

The Mediating Role of Employee Engagement on the Relationship between Electronic Human Resource Management and Organizational Effectiveness

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Abstract: This study seeks to analyze the impact of electronic human resources management on organizational effectiveness through the mediating role of employee engagement. The study population consisted employees working at commercial banks in Jordan. To collect required primary data a random sample was adopted composing of 612 employees. Structural equation modeling (SEM) was conducted for analysis the collected data and testing hypotheses. The results of the study showed that electronic human resource management has positive impact on employee engagement and organizational effectiveness, as well as employee engagement has also positive impact on organizational effectiveness. Further, it was resulted that employee engagement was a mediating variable between human resource management and organizational effectiveness. Based on the study results, the researcher recommends managers and decision makers of commercial banks to adopt human resource management that supported with electronic technologies because of its role in enhancing the behavioral and emotional aspects of employees and improving organizational effectiveness.

Keywords: Electronic Human Resource Management, Employees' Engagement, Organizational effectiveness, Commercial Banks, Jordan

1 Introduction

The successive technological development has enforced organizations to search of ways which help them increase their ability to adapt to changes and enhance their organizational effectiveness in order to be able to achieve their strategic goals. With electronic application becoming a given for organizations, many of them have begun to integrate modern technologies in interacting and communicating with persons of the internal and external environments. With the dawn of the twenty-first century, the accelerated pace of technological developments has affected the administrative methods used in organizations [1,2,3,4]. This effect led to the emergence of the concept of electronic human resources management (E-HRM) to enhance the performance of the systems used in managing the human capital [5,6,7,8]. E-HRM is appropriate with strategic planning of organizations in order to cope with dynamic environments, where studies indicated that E-HRM enables the organization to develop organizational learning [9], increase productivity [10], and improve efficiency [11].

In the midst of intense competition between organizations to achieve the best business outcomes, employee engagement is one of the most significant pillars that ensure the cohesion of the organizational structure and direct efforts towards achieving goals. Recently, employee engagement is witnessing a remarkable boom in the number of experimental studies, as this variable has been linked to many basic organizational outcomes such as employee retention [12,13], business growth [14], and job performance [15,16]. Moreover, it has been observed through research findings

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that engaged employees report fewer absenteeism and stay with the organization for longer [17], as well as they are willing to invest their physical strength and emotional energy to achieve organizational goals [6].

Since the organization is a social entity that coordinates and works continuously to achieve common goals [18], the ability of the organization to achieve its strategic goals is related to the extent of organizational effectiveness [19]. Organizational effectiveness is the essence of organization theory, as it plays a critical role in understanding leaders' values and preferences that are limited in order to be measured [20]. The effectiveness of the organization, as indicated by studies, is affected by a number of factors, the most prominent of which are organizational culture [21], business environment [22,23], absorptive capacity [24,25], and innovation infrastructure [26,27].

Considering the dynamic of the business environment, the present paper exploits the new opportunity to complement the existing literature by examining the relationship between electronic human resource management and organizational effectiveness. In contrast to previous studies that relied on a stakeholder approach in evaluating organizational effectiveness, this study focuses on the perceptions of employees in commercial banks in Jordan about the organizational effectiveness of their organizations, where the banking sector is one of the pillars of the Jordanian economy and the degree of its organizational effectiveness is considered a critical factor for attraction the investments, guarantee of citizens well-being, and continues growth. Moreover, the study discusses the potential role of employee engagement as a mediator in the relationship between electronic human resource management and organizational effectiveness.

2 Literature Review

2.1 Electronic human resource management

There is no broad endorsement or consistency among management science theorists on defining the concept of E-HRM. Malkawi(2018) believes that E-HRM is a strategic approach based on the use of technology in managing human resource-related jobs in dynamic and future organizations [7]. This was emphasized by [8], who considered that the origin of E-HRM comes from the vision and mission of the organization to create added value utilizing information technology. While Al-Hawary and Al-Namlan (2018) referred to it as a comprehensive term for the combination of human resource management and novel technology to support employees and managers in making the right decisions [9]. E-HRM supports compliance with the organization's needs of human resources through channels based on web technology [28], thus it contributes to achieving job satisfaction by relying on supporting the prevailing belief in the fairness and impartiality of technology systems [29]. Furthermore, one of the distinguished results of E-HRM lies in accelerating the growth of the organization through the optimal use of available resources and increasing the organization's agility in responding with changes in the dynamic environment [30,31].

E-HRM provides a portal that allows managers, specialized employees and human resources experts to view, extract and amend information necessary to manage the human resources of the organization [32]. E-HRM strategies and policies are implemented through technical support directed to traditional human resource activities [33]. Hence, the dimensions of the E-HRM center around E-recruitment, E-training, E-performance appraisal, E-compensation, and E-communication [5]. E-recruitment refers to posting job vacancies on the organization's websites that allow candidates to submit their CVs electronically. It also includes an active online search of CV sites for talent [28]. E-training expresses the use of web technologies in assessing training needs and designing e-learning activities to support the career path and improve human resources capabilities in the organization [9]. E-performance appraisal is the conversion of traditional performance evaluation forms and questionnaires into electronic formats and distributing them to employees using the organization's internal network in a way that contributes to obtaining accurate and immediate results about employee performance indicators [30]. E-compensation allows the organization to accurately allocate rewards, promotion opportunities, and employee incentives through a rapid and fair review of the results of performing tasks [34]. E-communication provides the possibility of broad sharing of information and increasing cohesion among employees by supporting effective communication methods based on web technologies and social media [8].

2.2 Employee engagement

Employee engagement is a broad complex construct that combines many well-thought-out concepts such as commitment, satisfaction, loyalty, and additional role behavior. Employee engagement is commonly referred to as an emotional and intellectual commitment to the organization's goals [35]. In the organizational context, the term employee participation has been described as one of the desirable and implicitly motivated condition to employee participation and commitment emotionally and physically and their enthusiasm for focused efforts and positive energy to reach the goals of the organization [36].

Meng and Berger (2019) added that employee engagement expresses the positive attitudes that the employee takes towards the organization and its values by being aware of the work context and working with colleagues to improve the performance of the organization [37]. Macey and Schneider (2008) indicated three levels of employee engagement, including traits and attitudes engagement, psychological state engagement, and behavioral engagement [38]. Consequently, the traits and attitudes engagement drives employees to commitment and loyalty towards the mission and vision of the organization, and psychological state engagement contributes to enhancing effective communication between colleagues and managers alike as a result of a feeling of appreciation and respect for the effort exerted, while behavioral engagement results in performing actions that exceed the requirements of performing the job and respecting the organization's laws and regulations.

2.3 Organizational effectiveness

The term effectiveness is derived from success in achieving a goal. Specifically, an organization's effectiveness refers to its ability to progress successfully in achieving its strategic vision and mission [19]. Therefore, the process of achieving objectives is referred to as the most influencing factor among other factors such as infrastructure and the organizational environment on the effectiveness of the organization [24]. Daft (2021) defined the organizational effectiveness as the degree to which the organization reaches to achieve its goals [20]. Thus, it can be argued that the effectiveness of the organization can be equivalent to its performance, productivity and financial gains, with the emphasizing that effectiveness is part of the overall performance of the organization, which is considered a more comprehensive term.

Historically, organizational effectiveness is the outgrowth of structural contingency theory which states that the effectiveness of an organization is influenced by the fit between organizational design (organizational structure) and its contingencies [39]. Consequently, it focuses on agility and fitness, where the more flexible the organization's structure and the greater its ability to adapt to contingency situations that the organization is exposed to in the dynamic environment, the greater the effectiveness of the organization [27]. Therefore, the effectiveness of an organization can be based on a lot of internal factors such as organizational culture [18], technological infrastructure [40,41], and strategic approach [42]. In addition to external factors such as the level of economic growth [43], laws and regulations [44], and competitiveness levels [45].

3 Conceptual Framework and hypotheses development

The success of organizations in their performance and achievement of a distinguished competitive position is linked to modern methods of human resource management and the fact that they lead to increased efficiency and productivity [28, 46,47]. Moreover HRM mainly leads to the development of human capital through the process of exchanging experiences and knowledge supported by novel technology and changing the organization's culture towards focusing on electronic aspects of task performance [22,48,49]. Some studies have argued that E-HRM encourages employees to discover themselves and develop new work visions and mechanisms by improving employee management efficiency, modeling processes, and reducing administrative burdens [29]. On the other hand, studies have shown that E-HRM practices work to develop organizational capabilities by supporting the establishment of relationships between employees in the organization, which is reflected in their increased knowledge and integration in the work environment [50,51,52]. Accordingly, E-HRM through its basic functions is a significant strategy that encourages teamwork and cooperation among employees. Moreover, it plays a fundamental role in integrating employees' beliefs and knowledge in the organization's culture by relying on enhancing emotional and behavioral aspects that drive the employees to make efforts that exceed their job requirements. Therefore, the first hypothesis indicates:

H1: *There is a positive effect of electronic human resource management on employee engagement.*

Management science theorists acknowledge that the core issue of organizational theory relates to organizational effectiveness [20]. Beyond that, the primary goal of most studies on organizations is to improve their effectiveness by adopting methods focused on improving their ability to achieve long-term operational and strategic objectives [19,53]. Although it is difficult to determine the factors that constitute organizational effectiveness, some researchers have indicated that the ability of the organization to identify its strengths in order to improve productivity and its speed in adapting to changes is the most significant factors of organizational effectiveness [23,42]. Further, organizational theory presented a variety of factors, for example the formulation of the rational goal, exploitation of the system resource, and the satisfaction of the participants as foundations for enhancing organizational effectiveness [18]. Since employee engagement relates to the psychological aspects of employees while performing their duties related to organizational results so that they are of greater importance when it comes to competitive advantage, innovation capabilities, and organizational performance. Hence, employee engagement can be considered related to organizational effectiveness as follows:

H2: *There is a positive effect of employee engagement on organizational effectiveness.*

Extensive empirical support for E-HRM has demonstrated its impact on the prevailing organizational climate [54], along with organizational culture [55,56] and performance [8,57]. The organizations' adherence to the E-HRM strategy provides an opportunity to support and develop employees' skills, which leads to increased productivity [58] and improvement of the organization's profitability and long-term growth [51]. These indicators that the human resources management strengthens and develops are part of the main factors that increase the effectiveness of the organization and the development of its performance.

Moreover, the inclusion of employee engagement in the model of the relationship between E-HRM and organizational effectiveness leads to an integrated system that ensures that the organization reaches its long-term strategic goals. Research has discussed that E-HRM improves the organization's adaptation to internal and external work environment variables [30]. In addition to the remarkable results on employee behavior in terms of reduced work turnover and absenteeism [33, 55], as well as the emotional aspects of increased job satisfaction and commitment to achieving the organization's goals [16,59]. Behavioral and emotional engagement improves employee performance and adhesion to the organization and enables organizational goals to be reached efficiently and effectively. Thus, the third hypothesis can be formulated as follows:

H3: *Employee engagement has a mediating role between electronic human resource management and organizational effectiveness.*

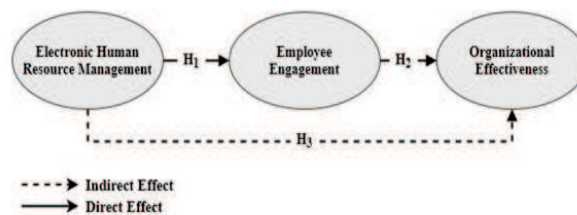


Fig. 1: Proposed model

Figure 1 shows the relationship between the study variables represented by electronic human resource management, employee engagement, and organizational effectiveness. This figure also shows the research hypotheses that will be tested, and their results identified according to the viewpoint of respondents in commercial banks in Jordan.

4 Methodology

4.1 Sample and procedure

This study was conducted on employees of commercial banks that carry out their activities in Jordan. According to the Statistics Department report for the year 2020, there are 13 local banks and 8 foreign banks. The main and subsidiary service centers of these banks have been targeted in Amman. To collect the primary data related to the study variables, a self-report questionnaire was developed and then distributed via e-mail to a random sample of 850 employees at the operational level using the information obtained from the human resources departments. It was emphasized that the responses would be kept confidential and would only serve research interests. In total, 612 individuals provided usable responses, with a response rate of 72 percent that exceeds the minimum adequacy threshold according to [60].

The results of the frequencies and percentages used to identify the demographic characteristics of the study sample indicated that the number of males reached 361 compared to the number of females which were 251. It was also found that 46.07% of the respondents hold a bachelor's degree, 36.76% hold a diploma degree, and 17.17% hold a master's degree. In terms of the age group, the 30-40 category ranked first 40.19%, followed by the 40-50 category in the second place 28.75%, then the group less than 30 ranked third 22.38% and finally the group greater than 50 ranked fourth 8.68%. Whereas the results showed that 62.90% of the respondents have job experience in the category of 5-10 years that they are forming the majority of the respondents.

4.2 Measures

Based on the objectives of the study, the theoretical model and the questionnaire consisting of three basic variables were built. The independent variable was electronic human resource management, the dependent variable was organizational effectiveness, and the mediating variable was employee engagement. All the questionnaire's items were originally developed in the English language; thus, they were translated into Arabic with the help of a specialized translator and then returned to the English language as usual. Moreover, these items were measured using a five-point Likert scale, with a value of (1) indicating strongly disagree and a value of (5) strongly agree.

Electronic human resource management (E-HRM): was measured using a scale of 19 items that corresponds to [8,34]. This variable was considered a second order construct whose items were divided into five first order constructs. E-recruitment was measured using 4 items "e.g.,The use of electronic forms and tools enhances the transparency in the recruitment process". E-training was measured using 3 items "e.g.,E-training stimulates the acquisition of skills that exceed job requirements". E-performance appraisal was measured by 5 items "e.g., Electronic performance appraisal provides clearer and fairer criteria". E-compensation was measured using 4 items "e.g., The use of electronic devices in preparing the salary slip enables the speed of delivery and accuracy". E-communication was measured through 3 items "e.g., Electronic tools and the internet helped improve communication with my colleagues and managers" [5].

Employee engagement (EE): was measured using a scale of 6 items that consorts with [15,56]. This variable was considered a first order construct that included questions such as "I am highly engaged in my current job" and "One of the most exciting things for me is being involved in events that contribute to the achievement of the Bank's goals".

Organizational effectiveness (OE): was measured using a scale of 6 items that consorts with [61]. This variable was considered a first order construct that included questions such as "The bank is an open work environment that provides the greatest amount of information to the employees" and "I am proud to be part of the bank's staff".

Control variables: the study included four categorical control variables related to demographic characteristics, which is proportional with [61]. Gender was a variable from two categories (male and female). The educational level consisted of three categories (diploma, bachelor's, and master's). The age group divided into four groups (less than 30, from 30 to less than 40, from 40 to less than 50, and 50 years and over). Job experience, which was also four categories variable (less than 5, from 5 to less than 10, from 10 to less than 15, and 15 years and over).

4.3 Analytical strategy

The study was started with confirmatory factor analysis (CFA), which enables the reliability of the instrument to be identified using both the Cronbach Alpha and McDonald's Omega coefficients, in addition to verifying the convergent and discriminatory validity. Moreover, CFA enables verification of the constructive validity of the study model using Chi-square ratio (CMIN), goodness of fit index (GFI), comparative fit index (CFI), Tucker-Lewis index (TLI) and root mean square error of approximation (RMSEA).

In the second stage, structural equation modeling (SEM) was used to test the impact of electronic human resources management on employee engagement, the impact of employee engagement on organizational effectiveness, and the mediating role of employee engagement in the relationship between electronic human resources management and organizational effectiveness.

Finally, the bootstrap method was used in the AMOS program developed by [62], with the proposed model for further validation of the mediation role, in which 5,000 were bootstrapped in the current study in order to generate bias-corrected confidence intervals of 95% yield. Only the confidence interval excludes 0, and mediation from employee engagement in the relationship between electronic human resource management and organizational effectiveness is significant [63].

5 Results

5.1 Confirmatory factor analysis

To verify whether the items of the study instrument for measuring electronic human resources management, employee engagement and organizational effectiveness were reliable and valid, a confirmatory factor analysis (CFA) was conducted, the results of which are included in 1.

These results indicated that the items loadings on their first-order constructs exceeded the minimum threshold 0.60 [33,46,64]. All average variance extracted (AVE) were higher than 0.50 which represents the lowest acceptable value for considering the study instrument as having convergent validity [54,65,66,67,68]. Moreover, the maximum shared variance (MSV) values were smaller than the average variance extracted (AVE) values, and the values of the square root

Table 1: Descriptive statistics results and assessing reliability and validity of a measurement model

Variables	1	2	3	4	5	6	7
1. E-REC	0.736						
2. E-TRA	0.695	0.773					
3. E-PEA	0.715	0.458	0.733				
4. E-COP	0.625	0.638	0.553	0.725			
5. E-COM	0.541	0.745	0.468	0.387	0.769		
6. EE	-0.442	0.651	0.637	0.544	0.673	0.746	
7. OE	0.648	0.705	0.695	0.682	0.714	0.709	0.756
Mean	3.46	3.73	3.65	3.31	3.7	3.57	3.69
SD	0.879	0.927	0.901	0.855	0.912	0.956	0.891
FLR	0.667-0.814	0.716-0.844	0.652-0.823	0.691-0.753	.706-.816	0.672-0.824	0.681-0.842
AVE	0.542	0.597	0.538	0.526	0.592	0.557	0.572
MSV	0.414	0.38	0.457	0.402	0.395	0.486	0.379
CA	0.804	0.811	0.846	0.809	0.811	0.879	0.886
CR	0.825	0.815	0.852	0.816	0.813	0.882	0.889

of the average variance extracted were also less than the correlation values between the rest of the constructs, which are the conditions that fulfill the discriminant validity [69]. As for reliability, the results showed that the values of Cronbach alpha coefficients (CA) used to measure internal consistency and the McDonald's Omega coefficients (CR) used to measure the composite reliability were greater than the minimum acceptable value of 0.70 which was recommended by [70].

Besides ensuring the validity and reliability of the study instrument, CFA enables identification of the constructive validity of the study model through the values of goodness of fit indices.

The results of these indicators appeared in Figure 2, which showed that the ratio of chi-squared to degrees of freedom (CMIN) did not exceed the recommended upper limit of 3. Further, the values of (GFI), (CFI) and (TLI) were greater than the lowest permissible value of 0.90, and the value of (RMSEA) was less than the upper threshold of 0.08. According to Brown (2015) who defined the acceptance thresholds of these indices, the study model can be considered has an appropriate constructive validity [71].

5.2 Descriptive statistics

For descriptive statistics, mean and standard deviations were used to determine the level of electronic human resources management, employee engagement, and organizational effectiveness in commercial banks in Jordan according to the viewpoint of the respondents. The values of correlation coefficients between variables were used to ensure that the data is free from the problem of multicollinearity.

The results in Table 1 showed that E-training, as one of the dimensions of electronic human resources management, ranked first at a high level ($M= 3.73$, $SD= 0.927$), while E-compensation was ranked last at a moderate level ($M= 3.31$, $SD= 0.855$). Employee engagement was at a moderate level ($M= 3.57$, $SD= 0.956$), in contrast to organizational effectiveness, which was at a high level ($M= 3.69$, $SD= 0.891$). Furthermore, the results of the Pearson's correlation matrix listed in Table 1 indicated that the values of the correlation coefficients were within the range of (0.387-0.715) which means all values were less than 0.80 the value that Senaviratna and Cooray (2019) specified in order to judge that the data are free from a multicollinearity problem [72].

5.3 Hypotheses testing

The structural equation model (SEM) used to test the hypotheses of the study as shown in Figure 3 and Table 2.

The first hypothesis indicated the positive effect of electronic human resources management on employee engagement, as the results of its test were shown in Table 2 and show that employee engagement was significantly related to electronic human resources management with a direct effect ($\beta = 0.433$, $t = 14.85$, $p < 0.01$). This result was confirmed by the bootstrapped values that were at a level of confidence interval of 95% within the domain [0.1322-0.2032], thus the first hypothesis was supported. The second hypothesis indicated the positive effect of employee engagement on organizational effectiveness, where the results showed that organizational effectiveness was significantly related to employee engagement

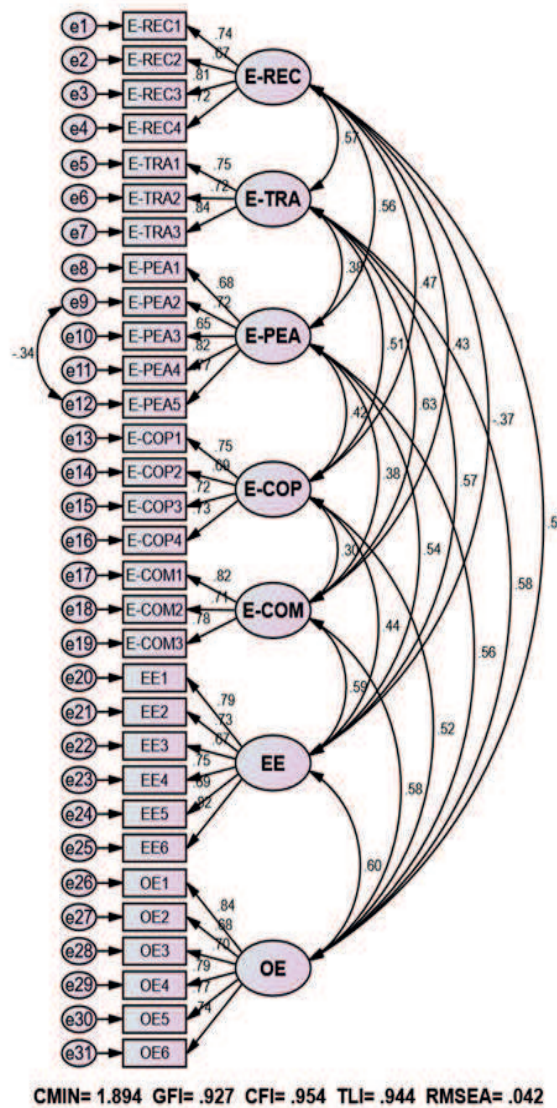


Fig. 2: Measurement model of the first-order constructs

Table 2: Result of testing the research hypotheses using structural equation modeling

Relationship	Direct Effect	Indirect Effect	Total Effect	t-value	95% Confidence Interval	
					LLCI	ULCI
E-HRM → EE	0.433		0.433	14.85**	0.1322	0.2032
EE → OE	0.508		0.508	15.93*	0.0869	0.1439
E-HRM → EE → OE	0.571	0.22	0.791	25.60***	0.1553	0.2846

with a direct effect ($\beta = 0.508, t = 15.93, p < 0.05$). This result was confirmed by the bootstrapped values that were at a level of confidence interval of 95% within the domain [0.0869-0.1439], thus the second hypothesis was supported.

Regarding the third hypothesis that indicated the mediating role of employee engagement in the relationship between electronic human resources management and organizational effectiveness, the results of its test showed that employee engagement has a direct effect ($\beta = 0.571$) and an indirect effect ($\beta = 0.220$). The sum of the direct and indirect effect constitutes the total effect of the employee engagement correlation in the relationship between electronic human resource

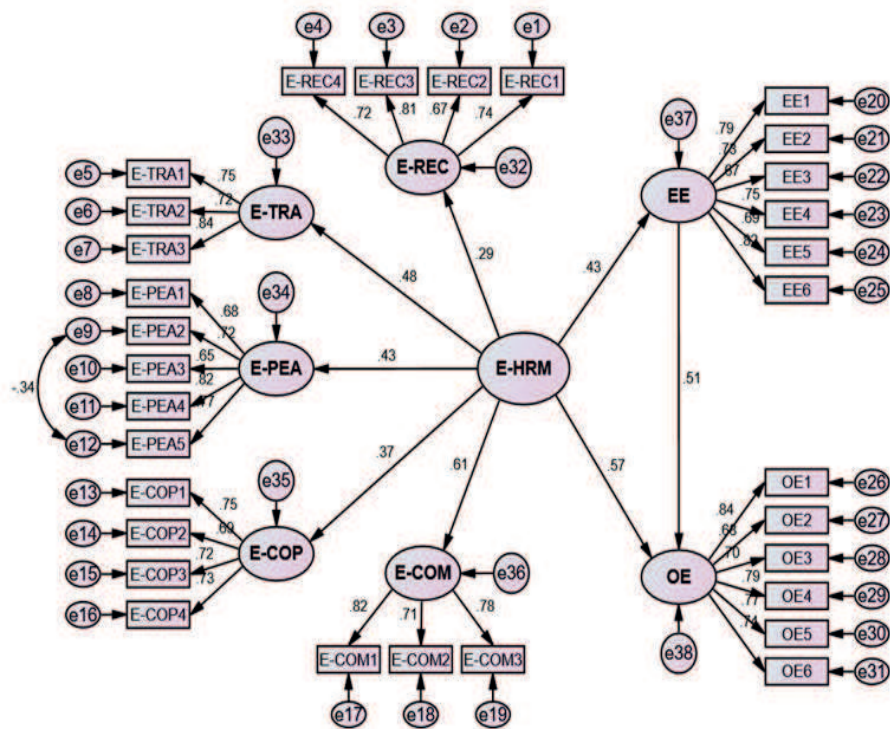


Fig. 3: Results of structural equation modeling (SEM) on the proposed model The values in figure referred to standardized coefficients extracted by AMOS

management and organizational effectiveness ($\beta = 0.791, t = 25.60, p < 0.001$). The bootstrapped values confirmed this result at a confidence interval of 95% whose boundaries were within the range [0.1553-0.2846]. Thus, the third hypothesis was supported and employee engagement had a partial mediating role in the relationship between electronic human resource management and organizational effectiveness.

6 Discussion and conclusions

The main objective of the current study was to analyze the impact of electronic human resources management on organizational effectiveness through the mediating role of employee engagement in the context of commercial banks in Jordan. The results indicate moderate levels for both electronic human resources management and employee engagement, although some dimensions of electronic human resources management represented in electronic training and electronic communication were at high levels. While the level of organizational effectiveness was at a high level. Therefore, it can be seen that the respondents are aware of the study variables and can judge their adoption levels in the organizations they work with.

Besides, the results showed a positive effect of electronic human resources management on employee engagement, which is consistent with [73, 74]. This result confirms that the functions of electronic human resource management play a crucial role in improving the emotional and behavioral aspects that lead employees to expend all their energies in achieving the organization's strategic goals. Moreover, the study results indicated that employee engagement has a positive effect on organizational effectiveness which is proportional to [57, 75]. This result documents that employees who are engaged in the work of the organization often have positive feelings such as sympathy and joy that direct their behavior to perform positive activities that form an upward spiral that in turn improves their productivity and increases levels of satisfaction and commitment towards fair decisions taken by the management against them to reach the highest level of organizational effectiveness.

In terms of the mediating effect, the study identified employee engagement as a partial mediating variable in the relationship between electronic human resource management and organizational effectiveness. Thus, the organizations tendency to exploit the functions of human resources management electronically improves the work environment and

helps stimulate the energies of employees and highlight their positive behavior during the performance of duties, as well as enables to exploit the emotional aspects resulting from their feeling of the levels of interest and justice shown by the management of the organization about the results of their work. Positive results of the behavior and emotional of employees towards the organization increase their capabilities and desires to perform more tasks that enhance organizational effectiveness.

7 Managerial Implications

The results of the current study showed many theoretical and practical aspects. On the theoretical aspect, this study contributes to developing the literature on electronic human resource management and its relationship to both employee engagement and organizational effectiveness by uncovering empirical evidence confirming these relationships. On the practical aspect, the study indicates that organizations can enhance their organizational effectiveness by designing a human resource management system based on modern technology to attract employees prepared to engage themselves in the work environment. It also recommends the need to focus on the psychological and emotional aspects of the work environment through the application of E-HRM functions in a way that improves the investment of employees' energies. Moreover, the study suggests that organizations wishing to develop employee engagement levels work to clarify job roles well, as clarity of the role helps employees with an in-depth understanding of the duties and responsibilities that they have to assume and the accompanying behavioral aspects, leading to an improvement in their job performance and increased organizational effectiveness.

8 Limitations and direction for future research

This study provides potential contributions for managers and researchers, although it acknowledges that there were some methodological limitations. Firstly, this study dealt with electronic human resources management as a second-order construct that was divided into five dimensions formed first-order constructs, where the effect of a second-order construct was tested only, so future studies can investigate the effect of first-order constructs. Secondly, the study sample included respondents who were employees of commercial banks in Jordan; hence future research can expand the study sample to include other types of banks or other economic sectors. Finally, this study examines the effect of electronic human resources management on organizational effectiveness through the mediating role of employee engagement. Therefore, future studies can address other variables such as workforce diversity, organizational agility, and job performance.

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