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Bibliometric Analysis of Scientific Papers Published in the Field of Electronic Human Resource Management

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ABSTRACT

Research in human resource management is among the prominent topics in the field of organizational management, especially when this management is electronic, given its value and importance in many other areas. Based on this, this study aims to conduct a bibliometric analysis of scientific research published in the field of electronic human resource management, from 1996 to the end of 2025, using the OpenAlex database. Among our findings, we discovered several related fields. We also found that 128 scientific papers were published during this period, with Jordan ranking first (17 Study). The motivation for this study stems from the presence of several Arab countries on this list: Iraq, Kuwait, etc. Therefore, we will focus on highlighting the theoretical framework of our study topic, then its current state in Arab countries, particularly Algeria. Finally, we will attempt to offer some recommendations for advancing this field in the future, especially in Algeria.

1. Introduction

When we view global economic transformations from only one perspective, it's natural to feel apprehensive about what's to come, confused, and uncertain about our next steps. However, when we consider other perspectives, we can ask: Can we be part of these transformations, particularly the digital ones, and contribute to their implementation within our respective economic institutions, each according to their specialization?. Technology is profoundly impacting human resource management (HRM) processes, propelling them into entirely new territory; For example, technology, particularly the World Wide Web, has transformed numerous HR processes, including HR planning, recruitment, selection, performance management, workflow, training, and compensation; In particular, most large organizations now utilize e-recruitment systems and have implemented e-training programs; These new systems have enabled HR professionals to better serve all stakeholders (such as job applicants, employees, and managers) and have significantly reduced the administrative burden in this area (Stone & Dulebohn, 2013, P1). Electronic human resources management is one of the important topics that aims to strengthen institutions of all kinds, especially economic ones, due to its importance and direct impact on the development of the national economy of each country. One of the most significant outcomes of using modern technology in human resource appears to be the availability of accurate and detailed information; Kovac and colleagues noted that since the mid-20th century, human resource information systems have

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been considered a source of information, and the data collected from them can now provide management with a tool for decision analysis and a robust database, offering detailed information across diverse fields; Consequently, through human resource data management, companies are now able to perform calculations that impact the business as a whole and contribute to guiding business decisions and strategies (Alwis, 2010, P49). From the above, we can say that the optimal, smart, fast and accurate use of data or information stored in the human resources department is what creates change in this department and institution, not the quantity of information or data stored. Therefore, how much focus has been placed on publishing scientific research in the past 30 years in the field of electronic human resource management?

2. Literature review

2.1. The concept of e- management

The term e-management has appeared in many specialized literature with varying interpretations from numerous writers and researchers (Kourichi et all, 2017, P148).

Table 1: Some definitions of e-management

Author and year of publication	Definition
Khalouf (2010)	encompasses the various uses of information and communication technologies, including: Computers; Networks; Fax machines; Input devices.
Abouashour and Alnimri (2013)	It is the positive investment in information and communication technology across all administrative functions, including: Planning; Organizing; Implementing; Controlling; And evaluating. This is done with the aim of improving organizational performance and strengthening its competitive position.
Najem (2004)	The administrative process is based on: The exceptional capabilities of the internet; and communication networks in planning; direction; and borderless electronic resource control to achieve the organization's goals.
Al-Salmi (2003)	The process involves automating all administrative tasks and activities of the institution by utilizing all necessary information technologies to achieve the goals of the new management: Reduce paper usage; Simplifying procedures; Getting rid of routine; Fast and accurate completion of tasks and transactions.
Kanadil (2004)	A paperless, timeless, and rigid management system, relying on: Electronic archives; Email; Electronic diaries; Voice messages. It is a smart, network-based organization that depends on knowledge workers.

Source*:* (Kourichi et all, 2017, P149)

2.2. The concept of electronic human resource management

The philosophy of human resource management (HRM) revolves around management's beliefs and assumptions about people—their nature, needs, values, and work style: These beliefs and assumptions determine how people are treated; There are three approaches to treating people: the commodity approach, the mechanistic approach, and the humanistic approach; In the commodity approach, the individual is treated as a commodity that can be bought or sold for a price, as was the case in the old system of slavery, In the mechanistic approach, the individual is treated as a part of a machine that can be assembled like any other part; Both approaches treat the individual as a human being with physiological characteristics; In the humanistic approach, the individual is treated as a human being with psychological characteristics; Therefore, the philosophy of HRM should take all of these human characteristics into account (Ramaraju, 2015, P776).

Definitions of e-HRM have proliferated, with little consistency or agreement in sight; So why do we need to understand how researchers define e-HRM? Simply because subtle changes in terminology can lead to different study directions or diverse subsets of the target population for e-HRM; Since very early work on the intersection of web-based technologies and HR, a number of definitions have been proposed for the phenomenon later termed e-HRM; The term e-HRM has been used interchangeably with HRIS, virtual HRM, web-based HRM, and intranet-based HRM; DeSanctis (1986) began with an early definition of HRIS as "an information system specialized within the traditional functional areas of an organization, designed to support the planning, management, decision-making, and control activities of human resource management" (Bondarouk & Ruël, 2009, P506).

There are three types of e-HRM: operational, relational, and transformational; Operational e-HRM relates to administrative functions such as payroll and employee data; This type of HRM allows employees to update their personal data themselves via a dedicated HR website or delegate this task to an administrative department; Relational e-HRM focuses on supporting business processes through training, recruitment, performance management, and other activities, In this type, employees can choose between recruitment and selection support via an electronic application or using paper-based methods (such as advertisements, paper application forms, and letters); Transformational e-HRM relates to strategic HR activities, such as knowledge management and strategic reorientation, This type of HRM can build a change-ready workforce through a comprehensive suite of electronic tools that enable employees to evolve in line with the company's strategic choices, or through the use of paper-based materials (Ma & Ye, 2015, P72).

Based on the above, we can analyze the current state of e-HR management by focusing on a thorough and practical understanding of this field, rather than solely on theoretical aspects. This stems from its connection to competition, the rapid development of information technology, and digital transformation. Therefore, we will address the necessity of linking HR management to digital transformation and information technology, with the aim of practical application. This will be achieved by effectively leveraging successful experiences in this field and moving away from routine and ineffective training courses.

2.3. Requirements for implementing electronic human resources management

There are a number of requirements that must be met to implement electronic human resources management, including (Mahran et all, 2023, P50-51):

2.3.1. Management Level Requirements

These requirements include guidance and technical support, as well as a flexible organizational structure that enables the implementation of electronic human resources management.

2.3.2. Technical requirements

An electronic human resources management system can be considered part of an electronic management system, which is based on information and communication technology and its tools, including networks, software, communications and the Internet.

2.3.3. Human level requirements

No matter how much science develops, the human element remains the most influential element in any organization. Therefore, electronic human resource management was developed in order to raise the level of technical culture of this human element.

2.3.4. Security requirements

These measures include information protection and reducing cyber piracy.

2.4. Examples of some studies that addressed the topic of Intellectual capital management and E-HRM in Algeria

The study by Zouaoui and Ghajati (2017) aimed to investigate the impact of e-HRM on human capital development at Orascom Telecom Algeria, a leading mobile telecommunications company, The main findings indicated that e-HRM contributes positively to human capital development at Orascom Telecom Algeria; The study by Zouaoui (2016) also aimed to determine the impact of e-HRM on intellectual capital development in a group of economic institutions in Algeria, The results showed that e-HRM applications contribute to intellectual capital development (haither, 2024, P09).

3. Methodology

Reviewing all previous studies related to a research topic is a complex and impossible task, especially if done in a traditional way (i.e., study by study), due to their large number and their connection to different fields. Therefore, it is preferable to use bibliometric analysis, as it allows us to filter an unlimited number of studies (khalil, 2021, P680). We relied on the OpenAlex database.

4. Results Analysis

In our study, we relied on bibliometric analysis using the OpenAlex database and VOSviewer software.

After browsing the OpenAlex database, we entered the title of our study in English in the search box as follows:

"Electronic Human Resources Management"

Then, we specified the following:

- The time period from 1996 to 2025.

We obtained the following search results:

- "Electronic Human Resource Management": 128 studies.

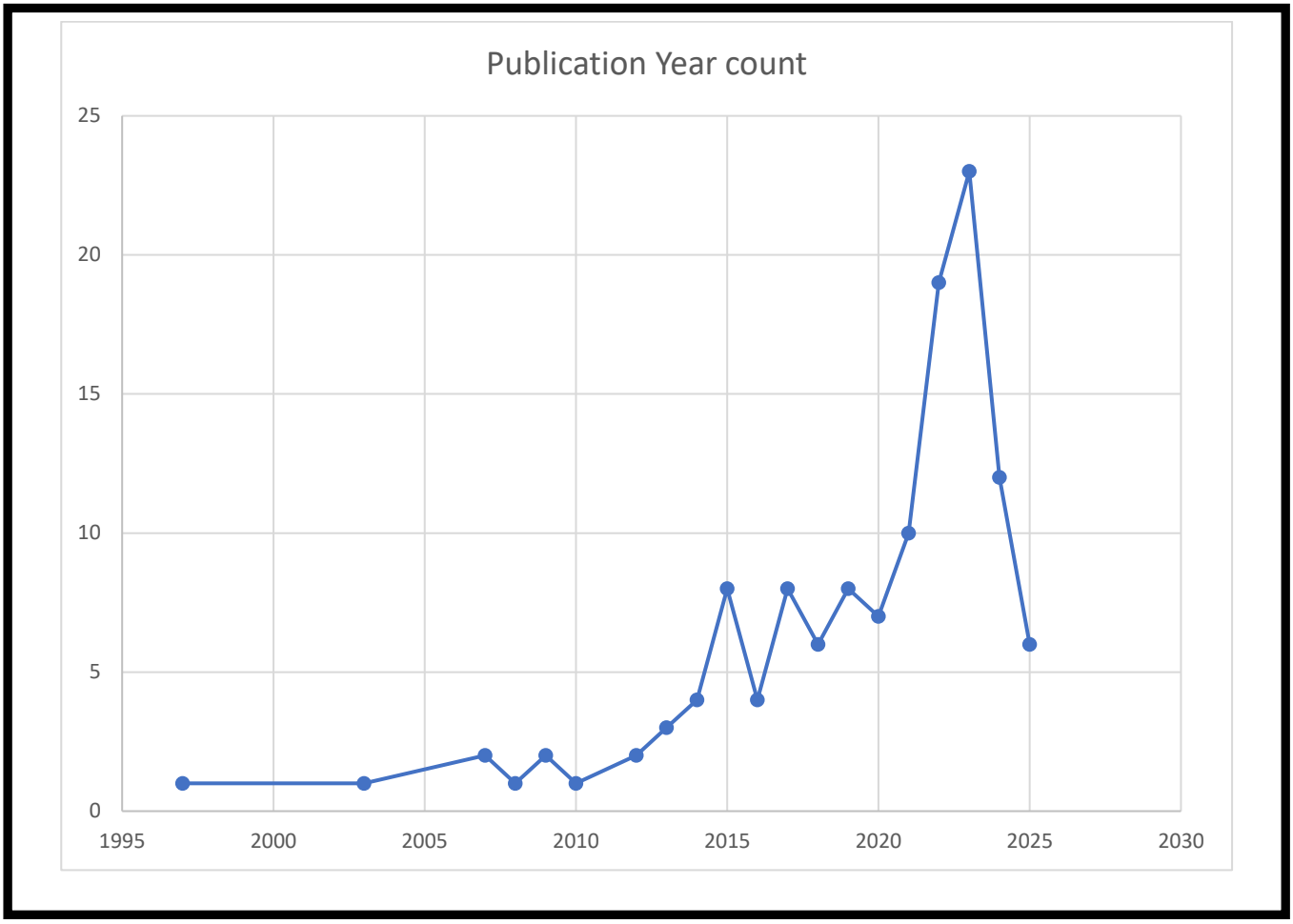
After obtaining the specified data, which was downloaded in CSV format from the OpenAlex database and imported into VOSviewer,

The following commands were then specified in the program:

- Distributing the network to the domains most related to electronic human resource management.

The following outputs were then obtained:

Figure 1: Number of publications during the period 1996-2025



Source: OpenAlex database

After reviewing the initial results from Scopus, shown in Figure [1], we observe that the first study published in the period from 1996 to 2025 was in 1997, and that the year with the highest number of studies published on our research topic was 2023, with 23 studies.

Table 2: Number of studies published during the specified period

Publication Year	
Name	Count
1997	1
2003	1
2007	2
2008	1
2009	2
2010	1
2012	2
2013	3

2014	4
2015	8
2016	4
2017	8
2018	6
2019	8
2020	7
2021	10
2022	19
2023	23
2024	12
2025	6

Source*:* OpenAlex database

Table [2] illustrates the evolution of the number of studies published annually from 1996 to 2025. We observed that during the first ten years, the numbers were very low, with only one study published in 1997 and 2003. The highest number of studies was published in 2023, reaching 23, reflecting a significant increase in research in recent years.

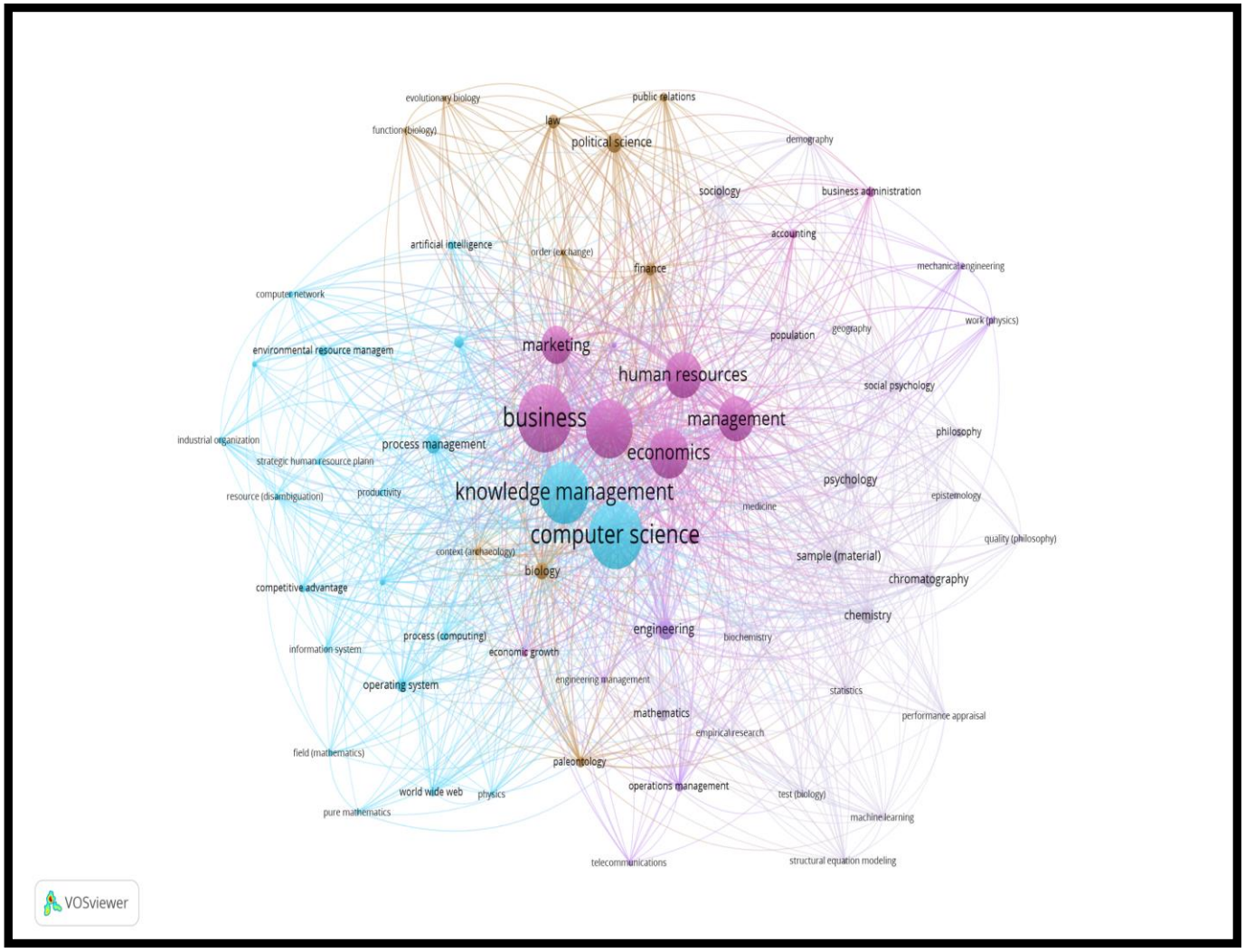
Table *3*: Ranking of co-occurrence

Keywords	Number
Business	107
Computer science	107
Knowledge management	96
Human resource management	90
Economics	74
Human resources	67
Management	65
Marketing	53
Engineering	25
Chemistry	21

Source*:* OpenAlex database

Table 3 shows the frequency of overlap between e-HRM and various fields, such as business and computer science, which topped the list with 107 occurrences each. This explains the importance and openness of this field to other fields, especially those in the technology sector.

Figure 2: Co-occurrence of the field of electronic human resources management with other fields



Source*:* VOSviewer

Figure 2 reveals a distribution network between e-HRM and other fields: business, computer science, knowledge management, economics, human resources, management, marketing, engineering, chemistry.

5. Conclusion

Our study led to several conclusions, including the following:

- Electronic human resources management is one of the important topics that aims to strengthen institutions of all kinds, especially economic ones.
- There are three types of E-HRM, these are described respectively as Operational, Relational and Transformational, Operational E-HRM is related with administrative functions-payroll and employee personal data for instance.
- Transformational E-HRM is related with strategic HR activities known as knowledge management, strategic re-orientation.

- we observe that the first study published in the period from 1996 to 2025 was in 1997.
- The highest number of studies was published in 2023, reaching 23, reflecting a significant increase in research in recent years.
- The motivation for this study stems from the presence of several Arab countries on this list: Iraq, Kuwait, etc.

As with any scientific study, you can offer some recommendations, including:

- Moving towards fully electronic human resource management.

- The need for organizations to focus on developing this area.

- Encouraging scientific research in this field.

- Taking the challenges into account in order to address them.

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