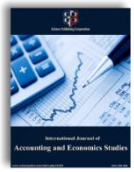
International Journal of Accounting and Economics Studies, 12 (8) (2025) 1120-1131

International Journal of Accounting and Economics Studies

Website: www.sciencepubco.com/index.php/IJAES
https://doi.org/10.14419/pf6gk427
Research paper



The Impact of Network Security Adoption on Electronic Human Resource Management: The Mediate Role of Intelligent Decision-Support Applications –A Case Study on The Dinarak E-Wallet

Osama Mousa Alawneh [1] *, Mahmoud Izzat Allahham [2], Bashar Almagharbeh [3], Tarek Al Oakely [4], Bahjat Mohammad Ogielat [5], Majed Muhammad Abdoh Aldalalah [6]

[1] Faculty of Business, Jadara University, Jordan
[2] Faculty of Business, Amman Arab University, Jordan
[3] Business Department, Amman Arab University, Amman, Jordan
[4] University of New England
[5] University of Texas at Rio Grande Valley USA, College of Business
[6] Oman
**Corresponding author E-mail: O.Alawneh@jadara.edu.jo*

Received: December 3, 2025, Accepted: December 26, 2025, Published: January 4, 2026

Abstract

This study investigates how network security adoption influences electronic human resource management within digital financial services, focusing on the Dinarak E-Wallet platform. The research develops a mediation model in which intelligent decision-support applications operate as an enhancing mechanism that strengthens the link between secure digital infrastructures and effective HRM functions. A quantitative descriptive design was employed, and 387 valid responses were collected from a distributed sample of 500 questionnaires. The findings demonstrate that strong network security practices significantly improve the effectiveness of E-HRM by safeguarding data flows, stabilizing digital processes, and improving system reliability. The mediating role of intelligent decision-support applications further amplifies this impact by improving workflow accuracy, supporting real-time decision-making, and increasing operational alignment across HR activities. The results highlight how secure digital ecosystems, supported by smart analytical tools, can enhance HR efficiency within mobile payment environments. The study enriches the existing literature by offering empirical evidence from a rapidly expanding fintech service, emphasizing the strategic importance of integrating security mechanisms with intelligent digital applications. Limitations and recommendations for future research are presented in the conclusion.

Keywords: *Authentication; Confidentiality Protection; Network Monitoring; Electronic Human Resource Management; Intelligent Decision-Support Applications.*

1. Introduction

In the evolving digital landscape, organizations are increasingly adopting secure technological infrastructures to strengthen operational reliability, enhance workflow accuracy, and support strategic decision-making, Alsammak, M. (2025). Human resource management has undergone a significant shift toward automation through electronic human resource management (E-HRM), enabling faster processing, improved information access, and better alignment between human capital and organizational objectives. As digital operations expand across financial technologies, e-wallet services, and mobile payment ecosystems, the integration of E-HRM with secure network architectures has become fundamental for ensuring sustainable organizational performance. Network security adoption is therefore considered a core requirement for safeguarding data, stabilizing system operations, and enabling digital HR processes to function without disruption 1. Parallel to these developments, financial technology platforms like the Dinarak E-Wallet rely on high-integrity digital infrastructures to maintain trust, ensure compliance, and deliver reliable services to users. Within such digitally intensive environments, the effectiveness of E-HRM depends not only on the automation of HR activities but also on the strength of the security systems that protect stored and transmitted information. When network security controls authentication, encryption, monitoring, and governance are properly adopted, organizations can mitigate cyber risks, protect employee data, and maintain uninterrupted HR operations across digital channels 2 (Al-Sammak et al., 2025). This positions network security as a foundational driver of digital HR effectiveness, particularly in sensitive financial contexts where data confidentiality and process transparency are essential. At the same time, the emergence of intelligent decision-support applications has transformed how organizations utilize digital information for HR-related decisions. These applications process real-time data, reduce manual errors, and enhance decision accuracy by integrating analytical, predictive, and workflow-support capabilities (Aljalely

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et al .,2019). Their mediating influence strengthens the relationship between network security and E-HRM by optimizing digital HR functions and enabling secure, data-driven decision-making across the organization 3. For platforms like Dinarak, intelligent decision-support systems represent a pathway through which secure digital infrastructures translate into enhanced HR responsiveness, operational alignment, and service consistency(Al-Sammak et al., 2025). Despite the increasing relevance of these mechanisms, existing research presents several gaps. First, limited empirical evidence explores how network security adoption affects E-HRM within fintech settings, where digital transactions, employee coordination, and information flows must operate at high speed and reliability. Second, scholarly work has not adequately examined how intelligent decision-support applications strengthen the link between network security controls and HR effectiveness. Third, research in mobile payment ecosystems is still emerging, and studies rarely investigate HR-related digital transformations within e-wallet environments. Finally, theoretical literature lacks comprehensive models that assess how security, intelligent applications, and digital HR systems jointly contribute to organizational improvement. Given these gaps, the present study investigates the impact of network security adoption on electronic human resource management, emphasizing the mediating role of intelligent decision-support applications. By focusing on the Dinarak E-Wallet as a case study, the research aims to determine how secure digital infrastructures and analytical applications jointly support efficient HR operations in fintech environments. The study is guided by the following research questions:

1) What is the effect of network security adoption on E-HRM effectiveness?
2) How do intelligent decision-support applications reinforce the relationship between network security and E-HRM?
3) What digital mechanisms within the e-wallet environment strengthen the reliability and performance of E-HRM processes?
4) How does the mediating factor contribute to improving digital HR outcomes in fintech settings?
5) What insights can be derived for enhancing secure and data-driven HR capability in mobile payment ecosystems?

The structure of this study proceeds as follows. Section 1 presents the introduction. Section 2 provides a detailed review of the literature relating to network security, E-HRM, intelligent decision-support applications, and digital infrastructure in fintech. Section 3 discusses the conceptual model and hypotheses development. Section 4 explains the research methodology. Section 5 presents the empirical analysis and results. Section 6 outlines theoretical and practical implications. Section 7 concludes with recommendations for future research.

2. Literature Review

Network security adoption has become a defining component of organizational effectiveness in digital environments, particularly in sectors where real-time information flows and sensitive data exchanges are fundamental to operational continuity. Electronic human resource management (E-HRM) operates at the center of this transformation, offering automated HR processes that depend on secure infrastructures to ensure confidentiality, system stability, and workflow integrity. While digital transformation reshapes broader organizational structures, E-HRM specifically refines HR operations, service delivery, and data-driven decisions. Network security adoption enhances these functions through authentication controls, confidentiality protection, and continuous network monitoring that strengthen the reliability of electronic HR activities. Intelligent decision-support applications further reinforce these gains by integrating analytical capabilities into secure HR ecosystems. The subsections below discuss the core constructs used in this study.

2.1. Authentication

Authentication represents the framework of identity verification mechanisms that determine who can access organizational systems and digital HR platforms. Strong authentication—through passwords, biometrics, multi-factor verification, and secure login protocols—creates a controlled environment for E-HRM operations, reducing risks of unauthorized access and data breaches. Prior research emphasizes that authentication systems increase the trustworthiness of digital HR processes by ensuring that only legitimate users interact with sensitive HR data, payroll structures, employee records, or administrative dashboards. In fast-paced digital services, authentication also supports operational transparency by preventing system misuse and sustaining accurate records that guide HR decisions. Through enhanced user validation, authentication contributes to better workflow management, greater system dependability, and improved performance within digitalized environments like the Dinarak E-Wallet platform.

2.2. Confidentiality protection

Confidentiality protection refers to the technologies and protocols used to safeguard sensitive HR information from exposure, theft, or manipulation. Encryption, secure communication channels, data masking, and controlled access levels form the core of this dimension. Confidentiality mechanisms are essential for E-HRM because HR functions manage highly sensitive data related to employee identities, financial entitlements, performance evaluations, and contractual arrangements. Studies highlight that confidentiality protection not only secures transactions but also strengthens organizational trust and employee confidence. Within digital financial services, such as mobile wallet operations, confidentiality protection supports uninterrupted HR procedures by protecting internal records and ensuring that data remains intact during transmission or storage. When confidentiality is effectively preserved, E-HRM processes gain greater accuracy, compliance with regulatory requirements, and resilience against cyber threats.

2.3. Network monitoring

Network monitoring addresses the continuous surveillance of digital traffic, detection of irregular activities, and automated alerts that identify potential security incidents. Monitoring systems and intrusion detection tools provide real-time visibility into the stability of digital infrastructures, which is essential for ensuring reliable E-HRM activities. Research underscores that network monitoring improves operational safety by tracking abnormal behaviors, blocking suspicious access attempts, and preventing disruptions that may affect HR workflows. In environments like e-wallet platforms, uninterrupted network availability determines the effectiveness of employee management, coordination, and digital transaction processing. When network monitoring is fully implemented, E-HRM systems operate with improved consistency, minimized downtime, and enhanced responsiveness to emerging risks. Overall, network monitoring serves as a stabilizing force that promotes secure, efficient, and predictable HR operations.

2.4. Electronic human resource management (E-HRM)

Electronic human resource management is the application of digital systems to automate operational, relational, and strategic HR tasks. E-HRM improves HR processes by accelerating administrative functions, strengthening employee communication, and integrating data-driven insights into workforce management. Scholars describe E-HRM as a mechanism that increases precision in decision-making, reduces administrative burden, and enhances process coordination. In mobile payment environments, E-HRM enables timely tracking of employee schedules, performance, training, and compliance, contributing to smoother digital workflows. The effectiveness of E-HRM, however, depends heavily on the security of the systems that support it, making network security adoption a critical enabler of successful HR digitalization. A well-secured E-HRM system reduces operational risks, strengthens information availability, and contributes to improved employee performance and organizational efficiency.

2.5. Intelligent decision-support applications

Intelligent decision-support applications integrate analytical algorithms, predictive models, and automated reasoning tools to enhance HR decision-making processes. These applications analyze large data sets, identify patterns in workforce behavior, and support timely decisions in areas such as staffing, performance management, and skill development. Prior studies show that intelligent systems can reduce manual bias, increase process accuracy, and strengthen strategic alignment between HR functions and organizational goals. In digital financial services, such applications contribute to operational readiness by enabling real-time insights and supporting rapid workforce coordination. As a mediating mechanism, intelligent decision-support applications enhance the influence of network security adoption on E-HRM by improving workflow intelligence, data interpretation, and the adaptability of HR processes in dynamic digital environments.

2.6. Business performance in digital financial environments

Business performance in digital financial platforms is defined by operational efficiency, accuracy of decision-making, service reliability, and responsiveness to fast-changing conditions. Performance depends on HR competency, speed of digital workflows, and access to accurate employee and operational data. E-HRM supports business performance by improving internal coordination, reducing process delays, and strengthening digital readiness. Network security adoption further enhances these capabilities by ensuring the stability and integrity of HR operations. When intelligent decision-support applications mediate this relationship, organizations benefit from data-driven insights that optimize workforce activity and strategic planning. In fintech environments like the Dinarak E-Wallet, high-quality HR digitalization supported by secure networks contributes to consistent service delivery, strong employee engagement, and sustainable organizational outcomes.

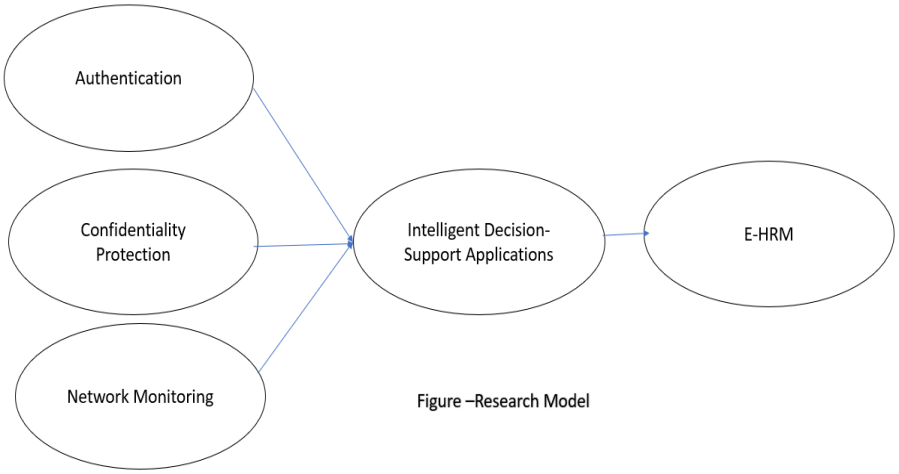


Figure –Research Model

3. Hypothesis Development

The digital transformation of modern organizations relies heavily on secure network infrastructures that protect data integrity, enable stable digital operations, and reinforce the reliability of electronic human resource systems. Drawing on the principles of dynamic capabilities theory (DCT), security-oriented capabilities—such as authentication controls, confidentiality protection, and continuous network monitoring—serve as organizational mechanisms that allow firms to sense digital threats, seize technological opportunities, and reconfigure internal processes to maintain operational advantage. These security mechanisms form a foundational layer that supports the functionality of Electronic Human Resource Management (E-HRM) systems, which automate HR processes and enable faster, more accurate, and more transparent HR operations.In this model, Authentication, Confidentiality Protection, and Network Monitoring are conceptualized as critical security capabilities that strengthen the integrity and performance of digital HR platforms. When implemented effectively, they enhance E-HRM functions by securing access, protecting employee information, and ensuring stable system performance. At the same time, Intelligent Decision-Support Applications (IDSA) represent the digital analytical tools that transform HR data into actionable insights. These applications rely on secure infrastructures to operate effectively, and their development is reinforced by the strength of underlying network security measures. Thus, the conceptual model positions security capabilities as strategic inputs, E-HRM as a core operational digital system, and IDSA as the enhanced analytical output that supports decision-making. The following subsections develop the hypotheses derived from these relationships. Conceptually, Electronic Human Resource Management is positioned as a transmission mechanism through which network security adoption influences intelligent decision-support applications. Network security dimensions do not directly generate analytical intelligence; instead, they create a secure, stable, and reliable digital environment in which HR data can be accurately captured, processed, and stored. E-HRM systems operationalize these secure conditions by structuring workforce data, automating HR workflows, and standardizing information flows. Intelligent decision-support applications subsequently rely on this structured and secure

HR data to generate reliable analytical outputs and decision insights. Thus, E-HRM represents the operational bridge that converts security-enabled digital infrastructure into actionable decision-support capability.

3.1. Authentication and electronic human resource management

Authentication ensures that only authorized individuals can access organizational systems, HR records, and employee information. Strong authentication mechanisms—password protection, multi-factor authentication, and biometric verification—reduce unauthorized access, minimize digital threats, and ensure the integrity of E-HRM operations. Prior studies emphasize that secure access management is essential for maintaining the accuracy, trustworthiness, and continuity of HR digital workflows. In fintech platforms, authentication stabilizes system entry points and supports HR activities such as attendance, payroll, and employee data updates.
H1: Authentication has a positive and significant impact on Electronic Human Resource Management.

3.2. Authentication and intelligent decision-support applications

Authentication not only secures operational systems but also creates controlled access to analytical tools and digital dashboards used for decision-making. Intelligent decision-support applications depend on secure user identification to ensure that the data they process is protected from manipulation or leakage. Secure authentication strengthens system credibility, supports accurate insights, and enables the reliable processing of HR-related analytics. When authentication practices are robust, digital decisions become more precise and dependable.
H2: Authentication has a positive and significant impact on Intelligent Decision-Support Applications.

3.3. Confidentiality protection and electronic human resource management

Confidentiality protection includes encryption, secure communication protocols, and data-protection policies that safeguard employee data, financial information, and internal HR records. Since E-HRM systems manage highly sensitive information, confidentiality measures ensure safe data exchange, reduce risks of breaches, and maintain compliance with digital governance standards. In quickly evolving digital environments, confidentiality protection enhances organizational trust and strengthens the overall efficiency of electronic HR processes.
H3: Confidentiality Protection has a positive and significant impact on Electronic Human Resource Management.

3.4. Confidentiality protection and intelligent decision-support applications

Intelligent decision-support applications rely on secure datasets to generate accurate and unbiased analytical outputs. Confidentiality protection ensures that the information feeding these systems is shielded from unauthorized access and remains intact throughout the analytical process. Data encryption and secure storage improve the reliability of predictions, reduce risks of external interference, and enhance the credibility of digital decisions.
H4: Confidentiality Protection has a positive and significant impact on Intelligent Decision-Support Applications.

3.5. Electronic human resource management and intelligent decision-support applications

E-HRM systems serve as the primary digital source of workforce data, performance indicators, competency records, and operational HR information. Intelligent decision-support applications depend on such structured data to produce meaningful insights. When E-HRM systems operate effectively—automating processes, improving communication, and ensuring accurate data collection—they significantly enhance the analytical capacity of IDSA systems. In fintech environments, the integration of E-HRM with intelligent analytical tools leads to improved forecasting, better workforce planning, and more consistent HR-driven decision-making.
H5: Electronic Human Resource Management has a positive and significant impact on Intelligent Decision-Support Applications.

3.6. Network monitoring and electronic human resource management

Network monitoring involves the continuous detection of system activities, identification of potential attacks, and tracking of irregularities that may affect digital HR operations. For E-HRM systems to function efficiently, uninterrupted system availability and stable digital environments are essential. Real-time monitoring reduces downtime, prevents system disruptions, and supports reliable HR transactions. Scholars highlight that active monitoring increases confidence in digital HR activities and ensures smooth operation of administrative, relational, and operational HR functions.
H6: Network Monitoring has a positive and significant impact on Electronic Human Resource Management.

3.7. Network monitoring and intelligent decision-support applications

Intelligent decision-support applications require consistent system uptime and safe data streams to generate meaningful insights. Network monitoring stabilizes the environment in which these applications operate by mitigating potential threats and ensuring the availability of high-quality, real-time data. Enhanced monitoring leads to more accurate modeling, faster analytical processing, and improved decision quality.
H7: Network Monitoring has a positive and significant impact on Intelligent Decision-Support Applications.

4. Research Methodology

The study adopted a stratified random sampling approach to achieve a balanced representation of participants involved in the digital financial services ecosystem associated with the Dinarak E-Wallet. The inclusion criteria were established to ensure relevance to the research :
1) Organizations and departments actively engaged in digital or fintech-related operations in Jordan.
2) A minimum number of employees using digital HR systems or security-controlled workflow platforms.
3) Direct implementation or ongoing integration of Electronic Human Resource Management (E-HRM) tools in daily operations.

4) Active use of network security mechanisms such as authentication, confidentiality protection, and network monitoring within their internal systems.
5) Functional exposure to analytical or intelligent decision-support applications used in HR or operational processes.

A cross-sectional survey design was employed to collect data at a single point in time, suitable for examining the effect of network security dimensions authentication, confidentiality protection, and network monitoring on E-HRM and intelligent decision-support systems. This design enabled efficient data collection from a large sample spanning multiple digital work environments connected to the Dinarak E-Wallet operations.The population included Dinarak employees, partnering fintech service providers, HR specialists, IT security teams, and administrative personnel involved in secure digital processes. A stratified random sampling technique ensured proportional representation across technical, administrative, and HR-focused categories, reflecting the varied digital interactions within the e-wallet ecosystem.Cochran's formula was applied at a 5% margin of error and a 95% confidence level to determine the minimum sample size of 385 respondents. To enhance statistical power and account for non-responses, the sample size was increased to 500. . Participants were randomly selected using a random number generator applied to the list of eligible individuals within each stratum. From the 500 distributed questionnaires, 387 valid responses were received, yielding a response rate of 77.4%. Representation across professional roles was maintained: digital service employees (n=78), HR and administrative staff (n=80), IT and security personnel (n=76), financial operations staff (n=75), and customer-service or workflow coordination teams (n=78). The measurement scales were adapted from validated instruments in prior studies. Authentication items evaluated secure access protocols, identity verification measures, and digital access restrictions. Confidentiality protection was assessed through items related to data encryption, secure communication, and information protection policies. Network monitoring was measured through indicators reflecting real-time system surveillance, threat detection, and network activity tracking. E-HRM items captured automation of HR processes, digital communication, and electronic record management. Intelligent decision-support applications were measured through analytical capability, predictive assistance, and digital decision-making support. Content validity was ensured through expert review by specialists in HRM, cybersecurity, and fintech operations, confirming item relevance and clarity. Construct validity was established through exploratory and confirmatory factor analyses, ensuring acceptable loadings for each item within its theoretical construct. Reliability was confirmed using Cronbach's alpha, with values above 0.70 indicating satisfactory internal consistency. Ethical considerations were strictly observed. . This methodological design provided a robust foundation for examining the structural relationships between network security adoption, E-HRM effectiveness, and intelligent decision-support applications. It enabled precise testing of the mediation hypothesis and strengthened the empirical understanding of security-enabled HR digitalization within the Dinarak E-Wallet environment.

5. Data Analysis

The evaluation of the measurement model was conducted using internal consistency reliability, convergent validity, and discriminant validity to ensure the robustness of the scales measuring the constructs of network security adoption, electronic human resource management, and intelligent decision-support applications. Internal consistency reliability was assessed using Cronbach's Alpha (ρa) and Composite Reliability (ρc). All constructs—Authentication, Confidentiality Protection, Network Monitoring, Electronic Human Resource Management, and Intelligent Decision-Support Applications demonstrated ρa values above the recommended threshold of 0.70, indicating strong internal coherence among the items within each construct. Similarly, composite reliability values (ρc) exceeded 0.70 for all variables, confirming that the indicators consistently captured their respective latent dimensions. Convergent validity was examined using the Average Variance Extracted (AVE). All constructs recorded AVE values greater than 0.50, signifying that more than half of the variance in the indicators was explained by their associated latent construct. This confirms that the measurement items were sufficiently representative of the theoretical concepts, particularly the dimensions of network security adoption—authentication, confidentiality protection, and network monitoring—along with E-HRM and intelligent decision-support mechanisms. Overall, the reliability and validity indicators reflect a well-specified measurement model, suitable for further structural analysis within the context of examining how network security adoption influences E-HRM and the mediating role of intelligent decision-support applications. Table 1 presents the detailed reliability and validity statistics for each construct.

Table 1: Factor Loading

Variables	Items	Factor loading	Cronbach's Alpha	rho-a	rho-c	AVE
Authentication	AU1	0.93	0.915	0.920	0.945	0.730
	AU2	0.94				
	AU3	0.89				
	AU4	0.83				
Confidentiality Protection	CP1	0.79	0.870	0.875	0.920	0.710
	CP2	0.77				
	CP3	0.9				
	CP4	0.84				
Electronic Human Resource Management	EHRM1	0.88	0.950	0.972	0.960	0.770
	EHRM2	0.85				
	EHRM3	0.91				
	EHRM4	0.89				
Intelligent Decision-Support Applications	IDSSA1	0.83	0.930	0.935	0.950	0.710
	IDSSA2	0.92				
	IDSSA3	0.9				
	IDSSA4	0.9				
Network Monitoring	NM1	0.85	0.887	0.862	0.804	0.763
	NM2	0.79				
	NM3	0.85				
	NM4	0.86				

The Cronbach's Alpha (0.915) and rho-a (0.920) exceeded the recommended threshold of 0.70, demonstrating high internal consistency. The composite reliability (ρc = 0.945) confirmed the robustness of the scale, while the AVE value of 0.730 showed strong convergent validity, indicating that the construct explains a substantial portion of the variance in its indicators. These loadings showed satisfactory alignment between the indicators and the construct. The Cronbach's Alpha (0.870) and rho-a (0.875) values exceeded the 0.70 threshold, confirming good internal consistency. The composite reliability (ρc = 0.920) further supported the reliability of the construct. The AVE

value of 0.710 demonstrated strong convergent validity, confirming that the indicators capture more than half of the construct's variance. Electronic Human Resource Management (E-HRM) was measured with four items that achieved factor loadings ranging from 0.85 to 0.91, signifying excellent indicator reliability. The Cronbach's Alpha (0.950) and rho-a (0.972) were substantially above the required minimum, indicating very high internal coherence among the items. The composite reliability (ρc = 0.960) and AVE (0.770) further confirmed the construct's reliability and convergent validity. These values highlight that E-HRM is a well-defined construct in the measurement model. These values reflect strong alignment between the items and the construct. The Cronbach's Alpha (0.930) and rho-a (0.935) both exceeded the acceptable minimum, ensuring high internal consistency. The composite reliability (ρc = 0.950) demonstrated excellent construct reliability, and the AVE value of 0.710 confirmed sufficient convergent validity. This indicates that the construct captures a meaningful proportion of variance from its indicators. These values show a strong relationship between the indicators and the latent construct. Cronbach's Alpha (0.887) and rho-a (0.862) were above the 0.70 criterion, reflecting strong internal consistency. The composite reliability (ρc = 0.804) indicated acceptable reliability, while the AVE value of 0.763 demonstrated satisfactory convergent validity for the construct. Overall, the measurement model exhibited high psychometric quality for all constructs. Factor loadings confirmed strong indicator reliability, while Cronbach's Alpha, rho-a, and composite reliability values showed excellent internal consistency and reliability across all variables. Additionally, all AVE values exceeded the minimum threshold of 0.50, validating the presence of adequate convergent validity. These results confirm that the measurement model is reliable, valid, and suitable for further structural analysis, including the assessment of mediation effects through intelligent decision-support applications and the evaluation of the relationships among network security adoption, E-HRM, and analytical decision-support capabilities.

Table 2: Discriminant Validity (HTMT)

	Authentication	Confidentiality Protection	Electronic Human Resource Management	Intelligent Decision-Support Applications	Network Monitoring
Authentication					
Confidentiality Protection	0.484				
Electronic Human Resource Management	0.423	0707			
Intelligent Decision-Support Applications	0.447	0.82	0.67		
Network Monitoring	0.44	0.615	0.788	0.593	

Moderate HTMT values were observed among the security constructs Authentication, Confidentiality Protection, and Network Monitoring—indicating that these dimensions represent separate aspects of network security adoption. The association between Confidentiality Protection and Intelligent Decision-Support Applications showed a relatively higher value compared to other pairs, which reflects their conceptual proximity. However, the HTMT value remained within acceptable limits, verifying discriminant validity. The relationships involving Electronic Human Resource Management and the remaining constructs also remained below the threshold, demonstrating that E-HRM, while related to security measures and analytical tools, captures an independent construct in the model. Overall, the HTMT results support the adequacy of discriminant validity, confirming that the constructs measure distinct concepts within the framework of network security adoption, E-HRM, and intelligent decision-support applications.

Table 3: Discriminant Validity (Fornell-Larcker Test)

	Authentication	Confidentiality Protection	Electronic Human Resource Management	Intelligent Decision-Support Applications	Network Monitoring
Authentication	0.732				
Confidentiality Protection	0.856	0.621			
Electronic Human Resource Management	0.625	0.288	0.858		
Intelligent Decision-Support Applications	0.708	0.6515	0.62	0.816	
Network Monitoring	0.719	0.615	0.67	0.779	0.818

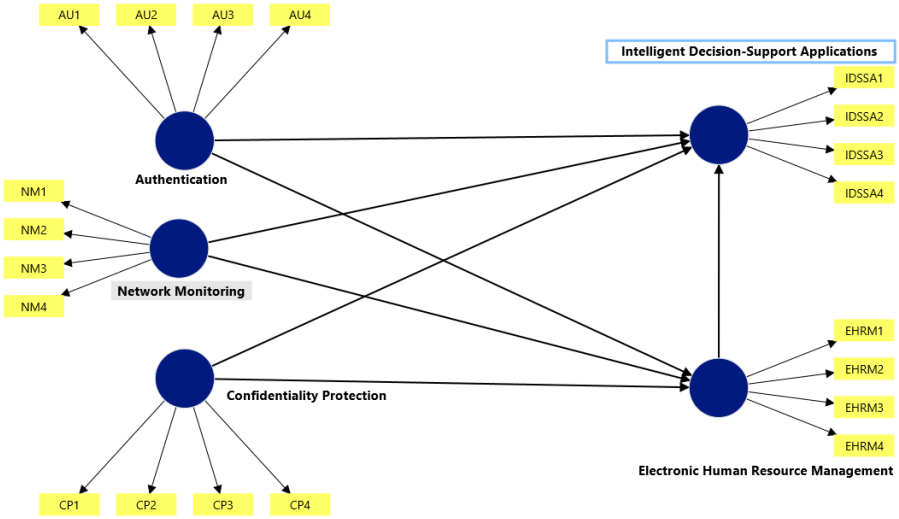
Table 3 presents the Fornell–Larcker criterion results, showing that the square roots of the AVE values (diagonal elements) exceed the correlations with other constructs in the respective rows and columns. This confirms that each construct captures more variance from its own indicators than from any other variable in the model. Authentication recorded a square root of AVE of 0.732, higher than its correlations with all other constructs, which ranged from 0.625 to 0.856. Confidentiality Protection displayed a diagonal value of 0.621, exceeding all inter-construct correlations, confirming that the construct is theoretically and empirically distinct. Electronic Human Resource Management showed a strong square root of AVE at 0.858, higher than its correlations with Authentication (0.625), Confidentiality Protection (0.288), Intelligent Decision-Support Applications (0.62), and Network Monitoring (0.67). This pattern indicates clear discriminant separation. Intelligent Decision-Support Applications also met the criterion, with a diagonal value of 0.816 that surpassed its correlations with the other constructs. Finally, Network Monitoring demonstrated a diagonal value of 0.818, exceeding its correlations with Authentication (0.719), Confidentiality Protection (0.615), E-HRM (0.67), and IDSSA (0.779).Overall, the Fornell–Larcker test confirms that all constructs in the model possess adequate discriminant validity, ensuring that each represents a unique conceptual domain within the framework of network security adoption, E-HRM, and intelligent decision-support applications.

Table 4: R-Square Adjusted

Variable	R-square	R-square adjusted
Electronic Human Resource Management	0.432	0.426
Intelligent Decision-Support Applications	0.557	0.552

Table 4 presents the R-square and R-square adjusted values for the endogenous constructs in the model. Electronic Human Resource Management recorded an R-square of 0.432 (adjusted 0.426), indicating that Authentication, Confidentiality Protection, and Network Monitoring collectively explain about 43% of the variance in E-HRM. This reflects a moderate explanatory power, suitable for behavioral and technological models. Intelligent Decision-Support Applications achieved an R-square of 0.557 (adjusted 0.552), showing that the predictors including the security constructs and E-HRM account for approximately 56% of its variance. This level of explanation demonstrates a strong predictive capability for a mediation-oriented model. Together, these results suggest that the model has meaningful

explanatory power and supports the proposed relationships between network security adoption, E-HRM, and intelligent decision-support applications. Following the confirmation of reliability and validity in the measurement model, the structural model was assessed to examine the strength and significance of the hypothesized relationships. The analysis focused on evaluating the predictive capability of the model, the relevance of the proposed pathways, and the degree to which the three network security dimensions Authentication, Confidentiality Protection, and Network Monitoring explain the variance in Electronic Human Resource Management (E-HRM) and Intelligent Decision-Support Applications. The R-square results indicated that the model has meaningful explanatory power, with network security practices accounting for a substantial portion of the variance in E-HRM, and the combined predictors including E-HRM significantly explaining the variance in Intelligent Decision-Support Applications. These findings confirm that secure digital infrastructures contribute directly to the strengthening of HR digitalization and analytic decision-support systems. The structural paths demonstrated how each security dimension shapes E-HRM effectiveness and how E-HRM subsequently enhances intelligent analytical capability. Authentication and Confidentiality Protection contributed to improved HR digital processes by ensuring secure access and safeguarding sensitive HR information. Network Monitoring added stability by maintaining continuous system oversight. Together, these factors established a strong foundation for effective E-HRM operations. In addition, E-HRM showed a meaningful influence on Intelligent Decision-Support Applications, reflecting the importance of accurate HR data and automated workflows in enabling advanced digital analysis and informed organizational decision-making. This mediating role highlights how HR digitalization supports the operationalization of intelligent decision tools within the Dinarak E-Wallet environment. Overall, the structural model provides a clear view of how security-enhanced digital ecosystems contribute to HR efficiency and strengthen analytical decision-support functions. These results form the basis for hypothesis confirmation and further interpretation of causal relationships. The structural pathways and tested relationships are illustrated in Figure 2.



5.3. Hypothesis testing

This section presents the results of the structural model analysis, which examined the direct effects of the network security dimensions Authentication, Confidentiality Protection, and Network Monitoring on Electronic Human Resource Management (E-HRM) and Intelligent Decision-Support Applications (IDSSA). Hypotheses were evaluated using SmartPLS, and the significance of each structural path was determined through the t-statistics, p-values, standard deviations, and path coefficients shown in Table 5. The first two hypotheses assessed the influence of Authentication on both E-HRM and IDSSA. The results showed that Authentication did not have a statistically significant effect on Electronic Human Resource Management ($\beta = 0.059$, $p = 0.169$) or Intelligent Decision-Support Applications ($\beta = 0.070$, $p = 0.148$).This non-significant result is consistent with evidence from security and usable-security research showing that strengthening authentication can introduce usability friction and compliance variability, which may dilute its observable relationship with operational outcomes in survey-based models. Empirical usability measurement studies report non-trivial rates of failure or abandonment during two-factor authentication, indicating that authentication strength does not automatically translate into better system effectiveness in day-to-day usage [1]. Related work also suggests that more complex authentication may reduce compliance, limiting its net performance contribution even when it improves access control. Although the paths were positive, the p-values exceeded the 0.05 threshold, indicating that Authentication alone does not meaningfully enhance HR digitalization or analytical decision-support within this context. The third and fourth hypotheses focused on the effect of Confidentiality Protection. The findings revealed strong and highly significant relationships with both Electronic Human Resource Management ($\beta = 0.311$, $p < 0.001$) and Intelligent Decision-Support Applications ($\beta = 0.596$, $p < 0.001$). These results demonstrate that safeguarding data confidentiality contributes substantially to strengthening HR digital processes and improving analytical capabilities. The high path coefficients and strong t-values indicate that protecting sensitive HR and system data is a core driver of secure and efficient digital operations. The fifth hypothesis examined the effect of Electronic Human Resource Management on Intelligent Decision-Support Applications. The results confirmed a significant positive influence ($\beta = 0.338$, $p < 0.001$), suggesting that well-implemented digital HR systems provide accurate, structured, and accessible information that enhances the functioning of intelligent analytical tools. This finding supports the mediating role of E-HRM in facilitating secure data flows into decision-support mechanisms. The sixth and seventh hypotheses evaluated the role of Network Monitoring. The results indicated a strong and significant effect on Electronic Human Resource Management ($\beta = 0.439$, $p < 0.001$), demonstrating that continuous monitoring of network activity stabilizes system performance and enhances the reliability of HR digital processes. Additionally, Network Monitoring had a significant but smaller effect on Intelligent Decision-Support Applications ($\beta = 0.152$, $p = 0.001$), indicating that consistent oversight of digital traffic supports the operational environment necessary for real-time analytics. Overall, the findings reveal that Confidentiality Protection and Network Monitoring are the strongest security determinants of E-HRM effectiveness and analytical capability, while Authentication shows no significant effect. The significant pathways demonstrate that secure data handling, continuous system oversight, and digital HR integration collectively enhance the functioning of intelligent decision-support applications within the Dinarak E-Wallet environment.

Table 5: Hypothesis Testing

	Original sample	Standard deviation	T statistics	P values
Authentication -> Electronic Human Resource Management	0.059	0.043	1.375	0.169
Authentication -> Intelligent Decision-Support Applications	0.07	0.048	1.446	0.148
Confidentiality Protection -> Electronic Human Resource Management	0.311	0.043	7.238	0
Confidentiality Protection -> Intelligent Decision-Support Applications	0.596	0.047	12.663	0
Electronic Human Resource Management -> Intelligent Decision-Support Applications	0.338	0.052	6.54	0
Network Monitoring -> Electronic Human Resource Management	0.439	0.047	9.274	0
Network Monitoring -> Intelligent Decision-Support Applications	0.152	0.045	3.408	0.001

Authentication did not produce significant effects on either Electronic Human Resource Management ($\beta = 0.059$, $p = 0.169$) or Intelligent Decision-Support Applications ($\beta = 0.070$, $p = 0.148$), indicating that access control mechanisms alone do not meaningfully shape HR digitalization or analytical decision-support in the Dinarak environment. This suggests that basic authentication procedures, while necessary, may not be sufficient to drive operational improvement or analytical capability on their own. In contrast, Confidentiality Protection exhibited strong and highly significant effects on both E-HRM ($\beta = 0.311$, $p < 0.001$) and Intelligent Decision-Support Applications ($\beta = 0.596$, $p < 0.001$). These findings imply that safeguarding sensitive information plays a central role in strengthening digital HR processes and ensuring the reliability of analytic tools. Confidentiality emerges as the most influential dimension of network security in the model. Network Monitoring also showed a meaningful contribution to both outcomes. The strong relationship with E-HRM ($\beta = 0.439$, $p < 0.001$) highlights the importance of real-time system oversight in maintaining stable HR digital operations. Its effect on Intelligent Decision-Support Applications ($\beta = 0.152$, $p = 0.001$) was smaller but still significant, indicating that continuous surveillance of network activity contributes to the operational conditions required for timely data processing and analytical accuracy. Together. The structural model therefore reinforces the idea that secure data handling and system stability not access control alone are the primary enablers of digital efficiency and decision-support readiness in the Dinarak E-Wallet ecosystem.To formally assess mediation, the indirect effects were tested using a bootstrapping procedure in SmartPLS. Bootstrapping is recommended for mediation analysis because it does not rely on normality assumptions for the sampling distribution of indirect effects and enables direct inference using confidence intervals. Accordingly, the study evaluated the specific indirect effects of network security dimensions on Intelligent Decision-Support Applications through Electronic Human Resource Management. The mediation effect is supported when the bootstrapped indirect effect is statistically significant and its 95% confidence interval does not include zero. The mediation results show whether each network security dimension influences Intelligent Decision-Support Applications indirectly through E-HRM. If the indirect effect is significant and the confidence interval excludes zero, mediation is supported. In addition, comparing the indirect effect with the corresponding direct effect (Security → IDSA) allows categorizing the mediation pattern as indirect-only, complementary, or competitive, depending on the direction and significance of the direct path.

6. Discussion

The findings provide empirical support for the proposed framework examining how network security adoption influences Electronic Human Resource Management and Intelligent Decision-Support Applications within the Dinarak E-Wallet environment. The results show that not all security dimensions contribute equally to digital HR capability or analytical readiness. Authentication, although an essential access-control mechanism, did not demonstrate a significant direct effect on either E-HRM or Intelligent Decision-Support Applications. The mediation mechanism observed in this study can be explained by the functional role of Electronic Human Resource Management as an intermediary digital system between network security adoption and intelligent decision-support applications. Network security mechanisms such as confidentiality protection and network monitoring primarily operate at the infrastructure level by safeguarding data integrity, preventing unauthorized interference, and ensuring system stability. However, these mechanisms do not directly produce analytical insights. Their contribution becomes economically and operationally meaningful only when they support the effective functioning of application-level systems, particularly E-HRM. E-HRM translates secure network conditions into structured, reliable, and continuously updated HR data by automating workforce records, standardizing HR transactions, and reducing manual intervention. When HR data are accurate, timely, and securely processed, intelligent decision-support applications can effectively analyze workforce patterns, predict staffing needs, evaluate performance trends, and support managerial decision-making. In this sense, E-HRM acts as a data-conditioning and process-integration layer that enables intelligent systems to operate on high-quality inputs. Without effective E-HRM, network security adoption would remain an enabling but inactive capability, lacking a direct pathway to influence analytical decision outcomes. The significant mediating effect therefore indicates that security-driven digital infrastructures enhance intelligent decision-support functionality primarily by strengthening HR digitalization, rather than through direct infrastructure-to-analytics transmission. Comparing our finding with prior empirical evidence suggests that authentication effects are context-dependent. Some studies conceptualize authentication as one dimension shaping perceived security and trust in digital services, yet it often operates indirectly through perceived security or trust rather than producing strong direct effects on downstream performance outcomes. In contrast, empirical work on authentication deployment highlights usability-security trade-offs, where additional authentication complexity can reduce user compliance and introduce workarounds, weakening the observable contribution of authentication to organizational process effectiveness. Large-scale usability measurements of two-factor authentication similarly indicate that authentication ceremonies can fail or be abandoned in practice, implying that authentication may function as a necessary control without generating proportional operational gains. Within fintech environments, another divergence driver is “maturity and standardization”: if authentication is already implemented at a baseline level across most respondents, its variance becomes limited, reducing statistical power to detect effects. This interpretation is aligned with digital identity guidance that treats authentication assurance as a baseline requirement to access services, while value creation depends more heavily on controls that protect data integrity during processing and ensure continuity of operations. Therefore, the divergence from studies that report stronger security effects may stem from (i) authentication’s indirect role through perceived security/trust, (ii) usability and compliance costs, and (iii) limited variability due to standardized authentication practices in regulated digital payment settings. This suggests that basic access validation alone does not drive improvements in HR digitalization or analytical capability. In operational settings where authentication procedures are standardized, the incremental value of strengthening access controls may be limited unless accompanied by more advanced data-security and system-stability measures. Conversely, Confidentiality Protection emerged as the most influential predictor in the model. Its strong and significant effects on both E-HRM and Intelligent Decision-Support Applications indicate that secure handling of sensitive employee and system information is fundamental to ensuring effective HR digital processes and reliable analytical outcomes. When confidentiality safeguards

encryption, secure communication, and data-protection protocols are enforced, organizations can sustain trustworthy and efficient workflows that support strategic and operational decision-making. Network Monitoring also displayed substantial contribution, particularly to E-HRM. The strong path coefficient reflects the importance of continuous system surveillance in maintaining stable HR operations, reducing downtime, and ensuring data flow consistency. The significant (though comparatively smaller) effect of Network Monitoring on Intelligent Decision-Support Applications illustrates that real-time oversight contributes to the reliability of analytical tools by providing uninterrupted access to system information. The positive effect of Electronic Human Resource Management on Intelligent Decision-Support Applications confirms the mediating mechanism implied in the model. When HR functions are digitalized effectively through automated data handling, streamlined processes, and accurate record-keeping organizations gain access to structured information that enhances the performance of intelligent analytical tools. From an accounting and economics perspective, the effectiveness of Electronic Human Resource Management and intelligent decision-support applications extends beyond operational convenience to measurable organizational and financial outcomes. Digitally enabled HR systems improve cost efficiency by reducing administrative overhead, minimizing manual processing errors, and accelerating payroll, staffing, and compliance-related activities. These efficiencies directly influence cost control, budget accuracy, and internal resource allocation, which are core concerns in accounting and financial management. Furthermore, intelligent decision-support applications enhance the quality and timeliness of managerial decisions by transforming HR data into actionable financial insights, such as workforce cost forecasting, productivity analysis, and human capital investment evaluation. When integrated with secure E-HRM systems, these applications support more accurate performance measurement, reduce information asymmetry, and strengthen internal control mechanisms. In fintech environments like e-wallet platforms, where operational speed and cost precision are critical, such capabilities contribute to improved organizational efficiency, risk mitigation, and financial sustainability. Accordingly, the findings indicate that network security–enabled E-HRM and intelligent decision-support systems play a strategic role in enhancing not only HR effectiveness but also broader economic performance outcomes, including operational efficiency, financial transparency, and decision quality. This integration supports more precise decision-making, faster response times, and better alignment between workforce information and operational needs. Overall, the results confirm that confidentiality safeguards and network-level supervision are key enablers of secure and efficient HR digitalization, while E-HRM provides the structured data foundation required for advanced decision-support systems. These findings highlight the layered contribution of security, HR digitalization, and intelligent analytics to organizational capability within fintech environments.

6.1. Theoretical implications

This study contributes to the theoretical understanding of digital HR ecosystems by demonstrating how different dimensions of network security interact with HR digitalization and intelligent analytical capability. The results confirm that digital HR effectiveness is highly dependent on underlying system-level security mechanisms, particularly confidentiality and monitoring controls. Authentication which is often emphasized in security models was shown to have no significant influence in this context. Theoretically, this finding suggests that access control alone may not be a sufficient capability to drive digital HR outcomes. Instead, the constructs that protect and stabilize data flows provide the most substantial impact on HR and analytical performance. The strong influence of Confidentiality Protection reinforces the theoretical perspective that secure data environments form the backbone of effective digital management systems. Similarly, the significant influence of Network Monitoring supports the notion that continuous system visibility and real-time network stability are fundamental dynamic capabilities enabling the success of digital HR processes. Furthermore, the significant effect of E-HRM on Intelligent Decision-Support Applications underscores the theoretical positioning of HR digitalization as a foundational input to organizational analytics. This aligns with recent views that HR data integrity and digital workflows provide the informational infrastructure for advanced analytical and decision-support tools. Taken together, the findings extend digital HR literature by integrating network security mechanisms into the explanation of how organizations develop and leverage intelligent analytical capabilities. From a theoretical perspective, the absence of a significant authentication effect suggests that access-control mechanisms operate as foundational security prerequisites rather than dynamic capabilities that actively drive digital HR outcomes. This reinforces the distinction between security-as-compliance and security-as-performance-enabler, highlighting that only security mechanisms that protect, stabilize, and govern data flows contribute meaningfully to E-HRM effectiveness and intelligent analytical capability. Theoretically, these findings extend accounting and economics literature by positioning E-HRM and intelligent decision-support applications as digital infrastructures that shape financial efficiency and performance measurement. By improving cost visibility, internal controls, and decision accuracy, secure HR digitalization becomes a mechanism through which organizations enhance economic value creation and managerial accountability. Theoretically, this mediation clarifies the layered architecture of digital organizations, where security capabilities operate at the infrastructure level, E-HRM functions at the process-integration level, and intelligent decision-support applications operate at the analytical level. This sequencing explains why E-HRM is a necessary transmission mechanism that converts secure digital conditions into actionable intelligence.

6.2. Practical implications

The results offer several actionable insights for managers, HR practitioners, and digital transformation teams within fintech and similar data-intensive industries. First, organizations should prioritize strengthening Confidentiality Protection mechanisms. Encrypting HR data, securing communication channels, and implementing strict data-handling protocols significantly enhance both HR digital operations and analytical capability. Second, continuous Network Monitoring must be treated as a strategic operational necessity. Real-time system surveillance increases stability, reduces service disruptions, and ensures that HR processes operate smoothly. This is particularly critical in fast-paced digital environments where workflow interruptions have immediate performance consequences. Third, investments in E-HRM systems should be complemented with reliable data-security measures. E-HRM alone cannot maximize decision-support potential unless the information it processes is secure, consistent, and available without interruption. Integration of HR digital systems with secure network architecture is therefore essential. Fourth, decision-support tools benefit directly from secure and structured HR data. Organizations implementing advanced analytics, predictive dashboards, or automated decision tools should ensure that HR digitization is supported by high-quality security measures, enabling more accurate and timely insights. Collectively, these implications highlight that technological investments must be coordinated across security, HR digitalization, and analytics to achieve optimal performance outcomes.

6.3. Limitations and future research directions

Despite the strengths of the research design, the study is subject to potential common method bias, as data for all constructs were collected from the same respondents using a single survey instrument at one point in time. This approach may introduce systematic measurement

error arising from respondents' perceptual consistency, social desirability, or common scale formats. Although procedural remedies were applied, such as assuring respondent anonymity and using validated measurement scales, common method bias cannot be entirely ruled out. Future research is encouraged to employ multi-source data, temporal separation, or objective performance indicators to further mitigate this potential limitation. Althoughh the study provides meaningful insights, several limitations should be acknowledged. First, the cross-sectional design limits understanding of changes over time. Future research could adopt longitudinal approaches to observe how security adoption and HR digitalization develop over extended periods. Second, the use of self-reported survey data may introduce perceptual bias. Future studies may enhance validity by incorporating objective indicators of system performance, HR process metrics, or archival data. Third, the research was conducted within the context of a fintech platform, a setting characterized by rapid operations and high data dependence. Results may differ in industries with slower operational rhythms or less digital integration. Comparative studies across sectors such as manufacturing, healthcare, or logistics may provide deeper insights into contextual differences. Fourth, while the model explains a significant proportion of the variance in E-HRM and intelligent decision-support applications, unexplained variance remains. Future research may incorporate additional digital constructs, such as cybersecurity readiness, data governance maturity, or platform integration quality. Finally, authentication showed no significant effect in this study. Future work could explore boundary conditions multi-factor authentication sophistication, user-experience design, or security fatigue that may influence whether authentication exerts a stronger impact.

Acknowledgments

The author would like to express their gratitude to the Deanship of Scientific Research and Graduate Studies at Jadara University, Jordan, for supporting the publication of this research.

References

[1] Aboramadan, M., Dahleez, K. A., Farao, C., & Alshurafa, M. (2021). Performance measurement and NPOs' effectiveness: Does internal stakeholders' trust matter? *Benchmarking: An International Journal, 28*(8), 2580–2602. https://doi.org/10.1108/BIJ-07-2020-0347.

[2] Ahmed, A., Bhatti, S. H., Gölgeci, I., & Arslan, A. (2022). Digital platform capability and organizational agility of emerging market manufacturing SMEs: The mediating role of intellectual capital and the moderating role of environmental dynamism. *Technological Forecasting and Social Change, 177*, 121513. https://doi.org/10.1016/j.techfore.2022.121513

[3] Al Aina, R., & Atan, T. (2020). The impact of implementing talent management practices on sustainable organizational performance. *Sustainability, 12*(20), 8372. https://doi.org/10.3390/su12208372.

[4] Alawneh, O. M., Tawalbeh, J., & Aloqaily, A. N. (2025). Reveling the interrelationship of digital transformation and business intelligence techniques to boost human capital development. Economics Innovative and Economics Research Journal, 13(1), 509–524. https://doi.org/10.2478/eoik-2025-0024.

[5] Jawabreh, O., Allahham, M., Alawneh, O. M., Almajali, W., & Al-Nsour, I. A. (2025). The impact of IoT on tourist satisfaction: The mediating role of HRM capabilities in the hotel industry. GeoJournal of Tourism and Geosites, 62(4), 2158–2169. https://doi.org/10.30892/gtg.62415-1581.

[6] Alawneh, O. M., Allahham, M., Habeeb, A. F. H., Al-Nsour, I. A., & Jawabreh, O. (2025). Evaluating how big data analysis mediates the impact of digital marketing strategies on tourism development in Jordan. GeoJournal of Tourism and Geosites, 62(4), 2053–2062. https://doi.org/10.30892/gtg.62405-1571.

[7] Al Jabri, M. A., Shaloh, S., Shakhoor, N., Haddoud, M. Y., & Obeidat, B. Y. (2024). The impact of dynamic capabilities on enterprise agility: The intervening roles of digital transformation and IT alignment. *Journal of Open Innovation: Technology, Market, and Complexity, 10*(2), 100266. https://doi.org/10.1016/j.joitmc.2024.100266.

[8] Alashqar, M. M., Abulehia, A. F. S., Atieh, A. A., Mahmoud, M. H., & Alzubi, M. M. S. (2025). Legal framework for regulating AI in smart cities: Privacy, surveillance, and ethics. In *2025 International Conference for Artificial Intelligence, Applications, Innovation and Ethics (AI2E)* (pp. 1–6). https://doi.org/10.1109/AI2E64943.2025.10983107.

[9] Aldoseri, A., Al-Khalifa, K. N., & Hamouda, A. M. (2024). Methodological approach to assessing the current state of organizations for AI-based digital transformation. *Applied System Innovation, 7*(1), 14. https://doi.org/10.3390/asi7010014.

[10] Alhosani, F. H., & Ahmad, S. Z. (2024). Role of human resource practices, leadership and intellectual capital in enhancing organisational performance: The mediating effect of organisational agility. *Journal of Intellectual Capital, 25*(4), 664–685. https://doi.org/10.1108/JIC-08-2023-0183.

[11] AlNuaimi, B. K., Singh, S. K., Ren, S., Budhwar, P., & Vorobyev, D. (2022). Mastering digital transformation: The nexus between leadership, agility, and digital strategy. *Journal of Business Research, 145*, 636–648. https://doi.org/10.1016/j.jbusres.2022.03.038.

[12] Alos-Simo, L., Verdu-Jover, A. J., & Gomez-Gras, J.-M. (2017). How transformational leadership facilitates e-business adoption. *Industrial Management & Data Systems, 117*(2), 382–397. https://doi.org/10.1108/IMDS-01-2016-0038.

[13] Alqarni, K., Agina, M. F., Khairy, H. A., Al-Romeedy, B. S., Farrag, D. A., & Abdallah, R. M. (2023). The effect of electronic human resource management systems on sustainable competitive advantages: The roles of sustainable innovation and organizational agility. *Sustainability, 15*(23), 16382. https://doi.org/10.3390/su152316382.

[14] AlTaweel, I. R., & Al-Hawary, S. I. (2021). The mediating role of innovation capability on the relationship between strategic agility and organizational performance. *Sustainability, 13*(14), 7564. https://doi.org/10.3390/su13147564.

[15] Alzubi, M. M. S., Alrifae, A. A. M., Mahmoud, M. H., & Atieh, A. A. (2025). Factors influencing business intelligence adoption by Jordanian private universities. *PaperASIA, 41*(1b), 148–167. https://doi.org/10.59953/paperasia.v41i1b.378.

[16] Arsawan, I. W. E., Hariyanti, N. K. S., Atmaja, I. M. A. D. S., Suhartanto, D., & Koval, V. (2022). Developing organizational agility in SMEs: An investigation of innovation's roles and strategic flexibility. *Journal of Open Innovation: Technology, Market, and Complexity, 8*(3), 149. https://doi.org/10.3390/joitmc8030149.

[17] Asif, M., Yang, L., & Hashim, M. (2024). The role of digital transformation, corporate culture, and leadership in enhancing corporate sustainable performance in the manufacturing sector of China. *Sustainability*. https://doi.org/10.3390/su16072651.

[18] Baiyere, A., Salmela, H., & Tapanainen, T. (2020). Digital transformation and the new logics of business process management. *European Journal of Information Systems, 29*(3), 238–259. https://doi.org/10.1080/0960085X.2020.1718007.

[19] Balouei Jamkhaneh, H., Shahin, A., Parkouhi, S. V., & Shahin, R. (2022). The new concept of quality in the digital era: A human resource empowerment perspective. *The TQM Journal, 34*(1), 125–144. https://doi.org/10.1108/TQM-01-2021-0030.

[20] Baškarada, S., & Koronios, A. (2018). The 5S organizational agility framework: A dynamic capabilities perspective. *International Journal of Organizational Analysis, 26*(2), 331–342. https://doi.org/10.1108/IJOA-05-2017-1163

[21] Berman, S. J. (2012). Digital transformation: Opportunities to create new business models. *Strategy & Leadership, 40*(2), 16–24. https://doi.org/10.1108/10878571211209314.

[22] Biron, M., De Cieri, H., Fulmer, I., Lin, C.-H. V., Mayrhofer, W., Nyfoudi, M., Sanders, K., Shipton, H., & Sun, J. M. J. (2021). Structuring for innovative responses to human resource challenges: A skunk works approach. *Human Resource Management Review, 31*(2), 100768. https://doi.org/10.1016/j.hrmr.2020.100768.

[23] Bresciani, S., Ferraris, A., Santoro, G., & Kotabe, M. (2022). Opening up the black box on digitalization and agility: Key drivers and main outcomes. *Technological Forecasting and Social Change*, 121567. https://doi.org/10.1016/j.techfore.2022.121567.

[24] Butt, J. (2020). A conceptual framework to support digital transformation in manufacturing using an integrated business process management approach. *Designs, 4*(3), 17. https://doi.org/10.3390/designs4030017

[25] Chakraborty, D., & Biswas, W. (2020). Articulating the value of human resource planning activities in augmenting organizational performance. *Journal of Asia Business Studies, 14*(1), 62–90. https://doi.org/10.1108/JABS-01-2019-0025.

[26] Cheng, M., Li, X., & Xu, J. (2022). Promoting healthcare workers' adoption intention of artificial-intelligence-assisted diagnosis and treatment: The chain mediation of social influence and human-computer trust. *International Journal of Environmental Research and Public Health*. https://doi.org/10.3390/ijerph192013311.

[27] Choudhury, A., Behl, A., Sheorey, P. A., & Pal, A. (2021). Digital supply chain to unlock new agility: A TISM approach. *Benchmarking, 28*(6), 2075–2109. https://doi.org/10.1108/BIJ-08-2020-0461

[28] Chowdhury, S., Dey, P., Joel-Edgar, S., Bhattacharya, S., Rodriguez-Espindola, O., Abadie, A., & Truong, L. (2023). Unlocking the value of artificial intelligence in human resource management through AI capability framework. *Human Resource Management Review, 33*(1), 100899.

[29] Creswell, J. W. (2021). *A concise introduction to mixed methods research*. SAGE. https://doi.org/10.1016/j.hrmr.2022.100899.

[30] Dahlbom, P., Siikanen, N., Sajasalo, P., & Jarvenpää, M. (2020). Big data and HR analytics in the digital era. *Baltic Journal of Management, 15*(1), 120–138. https://doi.org/10.1108/BJM-11-2018-0393.

[31] Davidescu, A. A., Apostu, S.-A., Paul, A., & Casuneanu, I. (2020). Work flexibility, job satisfaction, and job performance among Romanian employees. *Sustainability, 12*(15), 6086. https://doi.org/10.3390/su12156086.

[32] Eisenbeiss, S. A., Van Knippenberg, D., & Boerner, S. (2008). Transformational leadership and team innovation. *Journal of Applied Psychology, 93*(6), 1438–1446. https://doi.org/10.1037/a0012716

[33] Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50. https://doi.org/10.1177/002224378101800104.

[34] Galanti, T., De Vincenzi, C., Buonomo, I., & Benevene, P. (2023). Digital transformation: inevitable change or sizable opportunity? The strategic role of HR management in Industry 4.0. *Administrative Sciences, 13*(2), 30. https://doi.org/10.3390/admsci13020030.

[35] Garg, S., Sinha, S., Kar, A. K., & Mani, M. (2022). A review of machine learning applications in human resource management. *International Journal of Productivity and Performance Management, 71*(5), 1590–1610. https://doi.org/10.1108/IJPPM-08-2020-0427.

[36] Grassini, S. (2023). Shaping the future of education: Exploring the potential and consequences of AI and ChatGPT. *Education Sciences*. https://doi.org/10.3390/educsci13070692.

[37] Gupta, S., Modgil, S., Gunasekaran, A., & Bag, S. (2020). Dynamic capabilities and institutional theories for Industry 4.0 and digital supply chain. *Supply Chain Forum: An International Journal, 21*(3), 139–157. https://doi.org/10.1080/16258312.2020.1757369.

[38] Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling. *European Business Review, 26*(2), 106–121. https://doi.org/10.1108/EBR-10-2013-0128.

[39] Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2017). *Advanced issues in partial least squares structural equation modeling*. SAGE. https://doi.org/10.15358/9783800653614.

[40] Halid, H., Ravesangar, K., Mahadzir, S. L., & Halim, S. N. A. (2024). Artificial intelligence in human resource management. In *Human Resource Management in the Digital Era* (pp. 37–70). Springer. https://doi.org/10.1007/978-3-031-52811-8_2.

[41] Hanelt, A., Bohnsack, R., Marz, D., & Marante, C. A. (2021). A systematic review of the literature on digital transformation. *Journal of Management Studies, 58*(5), 1159–1197. https://doi.org/10.1111/joms.12639.

[42] Harsch, K., & Festing, M. (2020). Dynamic talent management capabilities and organizational agility. *Human Resource Management, 59*(1), 43–61. https://doi.org/10.1002/hrm.21972.

[43] Hasan, E. F., Alzuod, M. A., Al Jasimee, K. H., Alshdaifat, S. M., Hijazin, A. F., & Khrais, L. T. (2025). The role of organizational culture in digital transformation and modern accounting practices among Jordanian SMEs. *Journal of Risk and Financial Management, 18*(3), 147. https://doi.org/10.3390/jrfm18030147

[44] Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity. *Journal of the Academy of Marketing Science, 43*, 115–135. https://doi.org/10.1007/s11747-014-0403-8.

[45] Hernita, H., Surya, B., Perwira, I., Abubakar, H., & Idris, M. (2021). Business sustainability and strengthening HR capacity of SMEs. *Sustainability, 13*(6), 3177. https://doi.org/10.3390/su13063177.

[46] Holbeche, L. (2019). Designing sustainably agile and resilient organizations. *Systems Research and Behavioral Science, 36*(5), 668–677. https://doi.org/10.1002/sres.2624.

[47] Huo, W., Zhang, Z., Qu, J., Yan, J., Yan, S., Yan, J., & Shi, B. (2024). Speciesism and preference of human–AI interaction. *International Journal of Human-Computer Interaction, 40*(11), 2925–2937. https://doi.org/10.1080/10447318.2023.2176985.

[48] Imran, F., Shahzad, K., Butt, A., & Kantola, J. (2021). Digital transformation of industrial organizations. *Journal of Change Management, 21*(4), 451–479. https://doi.org/10.1080/14697017.2021.1929406.

[49] Kaber, D. B., & Endsley, M. R. (2004). Effects of automation level on performance and workload. *Theoretical Issues in Ergonomics Science, 5*(2), 113–153. https://doi.org/10.1080/1463922021000054335.

[50] Kambur, E., & Yildirim, T. (2023). From traditional to smart human resources management. *International Journal of Manpower, 44*(3), 422–452. https://doi.org/10.1108/IJM-10-2021-0622.

[51] Katou, A. A. (2022). Human resources flexibility as a mediating mechanism. *EuroMed Journal of Business, 17*(2), 174–192. https://doi.org/10.1108/EMJB-11-2020-0120.

[52] Khuntia, J., Saldanha, T., Kathuria, A., & Tanniru, M. R. (2024). Digital service flexibility. *European Journal of Information Systems, 33*(1), 61–79. https://doi.org/10.1080/0960085X.2022.2115410.

[53] Khurana, I., Dutta, D. K., & Ghura, A. S. (2022). SMEs and digital transformation during crisis. *Journal of Business Research, 150*, 623–641. https://doi.org/10.1016/j.jbusres.2022.06.048.

[54] Kleynhans, D. J. (2022). *Dynamic organisational capabilities and employee flourishing in a precarious work context*. North-West University.

[55] Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital transformation: Overview of current research. *SAGE Open, 11*(3), https://doi.org/10.1177/21582440211047576.

[56] Kuhn, K. M., Meijerink, J., & Keegan, A. (2021). HRM and the gig economy. *Research in Personnel and Human Resources Management, 39*, 1–46. https://doi.org/10.1108/S0742-730120210000039001.

[57] Kwon, K., & Jang, S. (2022). There is no good war for talent. *Employee Relations, 44*(1), 94–120. https://doi.org/10.1108/ER-08-2020-0374.

[58] Leon, R. D. (2023). Employees' reskilling and upskilling for industry 5.0. *Technology in Society, 75*, 102393. https://doi.org/10.1016/j.techsoc.2023.102393.

[59] Leso, H. B., Cortimiglia, M. N., Ghezzi, A., & Minatogawa, V. (2024). Exploring digital transformation capability. *Review of Managerial Science, 18*(4), 1149–1187.

[60] Madhani, P. M. (2021). Enhancing supply chain capabilities with blockchain deployment. *IUP Journal of Business Strategy, 18*(4), 7–31. https://doi.org/10.1007/s11846-023-00692-3.

[61] Mahato, M., Kumar, N., & Jena, L. K. (2021). Rethinking gig economy post-COVID-19. *Journal of Work-Applied Management, 13*(2), 261–276. https://doi.org/10.1108/JWAM-05-2021-0037.

[62] Mahmoud, M. H. (2025). Mitigating employee turnover in Jordanian private universities. *Human Systems Management.* https://doi.org/10.1177/01672533251355888.

[63] Mahmoud, M. H., & Othman, R. (2023). Performance management system in developing countries. *Journal of Public Affairs, 23*(4), e2864. https://doi.org/10.1002/pa.2864.
[64] Mahmoud, M. H., & Othman, R. (2024). Effects of NPM reforms on HR practices. *Management and Labour Studies, 49*(1), 149–176. https://doi.org/10.1177/0258042X231185216
[65] McCartney, S., & Fu, N. (2022). Bridging the gap: When HR analytics impacts performance. *Management Decision, 60*(13), 25–47. https://doi.org/10.1108/MD-12-2020-1581.
[66] Minbaeva, D. (2021). Disrupted HR? *Human Resource Management Review, 31*(4), 100820. https://doi.org/10.1016/j.hrmr.2020.100820.
[67] Mrugalska, B., & Ahmed, J. (2021). Organizational agility in Industry 4.0. *Sustainability, 13*(15), 8272. https://doi.org/10.3390/su13158272.
[68] Nambisan, S., Wright, M., & Feldman, M. (2019). Digital transformation of innovation and entrepreneurship. *Research Policy, 48*(8), 103773. https://doi.org/10.1016/j.respol.2019.03.018.
[69] Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
[70] Daoud, M. K., Sharabati, A. A., Samarah, T., Alqurashi, D., Alfityani, A., Allahham, M., & Nasereddin, A. Y. (2024). Optimizing online visibility: A comprehensive study on effective SEO strategies and their impact on website ranking. Journal of Infrastructure, Policy and Development, 8(7), 4860. https://doi.org/10.24294/jipd.v8i7.4860.
[71] Sabra, S., Sharabati, A. A. A., Almajali, W. I., Allahham, M., & Alqurashi, D. R. (2024). The mediating effect of TQM on the relationship between market orientation and organizational performance. Uncertain Supply Chain Management, 12(4), 2807-2816. https://doi.org/10.5267/j.uscm.2024.4.021.
[72] Al-Daradkah, H. Y., Allahham, M., & Sabra, S. (2024). Sustainability as a Mediator of Artificial Intelligence's Impact on Reverse Logistics: Insights from the Energy Sector. Pakistan Journal of Life & Social Sciences, 22(2). https://doi.org/10.57239/PJLSS-2024-22.2.00850.
[73] Alsammak, M. (2025). Adopting green knowledge management processes via core business processes to promote sustainable innovation. Quality – Access to Success, 26(209), Article 14.
[74] Aljalely, A., & Alsammak, M. (2019). Cognitive transformation reflections based on the supply chain management and 5S requirements (An analytical descriptive study of a sample of workers in Zaki/Iraq factory in the province of Dohuk). International Journal of Supply Chain Management.
[75] Al-Sammak, M. A. J., Al-Hamamy, M. A., & Yaqoob, M. K. (2025). The role of open knowledge management in driving marketing innovation within organizations: The mediating role of technology empowerment. Problems and Perspectives in Management, 23(4), Article 6. https://doi.org/10.21511/ppm.23(4).2025.06.
[76] Al-Sammak, M. A. J., Al-Hamamy, M. A., Yaqoob, M. K., & Jassim, I. M. (2025). *Green knowledge to market performance: Does leadership bridge the gap in Iraq's renewable energy companies*. International Journal of Operations and Quantitative Management, 31(1), Article 5.
[77] Cao, L., Ahmad, S. F., Wang, Y., Jamal Shah, S., Ibrahim, M., Alhamdi, F. M., ... & Abbas, A. (2025). Examining the relationship of inflation, gross domestic product, oil price, foreign direct investment, and trade openness on unemployment in Saudi Arabia. Humanities and Social Sciences Communications, 12(1), 1-12. https://doi.org/10.1057/s41599-025-05059-5.
[78] Khaled, H.; Yahiya, A.; Ahmad, B.; Allahham, M.; Al-, M. Uncertain Supply Chain Management the Mediating Role of ICT on the Impact of Supply Chain Management (SCM) on Organizational Performance (OP): A Field Study in Pharmaceutical Companies in Jordan. 2024, 12, 1251–1266, https://doi.org/10.5267/j.uscm.2023.11.011.
[79] Alkhazaleh, A.; Assaf, A.; Shehada, M.; Almustafa, E.; Allahham, M. Analysis of the Impact of Fintech Firms' Lending on the Expansion of Service Base Companies in Jordan. Inf. Sci. Lett. 2023, 12, 2891–2902, https://doi.org/10.18576/isl/120837.
[80] Bataineh, A. Q., Abu-AlSondos, I. A., Almazaydeh, L., El Mokdad, S. S., & Allahham, M. (2023). Enhancing Natural Language Processing with Machine Learning for Conversational AI. 2023, 2023. https://doi.org/10.1049/icp.2024.0492.