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ASSESSING THE IMPACT OF DIGITAL TRANSFORMATION ON HUMAN RESOURCE INFORMATION SYSTEM EFFICIENCY IN THE MINISTRY OF HEALTH IN OMAN

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ABSTRACT

Digital transformation has become a critical driver of organizational efficiency and innovation, particularly in public sector institutions. Human Resource Information Systems (HRIS) play a vital role in managing employee information, streamlining HR processes, and supporting strategic decision-making. The Ministry of Health in Oman has increasingly adopted digital technologies to improve HR operations and enhance service delivery. However, the effectiveness of digital transformation in improving HRIS efficiency remains an important area for investigation. This study aims to assess the impact of digital transformation on Human Resource Information System efficiency within the Ministry of Health in Oman. Specifically, the study examines the role and importance of digital transformation, evaluates the level of digital transformation in HRIS, assesses HRIS efficiency, identifies challenges affecting implementation, and proposes improvement strategies. A quantitative research approach was adopted using a structured questionnaire distributed to employees working within the Ministry of Health. A total of 82 valid responses were collected and analyzed using descriptive statistics, correlation analysis, and regression analysis through Microsoft Excel. The findings indicate that respondents perceive digital transformation as highly beneficial in improving HR service quality, reducing administrative workload, enhancing decision-making processes, and increasing overall HR efficiency. The descriptive statistics revealed high mean scores for both digital transformation ($M = 4.73$) and HRIS efficiency ($M = 4.70$). Furthermore, correlation analysis demonstrated a significant positive relationship between digital transformation and HRIS efficiency ($r = 0.605$). Regression analysis revealed that digital transformation significantly predicts HRIS efficiency ($\beta = 0.464$, $p < 0.001$) and explains approximately 36.6% of the variation in HRIS performance ($R^2 = 0.366$). The study concludes that digital transformation significantly enhances HRIS efficiency within the Ministry of Health. The findings highlight the importance of continuous technological investment, employee training, and infrastructure development to maximize the benefits of digital transformation. The study contributes to the growing body of knowledge on digital HR management in the public healthcare sector and provides practical recommendations for policymakers and HR practitioners.

Keywords: Digital Transformation, Human Resource Information System, HRIS Efficiency, Human Resource Management, Ministry of Health, Oman.

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INTRODUCTION

The rapid advancement of digital technologies has transformed the way organizations operate and manage their human resources. Across both public and private sectors, digital transformation has become a strategic priority aimed at improving operational efficiency, enhancing service delivery, and supporting organizational performance. Modern organizations increasingly rely on technological solutions to automate processes, manage information effectively, and facilitate evidence-based decision-making (Tursunbayeva et al., 2020). Human Resource Information Systems (HRIS) represent one of the most significant outcomes of digital transformation within human resource management. HRIS integrates information technology with HR functions, enabling organizations to manage employee records, payroll systems, recruitment activities, performance management, and training programs through centralized digital platforms (Al-Kahtani et al., 2022). By reducing manual processes and improving data accessibility, HRIS contributes to increased efficiency, accuracy, and employee satisfaction. In the healthcare sector, effective human resource management is particularly important due to the complexity of workforce planning, employee administration, and service delivery requirements. The Ministry of Health in Oman has undertaken several digital transformation initiatives to modernize its administrative processes and improve the effectiveness of HR operations. These initiatives include the adoption of electronic HR platforms, digital employee records, automated leave management systems, and integrated HR information systems that support workforce management activities. Despite these developments, challenges remain regarding the effective implementation and utilization of digital technologies within HR functions. Issues such as employee resistance to change, lack of technical skills, system integration difficulties, and infrastructure limitations may affect the overall effectiveness of digital transformation initiatives (Taher et al., 2025). Consequently, it is essential to evaluate the extent to which digital transformation contributes to HRIS efficiency and identify areas requiring further improvement. The present study investigates the impact of digital transformation on Human Resource Information System efficiency within the Ministry of Health in Oman. By examining employees' perceptions and analyzing statistical relationships between digital transformation and HRIS efficiency, the study seeks to provide valuable insights that can support future digital transformation initiatives and improve organizational performance.

LITERATURE REVIEW

Digital Transformation

Digital transformation refers to the integration of digital technologies into organizational processes, services, and operations to improve efficiency, innovation, and decision-making. It involves the adoption of advanced technologies such as cloud computing, data analytics, artificial intelligence, and digital platforms to enhance organizational performance (Mahmoud et al., 2025). According to Al-Kahtani et al. (2022), digital transformation enables organizations to streamline processes, reduce operational costs, and improve service quality. In the context of human resource management, digital transformation facilitates the automation of administrative tasks, improves communication, and enhances employee experiences through digital self-service systems. The successful implementation of digital transformation requires organizational readiness, leadership support, employee competencies, and adequate technological infrastructure. Organizations that effectively embrace digital transformation are more likely to achieve sustainable competitive advantages and improved operational efficiency.

Human Resource Information Systems (HRIS)

Human Resource Information Systems (HRIS) are integrated software applications designed to support human resource functions through the collection, storage, processing, and analysis of employee-related information. HRIS provides organizations with a centralized platform for managing workforce data and HR activities efficiently (Tursunbayeva et al., 2020). HRIS supports various HR functions, including recruitment, payroll administration, attendance management, performance evaluation, training and

development, and employee record management. The adoption of HRIS reduces paperwork, minimizes administrative errors, and improves information accessibility across departments. Researchers have emphasized that effective HRIS implementation contributes to improved organizational efficiency and better strategic HR management. By providing accurate and timely information, HRIS enables managers to make informed decisions regarding workforce planning and employee development.

HRIS Efficiency

HRIS efficiency refers to the ability of a Human Resource Information System to support HR activities effectively while improving organizational performance. An efficient HRIS enables organizations to process employee information accurately, perform HR functions quickly, and provide users with a satisfactory experience. Researchers have identified several dimensions of HRIS efficiency, including data accuracy, processing speed, system usability, and user satisfaction (Mahmoud et al., 2025).

Data accuracy is essential because HR decisions depend heavily on reliable employee information. Accurate data reduce administrative errors and improve workforce planning. Processing speed refers to the ability of the system to perform HR-related tasks efficiently and within a reasonable time. Faster processing improves productivity and reduces delays in organizational operations. System usability focuses on how easily employees can interact with the system. User-friendly systems encourage technology adoption and improve employee engagement. User satisfaction reflects employees' overall perceptions regarding the usefulness, effectiveness, and reliability of the HRIS. Organizations with efficient HRIS are more likely to achieve better HR outcomes and enhanced organizational performance (Tursunbayeva et al., 2020).

Relationship Between Digital Transformation and HRIS Efficiency

The relationship between digital transformation and HRIS efficiency has received increasing attention in recent years. Digital transformation provides the technological foundation that enables HRIS to function effectively. Through process automation, digital integration, and advanced information management, organizations can significantly improve HR operations and decision-making capabilities. Previous studies have demonstrated that digital transformation positively influences HRIS performance by enhancing information accessibility, reducing administrative workload, and improving service delivery (Al-Kahtani et al., 2022). Similarly, Mahmoud et al. (2025) reported that organizations with higher levels of digital transformation tend to achieve greater HR efficiency and employee satisfaction. The integration of digital technologies within HR functions enables organizations to improve data quality, increase operational speed, and support strategic workforce management. Therefore, digital transformation is expected to have a significant positive impact on HRIS efficiency within the Ministry of Health in Oman.

Theoretical Framework

This study is guided by the Technology Acceptance Model (TAM) developed by Davis (1989). The model suggests that individuals' acceptance and use of technology are primarily influenced by perceived usefulness and perceived ease of use. According to TAM, employees are more likely to adopt and utilize technological systems when they believe that such systems improve job performance and are easy to operate. Within the context of this study, digital transformation initiatives can influence employees' perceptions regarding the usefulness and usability of HRIS, which subsequently affects system efficiency and organizational performance. The model is particularly relevant because the dimensions of HRIS efficiency examined in this study—such as usability and user satisfaction—are closely related to the core assumptions of TAM. Therefore, TAM provides a suitable theoretical basis for understanding how digital transformation contributes to improved HRIS efficiency.

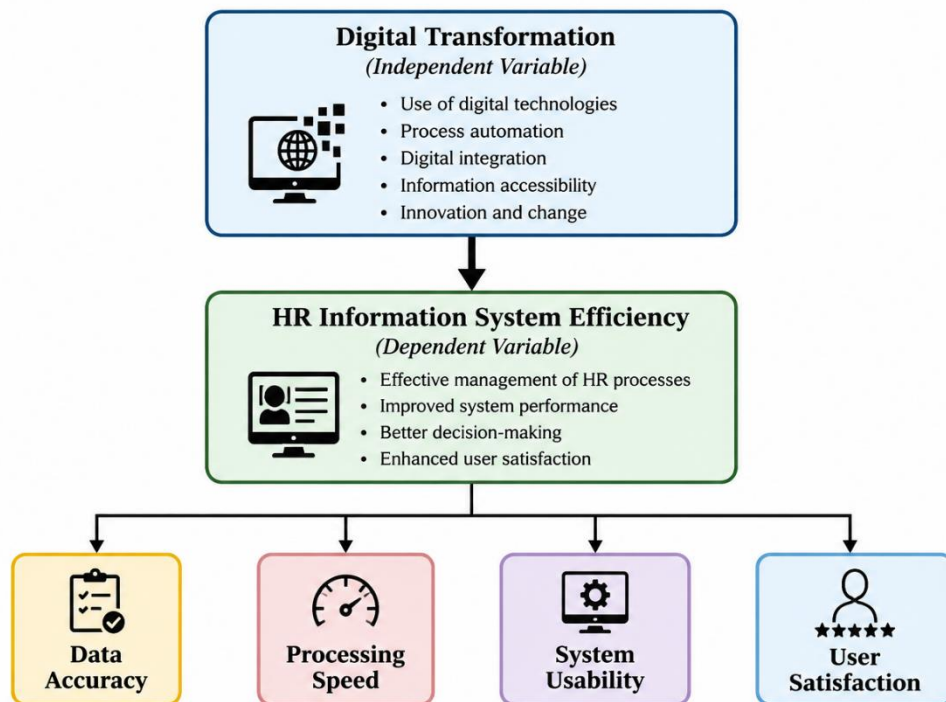


Figure 1: Conceptual Framework of the Study

Source: Developed by the researcher based on Davis (1989), Tursunbayeva et al. (2020), and Mahmoud et al. (2025).

Figure 1: Conceptual Framework of the Study

The conceptual framework illustrates the relationship between the independent variable, **Digital Transformation**, and the dependent variable, **HR Information System (HRIS) Efficiency**. The framework assumes that effective digital transformation initiatives positively influence HRIS efficiency through improvements in data accuracy, processing speed, system usability, and user satisfaction. Therefore, higher levels of digital transformation are expected to enhance the overall effectiveness and performance of HRIS within the Ministry of Health in Oman. Adapted from the Technology Acceptance Model (Davis, 1989) and previous studies on digital transformation and HRIS efficiency (Tursunbayeva et al., 2020; Mahmoud et al., 2025).

Empirical Review

Several studies have investigated digital transformation and HRIS implementation across different organizational contexts. Al-Kahtani et al. (2022) examined digital transformation initiatives within public sector institutions and found that digital technologies significantly improved operational efficiency, service quality, and organizational performance. The study emphasized the importance of technological infrastructure and employee readiness for successful implementation. Tursunbayeva et al. (2020) conducted a systematic review of HRIS implementation in healthcare organizations and concluded that HRIS contributes to improved workforce management, data accuracy, and administrative efficiency. The researchers highlighted the importance of user training and organizational support in maximizing system effectiveness. Mahmoud et al. (2025) investigated the impact of digital HRM systems on organizational performance and found that digital transformation positively influences HR efficiency through improved communication, information management, and decision-making capabilities. Taher et al. (2025) examined challenges associated with digital transformation in healthcare organizations and identified technical barriers, resistance to change, and insufficient employee skills as key obstacles to successful implementation. Bayhaqi et al. (2025) reported that digital transformation initiatives improve organizational productivity, service quality, and information management effectiveness. Their findings demonstrated that organizations with advanced digital capabilities achieve higher levels of operational performance. Although previous studies have provided valuable insights

into digital transformation and HRIS implementation, limited research has focused specifically on the impact of digital transformation on HRIS efficiency within the Ministry of Health in Oman.

Conceptual Framework

The conceptual framework of this study is based on the relationship between digital transformation and HRIS efficiency.

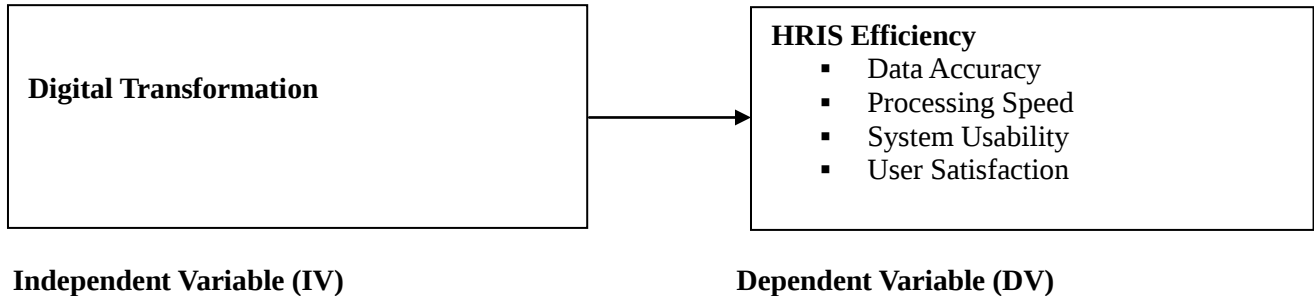


Figure 2: Conceptual Framework

The framework assumes that improvements in digital transformation initiatives will positively influence HRIS efficiency within the Ministry of Health.

Hypothesis Development

Based on the literature review and conceptual framework, the following hypotheses were developed:

Null Hypothesis (H₀)

There is no significant relationship between digital transformation and HRIS efficiency within the Ministry of Health in Oman.

Alternative Hypothesis (H₁)

There is a significant positive relationship between digital transformation and HRIS efficiency within the Ministry of Health in Oman.

METHODOLOGY

Research Design

This study adopted a quantitative research approach using descriptive and explanatory research designs. The quantitative approach was selected because it enables the collection of numerical data and facilitates statistical analysis of relationships between variables (Creswell & Creswell, 2018). The descriptive design was used to assess employees' perceptions regarding digital transformation and HRIS efficiency, while the explanatory design was employed to examine the impact of digital transformation on HRIS efficiency.

Population and Sample

The target population consisted of employees working within the Ministry of Health in Oman, particularly those involved in HR and administrative functions. These employees regularly interact with HRIS and possess direct experience regarding digital transformation initiatives. A convenience sampling technique was used to select respondents due to accessibility considerations. A total of 82 valid responses were collected and included in the final analysis.

Data Collection Instrument

Data were collected using a structured questionnaire divided into two sections.

Section A: Demographic information including gender, age, educational level, years of experience, and job position.

Section B: Statements measuring digital transformation and HRIS efficiency using a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5).

The questionnaire was developed based on previous studies related to digital transformation and HRIS implementation.

Validity and Reliability

Content validity was established through an extensive review of relevant literature and expert evaluation. Reliability was assessed using Cronbach's Alpha to evaluate the internal consistency of questionnaire items. According to Hair et al. (2019), a Cronbach's Alpha value above 0.70 indicates acceptable reliability.

Data Analysis Techniques

The collected data were analyzed using Microsoft Excel. Descriptive statistics including frequencies, percentages, means, and standard deviations were used to summarize respondents' characteristics and perceptions. Correlation analysis was conducted to determine the strength and direction of the relationship between digital transformation and HRIS efficiency. In addition, simple linear regression analysis was performed to assess the impact of digital transformation on HRIS efficiency and test the study hypothesis.

Ethical Considerations

The study adhered to ethical research principles throughout the research process. Participation was voluntary, and respondents were informed about the purpose of the study before completing the questionnaire. Confidentiality and anonymity were maintained, and all collected information was used solely for academic purposes. Respondents were also informed of their right to withdraw from the study at any stage without any consequences (Resnik, 2020).

RESULTS

Respondents' Demographic Profile

A total of 82 valid responses were collected from employees working within the Ministry of Health in Oman. The demographic analysis was conducted to provide an overview of the respondents' characteristics and ensure that the sample adequately represented different employee groups. The gender distribution indicated that 50.6% of respondents were male, while 49.4% were female. This balanced representation enhances the reliability of the findings by incorporating perspectives from both genders. Regarding age distribution, 32.9% of respondents were between 25 and 34 years old, 31.7% were between 35 and 44 years old, 26.8% were below 25 years old, and 8.5% were aged 45 years and above. These results indicate that the majority of participants belonged to the active working-age population and possessed sufficient exposure to digital technologies and HR processes. The educational profile revealed that 42.7% of respondents held a Bachelor's degree, 23.2% possessed a Diploma qualification, 19.5% held a Master's degree, and 14.6% had a PhD qualification. This demonstrates that respondents were highly educated and capable of providing informed opinions regarding digital transformation and HRIS implementation. In terms of work experience, 32.1% of respondents had less than five years of experience, while 24.7% had between five and ten years of experience, another 24.7% had between eleven and fifteen years of experience, and 18.5% had more than fifteen years of experience. The diversity of experience levels provided a comprehensive understanding of HRIS usage across different employee groups.

Finally, job position analysis showed that 31.7% of respondents were HR staff, 25.6% were administrative staff, 25.6% were managers, and 17.1% were supervisors. The participation of employees from different organizational levels contributed to the comprehensiveness of the study findings.

Descriptive Analysis

Descriptive statistics were conducted to evaluate respondents' perceptions regarding the two main study variables: digital transformation and HRIS efficiency.

Table 1: Descriptive Statistics of Study Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Digital Transformation	4.732	0.296	3.857	5.000
HRIS Efficiency	4.705	0.227	4.000	4.857

The results indicate that both variables recorded very high mean scores. Digital transformation achieved a mean value of 4.732, while HRIS efficiency achieved a mean value of 4.705. These findings suggest that respondents strongly agreed that digital transformation initiatives are actively implemented within the Ministry of Health and that HRIS performs efficiently in supporting HR activities. The relatively low standard deviation values indicate consistency in respondents' opinions and suggest a high degree of agreement among participants. Overall, the descriptive results demonstrate positive perceptions regarding both digital transformation and HRIS efficiency.

Correlation Analysis

Correlation analysis was conducted to examine the relationship between digital transformation and HRIS efficiency.

Table 2: Correlation Matrix

Variables	Digital Transformation	HRIS Efficiency
Digital Transformation	1.000	0.605
HRIS Efficiency	0.605	1.000

The Pearson correlation coefficient between digital transformation and HRIS efficiency was 0.605. This result indicates a moderately strong positive relationship between the two variables. The positive coefficient suggests that higher levels of digital transformation are associated with higher levels of HRIS efficiency. The finding implies that as digital technologies become more integrated into HR operations, improvements can be observed in system effectiveness, information management, and employee satisfaction. Therefore, digital transformation appears to play an important role in enhancing HRIS performance within the Ministry of Health.

Regression Analysis

Regression analysis was performed to determine the impact of digital transformation on HRIS efficiency.

Table 3: Model Summary

Statistic	Value
Multiple R	0.605
R Square	0.366
Adjusted R Square	0.358
Standard Error	0.182
Observations	82

The model summary indicates that the coefficient of determination (R^2) is 0.366. This means that digital transformation explains approximately 36.6% of the variation in HRIS efficiency. Although other factors may also influence HRIS performance, the findings demonstrate that digital transformation is a significant contributor to system effectiveness.

Table 4: ANOVA Results

Source	df	F	Significance F
Regression	1	46.263	0.000
Residual	80		
Total	81		

The ANOVA results indicate that the regression model is statistically significant. The F-value of 46.263 with a significance level below 0.05 confirms that the model is suitable for explaining the relationship between digital transformation and HRIS efficiency. These findings provide statistical evidence that digital transformation significantly influences HRIS performance within the Ministry of Health.

Table 5: Regression Coefficients

Variable	Coefficient (β)	Standard Error	t-value	p-value
Constant	2.509	0.323	7.755	0.000
Digital Transformation	0.464	0.068	6.802	0.000

The regression equation can be expressed as:

$$\text{HRIS Efficiency} = 2.509 + 0.464 (\text{Digital Transformation})$$

The coefficient for digital transformation ($\beta = 0.464$) is positive and statistically significant. This indicates that an increase in digital transformation is associated with an increase in HRIS efficiency. Specifically, a one-unit increase in digital transformation results in an estimated increase of 0.464 units in HRIS efficiency. These findings confirm that digital transformation contributes positively to improving HRIS performance within the Ministry of Health.

Hypothesis Testing

The study proposed the following hypothesis:

H₀: There is no significant relationship between digital transformation and HRIS efficiency within the Ministry of Health in Oman.

H₁: There is a significant positive relationship between digital transformation and HRIS efficiency within the Ministry of Health in Oman.

The regression analysis produced a significance value of 0.000, which is lower than the accepted significance level of 0.05. Therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted. The results provide strong evidence that digital transformation has a significant positive impact on HRIS efficiency within the Ministry of Health.

DISCUSSION OF RESULTS

The findings of this study demonstrate that digital transformation plays a significant role in enhancing HRIS efficiency within the Ministry of Health. The high mean scores recorded for both digital transformation and HRIS efficiency indicate that employees perceive digital technologies as effective tools for improving HR operations and organizational performance. The positive correlation coefficient confirms that digital transformation and HRIS efficiency move in the same direction, meaning that improvements in digital transformation are associated with improvements in HRIS performance. Furthermore, the regression analysis revealed that digital transformation significantly predicts HRIS efficiency and explains a considerable proportion of its variation. These findings are consistent with previous studies conducted by Al-Kahtani et al. (2022), Mahmoud et al. (2025), and Taher et al. (2025), which reported that digital transformation enhances

operational efficiency, improves information management, and supports effective decision-making. The results also support the Technology Acceptance Model (Davis, 1989), which suggests that technology adoption improves organizational performance when users perceive systems as useful and easy to use. Overall, the findings indicate that continued investment in digital technologies, employee development, and infrastructure enhancement will contribute to further improvements in HRIS efficiency and organizational effectiveness.

CONCLUSION

This study examined the impact of digital transformation on Human Resource Information System efficiency within the Ministry of Health in Oman. The findings revealed that employees hold positive perceptions regarding both digital transformation and HRIS effectiveness. The statistical analysis confirmed the existence of a significant positive relationship between digital transformation and HRIS efficiency. The study demonstrated that digital transformation contributes to improved information management, enhanced service delivery, greater operational efficiency, and increased user satisfaction. The correlation and regression analyses further confirmed that digital transformation is a significant predictor of HRIS efficiency. The findings highlight the importance of continuing digital transformation initiatives within the Ministry of Health to support effective human resource management and sustainable organizational performance. Future investments in digital infrastructure, employee training, and technological innovation are likely to generate additional improvements in HRIS effectiveness and overall organizational success.

Limitations of the Study

Despite achieving the objectives of the study, several limitations should be acknowledged when interpreting the findings. First, the study was conducted exclusively within the Ministry of Health in Oman, which may limit the generalizability of the results to other government institutions or private sector organizations that operate under different organizational structures and technological environments. Second, the study relied on questionnaire responses as the primary source of data collection; therefore, the findings were based on respondents' perceptions and opinions, which may be subject to personal bias or inaccuracies. Additionally, the research adopted a cross-sectional design, meaning that data were collected at a single point in time, making it difficult to assess changes in perceptions or system performance over an extended period. Furthermore, the study focused specifically on the impact of digital transformation on HRIS efficiency and did not examine other potentially influential factors such as organizational culture, leadership support, employee engagement, technological readiness, or financial resources. Finally, limitations related to time, accessibility of respondents, and available resources may have affected the scope of data collection and analysis. Nevertheless, despite these limitations, the study provides valuable insights into the relationship between digital transformation and HRIS efficiency and contributes to the growing body of knowledge on digital HR management within the public healthcare sector in Oman.

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