

Does Electronic Human Resource Management Matter for Workforce Agility? An Empirical Study of the Jordanian Banking Sector



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Abstract The current research examined the impact of electronic human resource management on workforce agility in the Jordanian banking sector. The research used experimental data through a survey distributed to 559 employees for Jordanian commercial banks at various administrative levels, which formed a response rate of 78.3%. Structural equation modeling (SEM) was applied as a statistical analysis approach to the collected data. The research concluded that electronic human resources management had a positive impact on workforce agility, as e-recruiting had the greatest effect, while e-performance appraisal had the least effect. Accordingly, the research emphasized the necessity of adopting a change management approach and seamless integration of electronic human resources management through comprehensive training programs and addressing any concerns or resistance to change.

Keywords Electronic human resource management · Workforce agility · Banking sector · Jordan

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1 Introduction

Organizations encounter persistent challenges and possibilities in today's fast-paced and unpredictable business world as a result of technical breakthroughs, changing market dynamics, and evolving client expectations (Al-Abbadi et al. 2021; Al-Alwan et al. 2022, 2022; Aityassine et al. 2021). To flourish in such a volatile climate, organizations should have employees that are adaptive, flexible, and eager to learn from volatile circumstances (Alhalalmeh et al. 2022; AlHamad et al. 2022; Al-Hawary 2013). Workforce agility has evolved as a vital notion for organizations to maintain competitiveness (Al-Hawary and Abu-Laimon 2013; AlTaweel and Al-Hawary 2021), innovate (Al-Hawary and Harahsheh 2014; Al-Hawary and Nusair 2017), and achieve long-term success (Al-Hawary et al. 2021; Al-Hawary and Al-Syasneh 2020). Workforce agility can be described as an ability to change work methods, jobs, and skills to suit changing needs and promote organizational success. Al-Hawary and Al-Rasheedy (2021) stated that a highly agile workforce anticipates changes, navigates uncertainty, and seizes novel opportunities in an evolving organisational context. Thus, in an era of digital transformation and rapid change, organizations that prioritize worker agility gain a competitive edge sooner than those that rely on regular labour and antiquated organizational structures (Al-khawaldah et al. 2022; Al-Shormana et al. 2021).

As technology continues to shape and redefine various aspects of business operations, human resource management has undergone a transformation with the rise of electronic human resource management, which refers to the incorporation of technology and digital solutions into human resource processes and practices in order to streamline and improve their functions (Al-Hawary and Al-Namlan 2018; Metabis and Al-Hawary 2013). Electronic human resource management can be used to improve the efficiency and effectiveness of human capital management within organizations, where it could improve self-service options, continuously updating of performance evaluations, and allow human resource managers to focus on strategic goals rather than routine work (Mohammad et al. 2020). However, the adoption of electronic HRM necessitates careful planning of investments in technological infrastructure, as well as the resultant issues related to data security and privacy considerations (Tariq et al. 2022; Boudlaie et al. 2022; Mukhlis et al. 2022). Therefore, organizations must ensure that electronic human resource management systems are easy to use, adaptable, and consistent with their specific human resource requirements and organizational culture (Al-Hawary et al. 2022; Mohammad 2020; Al-Rwaidan et al. 2023).

2 Literature Review and Hypotheses Development

2.1 *Electronic Human Resource Management*

Electronic human resource management enables greater adaptability to changing organizations' requirements and economic conditions. The theory of social exchange suggested that the relationship between individuals and organizations is founded on mutual advantages and reciprocity (Al-Hawary et al. 2023; Pallathadka et al. 2023). Thus, electronic human resource management could encourage beneficial relationships between employees and human resource departments through self-service portals, interactive platforms, and transparent communication channels (MajdyAmiruddin et al. 2023). Employee empowerment, engagement, and happiness are increased as a result of these electronic activities, resulting in a positive dynamic interchange inside the organization.

Electronic human resource management is described as the integration of information technology with traditional human resources methods to simplify and improve the outcomes of operations inside organizations (Al-Alwan et al. 2022). Electronic human resource management involves the use of digital technologies, software programs, and online platforms to handle human resource tasks like recruiting, employee data management, training, performance appraisal, and employee engagement (AlHamad et al. 2022). Several dimensions arising from electronic human resource management contribute substantially to the successful conduct of human resource management operations utilizing digital technology. (a) E-recruitment is a method of investing technological resources which facilitates the acquisition of qualified persons for a job opportunity. (b) E-training, also known as "e-learning", is the adoption of digital technology to provide and promote employees' learning experiences, including formal and informal learning activities, which are frequently aided by online platforms and resources accessible through computers or cell phones (Alshuqairat et al. 2023). (c) Electronic communication refers to taking advantage of digital technology and online networks to facilitate and enhance interaction among human resources departments and employees, as well as amongst employees themselves (Al-Hawary and Al-Namlan 2018). (d) Electronic performance appraisal indicates the implementation of electronic means to automate and improve the employee performance evaluation procedure within organizations.

2.2 *Workforce Agility*

Workforce agility defines as an organization's capability to adjust rapidly and effectively to modify strategic situations and trends through its workforce which leads to meeting customers' requirements. It means possessing flexible and adaptable employees that can immediately modify and adapt their skills, capabilities, and

organizational resources to meet evolving demands and gain new possibilities (Al-Khasswneh et al. 2023). Workforce agility represents an organization's capacity to predict changes in the outside context and adapt appropriately to them by using its human abilities, skills, and experience (Ashura et al. 2023). Al-Hawajreh et al. (2023) Considered that it is based on creating a dynamic workforce capable of swiftly pivoting and embracing new technologies, aligning its efforts toward strategic goals, and therefore driving organizational success and competitive advantage (Al-hawajreh et al. 2023). Additionally, workforce agility assists with advancing organizational resilience theory, which indicates an organization's capabilities to rebound from adversity and adapt to business environment troubles. Thus, the workforce's agility allows an organization to swiftly rearrange its roles, responsibilities, and competencies in order to deal with unanticipated problems and sustain organizational performance excellence (Al-Husban et al. 2023). Al-Armeti et al. (2023) mentioned that dynamic leadership style, flexibility, adaptation, collaboration, and empowerment are the core characteristics of workforce agility.

2.3 Electronic Human Resource Management and Workforce Agility

The researchers believe that electronic human resource management is associated with workforce agility. Al-Armeti et al. (2023) sought to ascertain the empirical relationship between electronic human resource management and organizational performance in the presence of organizational agility. A descriptive correlational analysis was used to perform this study on a sample of 40 Sri Lankan institutions. According to the findings of the study, electronic human resource management had a considerable and beneficial impact on organizational performance, whereas organizational agility mediates the relationship between electronic human resource management practices and organizational performance. Accordingly, the current research suggested the following hypotheses:

H1: Electronic human resource management has a significant impact on workforce agility.

Figure 1 depicts the impact of electronic human resource management, i.e., e-recruiting, e-training, e-communication, and e-performance appraisal, on workforce agility that form the research hypotheses.

3 Methodology

The primary sources were gathered from a survey sent to Jordanian commercial banks' employees. It was not possible to use a comprehensive approach to collect data. Hence, a convenience sample was used through a Google Forms survey

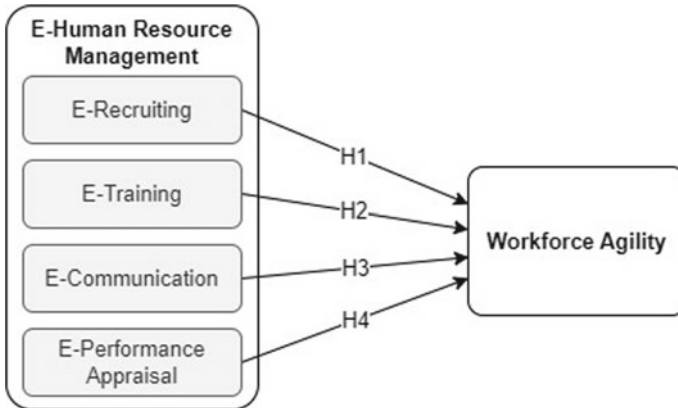


Fig. 1 Research model and hypotheses

distributed via social media and e-mail to those employees. The study survey received 714 replies; however, 155 replies were removed from the statistical analysis as a result of recurring patterns or incomplete surveys. Accordingly, 559 replies. An internet-based survey was used to obtain data on the impact of electronic human resource management on workforce agility. The survey was divided into three sections: an introduction that stated the research's goals, a section for collecting demographic information on respondents.

The independent variable of the research was electronic human resource management, which was measured using 18 items borrowed from (AlHamad et al. 2022). This variable was a second-order construct that was divided into four first-order constructs. e-recruiting was measured using five items (ER1–ER5), e-training was measured using four items (ET1–ET4), e-communication was measured using four items (EC1–EC4), and e-performance appraisal was measured by five items (EPA1–EPA4). On the other hand, the dependent variable of the research was workforce agility, which was a first-order construct measured using seven items (WFA1–WFA7) according to AlBrakat et al. (2023).

4 Results

Structural equation modeling (SEM) is a flexible statistical method to evaluating both quantitative and qualitative data. Confirmatory factor analysis (CFA) is a type of SEM used in management research to determine the validity and reliability of research instruments (Dwijendra et al. 2023). The fundamental purpose of CFA is to establish how well latent construct measurements match the researcher's initial understanding of those components and their latent factors. CFA was utilized in this

study to create the indicator values displayed in Table 1, which are used to evaluate the research instrument’s validity and reliability.

Table 1 results indicated that all items had loadings of more than 0.5 on their latent constructs, ranging from 0.671 to 0.811, showing that they were maintained since they surpassed the minimum limit (Zahran et al. 2023). The average variance extracted (AVE) values were above the minimum permissible value of 0.5, indicating that the measurement model had convergent validity (Al-Alwan et al. 2022). Moreover,

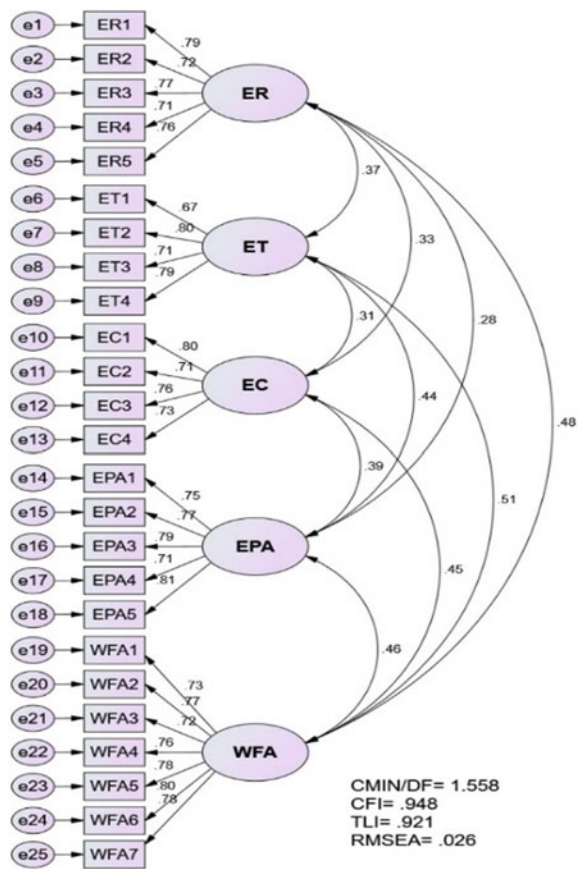
Table 1 Validity and reliability of measurement model

Construct	Loadings	AVE	MSV	√AVE	CR
<i>E-recruiting</i>		0.569	0.464	0.754	0.868
ER1	0.792				
ER2	0.725				
ER3	0.774				
ER4	0.713				
ER5	0.765				
<i>E-training</i>		0.552	0.483	0.743	0.830
ET1	0.671				
ET2	0.797				
ET3	0.706				
ET4	0.789				
<i>E-communication</i>		0.564	0.479	0.751	0.838
EC1	0.802				
EC2	0.711				
EC3	0.758				
EC4	0.729				
<i>E-performance appraisal</i>		0.587	0.491	0.766	0.877
EPA1	0.752				
EPA2	0.769				
EPA3	0.788				
EPA4	0.708				
EPA5	0.811				
<i>Workforce agility</i>		0.585	0.493	0.765	0.908
WFA1	0.734				
WFA2	0.772				
WFA3	0.719				
WFA4	0.764				
WFA5	0.785				
WFA6	0.799				
WFA7	0.777				

maximum shared variance (MSV) values were lower than AVE values, and the square root of AVE values surpassed the correlation between the other latent variables. These findings indicated that the measurement model had discriminatory validity (Al-Hawary 2013). On the other hand, the composite reliability (CR) of the measurement model was examined using McDonald’s omega coefficient, which was more than the minimal criterion of 0.70. Therefore, the model fit indices were derived and shown in Fig. 2.

According to Fig. 2, the measurement model produced adequate goodness of fit indicators. The chi-squared ratio to degrees of freedom was 1.558, which was less than the highest limit of 3 (Muda et al. 2022). The comparative fit index (CFI) and Tucker-Lewis’ index (TLI) were both 0.948 and 0.921, respectively, above the minimum allowable value of 0.90 (Harahap et al. 2022). The findings for the root mean square error of approximation (RMSEA) revealed that it did not approach the highest limit of 0.08 (Attiany et al. 2023).

Fig. 2 The results of confirmatory factor analysis



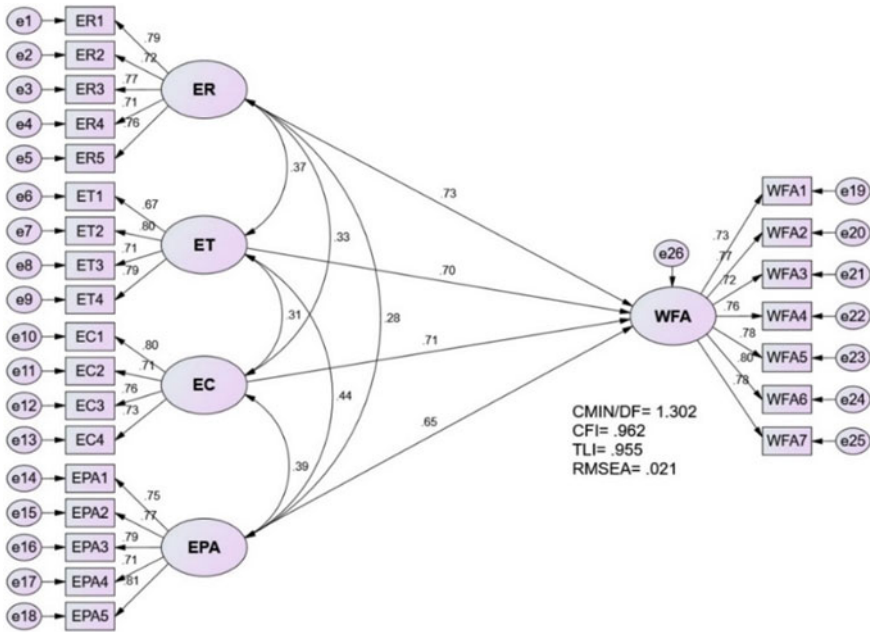


Fig. 3 SEM for testing the impact of E-HRM on WFA

Structural equation modeling (SEM) was used to test the researcher’s hypotheses. Researchers could apply SEM to examine the appropriateness of their models and analyse associations between observable variables and latent variables with the maximum likelihood approach (Rahman et al. 2023). The structural model used to investigate the influence of electronic human resource management on workforce agility is illustrated in Fig. 3.

According to the results of Fig. 3, the structural model obtained appropriate values of the goodness of fit. The chi-squared ratio to degrees of freedom is 1.302, therefore it was lower than the upper threshold of 3 (Mohammad 2019). The comparative fit index (CFI) and the Tucker–Lewis’s index (TLI) were 0.962 and 0.955, respectively, thus they exceeded the minimum allowed value of 0.90 (Mohammad et al. 2022; Al-Awamleh et al. 2022). As for the root mean square error of approximation (RMSEA), the results showed that it did not reach the upper value of 0.08 (AL-Zyadat et al. 2022; Alolayyan et al. 2022). Accordingly, path coefficients for the impact of electronic human resource management on workforce agility were extracted and included in Table 3. This table includes five columns, each representing the relationship of anelectronic human resource management practice to workforce agility.

According to the findings in Table 3, the four paths of electronic human resource management had a statistically significant favourable impact on workforce agility. Path coefficients (B) vary from 0.718 to 0.812, with e-recruiting having the highest coefficient, suggesting that it had the most positive impact on workforce agility.

Table 3 Path coefficient for the impact of E-HRM on WFA

Path			B	S.E.	β	t	p
E-recruiting	→	Workforce agility	0.812	0.062	0.733	13.09	0.000
E-training	→	Workforce agility	0.737	0.066	0.698	11.16	0.000
E-communication	→	Workforce agility	0.784	0.064	0.710	12.25	0.000
E-performance appraisal	→	Workforce agility	0.718	0.069	0.648	10.40	0.002

The standard regression coefficients (β) were in the (0.648–0.733) range, indicating that raising the standard deviation in any combination of electronic human resource management had a significant impact on workforce agility. The *t* values were substantially greater than the crucial value of 2.05 (at a 0.05 significance level). Furthermore, all of the paths had a *p*-value of less than 0.05, indicating that the relationships between electronic human resource management dimensions and workforce agility were statistically significant.

5 Discussion

The findings revealed that electronic human resource management has significant effects on worker agility. Therefore, electronic human resource management enables employees' self-service selections and online platforms through which they may access and update personal information, manage their work schedules, and seek time off or other benefits. According to many studies, allowing workers to handle duties connected to their human resources, such as electronic human resource management, increases employee adaptability and minimizes administrative requirements on human resources staff. Employees may make timely changes to their work arrangements, allowing the firm to adapt rapidly to changing demands.

Furthermore, cooperation and communication are vital for an agile workforce, where electronic human resource management is essential in this context. Employees may collaborate on projects, exchange information and expertise, and work together regardless of physical location using digital platforms and tools including, including intranets, collaboration software, and social media. These findings are congruent with (Kumar and Kumar 2022), which found that immediate interaction through features like instant messaging, video conferencing, and discussion boards allows for seamless cooperation and information sharing across departments. Although electronic human resource management provides major advantages for workforce agility, it is necessary to evaluate possible issues and constraints. Setiawan and Gunawan (2023)

suggested that organizations should have data security and privacy measures to safeguard key employee information. Furthermore, strong change management techniques and training programs are required for the successful deployment of e-HRM to ensure employee acceptance and engagement in the transformation process.

In conclusion, the effects of electronic human resource management on workforce agility matter for organizations. Major results to consider include increased employee autonomy, empowerment, improved performance management, more interaction and organizational cooperation, and the requirement for adaptive human resource management practices. Organizations may improve workforce agility, react to changing business environments, and maintain a competitive advantage in today's dynamic world by efficiently deploying electronic human resource management systems. To fully realize the promise of electronic HRM for workforce agility, organizations should also address the issues of synchronizing human resource strategy, data security, and privacy.

6 Implications

The research revealed multiple implications associated with the positive impact of electronic human resource management on workforce agility. First, emphasizing on excellent change management and smooth electronic human resource management integration to optimize the impact of electronic human resource management on worker agility. thus, Organizations should provide thorough training programs and address any concerns or resistance to change by proactively managing the transition process. Second, continuous learning and growth are advantages of electronic human resource management. Therefore, organizations should use electronic human resource management to provide tailored learning paths, online training modules, and access to educational resources, resulting in the development of an agile workforce capable of adapting to changing demands. Finally, an electronic human resource management strategy could improve employee engagement by allowing self-service, real-time feedback and evaluation, and open communication. Hence, organizations ought to utilize electronic human resource management to generate an engaging employee experience, stimulate collaboration and knowledge sharing, and develop a feeling of belonging and purpose, because engaged people are more adaptive, inventive, and agile at work.

References

- Aityassine F, Aldiabat B, Al-rjoub S, Aldaihani F, Al-Shorman H, Al-Hawary S (2021) The mediating effect of just in time on the relationship between green supply chain management practices and performance in the manufacturing companies. *Uncertain Supply Chain Manage* 9(4):1081–1090

- Al-Abbadi LH, Alshwabkeh RO, Al-Quran AZ, Eldahamsheh MM, Almomani HM, Bani-Khaled AK, Al-Hawary SIS (2021) Do high performance work systems enhance employee engagement? An empirical study at mobile telecommunication companies in Jordan. *Int J Entrepreneurship* 25(S5):1–14
- Al-Alwan M, Bader D, Al-Qatawneh M, Alneimat S, Al-Hawary S (2022a) E-HRM and employee flexibility in Islamic banks in Jordan. *Int J Data Netw Sci* 6(3):703–710
- Al-Alwan M, Al-Nawafah S, Al-Shorman H, Khrisat F, Alathamneh F, Al-Hawary S (2022b) The effect of big data on decision quality: evidence from telecommunication industry. *Int J Data Netw Sci* 6(3):693–702
- Al-Armeti IY, Al-Azzam MKA, Alkhawaldeh MIG, Mohammad A, Melhem YS, Ababneh RI et al (2023) The impact of human resources agility on job performance in—Islamic Banks Operating in Jordan. In: *The effect of information technology on business and marketing intelligence systems*. Springer International Publishing, Cham, pp 1113–1129
- Al-Awamleh H, Alhalalmeh M, Alatyat Z, Saraireh S, Akour I, Alneimat S, Al-Hawary S (2022) The effect of green supply chain on sustainability: evidence from the pharmaceutical industry. *Uncertain Supply Chain Manage* 10(4):1261–1270
- AlBrakat N, Al-Hawary S, Muflih S (2023) Green supply chain practices and their effects on operational performance: an experimental study in Jordanian private hospitals. *Uncertain Supply Chain Manage* 11(2):523–532
- Alhalalmeh M, Alkhawaldeh RA, Mohammad A, Al-Quran A, Hijjawi G, Al-Hawary S (2022) The effect of selected marketing activities and promotions on the consumers buying behavior. *Bus Theor Pract* 23(1):79–87
- AlHamad A, Alshurideh M, Alomari K, Kurdi B, Alzoubi H, Hamouche S, Al-Hawary S (2022) The effect of electronic human resources management on organizational health of telecommunications companies in Jordan. *Int J Data Netw Sci* 6(2):429–438
- Al-Hawajreh KM, Al-Nawaiseh AR, Almomani RZQ, Alqahtani MM, Barqawi BYA, Alshurideh MT et al (2023) Strategic leadership and its role on implementing public policies in the government departments in Karak Governorate. In: *The effect of information technology on business and marketing intelligence systems*. Springer International Publishing, Cham, pp 1385–1401
- Al-Hawary SI (2013a) The role of perceived quality and satisfaction in explaining customer brand loyalty: mobile phone service in Jordan. *Int J Bus Innov Res* 7(4):393–413
- Al-Hawary SI (2013b) The roles of perceived quality, trust, and satisfaction in predicting brand loyalty: the empirical research on automobile brands in Jordan Market. *Int J Bus Excell* 6(6):656–686
- Al-Hawary SI, Abu-Laimon AA (2013) The impact of TQM practices on service quality in cellular communication companies in Jordan. *Int J Prod Qual Manage* 11(4):446–474
- Al-Hawary SI, Al-Namlan A (2018) Impact of electronic human resources management on the organizational learning at the private hospitals in the state of Qatar. *Glob J Manage Bus Res Adm Manage* 18(7):1–11
- Al-Hawary SIS, Al-Rasheedy HH (2021) The effect of strategic learning for human resources on dynamic capabilities of airlines companies in Kuwait. *Int J Bus Inform Syst* 37(4):421–441
- Al-Hawary SI, Harahsheh S (2014) Factors affecting Jordanian consumer loyalty toward cellular phone brand. *Int J Econ Bus Res* 7(3):349–375
- Al-Hawary SI, Nusair W (2017) Impact of human resource strategies on perceived organizational support at Jordanian Public Universities. *Glob J Manage Bus Res Adm Manage* 17(1):68–82
- Al-Hawary SIS, Mohammad AS, Al-Syasneh MS, Qandah MSF, Alhajri TMS (2021) Organizational learning capabilities of the commercial banks in Jordan: do electronic human resources management practices matter? *Int J Learn Intellect Cap* 17(3):242–266
- Al-Hawary SIS, Mukhlis H, Mahdi OA, Surahman S, Adnan S, Salim MA, Iswanto AH (2022) Determining and explaining the components of the justice-oriented Islamic community based on the teachings of Nahj al-Balaghah. *HTS Theologiese Stud/theolog Stud* 78(4):6

- Al-Hawary SIS, Subrahmanyam S, Muda I, Kumar T, Ramirez-Coronel AA, Al-Salami AAA (2023) Islam-based spiritual orientations and quality of work life among Muslims. *HTS Theologesie Stud/theol Stud* 79(1):8194
- Al-Hawary SI, Al-Syasneh MS (2020) Impact of dynamic strategic capabilities on strategic entrepreneurship in presence of outsourcing of five stars hotels in Jordan. *Bus Theor Pract* 21(2):578–587
- Al-Husban DAAO, Al-Hawary SIS, AlTaweel IRS, Al-Husban NA, Almaaitah MF, Aldaihani FMF et al (2023) The impact of intellectual capital on competitive capabilities: evidence from firms listed in ASE. In: *The effect of information technology on business and marketing intelligence systems*. Springer International Publishing, Cham, pp 1707–1723
- Al-Khasswneh RSJ, Mohammad A, Al-Shaikh FN, Melhem YS, Al-Azzam MKA, Alolayyan MN et al (2023) Impact of strategic vigilance on competitive capabilities in Jordanian insurance companies. In: *The effect of information technology on business and marketing intelligence systems*. Springer International Publishing, Cham, pp 1061–1076
- Al-khawaldah R, Al-Zoubi W, Alshaer S, Almarshad M, AL-Shalabi F, Altahrawi M, Al-Hawary S (2022) Green supply chain management and competitive advantage: the mediating role of organizational ambidexterity. *Uncertain Supply Chain Manage* 10(3):961–972
- Alolayyan M, Al-Qudah M, Hunitie M, Akour I, Alneimat S, Al-Hawary S, Alshurideh M (2022) Validating the operational flexibility dimensions in the medical service sectors. *Uncertain Supply Chain Manage* 10(4):1397–1404
- Al-Rwaidan R, Aldossary N, Eldahamshah M, Al-Azzam M, Al-Quran A, Al-Hawary S (2023) The impact of cloud-based solutions on digital transformation of HR practices. *Int J Data Netw Sci* 7(1):83–90
- Al-Shormana H, Alshawabkeh R, Aldaihani F, Aityassine F, Mohammad A, Al-Hawary S (2021) Drivers of e-training intention to use in the private universities in Jordan. *Int J Data Netw Sci* 5(4):831–836
- Alshuqairat EA, Barqawi BYA, Khalaylah ZAK, Alshura MSK, Al-mzary MM, Alshurideh MT et al (2023) The effect of total quality management on the organizational reputation: the moderating role of quality standards in Jordanian Public Universities. In: *The effect of information technology on business and marketing intelligence systems*. Springer International Publishing, Cham, pp 1147–1163
- AlTaweel IR, Al-Hawary SI (2021) The mediating role of innovation capability on the relationship between strategic agility and organizational performance. *Sustainability* 13(14):7564
- AL-Zyadat A, Alsaraireh J, Al-Husban D, Al-Shorman H, Mohammad A, Alathamneh F, Al-Hawary S (2022) The effect of industry 4.0 on sustainability of industrial organizations in Jordan. *Int J Data Netw Sci* 6(4):1437–1446
- Ashura MSK, Tayeh SSAA, Melhem YS, Al-Shaikh FN, Almomani HM, Aityassine FLY et al (2023) Authentic leadership and its impact on sustainable performance: the mediating role of knowledge ability in Jordan Customs Department. In: *The effect of information technology on business and marketing intelligence systems*. Springer International Publishing, Cham, pp 1437–1454
- Attiany M, Al-Kharabsheh S, Abed-Qader M, Al-Hawary S, Mohammad A, Rahamneh A (2023) Barriers to adopt industry 4.0 in supply chains using interpretive structural modeling. *Uncertain Supply Chain Manage* 11(1):299–306
- Boudlaie H, Boghosian A, Chandra T, Al-Hawary SIS, Hussein RA, Talib SG et al (2022) Investigating the effect of humility of Muslim leaders on the moral behaviours of followers and spirituality at work in Islamic society. *HTS Theolog Stud* 78(1):6
- Dwijendra NKA, Arsana IGNK, Al-Hawary SIS, Prakaash AS, Parra RMR, Jalil AT, Hammid AT (2023) Operation of the multiple energy system with optimal coordination of the consumers in energy market. *Environ Clim Technol* 27(1):1–13
- Harahap TH, Dwijendra NKA, Al-Hawary SIS, Iswanto AH, Ahmed NM, Hasan YM (2022) A new commodity distribution approach based on asymmetric traveler salesman using ant colony algorithm. *Indus Eng Manage Syst* 21(3):538–546

- Kumar AD, Kumar S (2022) Enhancing workforce agility through e-training to deal with a crisis: a themes-based content analysis. *IUP J Organ Behav* 21(2):99–116
- MajdyAmiruddin M, Hamoud Alshahrani S, Dwijendra NK, Shelash Al-Hawary SI, Turki Jalil A, Muda I et al (2023) Religious behaviours and commitment among Muslim healthcare workers in Malaysia. *HTS Teologiese Stud/Theol Stud* 79(1):8177
- Metabis A, Al-Hawary SI (2013) The impact of internal marketing practices on services quality of commercial banks in Jordan. *Int J Serv Oper Manage* 15(3):313–337
- Mohammad AAS (2019) Customers' electronic loyalty of banks working in Jordan: the effect of electronic customer relationship management. *Int J Sci Technol Res* 8(12):3809–3815
- Mohammad AAS (2020) The effect of customer empowerment and customer engagement on marketing performance: the mediating effect of brand community membership. *Verslas: Teorijairpraktika/Bus Theor Pract* 21(1):30–38
- Mohammad AA, Alshura MS, Al-Hawary SIS, Al-Syasneh MS, Alhajri TM (2020) The influence of internal marketing practices on the employees' intention to leave: a study of the private hospitals in Jordan. *Int J Adv Sci Technol* 29(5):1174–1189
- Mohammad A, Aldmour R, Al-Hawary S (2022) Drivers of online food delivery orientation. *Int J Data Netw Sci* 6(4):1619–1624
- Muda I, Sivaraman R, Al-Hawary SIS, Rahardja U, Bader RS, Kadarsyah D et al (2022) Hub location-allocation in computer-based networks under disruption using whale optimization algorithm. *Indus Eng Manage Syst* 21(3):503–515
- Mukhlis H, Al-Hawary SIS, Linh HV, Hani IR, Adnan S (2022) Religious capital and job engagement among Malaysian Muslim nurses during the COVID-19 pandemic. *HTS Teologiese Stud/theolog Stud* 78(1):6
- Pallathadka H, Al-Hawary SIS, Muda I, Surahman SH, Al-Salami AAA, Nasimova Z (2023) The study of Islamic teachings in education: With an emphasis on behavioural gentleness. *HTS Teologiese Stud/theol Stud* 79(1):8193
- Rahman A, Alrawashdeh S, Bawaneh A, Alatyat Z, Mohammad A, Al-Hawary S (2023) The effect of digital supply chain on lean manufacturing: a structural equation modelling approach. *Uncertain Supply Chain Manage* 11(1):391–402
- Setiawan D, Gunawan EF (2023) Electronic human resource management (e-HRM) practices: systematic literature review. *Asia Pac J Bus Econom Technol* 3(3):37–50
- Tariq E, Alshurideh M, Akour I, Al-Hawary S (2022) The effect of digital marketing capabilities on organizational ambidexterity of the information technology sector. *Int J Data Netw Sci* 6(2):401–408
- Zahran B, Ayyoub B, Abu-Ain W, Hadi W, Al-Hawary S (2023) A fuzzy based model for rainfall prediction. *Int J Data Netw Sci* 7(1):97–106