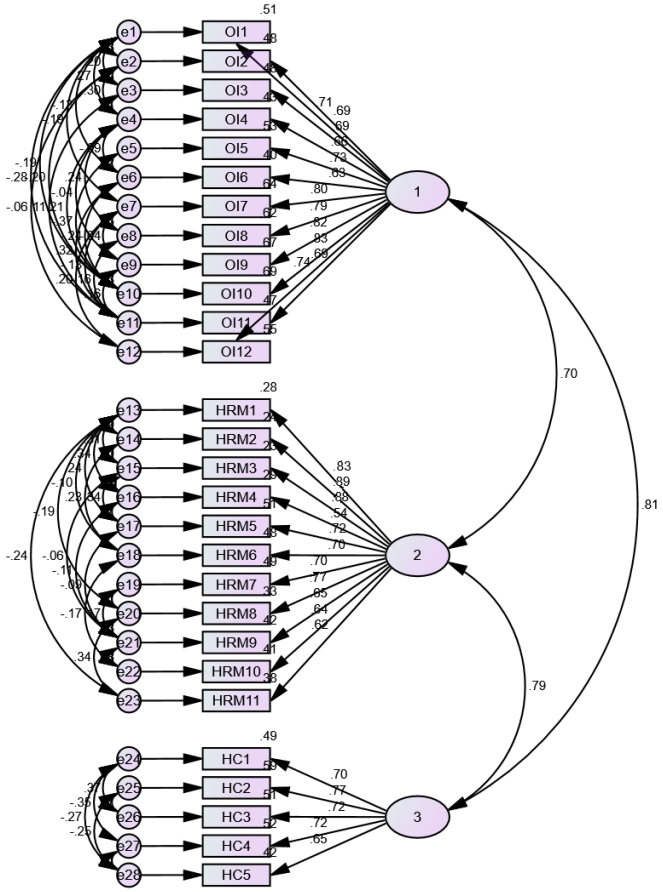

Figure 2. Confirmatory factor analysis.

Table 4. Fit indicators for the CFA model.

Model	CMIN	DF	P	CMIN/DF	CFI	NFI	IFI	RMSEA	SRMR
	429.749	249	.000	1.726	0.956	0.904	0.957	0.059	0.057

To verify construct validity, the authors also performed a discriminant validity test. Statistical tests were created to determine whether the correlation between two constructs is statistically substantially smaller than unity to evaluate discriminant validity, according to [88]. The discriminant validity test is summarized in Table 5.

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Table 5. The discriminant validity test.

	HRM	HC	OI
HRM	**0.742**	.677**	.676**
HC	.677**	**0.857**	.701**
OI	.676**	.701**	**0.769**

** Correlation is significant at the 0.01 level (2-tailed). Note: HRM: human resource management; HC: human capital; OI: organizational innovation.

4.3 Correlation

Table 6 shows the correlations between the study variables, which all had a positive correlation with one another at a significance level of 0.01.

Table 6. Correlations between variables.

	HRM	HC	OI
HRM	1		
HC	.677**	1	
OI	.676**	.701**	1

n=207. ** The correlation is significant at the 0.01 level (2-tailed). Note: HRM: human resource management; HC: human capital; OI: organizational innovation.

4.4. Hypothesis Testing

The researchers used the PROCESS macro for SPSS Version 4.2 to test the study hypotheses. This study was conducted to assess each component of the proposed mediation model by using Model 4 and the bootstrapping method with bias-correlated confidence estimates. First, it was found that the direct effect of HRM was positively associated with OI ($F = 172.6244$, $R^2 = 0.457$, $P < 0.05$). In this study, the 95-confidence interval of the indirect effects was obtained with 5000 bootstrap resamples. The indirect effect of the mediation analysis confirmed the mediating role of HC in the relationship between HRM and OI ($F = 133.5160$, $R^2 = 0.567$, $P < 0.05$). Because zero does not fall between the lower and upper bound of the 95% confidence interval (LLCI=0.1460, ULCI=0.2977), the author infers that the effect of HC between HRM and OI is significantly different from zero. This means that the direct effect of HRM on OI became significant when controlling by HC, thus suggesting a partial mediation. Table 7 summarizes the details of the hypothesis testing results of this study. According to the criteria in [89], the results of this study show that the hypotheses yielded statistically significant results.

Table 7. Results of hypothesis testing.

	Linkage	R^2	F Test	P-value	B Coefficient	Hypothesis Acceptance
H_1	HRM - HC	0.458	173.073	.0000	0.215	Accepted
H_2	HRM - OI	0.457	172.624	.0000	.494	Accepted
H_3	HRM – HC - OI	0.567	133.5160	.0000	1.035	Accepted
H_4	HC - OI	0.492	198.544	.0000	1.614	Accepted

Note: HRM: human resource management; HC: human capital; OI: organizational innovation.

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5. Discussion

In this study, the relationship among human resource management practices, human capital, and organizational innovation in the North Iraqi banking sector was investigated. The results confirm that human capital plays a vital role in developing innovation, but its complete fulfillment faces various obstacles. While it was expected that organizations could acquire a competitive advantage through the acquisition of valuable and unreplicable resources, as reflected by traditional perspectives, the existence of economic uncertainty and weak institutional structures in North Iraq has largely hindered banks from adequately leveraging these resources. Compared to financial institutions within stable economies, which apply well-structured human resource management practices to instill innovation, banks in North Iraq have faced regulatory uncertainty and financial limitations that hinder the process.

In addition to supporting the notion that knowledge-sharing networks are crucial in ensuring a competitive edge, the results demonstrate the role of knowledge in driving innovation as an additional key element. Banking in North Iraq was, however, found to lack advanced frameworks for information-sharing and to place more focus on experience-based learning compared to knowledge management and digital transformation through fintech. Banks in this region depend on more clerical transactions compared to international banking practices, in which technology has been viewed as the primary force of change [7,8]. Consequently, their capacity to cope with changing economic circumstances is affected. It was mostly assumed that investment in human capital in terms of education, training, and skill enhancement would tend to make workers more productive and creative. Though this relationship was supported by the evidence, banks in North Iraq have suffered from poor HRM implementation, which has resulted in mixed innovation results. Poor career paths, retention, and HR rules prevent financial firms from fully utilizing the capabilities of their employees. While other banks launched structured HRM programs to foster innovation, the North Iraqi banking sector was constrained by institutional support deficiencies and legal prohibitions[90].

The above argument underscores the applicability of aligning HRM practices with sustainability goals to foster long-term resilience in organizations. This strategic alignment includes integrating sustainability into human resource functions, thereby improving overall readiness and agility. It emphasizes integrating the principles of sustainability into the diverse education components of human resource management to create a higher overall appreciation of the impact of business practices on the general social and environmental spheres. By training staff on issues of sustainability, the banking industry can develop an enlightened workforce actively contributing to resilience development. To improve employee resilience, organizations must adopt new practices [91]. Workers with previous experience in innovative environments have a high likelihood of generating new ideas, improving work efficiency, and demonstrating greater adaptability. Furthermore, workers with polychronic behavior can facilitate innovation through resilience, as it enables them to solve complex issues and improve creativity in their jobs [92]. One of the key results of this study is the emphasis on human creativity instead of technology-led innovation in North Iraq.

Although banks in advanced economies leverage fintech offerings and digital innovations to power banking innovation, the banking sector in North Iraq has depended, to a large extent, on human creativity due to a lack of technological infrastructure. Moreover, political and regulatory uncertainties, which are powerful inhibitors of innovation, have compounded these issues. Such variables expose a deficiency in traditional theory frameworks, as they cannot fully explain the institutional and financial constraints that have influenced HRM-led innovation in transition economies. This study emphasizes the intrinsic significance of good HRM practices in driving sustainability and resilience in the banking industry. By aligning HR approaches with sustainable practices, financial institutions are more able to handle the uncertainty of an evolving industrial environment characterized by swift technological change and shifting consumer demands. The results of this study suggest that sustainable HR practices—encompassing strategic workforce planning, ongoing learning and development, and cultivating an engaged organizational culture—are central to improving organizational innovation and long-term success. This study indicates that

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current theories require modification to accommodate the unique challenges of financial institutions in North Iraq. In confronting the role of human capital in fostering innovation, external determinants such as institutional support, legal frameworks, and economic stability must be considered in a comprehensive approach.

Further study is recommended to incorporate these elements into HRM–innovation frameworks to provide a more comprehensive understanding of banking innovation in transition economies. The application of this method will enable HRM policies to be designed with the specific demands of the North Iraqi banking industry in mind. Thus, investing in human capital can yield intensive and innovative outputs. There is a need to continue investing in training and development, even during difficult times. Organizations must see this as an investment and not merely an expense, as this enables them to remain competitive in the long run.

6. Conclusions

This study contributes to the current body of literature by endorsing and expanding significant theoretical positions, including the Resource-Based View (RBV), Knowledge-Based View (KBV), and Human Capital Theory. This study demonstrates how HRM functions as a partial mediator between HRM practices and organizational innovation, underscoring the strategic importance of HRM in employing human capital as a valued, rare, and distinctive resource. The results show that HRM practices enhanced employee capacities and fostered an environment that facilitated innovation, which is consistent with the core ideas of the RBV. In addition, this study adds to the KBV by further emphasizing the mechanisms through which knowledge creation and exchange in financial institutions produce innovative outcomes. This study also supports continued investment in human capital development as a main driver of organizational innovation by providing empirical evidence supporting Human Capital Theory. This study examined the relationship between HRM practices and organizational innovation, with human capital as a mediating factor, within the banking sector of North Iraq. Theoretically, this study expands the HRM-Innovation Theory and addresses a gap in research by confirming the crucial role of human capital in linking HRM to innovation, especially in understudied areas like developing economies. Furthermore, it supports the contingency perspective by showing how North Iraq's unique cultural and institutional environment affects how effectively HRM drives innovation. The findings also reinforce the Resource-Based View, emphasizing that human capital is a key asset that converts HRM investments into innovative results. Practically, bank managers should prioritize HRM practices that cultivate human capital – think continuous learning and knowledge sharing – to foster a culture of innovation. Policymakers could implement sector-wide training programs and incentives to address skill shortages and stimulate innovation in Iraqi banking. Finally, HR professionals can create performance metrics that reward creative problem-solving and teamwork, aligning individual development with the bank's innovation objectives. In summary, this study proved the role of HRM practices in developing human capital and driving organizational innovation in the banking sector of North Iraq. The findings support the argument that HRM processes such as recruitment, training, and performance monitoring serve as determinants of innovation and human capital growth. The partial mediation attests to the significance of human capital in streamlining HRM-driven goals into measurable innovation results.

6.1. Implications

Empirically, this study provides valuable new insights into the mechanisms through which HRM practices promote innovation in North Iraqi banking via human capital building. The results demonstrate that banks must undertake an array of HRM approaches, including special recruitment, staff training, performance management, and staff engagement activities, to build innovative employees. Data from banking professionals were analyzed using SPSS v25, generating good empirical evidence that HRM-based human capital development directly improved organizational creativity. The study also offers practical recommendations for financial firms in emerging economies, grounded in the identified regional challenges—such as regulatory constraints and

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economic volatility—those respondents associated with HRM effectiveness. These insights, derived from survey data, literature, and qualitative interviews, highlight contextual barriers that may hinder the implementation of HRM best practices.

This study highlights new avenues for research, as well as providing valuable insights. As this study focused on the banking sector in North Iraq, the generalizability of the findings to different industrial and geographical settings should be considered in future studies. Comparative studies undertaken across different sectors or industries might provide additional insights into how institutional and cultural factors influence the interaction between HRM and innovation. Qualitative measures such as interviews or case studies may be utilized to further formulate a more detailed understanding of the impact that HRM practices have on innovation and human capital development. Given the banking sector's continued evolution into the digital realm, studies should also be conducted to explore how technology-driven HRM practices, such as AI administration and online training sites, would help to facilitate human capital development and inspire innovation. Future studies can further enhance our understanding of HRM strategies and organizational innovation impacts.

Theoretically and empirically, this study confirms the RBV, the KBV, and Human Capital Theory and offers new explorations of the link between HRM and innovation. Valuable recommendations are also provided for financial institutions looking to tap human resources to trigger persistent innovation. Despite its strengths, this study has several limitations, such as its quantitative methodology and geographical boundaries, which signal areas that require further study in broader contexts and qualitative dimensions. To thrive in a dynamic and highly competitive world, banks have to emphasize strategic HRM practices that foster continuous learning, adaptability, and innovation. With this, they would be able to build a strong workforce that would drive further growth and maintain a competitive position in the financial sector. By highlighting the association between HRM practices, human capital, and firm innovation, the current study furthers the concept of human resource management. Overall, the operational implications of the results can be very positive for managers trying to foster company innovation in the quest for long-term competitiveness. Managers must implement various HR programs for the optimal utilization of human capital in fostering company innovation. In addition, ongoing investment in human capital can accumulate the capabilities, know-how, skills, and talents needed to think innovatively and creatively, and this can help enhance innovation performance. To more conveniently link HR practices and business innovation, owners or managers should be attuned to human capital's strategic importance as well.

6.2. Study Limitations and Future Studies

The current study includes several limitations. The first limitation is in data collection: the cross-sectional nature of the data limits our ability to infer causal relationships. In particular, certain HR procedures may not immediately affect innovation. Therefore, a well-known and sensible strategy would be to conduct a longitudinal/experimental design to test causality. Another study constraint is the particular focus of the investigation. The current study is limited to Erbil's banking sector. To improve the generalization of the results, additional studies should be conducted using different samples from different areas within the same industry, as the results of this study cannot be generalized to other samples in other fields or locales. Finally, this analysis was limited to North Iraq's banking sector. Future studies should be expanded to include other service provider areas, such as the education and health sectors.

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