





Design and Analysis of Human Resource Development Strategies in Remote Work Conditions: An Applied Study in the Iraqi Ministry of Planning

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ABSTRACT

With the growing expansion of remote work and the transformation of workplace structures, organizations—particularly in the public sector—have encountered new challenges in the field of human resource development. This transformation requires the redesign of strategies tailored to technology-driven, non-face-to-face work environments. The purpose of this study is to identify and analyze effective human resource development strategies under remote work conditions, with a focus on the operational context of the Iraqi Ministry of Planning. This study employed a mixed-methods approach (qualitative–quantitative) and was conducted in three stages. In the first stage, through a systematic review of the scientific literature, 33 initial strategies were collected. Subsequently, by implementing two rounds of the Delphi method with the participation of 14 experts, the final list of 29 strategies was extracted. In the third stage, exploratory factor analysis was applied to identify the conceptual dimensions of the strategies, resulting in three main axes: “individual and professional empowerment,” “team and organizational cultural development,” and “digital transformation of human resources.” The findings revealed that human resource development in the context of remote work requires a comprehensive, technology-oriented, and flexible perspective that must align with the characteristics of virtual work environments and the requirements of public organizations. Furthermore, recommendations were provided for designing blended training programs, strengthening virtual interactions, and enhancing employees’ technological empowerment. By localizing global approaches within Iraq’s administrative structures, this study has taken an innovative step toward formulating human resource development policies under remote work conditions.

Keywords: Human resource development, remote work, strategy, factor analysis, Iraqi Ministry of Planning, digital training, coaching, organizational culture

1. Introduction

T

he global transformation of work practices over the past decade, accelerated by the COVID-19 pandemic, has

fundamentally reshaped how organizations design and implement human resource development (HRD) strategies. Remote work, once considered a flexible option for select sectors, has become a structural necessity for both private and public organizations worldwide (Carnevale & Hatak, 2020; Mustajab et al., 2020). This shift has introduced unprecedented opportunities for flexibility, inclusivity, and productivity gains (Kazekami, 2020; Ollo-López et al., 2020), while simultaneously presenting new challenges in sustaining employee engagement, organizational culture, and long-term professional growth (Buomprisco et al., 2021; Mininni & Manuti, 2020). Against this backdrop, the strategic role of HRD has gained renewed importance, requiring innovative approaches that integrate digital technologies, leadership development, employee well-being, and sustainable practices.

Remote work has been shown to generate mixed outcomes for organizational performance and individual experiences. On one hand, it enhances employee autonomy, reduces commuting stress, and contributes to greater work-life balance (Rothbard et al., 2021; Wang et al., 2023). On the other hand, research highlights risks such as social isolation, blurred work-life boundaries, and inequities in access to digital resources (Hodzie et al., 2024; Racine et al., 2021). The balance between productivity and employee well-being requires carefully crafted HRD strategies that are context-sensitive and evidence-based (Newman et al., 2023; Rokhsani et al., 2020). Moreover, the pandemic revealed that traditional HRD models are insufficient for remote contexts, demanding fresh approaches that blend digitalization, individualized development, and resilience building (Bahri, 2025; PiwosarSulej & et al., 2024).

The acceleration of telework has also raised fundamental questions about organizational adaptability and sustainability. Scholars argue that telework practices must not only respond to immediate crises but also align with long-term goals of human capital development and innovation (Anakpo et al., 2023; Jang & Ardichvili, 2020). Productivity outcomes vary across industries and individual circumstances, with evidence suggesting that telework mechanisms enhance performance only when coupled with strong leadership, adequate training, and robust digital infrastructures (Ameri et al., 2022; Kazekami, 2020). For government organizations in particular, the challenges are compounded by bureaucratic structures and the need for accountability in public service delivery (Otoo, 2022; Wahyuningsih & Suyitno, 2022). These complexities

highlight the importance of developing multidimensional HRD strategies tailored for remote work settings.

A significant theme emerging from recent scholarship is the centrality of employee competence development in remote and hybrid work contexts. Recruiters and organizations increasingly prioritize competence—technical, cognitive, and ethical—over traditional warmth-based attributes (Fousiani et al., 2023). Competence-driven HRD approaches are reinforced through coaching, mentoring, and structured career pathways, which play a critical role in motivating employees and sustaining engagement (Bahri, 2025; McIlongo & Strydom, 2021). Additionally, continuous learning systems such as data-driven training and long-term knowledge management strategies are essential to equip employees with adaptive capacities in a rapidly changing environment (Ekuma, 2024; Tims & Bakker, 2024). Such personalized HRD models, increasingly supported by artificial intelligence and machine learning, enable organizations to tailor development programs to individual employee needs while improving overall effectiveness (Ekuma, 2024; Tims & Bakker, 2024).

Leadership development constitutes another pillar of effective HRD in remote work environments. Studies highlight that effective leaders are instrumental in fostering trust, resilience, and adaptability among employees (Day, 2024; Gamage & Luthans, 2024). Leadership in hybrid contexts requires balancing digital competencies with interpersonal communication skills, ensuring that organizational culture and team cohesion are not eroded by physical distance (Harkiolakis & Komodromos, 2023; O'Neill & McLarnon, 2024). At the same time, mentoring and coaching models have proven vital in supporting career development, particularly for women and underrepresented groups, who face unique challenges in virtual workplaces (Bahri, 2025; McIlongo & Strydom, 2021). The cultivation of ethical and socially responsible leadership is further emphasized in HRD models that integrate corporate responsibility and sustainability principles (Jang & Ardichvili, 2020; PiwosarSulej & et al., 2024).

Employee well-being and mental health represent an equally critical dimension in the discourse on HRD under remote conditions. The pandemic exacerbated stress, anxiety, and depressive symptoms across populations, particularly among children, adolescents, and vulnerable groups (Racine et al., 2021). For employees, prolonged telework sometimes shifted from being a benefit to a burden, particularly when social support and knowledge-

sharing mechanisms were inadequate (Buomprisco et al., 2021; Hodzic et al., 2024). Research emphasizes the role of supervisor support and collaborative team practices in mitigating these adverse outcomes (Hodzic et al., 2024; Newman et al., 2023). Psychological flexibility, a construct central to Acceptance and Commitment Therapy, has been identified as a critical competency that enables employees to cope with stress and adapt to evolving demands (Fousiani et al., 2023; Hayes et al., 2024). HRD strategies that integrate well-being initiatives alongside skill-building efforts are thus more likely to yield sustainable outcomes.

The role of technology and digital transformation in HRD cannot be overstated. The adoption of telework platforms, digital training tools, and collaborative technologies has created new opportunities for efficiency but also requires substantial investment in employee training (Sahut & Lissillour, 2023; Sweet & Scott, 2022). Remote platforms demand new competencies, including digital literacy, entrepreneurial skills, and innovative problem-solving (Gamage & Luthans, 2024; Marlina et al., 2023). Moreover, organizations increasingly rely on data-driven HRD approaches to design personalized learning pathways and measure outcomes (de Macêdo et al., 2020; Tims & Bakker, 2024). However, scholars caution against excessive reliance on technology without parallel investments in organizational culture and human interaction (O'Neill & McLarnon, 2021; Soga & Gaston, 2022). A balanced approach that combines digital tools with interpersonal support is essential for sustainable HRD outcomes.

Cross-cultural and contextual considerations also play a crucial role in shaping HRD strategies. While remote work is now a global phenomenon, its implementation varies significantly depending on organizational structures, cultural expectations, and local resources (Al-Shameri et al., 2023; Anakpo et al., 2023). For example, while high-income countries may emphasize advanced digitalization and flexible work models, developing economies face challenges related to digital divides and resource constraints (Ameri et al., 2022; Mustajab et al., 2020). This variability underscores the importance of localized HRD approaches that adapt global best practices to specific institutional and cultural contexts (Rokhsani et al., 2020; Wahyuningsih & Suyitno, 2022). Moreover, environmental sustainability is increasingly being integrated into HRD models, where employee training is linked to broader ecological awareness and responsible organizational practices (Jang & Ardichvili, 2020; Marlina et al., 2023).

Research also demonstrates that HRD in remote work contexts must account for the dynamic interplay between organizational performance and employee life domains. Work-life balance, long recognized as a driver of well-being and retention, takes on new complexities in telework settings (Carnevale & Hatak, 2020; Rothbard et al., 2021). While some employees experience greater harmony through flexible scheduling, others struggle with increased demands and blurred boundaries (Buomprisco et al., 2021; Mininni & Manuti, 2020). HRD strategies must therefore integrate flexible policies, wellness programs, and supportive infrastructures to address diverse employee experiences (Harkiolakis & Komodromos, 2023; Newman et al., 2023).

Finally, the long-term trajectory of HRD in remote and hybrid contexts is shaped by broader transformations in the future of work. Emerging evidence suggests that telework will remain a structural component of modern organizations, requiring continuous adaptation of HRD models (O'Neill & McLarnon, 2021; Sweet & Scott, 2022). The convergence of artificial intelligence, automation, and machine learning with HRD practices points toward increasingly personalized and predictive development programs (Ekuma, 2024; Tims & Bakker, 2024). At the same time, sustainable and inclusive HRD strategies must be designed to support not only organizational performance but also employee well-being, equity, and long-term societal goals (PiwosarSulej & et al., 2024; Soga & Gaston, 2022). This multidimensional perspective reflects the evolving nature of HRD as both a managerial function and a strategic imperative in a digitalized, post-pandemic world. The purpose of this study is to identify and analyze effective human resource development strategies under remote work conditions, with a focus on the operational context of the Iraqi Ministry of Planning.

2. Methods and Materials

The present research is of an applied nature and has been conducted using a mixed-methods approach (qualitative–quantitative). The main objective of this study is to identify and evaluate human resource development strategies under remote work conditions, with an emphasis on the operational context of the Iraqi Ministry of Planning. The research process was designed and implemented in three stages.

In the first stage, the systematic literature review method was applied to collect and extract strategies discussed in

reputable domestic and international sources on human resource development in remote work conditions. For this purpose, studies published between 2010 and 2023 were reviewed and analyzed, focusing on keywords such as Human Resource Development, Remote Work, Digital HRD, and Employee Training in Telework Context. After refining the sources and removing duplicates or irrelevant items, 33 initial strategies were identified and categorized.

In the second stage, in order to evaluate content validity and screen the strategies, the Delphi technique was employed. The statistical population of this stage included 14 experts in the field of human resources, senior managers, and university professors familiar with governmental structures and managerial experience during remote work. After conducting two consecutive Delphi rounds, four new strategies based on experts' localized perspectives were added to the list, and some overlapping strategies were removed. As a result of this process, a final list of 29 strategies was obtained, classified into three main axes: "individual and professional empowerment," "team and organizational cultural development," and "digital transformation of human resources."

In the third stage, for the empirical evaluation of the final strategies, a questionnaire with 29 items was designed. This questionnaire was structured on a five-point Likert scale (from 1 = strongly disagree to 5 = strongly agree) and distributed among employees of the Iraqi Ministry of

Planning. The statistical population of this stage consisted of employees who were engaged in work during remote periods. Data were collected between December 2023 and July 2024. To ensure the reliability of the measurement instrument, Cronbach's alpha coefficient was calculated, indicating satisfactory reliability of the tool. The approach of this research, emphasizing the integration of conceptual analysis and field evaluation, seeks to identify strategies that are both theoretically grounded and practically implementable within a governmental institution—an imperative that, particularly in the structural context of the Iraqi Ministry of Planning, gains added significance with the expansion of remote work.

3. Findings and Results

The findings of this research were obtained based on the mixed-methods approach and in three main stages. The results of each stage are presented separately below.

First Stage: Initial Extraction of Strategies through Systematic Review

In the first step, through a systematic review of scientific sources published between 2010 and 2023, a total of 33 strategies for human resource development in remote work conditions were extracted. These strategies, after content refinement and the removal of duplicates or irrelevant items, were used as input for the Delphi stage.

Table 1

Heart Rate Variability (HRV) and Electrodermal Activity (EDA) Outcomes by Group and Time Point

Row	Strategy Component	Source
1	Strategy for competency-based skill development and flexibility	(Bahri, 2025)
2	Strategy for training work skills and techniques	(O'Neill & McLarnon, 2021)
3	Strategy for creating online teamwork skills	(Rokhsani et al., 2020)
4	Strategy for improving skills and capabilities to adapt to changes	(PiwowsarSulej & et al., 2024)
5	Strategy for empowering and enhancing employee capacity in hybrid work environments	(O'Neill & McLarnon, 2024)
6	Strategy for developing social and communication skills	(O'Neill & McLarnon, 2021)
7	Strategy for informal learning and knowledge transfer	(de Macêdo et al., 2020)
8	Strategy for training in information technology use and application of advanced skills	(Hong, 2010)*
9	Strategy for employee training and regular, continuous development	(Wahyuningsih & Suyitno, 2022)
10	Strategy for scenario-based interactive training in remote contexts	(Hodzic et al., 2024)
11	Strategy for enhancing technological skills in digital environments	(PiwowsarSulej & et al., 2024)
12	Strategy for developing digital entrepreneurial skills among employees	(Gamage & Luthans, 2024)
13	Strategy for developing leadership and managerial skills	(Jang & Ardichvili, 2020)
14	Strategy for organizational and team leadership development	(Day, 2024)
15	Strategy for training programs fostering ethical leadership and social responsibility	(Jang & Ardichvili, 2020)
16	Coaching strategy	(Jenkins, 2013)*
17	Mentoring strategy	(Bahri, 2025)
18	Coaching and counseling strategy	(Werner, 2014)*
19	Strategy for developing ethical and social competencies in rapidly changing environments	(PiwowsarSulej & et al., 2024)
20	Learner-centered strategy	(Garavan & McCarthy, 2008)*
21	Training tailored to individual learning styles and job-specific needs	(Garavan & McCarthy, 2008)*

22	Personalized program strategy	(Werner, 2014)*
23	Strategy for designing programs tailored to organizational and employee needs	(Werner, 2014)*
24	Long-term, transformative learning strategy	(Lepak et al., 2005)*
25	Strategy for knowledge management and intellectual capital development	(Ekuma, 2024)
26	Strategy for strengthening active participation in planning and executing professional development pathways	(Bahri, 2025)
27	Development of metacognitive skills	(Griffin & Hesketh, 2003)*
28	Strategy for developing critical thinking, complex problem-solving, and time management	(Griffin & Hesketh, 2003)*
29	Strategy for enhancing employee self-efficacy	(Maurer, 2001)*
30	Strategy for developing organizational flexibility and resilience	(Ameri et al., 2022)
31	Strategy for psychological flexibility in HR	(Hayes et al., 2024)
32	Strategy for data-driven learning	(Carnevale & Hatak, 2020)
33	Strategy for applying machine learning in HRD	(Tims & Bakker, 2024)

Second Stage: Qualitative Analysis Using the Delphi Technique

In this stage, the initial list of 33 proposed strategies was submitted in two consecutive rounds to 14 academic and executive experts. Based on the analysis of their responses, 6 strategies were removed from the final list due to failure to achieve the minimum consensus threshold of 50 percent. The main reasons for elimination included being overly general, overlapping with other strategies, and lack of alignment with the operational conditions of the Iraqi Ministry of Planning. For instance, strategies such as “training of work skills and techniques” and “coaching and counseling” were eliminated because their conceptual scope was already covered by more precise strategies such as “continuous training” and “coaching and mentoring.” Moreover, the “machine learning” strategy was deemed impractical due to the lack of adequate infrastructure. At the end of the questionnaire, an open section was provided for experts to offer additional suggestions. Content analysis of these responses led to the identification and formulation of two new strategies:

1. Data management and security in remote human resources, aimed at protecting employee information in digital platforms;

2. Development of self-monitoring culture in remote systems, to strengthen individual accountability in the absence of direct supervision.

These two strategies were evaluated and confirmed by experts in the second Delphi round and were added to the final list.

In the second stage of the Delphi process, 27 strategies confirmed from the first round, together with the 2 newly proposed strategies, were sent in the form of a structured questionnaire to the same 14 academic and executive experts. They were asked to evaluate the importance of each of the 29 strategies based on a five-point Likert scale (from “very low importance” to “very high importance”).

To examine the degree of consensus among Delphi panel members, Kendall’s coefficient of concordance was calculated. The value of this coefficient was 0.54, indicating relatively high agreement among experts regarding the importance of the proposed strategies. Furthermore, the significance value of the test ($\text{sig} = 0.000$) demonstrated that the assumption of randomness in responses was rejected, and the consensus among experts was statistically significant. This level of agreement confirmed the relative consistency of expert opinions and the adequacy of conducting two Delphi rounds.

Table 2

Descriptive Results of the Second Delphi Stage (Mean, Standard Deviation, Strategy Prioritization)

Strategy	Mean	Standard Deviation	Priority
Strategy of scenario-based interactive training in remote work contexts	4.59	0.48	1
Strategy of strengthening active participation in planning and implementing professional development pathways	4.58	0.60	2
Learner-centered strategy	4.57	0.42	3
Strategy of developing metacognitive skills	4.39	0.62	4
Strategy of developing employees’ self-efficacy	4.36	0.79	5
Strategy of developing organizational flexibility and resilience	4.34	0.47	6
Strategy of using data-driven learning	4.32	0.57	7
Strategy of developing ethical and social competencies in a rapidly changing world	4.29	0.52	8
Strategy of developing social and communication skills	4.28	0.55	9
Strategy of enhancing employees’ technological skills in digital environments	4.26	0.62	10
Strategy of organizational and team leadership development	4.23	0.70	11

Strategy of improving skills and capabilities to adapt to changes	4.22	0.56	12
Strategy of employee training and regular, continuous development	4.17	0.54	13
Strategy of training in information technology use and application of advanced skills	4.14	0.49	15
Strategy of developing a self-monitoring culture in remote systems	4.14	0.63	15
Strategy of employee empowerment and capacity building in hybrid work environments	4.14	0.68	15
Strategy of data management and security in remote human resources	4.08	0.40	18
Strategy of developing digital entrepreneurial skills among employees	4.08	0.67	18
Strategy of skill development and flexibility	4.08	0.62	18
Coaching strategy	4.06	0.45	20
Development of leadership and managerial skills	4.06	0.66	20
Strategy of developing online teamwork skills	4.05	0.57	22
Strategy of conducting training programs to foster ethical leadership and social responsibility at managerial levels	3.97	0.71	23
Mentoring strategy	3.95	0.53	24
Strategy of long-term, transformative learning	3.91	0.69	25
Strategy of informal learning and knowledge transfer	3.85	0.63	26
Strategy of training tailored to individual learning styles and specific job needs	3.84	0.53	27
Strategy of developing knowledge management and intellectual capital	3.77	0.57	28
Strategy of psychological flexibility in human resources	3.72	0.59	29

The findings of this stage showed that the strategies, based on the mean importance score, are divided into three levels:

High priority (mean ≥ 4.5): including the top four strategies, such as “scenario-based interactive training in remote work contexts,” “strengthening participation in professional development pathways,” and “learner-centered strategy,” which, from the perspective of experts, have the highest strategic importance in remote work conditions.

Moderate priority (mean 4–4.49): including the majority of strategies (high importance scores but below the top tier), such as “developing self-efficacy,” “organizational resilience,” and “developing technological skills.”

Lower priority (mean < 4): a limited number of strategies, such as “informal learning,” “psychological flexibility,” and “mentoring,” which, although not eliminated, were ranked lower in priority. The main reasons for this included insufficient infrastructure, implementation challenges, or overlap with other strategies.

Overall, the results of this stage indicated that innovative, interactive, data-driven, and learner-centered strategies received the strongest confirmation. Furthermore, based on the relative stability of expert opinions and the lack of need for major revisions, conducting a third Delphi round was deemed unnecessary.

Third Stage: Findings from Quantitative Questionnaire Analysis

In this stage of the research, after the final confirmation of 29 human resource development strategies under remote work conditions through the Delphi technique, efforts were made to identify the latent conceptual dimensions among these strategies. The purpose of this analysis was to scientifically and theoretically classify the strategies into

common and interrelated axes, thereby designing a coherent framework for human resource policymaking and planning in remote work contexts. To this end, exploratory factor analysis using the principal components method with varimax rotation was applied.

To ensure the adequacy of the data for factor analysis, two statistical indices were used: the KMO index and Bartlett’s test of sphericity. The KMO value was calculated at 0.864, indicating very good sample adequacy. Furthermore, Bartlett’s test with a significance level of 0.000 confirmed the presence of acceptable correlations among the variables. Therefore, the conditions for performing factor analysis were met. In the next step, communalities for all strategies were examined, and it was found that all of them had values above 0.50 (ranging from 0.56 to 0.81). As a result, none of the strategies were eliminated, and all entered the principal component analysis stage. By employing the principal components method with varimax rotation, three main factors with eigenvalues greater than 1 were extracted, which together explained 69.4 percent of the total variance. The factor loadings for the strategies across the three extracted axes ranged from 0.606 to 0.853, demonstrating strong correlations between the strategies and their respective factors.

Axis One: Individual and Professional Empowerment

This axis consists of nine strategies focused on the growth of individual capacities, self-directed learning, and the development of employees’ cognitive and ethical skills in remote environments. The primary goal of this group of strategies is to enhance individual capabilities in facing the

challenges of remote work, strengthen professional self-confidence, and promote continuous learning.

The strategies within this axis are as follows:

1. Scenario-based interactive training in remote work contexts
2. Strengthening active participation in planning and implementing professional development pathways
3. Learner-centered learning
4. Development of metacognitive skills
5. Development of employee self-efficacy
6. Long-term, transformative learning
7. Training tailored to individual learning styles and specific job needs
8. Informal learning and knowledge transfer
9. Development of ethical and social competencies in a rapidly changing world

Axis Two: Team and Organizational Cultural Development

This axis encompasses twelve strategies that emphasize leadership development, team cohesion, organizational interactions, data security, and the enhancement of social capital in remote work environments. These strategies focus on building effective interpersonal relationships, supporting organizational values, and fostering a culture of self-control and accountability.

The strategies within this axis are as follows:

1. Organizational and team leadership development
2. Improvement of skills and capabilities for adapting to change
3. Development of self-monitoring culture in remote systems
4. Employee empowerment and capacity building in hybrid work environments
5. Data management and security in remote human resources
6. Coaching
7. Mentoring
8. Conducting training programs to foster ethical leadership and social responsibility
9. Development of leadership and managerial skills
10. Development of online teamwork skills
11. Development of knowledge management and intellectual capital
12. Development of organizational flexibility and resilience

Axis Three: Digital Transformation of Human Resources

This axis includes eight strategies focused on empowering employees to utilize modern technologies, enhancing digital skills, and strengthening data-driven approaches in work environments. These strategies are primarily concerned with transforming human resource structures in alignment with the requirements of digital government and technology-driven work ecosystems.

The strategies within this axis are as follows:

1. Use of data-driven learning
2. Development of digital social and communication skills
3. Enhancement of employees' technological skills in digital environments
4. Employee training and regular, continuous development
5. Training in information technology use and application of advanced skills
6. Development of digital entrepreneurial skills among employees
7. Development and flexibility of skills
8. Psychological flexibility in human resources

4. Discussion and Conclusion

The findings of this study reveal that the development of human resource strategies under remote work conditions can be meaningfully classified into three overarching dimensions: individual and professional empowerment, team and organizational cultural development, and digital transformation of human resources. This classification demonstrates that effective HRD in remote contexts is not solely a matter of providing digital tools but rather requires a balanced and multidimensional approach that simultaneously addresses employee growth, organizational culture, and technological integration.

The results emphasize that scenario-based interactive training, learner-centered approaches, and continuous professional development pathways are central strategies within the empowerment axis. This aligns with recent evidence that highlights the importance of experiential and individualized learning mechanisms in enhancing professional self-efficacy and adaptability among employees working remotely (Bahri, 2025; Fousiani et al., 2023). Studies conducted during and after the pandemic confirm that employees who were engaged in continuous learning programs demonstrated higher resilience and productivity compared to those lacking structured development support (Ameri et al., 2022; Anakpo et al.,

2023). The identification of self-efficacy and metacognitive skill development as key strategies also resonates with findings that underscore the role of psychological resources in managing uncertainty and maintaining performance in remote environments (Hayes et al., 2024; Rothbard et al., 2021).

The second major dimension, focusing on team and cultural development, reflects the crucial role of leadership, mentoring, and organizational cohesion in sustaining effective HRD. The inclusion of strategies such as organizational and team leadership development, mentoring, and knowledge management demonstrates that remote work requires intentional efforts to preserve interpersonal connectivity and cultural alignment (Day, 2024; McIlongo & Strydom, 2021). Scholars note that without deliberate interventions to strengthen leadership and team collaboration, remote work risks producing fragmented organizational cultures and disengaged employees (Hodzic et al., 2024; O'Neill & McLarnon, 2024). Our results are consistent with evidence that supervisor support and social cohesion mitigate negative telework outcomes, particularly those related to social isolation and reduced knowledge sharing (Hodzic et al., 2024; Newman et al., 2023). Moreover, the identification of data security and self-monitoring cultures as part of the cultural development axis underscores the dual importance of trust and accountability in public-sector organizations, which must uphold transparency and data protection while empowering employees in remote systems (Al-Shameri et al., 2023; Wahyuningsih & Suyitno, 2022).

The third dimension, digital transformation of HRD, highlights strategies related to data-driven learning, digital skill enhancement, and technological entrepreneurship. These strategies reflect the growing reliance on digital infrastructures to deliver HRD initiatives and the necessity of equipping employees with advanced digital competencies. The emphasis on data-driven learning is consistent with emerging scholarship demonstrating how artificial intelligence and machine learning can support personalized development pathways and predictive performance management (Ekuma, 2024; Tims & Bakker, 2024). Similarly, the identification of digital entrepreneurial skill development corresponds with arguments that remote work environments demand innovative, entrepreneurial mindsets that enable employees to leverage digital tools for problem-solving and value creation (Gamage & Luthans, 2024; Jang & Ardichvili, 2020). These findings align with the broader literature that

situates digital transformation as both an enabler and a challenge for HRD, requiring careful integration of technological opportunities with human-centered strategies (Sahut & Lissillour, 2023; Sweet & Scott, 2022).

Taken together, the three dimensions reinforce the argument that remote work has fundamentally redefined HRD priorities, shifting them from a traditional focus on structured in-person training toward a multidimensional model that integrates flexibility, competence, and technology. This supports the perspective that sustainable HRD must balance organizational performance with employee well-being and adaptability (PiwowarSulej & et al., 2024; Soga & Gaston, 2022).

One of the central contributions of this study is the confirmation that individual empowerment and continuous learning are indispensable in remote contexts. Previous research shows that employees engaged in ongoing training and professional development are more likely to maintain motivation and productivity while working remotely (Ameri et al., 2022; Anakpo et al., 2023). The identification of learner-centered and self-directed learning strategies echoes findings from studies on personalized HRD, where adaptive programs tailored to individual needs improved retention and satisfaction (Ekuma, 2024; Tims & Bakker, 2024). In this regard, the present findings align with global HRD trends that emphasize competence-building as the primary determinant of remote employee effectiveness (Bahri, 2025; Fousiani et al., 2023).

The results also confirm that leadership and mentoring remain vital even in digitally mediated environments. Our classification of strategies into leadership development, mentoring, and coaching reflects findings that effective leadership mitigates the risks of disengagement and cultural erosion in virtual teams (Day, 2024; O'Neill & McLarnon, 2024). Scholars have argued that leadership in hybrid contexts must combine digital fluency with interpersonal authenticity, ensuring both efficiency and relational trust (Harkiolakis & Komodromos, 2023; McIlongo & Strydom, 2021). Our findings validate this dual requirement by highlighting leadership strategies as central to organizational cultural development.

The emergence of data management and digital transformation strategies aligns with global trends in HRD that emphasize the integration of artificial intelligence, automation, and data analytics into human capital management (Ekuma, 2024; Tims & Bakker, 2024). Studies demonstrate that machine learning tools enhance the ability of HRD systems to predict employee needs and

provide targeted development opportunities (Sahut & Lissillour, 2023; Tims & Bakker, 2024). However, our findings also suggest that technological innovation must be balanced with employee well-being and cultural cohesion, as overreliance on digital systems without adequate human support may exacerbate stress and reduce inclusivity (Carnevale & Hatak, 2020; Hodzic et al., 2024).

Another important contribution of this study is its emphasis on self-monitoring and accountability cultures as integral to HRD in remote government organizations. This finding complements literature on trust and responsibility in telework environments, which indicates that accountability mechanisms are essential for ensuring productivity and compliance in the absence of direct supervision (Al-Shameri et al., 2023; Wahyuningsih & Suyitno, 2022). These strategies extend beyond technical training, highlighting the social and ethical dimensions of HRD. The integration of accountability with ethical leadership and mentoring resonates with research on socially responsible HRD and the role of human capital in promoting sustainable organizational practices (Jang & Ardichvili, 2020; PiwowarSulej & et al., 2024).

Furthermore, the results confirm the centrality of well-being and psychological resilience in HRD strategies. By classifying self-efficacy, metacognitive skills, and psychological flexibility as empowerment strategies, the study reflects a growing recognition that mental health and adaptability are crucial determinants of employee success in remote environments (Hayes et al., 2024; Rothbard et al., 2021). Scholars have documented how remote work can undermine well-being if not accompanied by adequate social support and mental health interventions (Buomprisco et al., 2021; Racine et al., 2021). Our findings align with these insights by situating well-being as a core competency to be intentionally developed through HRD.

Finally, the results underscore the need for context-sensitive HRD strategies. While global best practices emphasize digitalization and flexibility, the adaptation of these models to the structural and cultural contexts of government institutions remains critical (Rokhsani et al., 2020; Wahyuningsih & Suyitno, 2022). For instance, strategies related to data management and accountability directly respond to the specific needs of public organizations, where transparency and compliance are paramount (Al-Shameri et al., 2023; Otoo, 2022). This finding reinforces arguments that HRD models must be localized rather than universally applied, accommodating

both institutional demands and cultural expectations (Anakpo et al., 2023; Soga & Gaston, 2022).

Despite the valuable insights provided, this study is not without limitations. First, the data collection was restricted to a single organizational context within the Iraqi public sector, which limits the generalizability of the findings across different cultural, institutional, and economic environments. Second, while the Delphi method ensured expert validation of the strategies, the reliance on a relatively small panel of 14 experts may have introduced bias toward particular perspectives. Third, the cross-sectional nature of the survey prevents conclusions about the long-term effectiveness of the identified strategies, as HRD outcomes typically unfold over extended periods. Finally, the study did not incorporate a comparative analysis between public and private sector organizations, which could have provided deeper insights into sector-specific HRD strategies in remote contexts.

Future research should expand the scope of investigation by incorporating cross-sectoral and cross-national comparisons to evaluate the transferability of the identified strategies in diverse organizational contexts. Longitudinal studies are needed to assess the sustainability and long-term outcomes of HRD interventions in remote and hybrid work arrangements. Moreover, future work could integrate advanced analytical models, including predictive machine learning and simulation techniques, to test the efficacy of specific HRD strategies under varying conditions. Researchers should also explore the intersection of HRD with emerging areas such as environmental sustainability, equity, and digital inclusion, to develop holistic frameworks that address both organizational and societal challenges. Finally, qualitative explorations of employee experiences across different hierarchical levels could complement the quantitative analysis and enrich our understanding of how HRD strategies are perceived and enacted in practice.

From a practical standpoint, organizations should prioritize integrating empowerment, cultural development, and digital transformation strategies into coherent HRD frameworks tailored to remote work environments. Policymakers and HR managers in government institutions should invest in blended training programs that combine digital tools with interactive, scenario-based learning. Leadership and mentoring initiatives must be strengthened to preserve organizational culture and provide career advancement opportunities in virtual contexts. Furthermore, organizations should establish clear

accountability mechanisms and robust data security systems to maintain trust and compliance in remote settings. Finally, balancing digital innovation with employee well-being should remain a priority, ensuring that technological progress supports rather than undermines human development and organizational cohesion.

Authors' Contributions

All authors equally contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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