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Electronic Human Resources Management and Its Role in Improving the Performance of Health Organizations in Zintan City

Ahmed Massoud Alsuwiey Massoud*[1], Rabea Emdas[2], Aisha Hanitish[3], Aya Ghumayid[3], Chaimaa Chalouf [3]
[1-3] Faculty of Information Technology, University of Zintan, Libya
ahmed.lsuwiey@uoz.edu.ly *[1], rabea.emdas@uoz.edu.ly [2]
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Abstract

This study aimed to identify the current reality of electronic human resources management (e-HRM) and its role in improving the performance of health organizations in zintan city. The study adopted a descriptive analytical approach and applied a questionnaire to a stratified random sample of (152) employees working in health organizations in zintan. The findings confirmed the acceptance of the general hypothesis that e-HRM, with its human and technical requirements and elements, plays a positive role in improving human resources performance. However, the results also revealed a clear weakness in the technical infrastructure, an absence of active digital transformation projects, and shortcomings in implementing electronic HR activities particularly in career planning and e-training along with a deficiency in motivating employees to acquire technological skills. The study recommended developing a clear strategic plan for digital transformation, upgrading infrastructure, training human cadres, and fostering a culture of digital innovation to ensure enhanced healthcare service quality.

Keywords: Electronic Human Resources Management (e-HRM), Human Resources, Health Organizations, Institutional Performance, Digital Transformation, Zintan City.

1. Introduction

In recent years, the world has witnessed a radical transformation in management methods driven by rapid technological advancements, where electronic systems have become an integral part of the organizational structure of modern institutions. Among these systems, electronic human resources management (e-HRM) stands out as a strategic tool to reshape the relationship between the organization and its employees through advanced digital techniques that enhance efficiency, transparency, and decision-making capabilities. e-HRM is not merely the automation of routine procedures; rather, it is a comprehensive managerial philosophy aimed at transforming talent management into a strategic process driven by accurate data and information. This orientation is increasingly vital in health organizations due to their heavy reliance on the human element and the critical nature of the services they provide. Human resources in hospitals and health centers represent not just a workforce, but the core element in delivering and ensuring the quality of healthcare services. Managing these resources through integrated electronic systems enables health organizations to monitor the performance of medical and administrative staff with high precision and quality, facilitate recruitment and selection processes, develop continuous training programs, and enhance incentive and evaluation systems ultimately reflecting positively on patient care. Furthermore, e-HRM provides a

comprehensive central database of employees, facilitating strategic workforce planning and enabling health organizations to forecast future needs and distribute human energy more fairly and efficiently.

1.1. Research Problem

The rapid evolution of technology and the surge in transaction volumes have prompted a shift toward digital transformation across institutions generally, and within administrative operations specifically, due to its profound impact on performance speed, data processing, storage, and retrieval with minimal time and effort. Aiming to improve the performance of health organizations, e-HRM emerges as a key pathway to enhance the efficiency and effectiveness of health organizations in general, and human resources performance in particular. Consequently, the main research question is formulated as follows:

To what extent does electronic human resources management contribute to improving human resources performance in health organizations in zintan City?

The following sub-questions branch from this main question:

- Are the elements and requirements for implementing e-HRM available in the health organizations of zintan City?
- Are e-HRM activities available in the health organizations of zintan City?
- Is there a statistically significant relationship between e-HRM and the performance effectiveness of health organizations in zintan City?

1.2. Research Objectives

To identify current developments in the field of human resources management.

To understand the actual status of e-HRM in the health organizations of zintan City.

To examine the orientation of organizational management toward e-HRM.

To assess the availability of infrastructure required to implement e-HRM.

1.3. Research Significance

Scientific Significance: Shedding light on e-HRM as a vital and modern concept that has not received sufficient attention from researchers in Libya, alongside enriching Arab academic literature in this domain.

Applied Significance: Achieving the organization's strategic goals in optimizing its resources and capabilities by studying the impact of e-HRM on healthcare service quality, and assisting hospital management in understanding the nature and tangible impacts of these systems.

1.4. Research Hypotheses

General Hypothesis: Electronic human resources management, with its human and technical elements and requirements, contributes to improving human resources performance in the health organizations of zintan City.

- Sub-Hypotheses:

Elements and requirements for implementing e-HRM are available in the health organizations of zintan City. e-HRM activities are available in the health organizations of zintan City. There is a statistically significant relationship between e-HRM and the effectiveness of health organizations in zintan City.

1.5. Research Scope

Spatial Scope: Restricted to zintan City.

Temporal Scope: Conducted during the autumn of 2025.

Human Scope: Included employees working in the health organizations of zintan City.

1.6. Operational Definitions

Electronic Human Resources Management (e-HRM): An integrated electronic system relying on information and communication technology to transform manual administrative work into digital operations Bokhri & Lagrab (2017), It is also defined as the digitalization of administrative tasks and activities to simplify procedures and expedite transactions Abdulnasr (2024).

Human Resources: The workforce operating within an organization, including managers and subordinates, employed to perform various duties and governed by plans, regulations, and policies designed to achieve organizational objectives Alanze (2019).

Health Organizations: Any establishment designated for examining, treating, and nursing patients, including hospitals, clinics, dispensaries, medical centers, primary care units, polyclinics, medical laboratories, radiological centers, blood banks, and physical therapy and rehabilitation centers (Official Gazette of the Libyan Legal Complex, 2023).

2. Literature Review

Previous studies have addressed e-HRM from various angles across different sectors and geographical contexts, offering a broader understanding of its dimensions and implementation challenges. The researchers reviewed prominent studies to leverage their methodologies and findings, identifying points of agreement and divergence to shape the current research gap. Several studies investigated the impact of e-HRM on job performance in Libyan institutions, institutions. Ben Halim (2015) examined human resource management efficiency and its relationship with e-HRM at the Libyan National Oil Corporation, revealing a positive statistical correlation and noting that the general level of e-HRM was high, though requiring further awareness among leadership. Similarly, Abdulnasr (2024) explored the impact of e-administration on human resources performance at the Diwan of the Libyan Ministry of Higher Education, confirming a clear improvement in staff performance. At the Maghreb level, studies focused on the health and educational sectors. Bokhri & Lagrab (2017) explored the reality of e-HRM implementation in Algerian health organizations, finding a strong correlation and positive impact on service quality, while noting insufficient reliance on information technology and a lack of continuous development. In education, Bosna & Haded (2022) examined human resource management within the framework of e-HRM at Ooredoo Algeria, highlighting the role of e-HRM in the telecommunications sector, while Rema & Shima (2024) analyzed digital transformation in Algeria's higher education sector, highlighting the critical role of governmental institutional support. Alanze (2019) analyzed the role of e-management in school organization in Kuwait, highlighting the importance of organizational support. Other sectors were also examined. Moussaoui (2026) explored the role of e-administration in improving human resources management at university institutions, confirming partial performance gains. On the other hand, Kames et al. (2018) analyzed the obstacles to implementing e-administration

at Sebha university from the perspective of faculty members. Additionally, Hoda (2022) examined the obstacles facing the implementation of e-administration at the university of Tripoli.

Reviewing previous literature indicates a general consensus on the positive impact of e-HRM on performance, though the degree of impact varies depending on infrastructural readiness and administrative support. The researchers note that prior Libyan studies focused primarily on the oil sector (Ben Halim, 2015), with no previous studies to the researchers' knowledge addressing e-HRM in the health sector, particularly within the Western Mountain region and zintan City. This highlights the research gap that the present study aims to bridge, providing evidence-based findings to support local health organization development.

3. Methodology

Research Design: The study adopted the descriptive-analytical approach to describe the reality of e-HRM in zintan City and analyze its impact on health sector development.

Population and Sample: The research population consisted of employees working in the health organizations of zintan City. A stratified random sample of (152) respondents was selected. Questionnaires were distributed, fully retrieved, and all were valid for statistical analysis (100% response rate).

Table 1: The distributed questionnaires

Statement	Distributed Questionnaires	Missing Questionnaires	Retrieved Questionnaires	Valid Questionnaires for Analysis
Count	152	—	152	152
Percentage	100%	—	100%	100%

3.1. Research Instrument

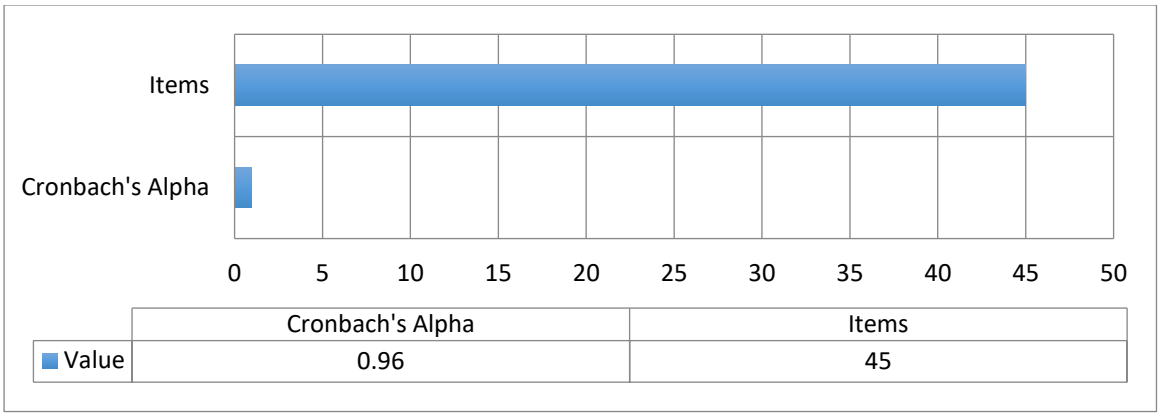
A questionnaire was utilized as the primary data collection tool using a five-point Likert scale, covering three main axes:

- Axis One: e-HRM requirements and elements (13 items).
- Axis Two: e-HRM activities (15 items).
- Axis Three: The impact of e-HRM on health organization effectiveness (10 items).

3.2. Validity and Reliability

- Face Validity: Verified by submitting the questionnaire to a panel of academic experts and reviewers.
- Reliability: Measured using Cronbach's Alpha, yielding an overall score of (0.960), which significantly exceeds the standard threshold of (0.70) (George & Mallery, 2003), confirming exceptional reliability.

Figure 1: Measuring using cronbach's (a)



3.3. Statistical Analysis Methods

The Statistical Package for the Social Sciences (SPSS) was used, employing percentages, frequencies, means, standard deviations, and One-Sample T-Tests. The Likert scale category length was calculated as (5 - 1) / 5 = 0.80:

Table 2: SPSS

Estimated Level	Weighted Mean Range	Opinion
Very Low	1.00 – 1.79	Strongly Disagree
Low	1.80 – 2.59	Disagree
Moderate	2.60 – 3.39	Neutral
High	3.40 – 4.19	Agree
Very High	4.20 – 5.00	Strongly Agree

4. Results

First: Demographic characteristics of the sample:

Table 3: Demographic characteristics of the sample

Variable	Category	Frequency	Percentage (%)
Gender	Male	98	64.0%
	Female	54	36.0%
Age	Under 30 years	33	21.7%
	30 to under 40 years	50	32.9%
	40 to under 50 years	60	39.5%
	50 years and above	9	5.9%
Years of Experience	Under 5 years	41	27.0%
	5 to under 10 years	77	50.7%
	10 to under 15 years	17	11.2%
	15 years and above	17	11.2%
Knowledge of e-HRM	Low	18	11.8%
	Moderate	42	27.6%
	High	92	60.5%
Computer Literacy	Low	8	5.3%
	Moderate	42	27.6%
	High	102	67.1%
Training Courses	None	50	32.9%
	Once	34	22.4%
	More than once	68	44.7%

The demographic profile indicates that the majority are males (64.0%), aged 40–50 years (39.5%), with 5–10 years of experience (50.7%). Furthermore, 60.5% possess high e-HRM knowledge, 67.1% have high computer literacy, and 44.7% have participated in multiple training courses, reflecting solid technical awareness.

Second: Domain results

Axis One: e-HRM requirements and elements:

Table 4: e-HRM requirements and elements

No.	Statement	Mean	Std. Deviation
1	The organization has a clear strategic vision for transforming administrative systems into electronic ones.	2.49	0.651
2	The organization has scientific studies regarding e-HRM requirements.	3.37	0.678
3	The organization has an active project to digitize administrative systems.	1.66	0.797
4	The IT department contributes to spreading electronic culture among employees.	1.72	0.849
5	The organization has sufficient computers to implement e-HRM.	1.81	0.867
6	Available servers are practically sufficient for e-HRM implementation.	1.61	0.611
7	The organization possesses software to operate devices and store data.	2.39	1.382
8	The organization works on updating software in line with new changes.	4.22	0.964
9	The organization has a practically sufficient internal communication network (Intranet).	2.38	0.607
10	The organization possesses advanced automated systems for data protection.	2.13	0.479
11	The organization has human resources with skills and abilities to apply e-HRM.	3.30	1.487
12	The organization consistently provides technical support to employees.	3.50	1.505
13	There is ongoing cooperation between the IT department and employees for high-quality e-management.	4.00	1.003

Means ranged between (1.61) and (4.22). Items (3, 4, 5, 6, 9, 10) scored weak means (< 2.59), indicating a severe weakness in technical infrastructure and a lack of serious digital transformation projects. Conversely, items (8, 12, 13) scored high means (4.22, 3.50, 4.00), demonstrating employee awareness and cooperation which lack adequate material backing.

Axis Two: e-HRM activities:

Table 5: e-HRM activities

No.	Statement	Mean	Std. Deviation
1	The organization uses ICT in human resources planning.	2.50	0.502
2	The organization announces vacancies via its official website.	2.03	1.016
3	Employment applications are submitted electronically.	3.34	1.460
4	The organization utilizes electronic testing systems in recruitment.	3.87	1.102
5	The organization utilizes electronic interview systems in recruitment.	2.84	1.919
6	Communication between departments is conducted via internal information networks.	3.26	1.482
7	Attendance and departure are recorded electronically.	4.00	1.003
8	Employee performance is evaluated electronically.	4.00	1.003
9	Employees know their evaluation results electronically.	3.00	2.007
10	The organization plans career paths electronically.	1.91	0.937
11	The organization determines training needs electronically.	2.00	1.003
12	The organization conducts electronic training for employees.	2.00	1.003
13	The organization educates employees using e-learning technologies.	3.00	2.007
14	Employee retirement processing is executed electronically.	3.00	2.007
15	Employee service termination is processed electronically.	3.50	1.505

Routine operational activities such as attendance logging and performance evaluation (items 7 and 8) scored high means (4.00). However, strategic activities such as career path planning, training needs assessment, and e-training (items 10, 11, and 12) scored very low means (1.91 and 2.00), indicating a clear shortfall in developmental HR activities.

Axis Three: Relationship between e-HRM and health organization effectiveness:

Table 6: Relationship between e-HRM and health organization effectiveness

No.	Statement	Mean	Std. Deviation
1	Contributing to raising the cultural, scientific, and social level of employees.	2.45	0.607
2	Saving administrative costs for recruitment, training, and education.	3.40	1.515
3	Providing the required time for recruitment, training, and education.	4.00	1.003
4	Overcoming time and space constraints in training processes.	2.93	1.945
5	Achieving objectives in the shortest time and with minimal effort.	4.00	1.003
6	Providing employees with vast amounts of information in minimal time.	4.24	0.921
7	Motivating employees to acquire new technological skills.	2.45	1.473
8	Communication between administrative structures is timely using communication networks.	3.44	0.658
9	Proper transmission and analysis of information at lower cost and higher quality than traditional methods.	2.50	1.505
10	Encouraging, motivating, and developing high-skilled employees.	3.44	1.508

Items concerning execution speed, time-saving, and information retrieval (3, 5, 6) achieved very high means (4.00 - 4.24), reflecting operational efficiency. Meanwhile, items concerning motivation, cultural enhancement, and information quality (1, 7, 9) lagged behind with weak means (2.45 - 2.93), showing that current applications prioritize routine execution while neglecting developmental dimensions.

Third: Hypothesis testing

Using the one-sample T-Test, the general and sub-hypotheses were tested:

Table 7: Hypothesis testing

Axis / Hypothesis Domain	T-Value	Degrees of Freedom (df)	Significance (Sig.)	Mean Difference	95% Confidence Interval
e-HRM Requirements	117.465	151	0.000	37.578	36.946 – 38.211
e-HRM Activities	31.424	151	0.000	44.243	41.461 – 47.025
Relationship & Effectiveness	35.932	151	0.000	32.868	31.061 – 34.675

Since the significance level (Sig.) equals (0.000) (< 0.05), the null hypothesis is rejected and the alternative general hypothesis is accepted:

"Electronic human resources management, with its elements and requirements, contributes to improving human resources performance in the health organizations of zintan City." All sub-hypotheses were similarly accepted.

4.1. Discussion of Results

- Infrastructure: Findings revealed an acute technical deficit, aligning with Kames et al. (2018) regarding digital barriers at Sebha university and Bokhri & Lagrab (2017) in Algerian health organizations, while contrasting with the well-resourced oil sector (Ben Halim, 2015) where e-HRM implementation was relatively advanced.
- Activities: Current practices remain confined to basic operational automation rather than comprehensive strategic digital transformation, supporting Moussaoui (2026) regarding partial performance gains and echoing Alanze (2019) on the need for deep strategic integration in educational institutions.
- Operational vs. Developmental Paradox: While operational speed and time-saving scored exceptionally high, motivational and innovative dimensions lagged behind, confirming Hoda (2022) assertion that full institutional impact requires holistic structural integration.
- Knowledge vs. Practice Discrepancy: High individual computer literacy (67.1%) contrasts with poor institutional deployment, indicating that the barrier is a lack of managerial will and budgets rather than human capability (Hoda, 2022). This supports Bosna & Haded (2022) regarding the positive impact of e-HRM in non-health sectors, and Abdulnasr (2024) regarding performance improvement in Libyan educational institutions.

5. Recommendations

Based on the findings, the researchers recommend:

- Formulating a clear, phased strategic plan for digital transformation in zintan's health organizations.
- Empowering IT departments to lead digital change and propagate digital culture.
- Allocating independent budgets to upgrade technical infrastructure (hardware, servers, secure networks).
- Transitioning from routine automation to advanced strategic activities like career path planning and interactive e-training.
- Establishing official websites for vacancies and full recruitment automation.
- Implementing clear incentive frameworks to reward employees acquiring modern technological skills.
- Adopting advanced information systems to ensure accurate data analysis at lower costs.
- Building partnerships with universities and training centers to qualify human cadres in e-HRM.

6. Conclusion

The study concluded that e-HRM is an imperative necessity for developing health organizations in zintan City. Statistical results confirmed a positive and significant relationship between e-HRM and human resources performance. However, a wide gap exists between staff theoretical awareness and actual institutional realities characterized by weak infrastructure and incomplete application. Bridging this gap requires genuine managerial will and a comprehensive strategic vision to enhance healthcare quality.

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