Journal of Statistics Applications & Probability
An International Journal

http://dx.doi.org/10.18576/jsap/120106

Strategic Employees Satisfaction toward Human Resource Management Information System in Higher Education Institutions

Mohammed Zedan Salem[1,*] *and Mohammed Yousif* [2]

[1]Department of Business, University College of Applied Sciences, Remal, Gaza, Palestine
[2]Applied Science University, Road 23, East Al Ekir, P.O. Box: 5055, Kingdom of Bahrain

Received: 22 Mar. 2022, Revised: 3 May 2022, Accepted: 4 Jun. 2022
Published online: 1 Jan. 2023

Abstract: This paper's objective is to investigate the factors affecting employees' satisfaction toward Human Resource Management Information System "HRMIS" in the Palestinian universities: the moderating role of training. To evaluate the hypotheses, an empirical study was undertaken utilizing a questionnaire to gather primary data. The data obtained from 347 Palestinian universities' employees is analyzed using a structural equation model (SEM). The results demonstrate that system quality, information quality, service quality, ICT infrastructure, and security are related to employees' satisfaction towards HRMIS. The findings also indicate that training plays a role in managing the link between independent and dependent factors, implying that it is important for the managements of universities to take the moderating role of training in the link between independent and dependent variables into account.

Keywords: Quality of system, quality of information, quality of service, ICT infrastructure, Security, training, Employees' satisfaction, Palestinian universities.

1 Introduction

Information and communication technology (ICT) was developed and is now widely used, which has significantly changed people's lives and how businesses work [1]. Individually, ICT use has made it easier for employees to engage with their coworkers by allowing them to convey pertinent information more quickly, such as in a couple of seconds [2]. ICT has unquestionably improved the planning, information processing, and decision-making effectiveness of many firms from an organizational perspective [3].

Despite this, most organizations find that implementing the IS is more difficult than they anticipated since it entails several problems and hurdles. Innovation diffusion, or the adoption of any new inventive technology, is slower and difficult in both the public sector and private sector [4]. Users, organizations, technology, and surroundings can all contribute to these issues and hurdles [5,6].

Information systems may be helpful in a variety of areas, including human resource management. In order to support decision-making, coordination, control, analysis, and visualization of an organization's human resource management activities at their most fundamental level, HRMIS are a set of linked components that collect, process, store, and distribute information [7]. Computers have made it easier to analyze large amounts of data in this context, and they may be important tools in human resource management, from payroll processing to record retention [8].

In order to improve planning, decision-making, and the filing of returns and reports to external organizations, HRMIS is simply described as a way of organizing data and information for each individual employee [9,10]. It is defined as a system meant to offer information essential for successful management of an organization, i.e. for human resource decision making [11].

Although management information systems are frequently a core component of managing an organization, "HRMIS" is a little-known concept aimed at improving the efficiency of the human resource operation, pushing the organization to a new level in regards to the number and diversity of reports connected to human resources it can reduce, and assisting human resources in shifting their focus from transaction-processing to strategic human resource management [12].

*Corresponding author e-mail: mrdd_salem@hotmail.com

Universities are among the first to adopt new methods and concepts in a range of industries in order to obtain a competitive advantage by implementing HRMIS [13]. The HRMIS is designed to help with precise workforce planning, automate human resource management activities, and make the workplace paperless. In Palestine, the number of accredited and licensed higher education institutions reached 51 higher education institutions divided up as follows (16 traditional universities, 2 open education universities, 16 university colleges, and 17 medium community colleges). Of the 16 traditional universities, 10 of them are in the West Bank and 6 in the Gaza Strip. The number of workers in these universities reached (12,383) for the academic year 2020/2021 (3356 Ph.D., 2903 Master's degree, 23 high diploma, 3249 bachelor's degree, 857 intermediate diploma, 46 vocational diploma, 513 high school, 1299 without high school, 137 not defined) [14].

This study makes two contributions. Determining factors affecting employees' satisfaction toward HRMIS in order to better understand how the HRMIS may be implemented is the first contribution. It was discovered that several of the people engaged preferred manual techniques to the HRMIS. Such a condition appeared to have hampered the successful execution of the HRMIS, and hence had an impact on the procurement objectives. The second contribution is investigating the moderating role of training in the link between independent and dependent variables.

2 Theoretical context and hypotheses formation

2.1 Technology usage theories and models

A technology-organization-environment paradigm that outlines the three primary elements impacting the application of technological innovation: technological, organizational, and environmental aspects, may be used to quantify an organization's success rate in technology adoption [15]. In contrast, context, attitude, and behavioral aspects are used to assess a person's success rate in adopting new technology. Theory of Planned Behaviour (TPB), Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Model of PC Utilization (MPCU), Motivational Model (MM), and TAM Extension and Updated Information System Success Model (ISSM) have been used in most individual context research [16,17].

DeLone and McLean [18] revised the ISSM model to give a broader knowledge of system utilization and its influence on the business. The influence of information systems is described as the extent to which they may affect people, communities, organizations, industries, and nations. The present research examines factors affecting employees' satisfaction toward HRMIS in the Palestinian universities using ISSM. The ISSM appears to be the best theoretical perspective for this work since it stresses information system effectiveness within organizational contexts while simultaneously focusing on the influence on human (people) benefits.

2.2 Employee Satisfaction

Satisfaction is defined as someone's sentiments or attitude in response to many circumstances in a specific setting [19]. Employees may violate or disrespect the value of utilizing HRMIS to acquire information and data resources for daily operations duties when their attitudes shift owing to technological constraints. Due to a variety of variables, such as a lack of expertise operating the system, senior personnel tend to breach the HRMIS system as technology rapidly evolves. Previous research has revealed substantial links between employee satisfaction and the intended/actual usage of information systems [20]. Employee satisfaction refers to the positive relationships that see between the information system and its intended users, which are the workers [18]. To conclude the literature research, the HRMIS system's documentation, user interface, timeliness, correctness, relevance, and simplicity of use are all factors that influence employee satisfaction. Individual and organizational effect are both essential factors in HRMIS utilization lifetime.

2.3 Factors affecting user satisfaction toward HRMIS

2.3.1 System quality

System quality was one of the criteria that influenced HRMIS use. In this context, system quality relates to the system's technical qualities of the system, as well as its accessibility and usage by users [21]. The performance features of the system under analysis are often the focus of system quality measures [22]. resources and investments, accurateness, speed of processing, reaction time, ease of access, simplicity of use, comfortable work conditions, and current technologies in the system's software and hardware have all been studied [23]. The list of system quality metrics by Hamilton and Chervany [24] is arguably the most widely used. Data currencies, response time, processing times, data correctness, reliability, completion, system adaptability, and simplicity of use are the factors to consider. System quality, according to Seddon [25],

is associated with "problems" in the system (system dependability),, user interface accuracy, simplicity of use, accuracy of the information, and program code quality and ease of maintenance. Cohen et al., [26] discovered that the Hospital Information System (HIS) system quality had a substantial effect on consumer satisfaction, which increased system use. In light of the aforementioned, we hypothesize the following:

H1: System quality has a significant favourable impact on employees' satisfaction toward HRMIS.

2.3.2 Information quality

Information quality refers to the properties of the system output like: relevance, timeliness, completeness, correctness, comprehension, and accessibility [27]. This component is critical in ensuring that an IS is utilized in the future. This will improve consumer satisfaction as well [28]. Information quality measures concentrate on a system's output and the user's assessment of its value, utility, or relative relevance. As a result, the majority of the measurements are of a perceptual character. Bailey and Pearson [29] proposed nine qualities of information quality: correctness, accuracy, validity, timely of output, dependability, completion, comprehensiveness, formatting, and relevancy, which sparked a wave of customer satisfaction study. Others have added criteria including readability [30], document utility [31], adequacy, bias-free, consistency, and quantitativeness [32]. Based on the foregoing, we suggest the following:

H2: Information quality has a significant favourable effect on employees' satisfaction toward HRMIS.

2.3.3 Service quality

The timeliness, flexible operation hours, reliability, and ease of contact of service providers are all examples of service quality [33]. It is also crucial to make sure that the consumer maintains to utilize the IS as a result of customer satisfaction. Uzir et al., [34] discovered that quality of service had the greatest effect on user satisfaction and system adoption. On the basis of the aforementioned, we propose the following hypothesis:

H3: Quality of service has a significant favourable impact on employees' satisfaction toward HRMIS.

2.3.4 ICT infrastructure

The property resources of an organization, including any gear and software that may be utilized to enable technology adoption, are referred to as ICT infrastructure [35]. ICT infrastructure is considered one of the most often reported elements impacting adoption [36]. Hardware and software are examples of tangible ICT resources. ICT infrastructure is vital in promoting organizational IT use [37]. On the basis of the above, we propose the following hypothesis:

H4: ICT infrastructure has a significant positive effect on employees' satisfaction toward HRMIS.

2.3.5 Security

Security was the sixth element indicated in the focus groups. In this context, security refers to how certain one is that the HRMIS is safe for transferring sensitive data [38]. According to Khan & AlShare [39], information security is a big worry for many corporate executives. For securing business data, security solutions focused solely on technological considerations are insufficient. Successful information security appears to be dependent on acceptable user behavior when using the IS. Based on the above, we suggest the following hypothesis:

H5: Security has a significant favourable effect on employees' satisfaction toward HRMIS.

2.4 The moderating role of training

Specialized training that gives employees with appropriate understanding of the system is critical to the implementation's success. Technical training has a substantial association with system utilization [40]. According to Sinniah et al., [41], one of the problems that hinder the implementation of HRMIS is the absence of employee training and no confidentiality in utilizing the system. Based on the preceding, we hypothesize the following:

H6: Training strengthens the effect of quality of system, quality of information, quality of service, ICT infrastructure, and security on employees' satisfaction toward HRMIS.

Figure 1 depicts the conceptual layout of the paper. This model connects the independent factors (quality of system, quality of information, quality of service, ICT infrastructure, and security) with the dependent variable (employees' satisfaction toward HRMIS). Training's impact on moderation is also shown.

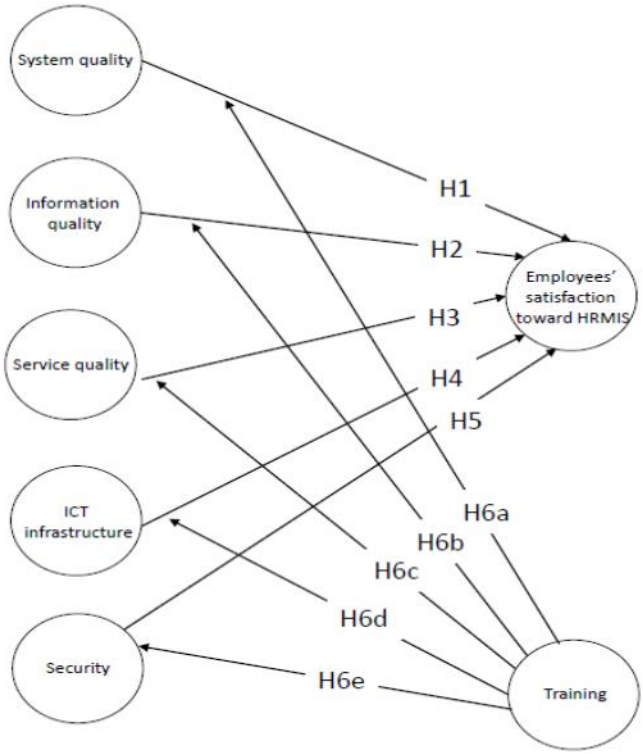

Fig.1: The framework for the study.

3 Methodologies

3.1 Participants

The questionnaire has been filled out and returned by a total of 347 participants. According to Table 1, 264 of the participants were men and 83 were women. 131 of the participants had master's degrees, which is the majority. 147 participants were between the ages of 31 and 40.

Table 1: Profile of employees' respondents

Variable	Interval	Frequency	Percentage
Age group	30 years or less	82	23.6
	31-40 years	147	42.4
	41-50 years	67	19.3
	51-60 years	46	13.3
	61 years and above	5	1.4
Sex	Male	264	76.1
	Female	83	23.9
Educational level	High school or lower	15	4.3
	Diploma	42	12.1
	Bachelor	57	16.4
	Master	131	37.8
	Ph.D.	102	29.4

Marital status	Single	29	8.4
	Married	318	91.6

3.2 Procedure

In order to understand the current status and address the main issues influencing workers' satisfaction with HRMIS in Palestinian institutions, the descriptive approach was employed. As a consequence, the survey, which was carried out using a Google form, served as the main method for obtaining the study's data. The link to the Google form was extensively shared on social media (Facebook, WhatsApp, and emails). The first question asked whether or not the individual is currently working on the Palestinian universities. If the participant replied "No," he or she was told not to browse the questionnaire's items. As a result, the population of this research includes all people who are working on the Palestinian universities. In order to adhere to regional language restrictions, the initial survey was accurately translated into Arabic. The correctness of it was then reviewed and put to the test by three native Arabic speakers.

3.3 Measures

The survey was conducted using a 5-point Likert scale, with 1 signifying a “strongly disagree”, 2 “disagree”, 3 “no opinion”, 4 “agree”, and 5 “strongly agree”. The questionnaire was divided into seven parts. In the first part, system quality is evaluated using four items based on Cohen et al., [26]; Hosnavi and Ramezan, [21]; Hamilton and Chervany [24]. Information quality was rated in the second part using four items from Almaiah & Alismaiel, [28]; Bailey and Pearson, [29]; and Srinivasan, [30]. The third part “service quality” uses four questions from Uzir et al., [34]; and Pakurár et al., [33]. In the fourth section, four items based on Qin et al., [37]; Li et al., [35]; and Ahmadi et al., [36] are utilized to assess ICT infrastructure. The fifth part “security” uses four items from Al-Mutawa & Manuel, [38]; and Khan & AlShare [39]. In the sixth part, four questions based on Sinniah et al., [41]; and Limbu et al. [40] are utilized to assess training. The last part “employees’ satisfaction uses five items adapted from Wixom & Todd [19], DeLone & McLean [18], and Athanassopoulos et al. [20].

4 Results

4.1 Measurement model assessment

In order to examine the collected data, a PLS-SEM model was fitted. Two steps were taken in the assessment of structural equation models. Because the Cronbach alpha values (used to gauge construct reliability) are more than (0.7), as shown in Table 2, the evaluation procedure in this work adheres to the guidelines suggested by Nunnally and Bernstein [42], which supports strong reliability. Likewise, when testing convergent validity using a different evaluation criterion recommended by Henseler et al. [43], all constructs' AVE values are higher than the 0.5 cutoff, confirming the convergence validity of the measuring tool.

Table 2: Reliability and loading values of the constructs

Construct	Item	Factor Loading "FL"	Composite Reliability "CR"	Cronbachs Alpha "CA"	Average Variance Extracted "AVE"
System quality	1	0.824	0.843	0.763	0.784
	2	0.786			
	3	0.826			
	4	0.809			
Information quality	5	0.816	0.854	0.787	0.735
	6	0.813			
	7	0.842			
	8	0.823			
Service quality	9	0.842	0.837	0.764	0.657
	10	0.835			
	11	0.776			
ICT infrastructure	12	0.807	0.861	0.846	0.792

Construct	Item	Factor Loading "FL"	Composite Reliability "CR"	Cronbachs Alpha "CA"	Average Variance Extracted "AVE"
	13	0.846			
	14	0.862			
	15	0.837			
Security	16	0.813	0.832	0.803	0.684
	17	0.830			
	18	0.825			
	19	0.849			
Training	20	0.802	0.811	0.753	0.567
	21	0.786			
	22	0.776			
	23	0.785			
Employees' satisfaction	24	0.846	0.837	0.748	0.634
	25	0.843			
	26	0.786			
	27	0.760			
	28	0.827			

The Fornell-Larker criteria was used to evaluate the discriminant validity [44]. According to the specifications, AVE should be greater than the largest squared correlation across all other components for every latent variable, as indicated in Table 3.

Table 3: Discriminant Validity of the Constructs

	SQ	IQ	SEQ	ICTI	S	T	ES	ME1	ME2	ME3	ME4	ME5
SQ	0.843											
IQ	0.721	0.828										
SEQ	0.562	0.632	0.815									
ICTI	0.526	0.416	0.452	0.837								
S	0.527	0.641	0.622	0.351	0.814							
T	0.416	0.543	0.348	0.458	0.288	0.776						
ES	0.474	0.624	0.626	0.332	0.578	0.462	0.784					
MO1	0.341	0.642	0.537	0.614	0.630	0.325	0.043	1.000				
MO2	0.244	0.227	0.452	0.369	0.227	0.365	0.532	0.532	1.000			
MO3	0.365	0.369	0.347	0.556	0.186	0.435	0.286	0.376	0.268	1.000		
MO4	0.243	0.646	0.479	0.580	0.265	0.524	0.467	0.162	0.446	0.539	1.000	
MO5	0.176	0.548	0.441	0.447	0.168	0.397	0.229	0.607	0.532	0.297	0.456	1.000

Note: SQ = Quality of system; IQ = Quality of information; SEQ = Quality of service; ICTI = ICT infrastructure; S =Security; T = Training; ES = Employees' satisfaction; Mo1= Moderating Effect 1; MO2= Moderating Effect 2; MO3= Moderating Effect 3; MO4= Moderating Effect 4; MO5= Moderating Effect 5.

4.2 Structural model assessment

As indicated in Table 4, the study findings suggest a positive association between employees' satisfaction toward HRMIS and quality of system ($t = 2.351$, $p < 0.008$), quality of information ($t = 2.254$, $p < 0.038$), service quality ($t = 2.851$, $p < 0.000$), ICT infrastructure ($t = 3.261$, $p < 0.000$), and security ($t = 2.948$, $p < 0.000$). Significant evidence supports the hypotheses H1, H2, H3, H4, and H5. The results confirm the moderating effect of training in the associations between quality of system ($t = 2.311$, $p < 0.027$), quality of information ($t = 2.146$, $p < 0.038$), service quality ($t = 2.074$, $p < 0.047$), ICT infrastructure ($t = 0.084$, $p < 0.842$), and security ($t = 2.462$, $p < 0.000$), implying that H6, H7, H8, and H10 are supported.

Table 4: Structural equation modeling results.

Dependent factor : Employees' satisfaction toward HRMIS		Model (1)		Model (2)	
Path model (*n*, model fit indices)		Coef.	*t*-value	Coef.	*t*-value
(1) Base model (SRMR = 0.076, d_ULS = 0.766, d_G = 0.286, NFI, 0.847)					
	SQ	0.124	2.351*	0.132	2.543**
	IQ	0.146	2.254**	0.151	2.68*
	SEQ	0.153	2.851**	0.164	3.042**
	ICTI	0.134	3.261***	0.148	4.462***
	S	0.162	2.948***	0.173	3.157***
(2) Training (SRMR = 0.083, d_ULS = 1.534, d_G = 0.356, NFI, 0.824)					
	T			0.136	3.125**
	SQ × T			0.124	2.311*
	IQ × T			0.116	2.146*
	SEQ × T			0.108	2.074*
	ICTI × T			0.048	0.084
	S × T			0.136	2.462**

Note: SQ = Quality of system; IQ = Quality of information; SEQ = Quality of service; ICTI = ICT infrastructure; S =Security; T = Training; ES = Employees' satisfaction.

.* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

In order to evaluate the suitability of the model in PLS, the Stone-Geisser Q2 (predictive relevance) [45] and the standardized root mean square residual (SRMR) were used. How closely the model and its predicted parameters fit the observed data is determined by the Q2 computation. Predictive relevance is shown by a Q2 score greater than 0. A high model fit was demonstrated by the composite model's SRMR value of 0.076 for both independent and dependent factors which is less than Hu and Bentler's [46] suggested value of 0.08 for this metric. The independent factors account for 48.2 percent of the variability in the employees' satisfaction with HRMIS, according to the adjusted R2 value of 0.482. The composite model's SRMR value in the existence of the moderating variables was 0.083, which is closely to Hu and Bentler's [46] suggested value of 0.08 and shows that the model is appropriate. When the moderating impact of training is taking into account, the modified R2 value of 0.547 shows that the independent factors account for 54.7 percent of the variability in employees' satisfaction toward HRMIS.

5 Discussions

The moderating effect of training on the links between (quality of system, quality of information, quality of service, ICT infrastructure, and security) and employees' satisfaction with HRMIS is examined in this study. The aforementioned technique was used to do this, together with a dependable and validated statistical analysis of the data gathered.

The results showed that improved system quality is projected to result in higher employee satisfaction. System quality affects the effectiveness of HRMIS through HRMIS makes information very accessible, increased ease of system use, decreased the time spent on HR tasks such as recruiting, training, and staffing. Cohen et al. [26], Hosnavi and Ramezan [21], and Hamilton and Chervany [24] all support this finding.

Also, results demonstrate that information quality affects employees' satisfaction toward HRMIS through improved information accuracy, complete, characterized by (timeliness, compatibility, appropriateness, and understandability), provide up to date information, and presented in a useful format. This conclusion is consistent with Almaiah & Alismaiel [28], Bailey and Pearson [29], and Srinivasan [30].

In addition, service quality is equally vital, but it takes the shape of qualities like correctness, technical expertise, reliability, and responsiveness. The ideal elements of the system output, such as management online reporting and internet applications, demonstrate the relevance of service quality. Relevancy, ease of understanding, accuracy, conciseness,

completeness, validity, timely, and applicability are all desired characteristics. This finding is line with Uzir et al. [34], and Pakurár et al. [33].

The ICT infrastructure was also regarded as a key feature that aided HRMIS adoption among Palestinian universities' personnel. ICT infrastructure, by definition, refers to the different technologies that serve as the base for any IS [47]. One of the most essential components in the adoption process, according to Ahmadi et al. [36], is IS infrastructure. It comprises physical assets such as gear and software. According to Limbu et al., [40], good ICT infrastructure encourages IT use and improves employee satisfaction.

Whenever a system employs a digital platform that entails access to sensitive data, security is another important consideration [36]. ICT security specialists have long been concerned about information security within organizations [48]. Users must trust the safety and confidentiality of e-services, as one of the essential elements impacting security has been identified [49]. The universities' employees in this research brought up the same concern. They were worried about user names and passwords. However, they had faith in these security measures.

Additionally, regarding the moderation effect of training between (quality of system, quality of information, quality of service, ICT infrastructure, and security) and employees' satisfaction toward HRMIS, results indicate that training strengthens the relationships between quality of system, quality of information, quality of service, and security on one side and employees' satisfaction toward HRMIS on the other side. Training entails the transmission of essential knowledge of information systems principles, technical abilities, organizational skills, and specialized information systems products [50]. As a result, technical training that gives customers with appropriate system expertise is required for any IS to be implemented successfully. Previous research has backed up this conclusion [51].

6 Conclusions

The objective of this article is to investigate the factors influencing employees' attitude toward HRMIS in the Palestinian universities: the moderating role of training. Data was analyzed using a survey, and variables impacting employees' satisfaction toward HRMIS were discovered. Based on these considerations, the universities would be in a good situation to implement the necessary steps to improve HRMIS utilization.

From a practical standpoint, the conclusions drawn might be applied to other systems, such as government agencies. Future academic research, particularly those focusing on hospitals, can benefit from the findings. Furthermore, the elements discovered in this paper constitute a comprehensive structure that may be explored in future researches to investigate the application and effect of IS in a comparable organizational situation.

Some limitations occurred in this study, as they do in every research. Because this research focused on the universities context with distinct traits and cultures, the results may not be applicable to other organizations with various features. Furthermore, a convenience sample technique was used in this study to collect data. Results may be skewed if a convenience sample strategy is used.

Conflicts of interest:

The authors affirm that the publishing of this paper does not involve any conflicts of interest.

References

[1] G. F. Davis, and A. Sinha, Varieties of Uberization: How technology and institutions change the organization (s) of late capitalism. *Organization Theory*, **2**(1), 2631787721995198 (2021).

[2] D. W. Jorgenson, and K. M. Vu, (2016). The ICT revolution, world economic growth, and policy issues. *Telecommunications Policy*, **40**(5), 383e397 (2016).

[3] H. Li, Y. Wu, D. Cao, and Y. Wang, Organizational mindfulness towards digital transformation as a prerequisite of information processing capability to achieve market agility. *Journal of Business Research*, **122**, 700-712 (2021).

[4] E. Toufaily, T. Zalan, and S. B. Dhaou, A framework of blockchain technology adoption: An investigation of challenges and expected value. *Information & Management*, **58**(3), 103444 (2021).

[5] F. Chien, H. W. Kamran, M. A. Nawaz, N. N. Thach, P. D. Long, and Z. A. Baloch, Assessing the prioritization of barriers toward green innovation: small and medium enterprises Nexus. *Environment, Development and Sustainability*, **24**(2), 1897-1927 (2022).

[6] M. Shepherd, J. A. Turner, B. Small, and D. Wheeler, Priorities for science to overcome hurdles thwarting the full promise of the 'digital agriculture'revolution. *Journal of the Science of Food and Agriculture*, **100**(14), 5083-5092 (2020).

[7] S. V. Shet, T. Poddar, F. W. Samuel, and Y. K. Dwivedi, Examining the determinants of successful adoption of data analytics in human resource management–A framework for implications. *Journal of Business Research*, **131**, 311-326 (2021).
[8] S. Chowdhury, P. Dey, S. Joel-Edgar, S. Bhattacharya, O. Rodriguez-Espindola, A. Abadie, and L. Truong, Unlocking the value of artificial intelligence in human resource management through AI capability framework. *Human Resource Management Review*, 100899 (2022).
[9] T. G. Mauro, and J. E. Borges-Andrade, Human resource system as innovation for organisations. *Innovation & Management Review*, **17**(2), 197-214 (2020).
[10] M. Rahman, C. Mordi, and U. Nwagbara, Factors influencing E-HRM implementation in government organisations: Case studies from Bangladesh. *Journal of Enterprise Information Management*, **31**(2), 247-275 (2018).
[11] S. K. Mousa, and M. Othman, M. The impact of green human resource management practices on sustainable performance in healthcare organisations: A conceptual framework. *Journal of Cleaner Production*, **243**, 118595 (2020).
[12] E. Zavyalova, D. Sokolov, and A. Lisovskaya, Agile vs traditional project management approaches: Comparing human resource management architectures. *International Journal of Organizational Analysis*, **28**(5), 1095-1112 (2020).
[13] V. M. Haji, and N. S. Ahmed, A web-based management information system for Human resources in selected universities of Duhok Province. *Science Journal of University of Zakho*, **5**(2), 214-220 (2017).
[14] Ministry of Higher Education & Scientific Research. *Statistical Yearbook 2020/2021 Ramallah*, Palestine (2021).
[15] P. Q. Thuan, N. V. Khuong, N. D. C. Anh, N. T. X. Hanh, V. H. A. Thi, T. N. B. Tram, and C. G. Han, The Determinants of the Usage of Accounting Information Systems toward Operational Efficiency in Industrial Revolution 4.0: Evidence from an Emerging Economy. *Economies*, **10**(4), 83 (2022).
[16] A. Granić, Technology Acceptance and Adoption in Education. In Handbook of Open, Distance and Digital Education (pp. 1-15). Singapore: Springer Singapore (2022).
[17] A. A. A. Zwain, Technological innovativeness and information quality as neoteric predictors of users' acceptance of learning management system: An expansion of UTAUT2. *Interactive Technology and Smart Education*, **16**(3), 239-254 (2019).
[18] W. H. DeLone, and E. R. McLean, The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, **19**(4), 9e30 (2003).
[19] B. H. Wixom, and P. A. Todd, A theoretical integration of user satisfaction and technology acceptance. *Information systems research*, **16**(1), 85-102 (2005).
[20] A. Athanassopoulos, S. Gounaris, and V. Stathakopoulos, Behavioural responses to customer satisfaction: an empirical study. *European Journal of Marketing*, **35**(5/6), 687-707, 2001 (2001).
[21] R. Hosnavi, and M. Ramezan, Measuring the effectiveness of a human resource information system in National Iranian Oil Company: An empirical assessment. *Education, Business and Society: Contemporary Middle Eastern Issues*, **3**(1), 28-39 (2010).
[22] C. Kriebel, and A. Raviv, An economics approach to modeling the productivity of computer systems. *Management Science*, **26**(3), 297-311 (1980).
[23] G. G. Panigyrakis, and K. C. Chatzipanagiotou, The impact of design characteristics and support services on the effectiveness of marketing information systems: an empirical investigation. *Review of Business Information Systems – Second Quarter*, **10**(2), 91-100 (2006).
[24] S. Hamilton, and N. L. Chervany, Evaluating information system effectiveness-Part I: Comparing evaluation approaches. *MIS quarterly*, 55-69 (1981).
[25] P. B. Seddon, A respecification and extension of the DeLone and McLean Model of IS success. *Information Systems Research*, **8**(3), 240-53 (1997).
[26] J. F. Cohen, E. Coleman, and M. J. Kangethe, An importance-performance analysis of hospital information system attributes: A nurses' perspective. *International Journal of Medical Informatics*, **86**, 82e90 (2016).
[27] M. A. Arifin, and F. P. Tajudeen, Impact of human resources information systems in the military environment. *Asia Pacific Management Review*, **25**(4), 198-206 (2020).
[28] M. A. Almaiah, and O. A. Alismaiel, Examination of factors influencing the use of mobile learning system: An empirical study. *Education and Information Technologies*, **24**(1), 885e909 (2018).
[29] J. E. Bailey, and S. W. Pearson, A validation of the end-user computing satisfaction instrument in Taiwan. *Information and Management*, **39**(6), 503-11 (1985).
[30] A. Srinivasan, Alternative measures of system effectiveness: associations and implications. *MIS Quarterly*, **9**(3), 243-53 (1985).
[31] M. A. Mahmood, and J. N. Medewitz, Impact of design methods on decision support system success: an empirical assessment. *Information & Management*, **9**(3), 137-51 (1985).
[32] W. R. King, and B. J. Epstein, Assessing information system value. *Decision Sciences*, **4**(1), 34-45 (1983).

[33] M. Pakurár, H. Haddad, J. Nagy, J. Popp, and J. Oláh, The service quality dimensions that affect customer satisfaction in the Jordanian banking sector. *Sustainability*, **11**(4), 1113 (2019).
[34] M. U. H. Uzir, H. Al Halbusi, R. Thurasamy, R. L. T. Hock, M. A. Aljaberi, N. Hasan, and M. Hamid, The effects of service quality, perceived value and trust in home delivery service personnel on customer satisfaction: Evidence from a developing country. *Journal of Retailing and Consumer Services*, **63**, 102721 (2021).
[35] Li, H., Dai, J., Gershberg, T., & Vasarhelyi, M. A. (2018). Understanding usage and value of audit analytics for internal auditors: An organizational approach. *International Journal of Accounting Information Systems*, **28**, 59e76.
[36] H. Ahmadi, M. Nilashi, L. Shahmoradi, and O. Ibrahim, Hospital Information System adoption: Expert perspectives on an adoption framework for Malaysian public hospitals. *Computers in Human Behavior*, **67**, 161e189 (2016).
[37] J. Qin, B. van der Rhee, V. Venkataraman, and T. Ahmadi, The impact of IT infrastructure capability on NPD performance: The roles of market knowledge and innovation process formality. *Journal of Business Research*, **133**, 252-264 (2021).
[38] H. A. Al-Mutawa, and P. Manuel, Human Resource Information System in Healthcare Organizations. In Intelligent Sustainable Systems (pp. 29-43). Springer, Singapore (2022).
[39] H. U. Khan, and K. A. AlShare, Violators versus non-violators of information security measures in organizations—A study of distinguishing factors. *Journal of Organizational Computing and Electronic Commerce*, **29**(1), 4-23 (2019).
[40] Y. B. Limbu, C. Jayachandran, and B. J. Babin, Does information and communication technology improve job satisfaction? The moderating role of sales technology orientation. *Industrial Marketing Management*, **43**(7), 1236e1245 (2014).
[41] S. Sinniah, R. Kumar, M. H. Mohamed, C. R. SPR, C. Supian, M. Nor, ... and I. Perumal, User Satisfaction Of Human Resource Management System In Rural Area. International conference on Recents Advancements in Engineering and Technology (ICRAET-18) |15th and 16th March 2019|Siddhartha Institute of Technology & Sciences, Telangana, India (2019).
[42] J. Nunnally, and I. Bernstein, I. Psychometric Theory, 3rd ed., McGraw-Hill, New York, NY (1994).
[43] J. Henseler, C. M. Ringle, and R. R. Sinkovics, The use of partial least squares path modeling in international marketing. *Advances in International Marketing*, **20**(1): 277-319 (1999).
[44] C. Fornell, and D. Larcker, Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, **18**(1): 39-50 (1981).
[45] S. Geisser, The predictive sample reuse method with applications. *Journal of the American Statistical Association*, **70**(350): 320-328 (1975).
[46] L.. Hu, and P. Bentler, Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, **6**(1): 1-55 (1999).
[47] H. Lin, and S. Lin, S. Determinants of e-business diffusion: A test of the technology diffusion perspective. *Technovation*, **28**, 135e145 (2008).
[48] J. R. Vacca, Computer and information security handbook. Massachusetts, MA: Morgan Kaufmann Publisher (2017).
[49] M. Warkentin, S. Sharma, D. Gefen, G. M. Rose, and P. Pavlou, Social identity and trust in internet-based voting adoption. *Government Information Quarterly*, **35**(2), 195e209 (2018).
[50] A. El-Kassar, and S. K. Singh, Green innovation and organizational performance: The influence of big data and the moderating role of management commitment and HR practices. *Technological Forecasting and Social Change*, **144**, 483e498 (2018).
[51] H. Mirzajani, M. Rosnaini, A. F. M. Ayub, and S. L. Wong, Teachers' acceptance of ICT and its integration in the classroom. *Quality Assurance in Education*, **24**(1), 26e43 (2016).