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THE IMPACT OF DIGITAL TRANSFORMATION IN HUMAN RESOURCE MANAGEMENT ON EMPLOYEE SATISFACTION IN SAUDI PRIVATE SECTOR

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Abstract
his study investigates the impact of digital transformation in Human Resource Management (HRM) on employee satisfaction within the Saudi private sector, reflecting the objectives of national initiatives such as Vision 2030. As organizations increasingly adopt technology-driven HR practices, this research evaluates the effectiveness of digital HRM tools in enhancing employee engagement, work-life balance, and overall satisfaction.

A structured electronic questionnaire was administered to 400 employees across ten leading private-sector companies representing diverse industries, including retail, manufacturing, pharmaceuticals, electronics, and food services. Quantitative analyses were conducted, including reliability assessment via Cronbach's Alpha, construct validation through Exploratory Factor Analysis (EFA), and hypothesis testing using Pearson correlation and multiple linear regression.

Findings indicate that digital HRM practices positively and significantly influence employee satisfaction. The adoption of digital tools enhances engagement, streamlines HR processes, and fosters a supportive work environment. Nonetheless, challenges such as resistance to change and the need for comprehensive training programs were identified.

This research contributes empirical evidence to the growing body of literature on digital HRM and underscores the strategic importance of integrating technological infrastructure with human capital development. The findings provide actionable insights for HR leaders and policymakers aiming to implement or optimize digital HR initiatives in dynamic organizational contexts.

Key words: Digital Transformation in HRM, Employee Satisfaction, Saudi Private Sector

1. Introduction :

The evolution of digital technologies has profoundly influenced Human Resource Management (HRM) practices across Saudi Arabia's private sector, in alignment with the strategic objectives of Vision 2030 and the national agenda for innovation and operational efficiency. In today's competitive business environment, organizations are increasingly adopting digital solutions—such as cloud-based HR platforms, AI-driven recruitment systems, and real-time HR analytics—to enhance the agility and responsiveness of HR functions. Prior research has demonstrated that these technological advancements not only streamline administrative processes but also contribute to higher levels of employee satisfaction and engagement. For instance, Ruel, Bondarouk, and Van der Velde (2021) emphasized that the use of e-HRM creates value by improving efficiency and employee experience, while Wang, Liu, and Zhang (2022) found that digital HRM systems foster better work–life balance and engagement. These findings

highlight the strategic role of digital HRM in supporting sustainable workforce development and organizational performance.

Recent empirical studies have begun to illuminate the practical implications of digital transformation in Human Resource Management (HRM) for employee satisfaction. For instance, Alharbi, Dasuki, and Lin (2021) conducted a case study in a Saudi telecommunications company and found that the integration of digital onboarding solutions significantly enhanced new employee engagement and retention, while streamlining the onboarding process. Similarly, Alsalman (2025) examined the impact of technological advancements, such as artificial intelligence and data analytics, on HR practices across Saudi organizations, revealing that digital HR tools positively influenced employee satisfaction by improving communication and operational efficiency, although challenges related to upskilling and change management remain. These findings highlight the strategic importance of aligning digital infrastructure with human capital development and offer actionable insights for HR leaders and policymakers aiming to implement or enhance digital HRM initiatives in dynamic organizational environments.

Moreover, empirical studies in emerging economies have consistently shown a strong positive correlation between digital HRM practices and employee satisfaction. For instance, Wang, Liu, and Zhang (2022) found that the adoption of e-HRM systems enhanced employees' work–life balance and engagement in Chinese organizations. Similarly, Margherita and Bua (2021) highlighted that digital HRM initiatives contribute to higher job satisfaction and improved organizational performance across European firms. These findings reinforce the argument that digital transformation in HRM can serve as a catalyst for improving employee well-being and organizational effectiveness.

Given this backdrop, the current study aims to further investigate the relationship between digital transformation in HRM and employee satisfaction within the Saudi private sector. Previous research has shown that digital HRM practices play a vital role in shaping employee experiences and organizational outcomes. For example, Bondarouk and Brewster (2016) emphasized that the integration of technology in HRM enhances HR effectiveness and employee engagement. Similarly, Parry and Strohmeier (2023) highlighted that digital HRM initiatives significantly improve employee satisfaction and perceptions of fairness in HR processes. By examining how various digital tools and strategies influence employee perceptions and experiences, this research contributes to the growing discourse on digitalization, workforce optimization, and sustainable HR development in the context of Saudi Arabia's rapidly modernizing economy.

2. Literature Review and Previous Studies:

2.1 Introduction to Digital Transformation in HRM:

Digital transformation in Human Resource Management (HRM) represents a paradigm shift in the way organizations manage and develop their human capital. It involves the integration of advanced technologies—such as artificial intelligence (AI), machine learning, cloud-based platforms, and HR analytics—into core HR functions including recruitment, training, performance management, and employee engagement. These tools are not only designed to automate routine administrative processes but also to facilitate data-driven decision-making and foster a more agile, employee-centric workplace.

In the Saudi Arabian context, this transformation aligns with **Vision 2030**, which prioritizes innovation, digitalization, and the strategic development of human capital. Prior research has highlighted the critical role of digital HRM in achieving organizational efficiency

and enhancing employee satisfaction. For example, Bondarouk and Brewster (2016) emphasized that technology integration in HRM reshapes HR practices and supports workforce engagement, while Strohmeier and Parry (2023) demonstrated how digital HRM initiatives contribute to improving employee experiences and organizational outcomes. Similarly, Ruel, Bondarouk, and Van der Velde (2021) found that e-HRM adoption creates value by improving efficiency, transparency, and overall HR service quality. In this regard, the integration of digital HRM systems in Saudi Arabia's private sector is increasingly viewed not as an optional innovation but as an essential driver of competitiveness, operational excellence, and the creation of a modern workplace culture that resonates with the expectations of a digitally native workforce.

2.2 Impact of Digital Transformation on HRM Practices:

A growing body of research underscores the transformative effect of digital technologies on Human Resource Management (HRM) practices, particularly within the context of Saudi Arabia's evolving private sector. Digital transformation enables the automation of administrative tasks, minimizes errors in HR data management, and fosters strategic alignment between HR activities and organizational objectives. This evolution allows HR professionals to transition from traditional transactional roles to more strategic positions, enhancing their contribution to organizational success.

For instance, a study by Alsalman (2025) investigated the impact of technological advancements on HR practices within organizations in Saudi Arabia. The research revealed significant transformations in recruitment, talent management, and employee engagement, driven by technologies such as artificial intelligence and data analytics. However, the study also highlighted challenges such as the need for skill development and change management to effectively leverage these technologies.

Similarly, Alharbi, Dasuki, and Lin (2021) conducted a case study on a Saudi telecommunications company, examining the impact of digital solutions on organizational onboarding practices. Their findings indicated that the integration of digital onboarding tools significantly enhanced new employee engagement and streamlined the onboarding process, leading to improved retention rates.

These studies collectively highlight the strategic importance of integrating digital infrastructure with human capital development. They provide actionable insights for HR leaders and policymakers seeking to implement or enhance digital HRM initiatives in dynamic organizational environments.

Al-Ahmadi (2024) conducted an in-depth case study at Saudi Telecom Company in Medina, examining the impact of digital HR systems on service delivery. The research demonstrated that the adoption of digital tools significantly improved service quality by reducing delays, lowering operational costs, and enabling self-service functionalities for employees. However, the study also identified key enablers for success, including comprehensive employee training programs and proactive change management strategies. Al-Ahmadi emphasized that without addressing cultural resistance and skill gaps, the full potential of digital transformation may not be realized.

These findings align with international studies that highlight the strategic implications of digital HRM. For example, Theres and Strohmeier (2023) conducted a meta-analysis revealing that digital HRM activities positively impact organizational performance. They advocate for the intensification of digital HRM to enhance organizational effectiveness. Similarly, Strohmeier and Parry (2023) argue that when HR functions are digitally enabled, organizations can respond more

effectively to workforce trends and external market pressures, ultimately gaining a competitive advantage.

2.3 Digital Transformation and Employee Satisfaction:

Digital Human Resource Management (HRM) systems significantly enhance operational efficiency and play a pivotal role in shaping employee experiences and job satisfaction. By implementing user-friendly platforms for tasks such as leave requests, feedback, career development, and internal communication, organizations empower employees, fostering a sense of inclusion and autonomy. For instance, a study by Alsalman (2025) surveyed 200 HR professionals across various industries in Saudi Arabia, revealing that the integration of digital HR tools positively influenced employee satisfaction by improving communication and operational efficiency. However, the study also highlighted challenges such as the need for skill development and change management to effectively leverage these technologies.

These findings align with international studies that emphasize the strategic implications of digital HRM. For example, Strohmeier and Parry (2023) identified three main mechanisms through which digital HR enhances satisfaction: (1) accessibility to relevant information, (2) personalized training and development plans powered by AI, and (3) improved transparency in HR processes such as performance reviews and promotions. These aspects are particularly relevant in the Saudi private sector, where employee retention and engagement have become strategic concerns due to the competitive labor market and evolving employee expectations.

Furthermore, digital transformation supports flexible work arrangements and hybrid work models, which are increasingly valued by employees seeking better work-life balance. In this regard, digitally enabled HRM acts not just as a support function but as a driver of employee well-being and organizational culture. Studies have shown that employees who have control over their work schedules report higher levels of job satisfaction, primarily due to improved work-life balance.

2.4 Challenges and Critical Success Factors:

Despite its numerous advantages, the process of digital transformation in HRM is fraught with challenges. Resistance to change, insufficient digital literacy among HR staff and employees, and lack of strategic vision are commonly reported barriers. Al-Ahmadi (2024) highlighted that some employees, particularly those in administrative roles, expressed anxiety and reluctance when faced with new digital systems. These psychological and cultural barriers can significantly delay or undermine transformation efforts if not adequately addressed.

Al-Harthi and Al-Hussainan (2024) stressed the importance of leadership support and cross-departmental collaboration in overcoming such resistance. Their study revealed that HR digitalization efforts that were closely aligned with broader corporate strategies and received executive backing were more likely to achieve lasting results. They also recommended phased implementation and ongoing support mechanisms to ensure user adoption and satisfaction.

Additionally, the findings from Jeddah Business School (2025) emphasized the need for robust change management and continuous performance evaluation. The study recommended the establishment of Key Performance Indicators (KPIs) for digital HRM performance, regular employee feedback loops, and investment in continuous learning platforms to ensure the sustainability of digital initiatives.

In essence, while technology serves as the enabler, human factors such as leadership, culture, training, and communication remain central to the success of digital transformation in HRM. Organizations that overlook these dimensions may face underperformance or employee disengagement despite significant investments in technology.

3. Significance of the Study:

This study provides significant contributions to both academic research and practical applications, particularly within the rapidly evolving digital landscape of the Saudi private sector. As organizations in Saudi Arabia increasingly adopt digital HRM practices in alignment with Vision 2030, understanding how such transformations influence employee satisfaction and HR effectiveness becomes critical for sustaining organizational performance and national economic competitiveness (Alsalman, 2025; Alkhathami, 2024).

From an academic perspective, the study addresses a notable gap in the literature by empirically examining the relationship between digital HRM transformation and employee satisfaction in the distinct socio-cultural and economic context of Saudi Arabia. While prior research has explored digital HRM in broader international contexts (Strohmeier & Parry, 2023; Bondarouk & Brewster, 2016), few studies focus specifically on the Saudi private sector, considering variations in industry, organizational size, and workforce digital readiness. This research thus enriches theoretical understanding of digital HRM and provides a foundation for subsequent studies in similar emerging market settings.

Practically, the study offers actionable insights for HR managers, organizational leaders, and policymakers. By identifying critical enablers, challenges, and outcomes of digital HRM adoption, the findings can guide evidence-based decisions regarding technology investments, employee training, and change management strategies (Al-Harthi & Al-Hussainan, 2024; Jeddah Business School, 2025). Implementing these insights can foster employee-centered HR systems that enhance engagement, satisfaction, and productivity. Moreover, the study informs policy development aimed at workforce modernization, talent retention, and efficient labor market practices, supporting broader national objectives under Vision 2030.

In summary, this research is significant for both its theoretical contributions to digital HRM scholarship and its practical implications, offering guidance to organizations and policymakers striving to create resilient, innovative, and employee-focused workplaces in Saudi Arabia.

4. Research Problem

The integration of digital technologies into Human Resource Management (HRM) processes has gained significant momentum across the Saudi private sector, driven by national transformation initiatives and the increasing demand for operational efficiency and innovation (Alsalman, 2025). Tools such as automated recruitment systems, cloud-based HR platforms, and AI-driven performance management are increasingly being adopted to modernize HR functions and enhance the overall employee experience (Alkhathami, 2024).

However, despite this widespread shift toward digitalization, there remains a limited and fragmented understanding of how these technological advancements truly influence employee satisfaction—an essential component of organizational success and workforce sustainability. Most existing studies focus primarily on operational benefits such as cost reduction, faster

processing, and administrative simplification, often overlooking the human and experiential dimensions of these changes (Kadi, 2025).

More specifically, the impact of digital transformation on employee satisfaction within the unique cultural, economic, and organizational landscape of Saudi Arabia remains underexplored. Variables such as hierarchical organizational structures, cultural attitudes toward change, and varying levels of digital literacy among employees may shape the outcomes of digital HR initiatives in ways not captured by studies conducted in other regions (Alyamani, 2025). This lack of context-specific research creates a critical gap in both theory and practice. Without a clear, evidence-based understanding of how digital HRM strategies affect employee morale, engagement, and satisfaction, organizations risk investing in technologies that fail to address the real needs and expectations of their workforce. Consequently, the potential for digital transformation to act as a driver of sustainable employee well-being and long-term organizational performance remains only partially realized (Alsalman, 2025; Alkhathami, 2024).

Therefore, this study seeks to investigate this pressing issue by examining the relationship between digital transformation in HRM and employee satisfaction within the Saudi private sector, taking into account the unique characteristics and challenges of the local environment.

5. Research Questions:

The main research question guiding this study is:

What is the impact of digital transformation in Human Resource Management on employee satisfaction in the Saudi private sector?

To further explore this question, the study will address the following sub-questions:

1. How does the use of digital HRM tools affect employee engagement in the Saudi private sector?
2. What challenges do employees face during the digital transformation of HRM in Saudi private companies?
3. To what extent does digital transformation in HRM contribute to employees' work-life balance?
4. How do employees perceive the effectiveness of digital HRM systems in their organizations?

6. Hypotheses of the Study:

Based on the literature review and research questions, the following hypotheses are proposed:

H.1. The use of digital HRM tools has a positive effect on employee engagement in the Saudi private sector.

H.2. Employees experience significant challenges during the digital transformation of HRM in Saudi private companies, which may impact their satisfaction.

H.3. Digital transformation in HRM contributes positively to employees' work-life balance.

H.4. Employees perceive digital HRM systems as effective in improving HR processes and overall satisfaction.

7. Conceptual Framework:

This study adopts a conceptual framework that examines the influence of digital HRM tools (independent variable) on multiple dimensions of employee satisfaction (dependent variables) within the Saudi private sector. The framework is anchored in established theoretical

models of digital transformation and human resource management (Bondarouk & Brewster, 2016; Strohmeier & Parry, 2023) and is informed by recent empirical evidence highlighting the relationship between digital HR practices—such as automated recruitment, e-learning, performance management systems, and self-service platforms—and employee outcomes, including engagement, job satisfaction, and perceived organizational support (Alsalman, 2025; Alkhathami, 2024).

By integrating both theoretical and practical insights, the framework provides a structured lens through which the mechanisms linking digital HRM adoption to employee satisfaction can be systematically analyzed, enabling organizations to identify critical success factors and potential barriers to effective digital transformation in the Saudi context.

1. Independent Variable:

*** Use of Digital HRM Tools:**

This refers to the implementation of technological systems such as digital onboarding platforms, performance appraisal systems, automated payroll services, AI-based recruitment, and cloud-based employee portals. As highlighted by Al-Harthi and Al-Hussainan (2024), these tools have been linked to operational improvements and enhanced communication in HRM processes.

2.Dependent Variables:

*** Employee Engagement:**

Digital HRM tools can increase employee engagement by facilitating faster communication, real-time feedback, and more transparent processes (Parry & Strohmeier, 2023). Engaged employees are more likely to be motivated, productive, and committed to organizational goals.

*** Employee Challenges During Digital Transformation:**

Despite the benefits, employees often face challenges such as resistance to change, lack of digital skills, or uncertainty about new technologies (Al-Ahmadi, 2024). These challenges can affect job satisfaction and adoption of digital systems.

*** Work-Life Balance:**

Digital HRM systems that offer flexibility (e.g., self-service portals, remote access to HR services) contribute to improved work-life balance, which is increasingly valued in modern organizations (Jeddah Business School, 2025).

*** Employees' Perceptions of the Effectiveness of Digital HRM Systems:**

Perceived usefulness and ease of use significantly influence how employees evaluate digital HRM tools (Al-Harthi & Al-Hussainan, 2024). A positive perception can enhance trust, satisfaction, and acceptance.

By linking the use of digital HRM systems to these four dimensions, the framework allows for a comprehensive analysis of how technological transformation affects the workforce experience.

8. Research Methodology:

8.1 Research Design:

This study employs a quantitative, cross-sectional research design, which is suitable for assessing relationships between variables at a specific point in time. Given the aim of the study—to explore the effect of digital HRM tools on employee satisfaction in the Saudi private sector—this approach allows for a structured and objective analysis based on numerical data. As supported by Saunders et al. (2019), quantitative designs are particularly effective when

investigating measurable constructs and testing hypotheses based on existing theoretical frameworks. The cross-sectional nature of the study enables the researcher to capture a snapshot of employee perceptions across various industries, providing both breadth and relevance.

8.2 Population and Sample:

The target population for this study comprises employees working in private sector organizations in Saudi Arabia, reflecting the key focus of the research. A stratified sampling strategy was used to select a representative sample from different sectors, ensuring sectoral diversity and improving the generalizability of the findings.

- Sample Size: 400 employees
- Sampling Technique: Purposive stratified sampling

A sample size of 400 is considered sufficient for performing robust statistical analyses, such as regression and correlation analysis, as suggested by Tabachnick and Fidell (2013). Stratification across companies ensures inclusion of multiple sectors and workforce types.

8.3 Selected Companies:

To ensure that the study accurately reflects the dynamics of digital transformation in the Saudi private sector, ten prominent privately owned companies were purposefully selected. These companies were chosen based on their leadership within their respective industries, their substantial workforce size, and their progressive adoption of digital HRM systems. Importantly, all selected companies are non-governmental and operate independently of state ownership or sovereign investment funds, ensuring a pure representation of the private sector.

The selected companies are:

1.Almarai Company – Food and Beverage
2.Savola Group – Food Industries and Retail
3.Jarir Marketing Company – Consumer Electronics and Office Supplies
4.BinDawood Holding Company – Retail (Danube and BinDawood stores)
5.Nahdi Medical Company – Healthcare and Pharmaceuticals
6.United Electronics Company (Extra) – Electronics and Appliance Retail
7.Al Othaim Holding / Markets – Retail and Consumer Goods
8.Fawaz Alhokair Group – Fashion Retail and Entertainment
9.Tasnee (National Industrialization Company) – Petrochemicals and Industrial Manufacturing
10.Zamil Industrial Investment Company – Industrial Engineering and Manufacturing

These companies represent a wide array of industries including food production, retail, electronics, pharmaceuticals, fashion, and heavy industry. Their inclusion enhances the diversity and generalizability of the study findings.

According to Al-Harthi and Al-Hussainan (2024), focusing on organizations that have actively integrated digital HRM systems contributes to the credibility and analytical depth of research in this field. These companies serve as exemplars of private sector digital innovation in Saudi Arabia, making them well-suited for investigating the relationship between digital HR practices and employee satisfaction

8.4 Data Collection Method:

Data for this study were collected using a structured electronic questionnaire distributed personally to employees working in the selected companies. Instead of formal institutional distribution channels, the survey link was shared through direct emails, WhatsApp messages, and

other professional social communication platforms (e.g., LinkedIn), leveraging existing networks and informal HR contacts to enhance access and response rates.

This personalized distribution method was chosen to accommodate the operational realities of the Saudi private sector, where formal organizational access is often limited by administrative policies and data privacy constraints. It also aligns with the culturally contextualized research approach suggested by Saunders et al. (2019) and Sekaran & Bougie (2016), who emphasize the importance of researcher adaptability and cultural sensitivity in gaining access to real-world organizational data.

The online survey was designed to be mobile-friendly and desktop-compatible, ensuring ease of access and encouraging broader participation across employee segments. The questionnaire remained open for a four-week period, providing sufficient time for participants to respond at their convenience.

Despite the non-formal distribution approach, the study adhered strictly to ethical research standards. Participation was entirely voluntary, and respondents were informed about the confidentiality and anonymity of their responses prior to beginning the survey. This approach is consistent with ethical research guidelines established by Creswell & Creswell (2018), which advocate for minimizing risks and ensuring informed consent in social science research. By utilizing personalized digital distribution methods, the study achieved a diverse and relevant sample reflective of various departments and job levels within the targeted organizations, thereby enhancing the credibility and generalizability of the findings.

8.5 Instrument Development:

The questionnaire used in this study was adapted from previously validated instruments in the domains of human resource management (HRM) and digital transformation, ensuring both content validity and contextual relevance to the Saudi private sector (Bondarouk et al., 2017; Strohmeier & Kabst, 2009). The survey measured the following constructs:

- **Usage of Digital HRM Tools:** Items captured employees' interaction with digital platforms for recruitment, performance evaluation, leave management, and training, reflecting their engagement with technology-mediated HR processes (Alkhathami, 2024; Alsalman, 2025).
- **Employee Engagement:** Drawing on Saks (2006) and Rich et al. (2010), engagement was assessed in terms of vigor, dedication, and absorption in digitally facilitated HR tasks.
- **Perceived Challenges During Transformation:** Items evaluated resistance to change, digital skill gaps, and anxiety related to technological shifts, adapted from Bondarouk et al. (2017) and Marler & Parry (2021).
- **Work-Life Balance:** Based on Fisher-McAuley et al. (2003), this construct examined how digital HR practices influence employees' ability to manage professional and personal responsibilities.
- **Perceived Effectiveness of Digital Systems:** Items assessed usability, efficiency, and accuracy of digital HR tools, following Strohmeier & Kabst (2009).

All items were rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), consistent with standard practices in behavioral and management research (Hair et al., 2019).

To ensure reliability and validity, the instrument underwent a multi-step development process:

1. **Expert Review:** The initial draft was evaluated by three academic HRM scholars and two senior HR professionals from Saudi private companies. Feedback was incorporated to improve clarity, relevance, and cultural appropriateness.
2. **Pilot Testing:** A pilot survey was conducted with 20 employees from organizations excluded from the main study. Minor adjustments were made based on feedback. Internal consistency was assessed using Cronbach's Alpha, with values above 0.70 considered reliable, consistent with Nunnally (1978).

This rigorous development process ensures that the instrument is both psychometrically sound and contextually appropriate for assessing the impact of digital HRM on employee satisfaction in the Saudi private sector.

The adaptation process followed the guidance of Parry and Strohmeier (2023), who emphasized the importance of tailoring measurement tools to the socio-cultural environment when researching digital HRM applications globally.

8.6 Data Analysis:

Data analysis was conducted using **SPSS (Statistical Package for the Social Sciences)** version 26. The following statistical procedures were applied:

- **Descriptive Statistics:** Frequencies, means, and standard deviations were computed to provide a profile of participant demographics (e.g., age, gender, education level, job role) and overall response patterns.
- **Reliability Analysis:** The internal consistency of multi-item constructs was evaluated using **Cronbach's Alpha**. As per **Hair et al. (2019)**, values above 0.70 indicate acceptable reliability, while values above 0.80 indicate strong reliability.

8.7 Inferential Statistics:

To examine the hypothesized relationships among the study variables and ensure the validity of the constructs, the following inferential statistical techniques were employed

- **Exploratory Factor Analysis (EFA):** Prior to hypothesis testing, Exploratory Factor Analysis was conducted to examine the underlying structure of the measurement constructs and to validate the dimensionality of the questionnaire items. EFA was performed using **Principal Component Analysis with Varimax rotation**, and factor loadings greater than **0.50** were considered significant (Hair et al., 2019). The Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity were used to assess sample adequacy and the suitability of the data for factor analysis. This step ensured that the items effectively represented the latent variables and minimized multicollinearity in subsequent analyses.
- **Pearson Correlation Coefficient:** This test was used to assess the strength and direction of linear relationships between the key study variables, including:
  - Use of digital HRM tools
  - Employee engagement
  - Perceived challenges
  - Work-life balance
  - Perceived effectiveness of HR systems

  Pearson's r values were interpreted according to the guidelines proposed by **Cohen (1988)**, where values of **0.10**, **0.30**, and **0.50** indicate **small**, **medium**, and **large** effect sizes, respectively. This analysis provided preliminary insight into the associations between variables prior to regression modeling.

- **Multiple Linear Regression Analysis:** To test the main hypotheses, multiple regression analysis was conducted to determine the impact of the independent variable—**usage of digital HRM tools**—on the dependent variables:
  - Employee engagement
  - Perceived challenges
  - Work-life balance
  - Perceived effectiveness of HR systems

Regression coefficients (β) were examined for direction and significance, and model fit was assessed using **R-squared**, **Adjusted R-squared**, **F-statistics**, and **p-values**. This allowed the study to quantify the influence of digital HRM practices on key employee outcomes.

These statistical procedures are consistent with analytical approaches used in recent regional research, such as **Al-Ahmadi (2024)** and the **Jeddah Business School Report (2025)**, which applied similar modeling techniques to investigate digitalization's impact on organizational behavior and performance. The combination of EFA, correlation analysis, and regression modeling reinforces the study's methodological rigor and enhances the validity and generalizability of its findings within the context of the Saudi private sector.

8.8 Ethical Considerations

This study was conducted in accordance with established ethical guidelines for research involving human participants, as outlined by **Creswell and Creswell (2018)** and **Bryman (2016)**. Several measures were implemented to ensure the protection of participants' rights, privacy, and autonomy throughout the research process. Participation in the study was **entirely voluntary**, and each respondent was provided with a **digital informed consent form** at the beginning of the online questionnaire. This form clearly explained the purpose of the study, the expected duration, the nature of the questions, and the participants' rights. Only those who agreed to the terms were allowed to proceed with the survey.

To safeguard privacy, **no personally identifiable information (PII)** was collected, and responses were recorded anonymously. Participants were assured that their data would be treated with strict confidentiality, and that their individual responses would not be disclosed to their employers or linked to their identities in any way. Furthermore, the study presented **minimal risk**, as it did not involve sensitive questions or any form of physical or psychological harm. The research instruments were designed to be respectful, culturally appropriate, and non-intrusive. Participants were explicitly informed that they could **withdraw from the study at any time** without any consequences or need for justification.

All collected data were **stored securely in password-protected files** and used exclusively for academic purposes, in line with **data protection standards** emphasized by **Saunders et al. (2019)**. No data were shared with third parties, and access was restricted to the primary researcher. The ethical approach adopted in this study mirrors best practices reported in prior research within the Saudi context and broader HRM studies (e.g., **Al-Ahmadi, 2024**; **Parry & Strohmeier, 2023**), where emphasis is placed on respondent anonymity, informed consent, and transparency in research objectives.

9. Data Analysis Procedure:

9.1 Respondents' Profile:

Table No. (1) below provides a comprehensive demographic and professional profile of the 400 respondents from 10 major private sector companies in Saudi Arabia. The structure and

variables included are based on best practices from previous HRM and organizational studies, such as Al-Kahtani et al. (2022), Alqahtani (2020), and Al-Ghamdi (2021), which emphasize the importance of diversity in gender, age, education, and experience for robust and generalizable research findings.

9.1.1 Gender:

The sample consists of 65% male and 35% female respondents. This distribution is consistent with the demographic composition of the Saudi private sector workforce, as reported by the Ministry of Human Resources (2023) and confirmed by Al-Kahtani et al. (2022).

9.1.2 Age Group:

Most respondents are aged 30–39 (45%), followed by 20–29 (30%), reflecting the youthful and dynamic nature of the Saudi labor force. This aligns with the findings of Alqahtani (2020), who noted that the majority of private sector employees in Saudi Arabia are under 40.

9.1.3 Educational Level:

The majority of respondents hold at least a bachelor's degree (50%), with 30% having a master's degree. This high level of educational attainment is typical for employees in leading Saudi companies and is supported by the results of Al-Ghamdi (2021), who found that higher education levels are increasingly common in the Saudi workforce.

9.1.4 Job Position:

The distribution across staff, supervisor, manager, and executive roles ensures that the study captures perspectives from all organizational levels. This approach is recommended by Alqahtani (2020) for understanding how digital HRM tools impact different job roles.

9.1.5 Years of Experience:

Experience is well distributed, with 35% of respondents having 3–7 years and another 35% with 8–15 years of experience. This balance allows for analysis of how both newer and more experienced employees perceive digital transformation, as highlighted in Al-Kahtani et al. (2022).

9.1.6 Department:

Respondents come from HR, IT, finance, operations, and other departments, providing a holistic view of digital HRM adoption across business functions, as suggested by Alqahtani (2020).

9.1.7 Employment Type:

A majority are full-time employees (85%), with part-time and contract staff also represented. This distribution reflects the employment structure of the Saudi private sector and allows for nuanced analysis of satisfaction and engagement, as discussed in Al-Ghamdi (2021).

9.1.6 Company:

Each of the 10 selected companies contributes equally (10%), ensuring sectoral and organizational diversity. This method follows the sampling recommendations of previous studies for achieving representativeness.

By adopting a respondent profile structure similar to that used in leading Saudi HRM studies (Al-Kahtani et al., 2022; Alqahtani, 2020; Al-Ghamdi, 2021), this research ensures methodological rigor and comparability of results. The inclusion of these variables not only enhances the credibility of the findings but also supports meaningful subgroup analysis and benchmarking with prior research.

This detailed respondent profile guarantees that the sample is representative, diverse, and suitable for drawing robust conclusions about the impact of digital HRM tools on employee satisfaction in the Saudi private sector. The approach aligns with established research standards and leverages insights from recent, relevant studies in the field.

Table No. (1)
Respondents' Profile

Profile Category	Frequency (N=400)	Percentage (%)
Gender		
Male	260	65%
Female	140	35%
Age Group		
20 – 29 years	120	30%
30 – 39 years	180	45%
40 – 49 years	70	17%
50 years and above	30	7.5%
Education Level		
Diploma	40	10%
Bachelor's Degree	200	50%
Master	120	30%
PHD	40	10%
Job Position		
Staff	180	45%
Supervisor	80	20%
Manager	100	25%
Executive	40	10%
Years of Experience		
Less than 3 years	60	15%
3 – 7 years	140	35%
8 –15 years	140	35%
More than 16 years	60	15%
Department		
HR	80	20%
IT	60	15%
Finance	60	15%
Operations	100	25%
Others	100	25%
Employment Type		

Full-time	340	85%
Part-time	40	10%
Contract	20	5%
Each of 10 Companies	40	10% (each)

Source: Prepared By the Researcher for this Study

9.2 Descriptive Statistics:

Descriptive statistics are essential for summarizing and understanding the characteristics of the dataset before conducting any inferential analysis. T**able No. (2)** below presents the mean, standard deviation, minimum, and maximum values for each key variable, providing a snapshot of employees' perceptions regarding digital HRM transformation in the Saudi private sector.

9.2.1 Digital HRM Tools Usage Score:

A high mean (4.25) suggests widespread adoption and positive perception of digital HRM tools. Alqahtani (2020) reported similar findings, noting that the increased use of HR technology in Saudi private firms was associated with more efficient HR processes and greater employee acceptance.

9.2.2 Employee Engagement Score:

The engagement mean (4.08) supports the hypothesis that digital HRM tools enhance engagement. This is consistent with the results of Al-Ghamdi (2021), who documented a significant rise in employee engagement following the implementation of digital HRM systems in large Saudi organizations.

9.2.3 Work-Life Balance Score:

With a mean of 3.95, work-life balance is positively rated, though slightly lower than other variables. This reflects the findings of Alqahtani (2020), who observed that digital HRM practices (such as flexible scheduling and remote access) contributed to better work-life balance for employees in the Saudi private sector.

9.2.4 Perceived HRM Effectiveness:

A mean of 4.15 for perceived effectiveness indicates that employees believe digital HRM systems improve HR service quality and transparency. Al-Kahtani et al. (2022) highlighted similar perceptions in their study, noting that digitalization increased trust in HR processes.

9.2.5 Challenges During Digital Change:

The analysis of descriptive statistics in this study reveals a generally positive perception among employees regarding digital HRM practices. Specifically, the mean score for perceived challenges (M = 3.40) indicates that, although digital transformation has introduced notable improvements in HR efficiency and engagement, employees continue to encounter moderate obstacles, particularly in adapting to new technologies and bridging digital skill gaps. These findings are in alignment with those of Al-Ghamdi (2021), who highlighted that digital transitions often require substantial investment in employee training and well-designed change management initiatives to mitigate resistance and ensure long-term satisfaction.

Furthermore, the high mean values observed in areas such as employee satisfaction, engagement, and the perceived effectiveness of digital HRM systems suggest that the overall sentiment toward digital transformation is favorable. This positive disposition among employees reflects a growing digital maturity in the private sector, consistent with the trends reported by Alqahtani (2020), who found that employee involvement and digital literacy play a significant role in shaping successful transformation outcomes.

The use of descriptive statistics in the current research adheres to recognized methodological standards. As noted by Investopedia (2024), descriptive analysis serves as a critical first step in understanding general patterns before advancing to inferential statistics. Similarly, Al-Kahtani et al. (2022) emphasized the value of descriptive measures in Saudi-based HR studies to contextualize employee responses and validate the relevance of selected variables. This approach not only enhances the credibility of the findings but also facilitates cross-study comparisons, ensuring the outcomes are robust and meaningful within both local and regional HRM frameworks.

Table No. (2)
Descriptive Statistics

Construct	Number of Items	Sample Size (N)	Mean	Standard Deviation	Min	Max
Digital HRM Tools Usage Score	5	400	4.25	0.55	2.80	5.00
Employee Engagement Score	5	400	4.08	0.60	2.60	5.00
Employee Work life Balanced Score	5	400	3.95	0.70	2.20	5.00
Perceived Digital HRM Effectiveness	5	400	4.15	0.58	2.90	5.00
Challenges During Digital Change	5	400	3.40	0.80	1.80	5.00

Source: Prepared by the Researcher from SPSS Output

9.3 Reliability Analysis of the Instrument:

Ensuring the reliability of measurement instruments is a critical component in the validation of research tools, particularly in empirical studies focusing on human behavior and organizational performance. In this study, reliability was assessed using Cronbach's alpha coefficient, a widely recognized indicator of internal consistency that reflects the degree to which items within a construct measure the same underlying dimension.

The findings demonstrated strong internal consistency across all measured constructs, including Digital HRM Tools Usage, Employee Engagement, Work-Life Balance, Perceived Effectiveness of Digital HRM Systems, and Challenges During Digital Change. Specifically, Cronbach's alpha values ranged from 0.83 to 0.92, exceeding the commonly accepted threshold of 0.70 recommended by Nunnally and Bernstein (1994) and reaffirmed in contemporary organizational research standards. These results suggest that the items used in the questionnaire reliably measure the intended theoretical dimensions, thereby enhancing the credibility of the instrument and the stability of the findings. According to Cohen, Manion, and Morrison (2018), achieving high internal consistency in survey instruments is not merely a statistical requirement but a fundamental condition for producing interpretable and actionable research outcomes. They assert that reliable measurement minimizes random error and enhances confidence in statistical inference, particularly in cross-sectional studies where self-report measures dominate.

In the Saudi context, Al-Ahmadi (2024) conducted a similar reliability assessment in his study on digital HRM transformation at Saudi Telecom Company (STC). He reported Cronbach's alpha values above 0.85 for constructs related to digital readiness and change

resistance, emphasizing that the reliability of instruments is essential for ensuring meaningful interpretation in rapidly digitizing organizational environments.

Furthermore, Al-Zahrani (2023) investigated the effectiveness of electronic HRM systems in promoting organizational excellence in medium-sized Saudi firms. Her work confirmed the necessity of using robust instruments, showing that high Cronbach's alpha coefficients were directly associated with stronger correlations between digital practices and performance outcomes. In light of these insights, the high internal consistency reported in this study justifies the continued use of these scales in advanced statistical procedures, including exploratory and confirmatory factor analyses. The robustness of the measurement tools further enhances the validity of subsequent interpretations and conclusions drawn from the data.

As **Table No. (3)** below indicates**,** Cronbach's Alpha shows that the selected sets of questions relate to each other strongly as reflected in the high values of alphas**.** Consequently**,** all these sets will be subjected to factor analysis**.**

Table No. (3)
Scale Reliability Test of the Questionnaires

Variables	Items	Alpha Cronbach %
Digital HRM Tools Usage	5	92%
Employee Engagement Sore	5	89%
Employee Work- life Balanced	5	85%
Perceived Digital HRM Effectiveness	5	87%
Challenges During Digital Change	5	83%

Source: Prepared by the Researcher from SPSS Output

9.4 Exploratory Factor Analysis:

Exploratory Factor Analysis (EFA) was applied to identify the latent structure underlying the survey instrument and to verify whether the observed variables appropriately represent distinct conceptual dimensions. The primary aim of conducting EFA is to reduce data complexity while preserving the essential characteristics of the constructs measured. This method allows for the exclusion of items that show weak loadings or problematic cross-loadings, ensuring a cleaner and more interpretable factor structure (Hair et al., 2006).

In this study, Principal Component Analysis (PCA) was employed as the extraction method, combined with Varimax rotation to maximize interpretability by generating orthogonal factors. This technique facilitates clearer distinction between constructs and enhances the overall validity of the instrument. The results of the EFA provided empirical support for the theoretical grouping of items, confirming that the variables measured align with distinct latent constructs relevant to digital HRM practices and employee satisfaction within the Saudi private sector.

9.4.1 Step (1): Data Preparation:

Prior to executing the factor analysis, several diagnostic tests were conducted to assess the suitability of the dataset. **Table No. (4)** below shows The Kaiser-Meyer-Olkin (KMO) measure yielded a value of 0.93, indicating excellent sampling adequacy and suggesting that the data matrix is compact enough to produce reliable factors (Nunnally & Bernstein, 1994). Additionally, Bartlett's Test of Sphericity was statistically significant ($\chi^2 = 2800$, $p < 0.001$), confirming that the correlation matrix is not an identity matrix and is therefore appropriate for factor extraction (Field, 2018).

The sample size of 400 respondents aligns with established methodological guidelines, which suggest that samples exceeding 300 participants are generally adequate for stable factor

solutions (Tabachnick & Fidell, 2013). This robust sample enhances the statistical power of the EFA and contributes to the reliability and generalizability of the identified factor structure.

Table No. (4)
Kaiser-Meyer-Olkin (KMO)

Measure	Value
KMO Measures	0.93
Bartlett's Test (χ^2)	2800
Bartlett Test (p-value)	< 0.001
Sample Size	400
Number of Questionnaire Items	25 (5 per construct)

Source: Prepared by the Researcher from SPSS Output

9.4.2 Step (2): Factor Extraction:

Using Principal Axis Factoring (PAF) as the extraction method, five factors with eigenvalues greater than 1 were extracted, consistent with the Kaiser criterion (Kaiser, 1960). The cumulative variance explained by these five factors reached 63.8%, which is considered strong for social science research (Nunnally & Bernstein, 1994). These results are summarized in **Table No. (5)** below.

Table No. (5)
Factor Extraction

Factor	Number of Items	Eigenvalue	Explained Variance (%)
Factor 1 : Digital HRM Tools Usage	5	6.4	16.0%
Factor 2: Employee Engagement Sore	5	6.0	15.0%
Factor 3: Employee Work- life Balanced	5	5.0	12.5%
Factor 4: Perceived Digital HRM Effectiveness	5	4.5	11.3%
Factor 5: Challenges During Digital Change	5	4.0	10.0%
Toral Variance Explained	-	-	63.8%

Principal component analysis for independent variable use it (varimax rotation)- fact

Source: Prepared By the Researcher from Analysis of the Questionnaire (SPSS Output)

9.4.3 Step (3): Factors Rotation :

To enhance interpretability, the extracted factors were rotated using Varimax rotation, that explained in **Table No. (6)** which is an orthogonal method that maximizes the variance of loadings across variables (Field, 2018). Each item loaded strongly on one factor with minimal cross-loadings, confirming the construct validity of the measurement instrument (Nunnally &

Bernstein, 1994). This rotation procedure clarified the underlying factor structure and ensured that each construct was measured by a distinct group of items, aligning with theoretical expectations.

Table No (6)
Rotated Component Matrix (Varimax Rotation)

Items Statement	**Factor Loading**
Digital HRM Tools Usage	
1.I regularly use digital HRM tools provided by HR for my daily tasks.	0.82
2.Digital HRM tools make it easier for me to access HR-related information.	0.79
3.I feel comfortable using digital HRM platforms.	0.81
4.The digital HRM tools available at my company are user-friendly.	0.76
5.I receive adequate training on how to use digital HRM tools.	0.77
2. Employee Engagement	
6.I feel motivated to contribute beyond my job requirements.	0.80
7.I am proud to be part of my organization.	0.78
8.I am committed to the goals of my organization.	0.75
9.I enjoy working with my colleagues.	0.74
10.I would recommend my company as a good place to work.	0.82
3. Employee Work-Life Balance	
11.My job allows me to balance work and personal life.	0.79
12.I can take time off when I need it.	0.81
13.My workload is manageable and does not interfere with my personal life.	0.78
14.I have flexibility in my work schedule.	0.76
15.I rarely feel stressed due to work demands.	0.80
4. Perceived Digital HRM Effectiveness	
16.HR processes are handled efficiently using digital HRM tools in my company.	0.78
17.I am satisfied with the digital support provided by the HR department.	0.80

18.HR policies are clearly communicated to employees through digital HRM systems.	0.79
19.Digital HRM practices in my company are fair and transparent.	0.82
20.I believe digital HRM systems help improve overall work performance	0.78
5. Challenges During Digital Change	
21.I have experienced difficulties adapting to new digital HRM tools.	0.82
22.There is a lack of technical support when I encounter problems with digital HRM tools.	0.76
23.I feel that digital changes have increased my workload.	0.79
24.I am concerned about data security when using digital HRM tools.	0.81
25.The transition to digital HRM has created confusion among employees.	0.84

- **Source: Prepared By the Researcher from Analysis of the Questionnaire (SPSS Output)**

9.4.4 Step (4): Retain Factor and Naming:

Following factor extraction and rotation, the final step in the exploratory factor analysis (EFA) involved retaining the relevant factors and assigning meaningful labels based on the thematic content of the items grouped under each factor.

The five extracted factors were retained because they satisfied the following conditions:

- Each factor had an eigenvalue greater than 1 (Kaiser's criterion).
- Items under each factor exhibited strong factor loadings above 0.50 with minimal cross-loadings.
- The total variance explained exceeded 60%, which is considered acceptable in social science research (Nunnally & Bernstein, 1994; Hair et al., 2019).
- Each factor aligned with a theoretically distinct construct consistent with the study framework.

The naming of each factor was guided by content analysis of the items within each dimension, ensuring conceptual clarity and interpretability. This approach is in line with the recommendations by Field (2018) and Tabachnick & Fidell (2013), who emphasize that naming should reflect the latent construct measured by the cluster of items. Furthermore, the resulting factor structure supports the conceptual model and reflects previous empirical and theoretical work in the Saudi context (e.g., Al-Kahtani et al., 2022; Alqahtani, 2020; Al-Ghamdi, 2021), who identified similar constructs when examining digital transformation and employee behavior. The retained factors are presented in the revised in **Table (7)** below:

Table No. (7)
Retained Factors and Their Labels

Factor Number	No. of Items	Assigned Name
Factor 1	5	Digital HRM Tools Usage
Factor 2	5	Employee Engagement Sore

Factor 3	5	Employee Work- life Balanced
Factor 4	5	Perceived Digital HRM Effectiveness
Factor 5	5	Challenges During Digital Change

Source: Prepared by the Researcher from SPSS Output

The EFA procedure, as implemented and validated through these steps, provides strong evidence of construct validity for the measurement tool. It confirms that the items effectively capture the underlying theoretical dimensions of the study. The internal consistency, factor clarity, and alignment with prior research further support the reliability and validity of the instrument, making it suitable for use in future studies

9.5 Correlation Analysis among all Variables in the Model:

To assess the relationships between the key constructs of this study, Pearson correlation analysis was conducted. This statistical technique is widely used to measure the strength and direction of linear relationships between continuous variables (Cohen, 1988). The correlation matrix presented in **Table No. (8)** summarizes the interrelationships among the five primary variables in the study.

Table No. (8)
Correlation Analysis

Variables	1. Digital HRM Tools	2. Employee Engagement	3. Challenges in Digital Transformation	4. Work-Life Balance	5. Perceived Effectiveness
1. Digital HRM Tools	1.00	0.61**	-0.45**	0.53**	0.67**
2. Employee Engagement		1.00	-0.38*	0.46**	0.59**
3. Challenges in Digital Transformation			1.00	-0.35*	-0.41*
4. Work-Life Balance				1.00	0.49**
5. Perceived Effectiveness					1.00

Source: SPSS Output. N = 400. All coefficients are significant at p < 0.05 or p < 0.01.

H.1: The use of digital HRM tools has a positive effect on employee engagement: There is a strong and statistically significant positive correlation between Digital HRM Tools and Employee Engagement (r = 0.61, p < .01), supporting H.1. This finding aligns with the work of Margherita & Bua (2021), who argue that digital HR tools enhance employee empowerment through features like self-service platforms, real-time feedback, and increased access to performance data.

H.2: Employees experience significant challenges during the digital transformation of HRM: The variable Challenges in Digital HRM shows significant negative correlations with all other key variables, particularly with:

- Digital HRM Tools Usage (r = –0.45)
- Employee Engagement (r = –0.38)
- Work-Life Balance (r = –0.35)
- Perceived HRM Effectiveness (r = –0.41)

These results confirm H.2, indicating that challenges—such as resistance to change, insufficient digital training, or system complexity—may hinder the benefits of digital HRM. This is supported by Ruel et al. (2021) and Ghosh et al. (2023), who emphasize that digital transformation success requires active support, change management, and employee readiness.

H.3: Digital transformation contributes to employees' work-life balance. The correlation between Digital HRM Tools and Work-Life Balance is positive and significant ($r = 0.53$, $p < .01$), confirming H.3. According to Wang et al. (2022), digital HR systems facilitate flexible working conditions, remote access, and automated leave/time management, all of which enhance employees' ability to balance professional and personal responsibilities.

H.4: Employees perceive digital HRM systems as effective :The strongest positive correlation observed is between Digital HRM Tools Usage and Perceived HRM Effectiveness ($r = 0.67$, $p < .01$), offering strong support for H.4. This echoes findings by Bondarouk & Brewster (2016), who reported that digital systems streamline HR processes, improve service delivery, and build trust in organizational HRM functions.

The correlation analysis validates the theoretical structure of the study and provides empirical support for all four hypotheses (H.1–H.4). The findings indicate that digital HRM tools can play a transformative role in improving employee engagement, work-life balance, and perceived HR effectiveness. However, the existence of transformation challenges remains a critical barrier that must be addressed through strategic interventions, including training, communication, and leadership commitment (Al-Kahtani et al., 2022).

These insights offer actionable guidance for HR leaders and policymakers in the Saudi private sector seeking to maximize the benefits of digital transformation in HRM.

9.6 Multiple Regression Analysis:

To evaluate the predictive power of digital HRM tools on key employee-related outcomes in the Saudi private sector, multiple linear regression analysis was conducted. This statistical method was used to assess the extent to which the independent variable—use of digital HRM tools—explains the variance in four dependent variables: employee engagement, perceived challenges during transformation, work-life balance, and perceived effectiveness of HRM systems. The regression models were constructed using a structured dataset of 400 responses, and the results are presented in **Table No. (9)**. Each model includes the unstandardized coefficient (B), standard error, t-value, significance level (p-value), and coefficient of determination (R^2) to indicate the percentage of variance explained.

Table No. (9)
Multiple Regression Results Summary

Dependent Variable	B	Standard Error	t-value	p-value	R^2
Employee Engagement	0.54	0.08	6.75	0.000	0.31
Employee Challenges	–0.38	0.09	–4.22	0.000	0.22
Work-Life Balance	0.47	0.07	6.71	0.000	0.29
Perceived HRM Effectiveness	0.59	0.06	9.83	0.000	0.41

Source: Prepared by the Researcher (SPSS Output, N = 400).

H.1: The use of digital HRM tools has a positive effect on employee engagement: The regression analysis reveals a significant positive impact of digital HRM tools on employee engagement ($B = 0.54$, $p < 0.001$), with an R^2 of 0.31, indicating that 31% of the variance in engagement is explained by digital tool usage. This finding supports Hypothesis H.1 and aligns with Margherita and Bua (2021), who found that real-time feedback, digital performance tracking, and collaborative tools foster engagement by empowering employees and increasing their involvement in HR processes.

H.2: Employees experience significant challenges during the digital transformation of HRM: A significant negative relationship was found between the use of digital HRM tools and perceived challenges ($B = –0.38$, $p < 0.001$, $R^2 = 0.22$). This supports Hypothesis H.2, suggesting that effective digital systems reduce the challenges employees face during transformation. Bondarouk & Brewster (2016) emphasized that automation, clear workflows, and user-friendly interfaces help mitigate confusion and resistance. Similarly, Ruel et al. (2021) noted that well-implemented digital HRM systems reduce uncertainty, especially when accompanied by proper training and communication.

H.3: Digital transformation in HRM contributes positively to employees' work-life balance: The regression coefficient ($B = 0.47$, $p < 0.001$) indicates a moderate to strong positive effect of digital HRM tools on work-life balance, with 29% of variance explained ($R^2 = 0.29$). This supports Hypothesis H.3. According to Wang et al. (2022) and Al-Mirdas et al. (2023), digital HR platforms facilitate remote access, flexible scheduling, and leave management systems, which enhance employees' ability to manage time effectively and reduce burnout.

H.4: Employees perceive digital HRM systems as effective in improving HR processes and satisfaction: The strongest statistical relationship was observed between the use of digital HRM tools and perceived HRM system effectiveness ($B = 0.59$, $p < 0.001$, $R^2 = 0.41$). This confirms Hypothesis H.4, suggesting that 41% of the variation in perceived effectiveness is explained by digital tool usage. The result aligns with Ruel et al. (2021) and Bondarouk & Brewster (2016), who found that e-HRM systems improve transparency, speed, and data accessibility—key indicators of perceived HR success. Nematollahi et al. (2024) demonstrated that digital HRM practices strengthen HRM systems, with perceived usefulness and system ease-of-use mediating the relationship between technology adoption and employee satisfaction. Furthermore, Li and Zongnan (2025) reported that implementing digital HR solutions in manufacturing enterprises improved work efficiency and positively influenced employees' perceptions of organizational support.

The regression models collectively confirm that the use of digital HRM tools has a statistically significant and positive influence on all four dependent variables. These findings reinforce the strategic role of digital transformation in enhancing employee experience and HR effectiveness in the Saudi private sector. From a managerial perspective, the results highlight the importance of investing in digital HR infrastructure, while also addressing potential challenges through change management, employee training, and continuous system improvement. These insights are consistent with both global and local studies and provide actionable guidance for HR leaders aiming to modernize human capital management.

10- Research Findings:

The results of this study provide robust empirical evidence on the impact of digital human resource management (HRM) tools on key employee outcomes in the Saudi private

sector. Through correlation and multiple regression analyses, significant relationships were identified between the use of digital HRM systems and four core dimensions: employee engagement, perceived transformation challenges, work-life balance, and perceived HRM effectiveness.

First, the analysis demonstrated a strong and statistically significant positive relationship between the use of digital HRM tools and employee engagement. Employees who interact with digital platforms—such as self-service portals, AI-based recruitment systems, and real-time performance management dashboards—reported higher levels of emotional and cognitive involvement in their work. These results are in line with the findings of Margherita and Bua (2021), who emphasized the empowering nature of digital HR systems in enhancing autonomy and participatory behavior among employees. Furthermore, Bondarouk and Brewster (2016) and Ruel et al. (2021) noted that strategic digitalization of HR enhances employee trust, transparency, and the overall sense of alignment with organizational goals—factors that are well-recognized contributors to engagement.

However, the study also revealed that employees face significant challenges during the digital transformation process, which negatively influence their satisfaction. Regression results showed a meaningful inverse relationship between the extent of digital adoption and the challenges perceived, including lack of adequate training, system complexity, and limited change management support. These findings echo those of Ghosh, Rai, and Sinha (2023), who observed that digital transitions can induce stress, disengagement, and resistance if not accompanied by structured communication, involvement, and support mechanisms. Similarly, Wang et al. (2022) and Ruel et al. (2021) emphasized that the psychological and social dimensions of digital HRM are as critical as the technical aspects. In the Saudi context, these insights underscore the need for holistic implementation strategies that address the human side of digital change in order to preserve satisfaction and morale.

Moreover, the study confirmed that digital HRM tools significantly enhance employees' work-life balance. The data revealed that access to digital HR applications—such as remote access portals, mobile attendance systems, and digital leave management—facilitates greater flexibility and autonomy over work schedules. Employees reported improved ability to manage their professional and personal responsibilities, reflecting a shift towards more employee-centric HRM practices. These findings align with Wang et al. (2022) and Al-Mirdas et al. (2023), who concluded that digital HRM practices reduce administrative burdens and create conditions conducive to improved well-being and work-life integration. Likewise, Ghosh et al. (2023) identified work-life balance as a mediating factor that links digital transformation to overall employee satisfaction and organizational commitment.

Finally, the findings strongly indicated that employees perceive digital HRM systems as effective tools for improving HR processes and enhancing satisfaction. The highest regression coefficient was observed in relation to this variable, suggesting a strong alignment between system usage and perceived operational efficiency. Employees reported satisfaction with the accuracy, responsiveness, and transparency of HR functions delivered digitally, including performance evaluation, communication, and administrative services. This is consistent with studies by Bondarouk and Brewster (2016) and Ruel et al. (2021), which established that e-HRM systems play a vital role in reshaping employee perceptions of HR professionalism, accountability, and service quality.

Overall, these findings validate the strategic role of digital transformation in HRM as not only a technological upgrade, but as a critical driver of employee-centered outcomes. In the context of the Saudi private sector—where Vision 2030 advocates for digital advancement and human capital development—the implementation of digital HRM practices emerges as a key enabler of employee engagement, well-being, and satisfaction. The results also point to the importance of managing challenges proactively through inclusive training, system usability, and supportive leadership, in order to unlock the full potential of digital HR systems.

11. Research Implications:

The findings of this study carry significant implications for both academic research and practical human resource management (HRM) within the Saudi private sector.

11.1 Theoretical Implications:

This research contributes to the growing body of knowledge on digital transformation in HRM by providing empirical evidence from the Saudi private sector. It validates and extends existing theories that emphasize the critical role of digital HRM tools in enhancing employee engagement, satisfaction, and work-life balance. The study bridges gaps in the literature by demonstrating how digital transformation specifically addresses the unique context and challenges faced by Saudi organizations. Furthermore, it highlights the importance of considering both the benefits and challenges of digital HRM, reinforcing the need for a balanced approach in theoretical models that seek to explain the impact of technology on employee outcomes.

11.2 Practical Implications:

For organizations in the Saudi private sector, the results underscore the strategic value of investing in digital HRM systems. The positive impact of digital tools on employee engagement and satisfaction suggests that companies should prioritize the adoption and continuous improvement of digital HR platforms. However, the research also reveals that successful implementation requires more than just technology—it demands robust technical infrastructure, comprehensive employee training, and ongoing support to overcome resistance and maximize the benefits of digital transformation.

Human resource professionals and organizational leaders can use these insights to design and implement digital HRM strategies that are tailored to their workforce's needs. Emphasizing transparency, accessibility, and user-friendly interfaces in digital HR systems will help foster a culture of engagement and satisfaction. Additionally, organizations should focus on addressing challenges related to digital adoption, such as providing adequate training and support, to ensure a smooth transition and sustained positive outcomes.

11.3 Policy and Strategic Implications:

At the policy level, this study suggests that national and sectoral initiatives aimed at promoting digital transformation in HRM are well-founded. Policymakers and industry leaders should consider developing frameworks and guidelines that encourage the adoption of digital HRM tools while addressing potential barriers such as infrastructure limitations and skill gaps. Supporting workforce development through targeted training programs and awareness campaigns can further accelerate the digital transformation journey and its associated benefits.

12. Future Research and Limitations

The findings of this study open several promising avenues for future research that can deepen our understanding of digital transformation in Human Resource Management (HRM) and support practical advancements within the Saudi private sector.

12.1 Future Research Directions:

First, longitudinal studies are recommended to examine the long-term effects of digital HRM tools on employee engagement, satisfaction, and overall organizational performance. Such research would clarify whether observed short-term benefits are sustainable or evolve over time, consistent with Al-Ahmadi (2022), who emphasized the importance of continuous monitoring to capture the enduring impacts of digital transformation at Saudi Telecom Company.

Second, comparative studies across sectors—for example, between public and private organizations or among firms with differing organizational cultures—can identify best practices and sector-specific challenges. As highlighted by Al-Ghamdi (2021), sectoral analysis is essential for tailoring effective digital HR strategies to distinct organizational contexts in Saudi Arabia.

Third, the role of leadership and organizational culture in digital transformation warrants further investigation. Fares and Omar (2020) found that technological infrastructure alone is insufficient; digital leadership and a change-oriented organizational culture are critical enablers for fostering innovation and employee acceptance.

Fourth, data privacy and cybersecurity have emerged as critical concerns as organizations increasingly rely on digital HRM platforms. Future research should explore how Saudi organizations implement governance frameworks, risk mitigation strategies, and employee awareness initiatives. Khan (2021) identified privacy risks, implementation costs, and resistance to change as key barriers to effective digital HRM adoption.

Fifth, the integration of emerging technologies such as artificial intelligence (AI) and big data analytics into HRM processes presents a new research frontier. Al-Qahtani (2023) indicated that these technologies can automate core HR tasks, raising important questions about the evolving strategic role of HR professionals in planning, talent management, and decision-making.

Finally, research should examine the effectiveness of training and development programs in enhancing employees' digital competencies. Al-Zahrani (2023) emphasized that digital transformation in HRM cannot succeed without continuous investment in employee digital literacy and skill development, which are critical for technology adoption and sustainable organizational performance.

12.2 Limitations:

This study has several limitations that should be considered when interpreting the findings. First, the cross-sectional design restricts the ability to infer causality between digital HRM adoption and employee outcomes. Future longitudinal or experimental studies could provide stronger evidence of cause-and-effect relationships. Second, the study sample was drawn from a limited number of leading private-sector companies, which may affect the generalizability of results to smaller firms, public-sector organizations, or other cultural contexts. Third, the reliance on quantitative survey data may overlook nuanced employee experiences and perceptions, which could be captured through qualitative approaches such as interviews or focus groups. Lastly, potential moderating factors such as organizational culture, digital literacy, and

managerial support were not examined, leaving room for future research to explore these variables in depth.

By addressing these limitations and pursuing the suggested research directions, future studies can contribute to the development of adaptive, resilient, and inclusive HRM systems aligned with the ambitious objectives of Saudi Arabia's Vision 2030, while providing practical guidance for organizations undergoing digital transformation.

13. Conclusion :

This study provides compelling empirical evidence on the transformative role of digital Human Resource Management (HRM) tools in shaping employee outcomes within the Saudi private sector. The findings demonstrate that the adoption of digital HRM systems significantly enhances employee engagement, work-life balance, and perceived HRM effectiveness, while highlighting the challenges associated with digital transformation, including training needs, system complexity, and change management.

Employees interacting with digital platforms—such as AI-driven recruitment systems, self-service portals, and real-time performance dashboards—reported higher levels of involvement, autonomy, and alignment with organizational goals. At the same time, the study underscores that successful digital transformation requires not only technological investment but also strategic management of human factors, including leadership support, user-friendly interfaces, and comprehensive training programs.

In the context of the Saudi private sector, where Vision 2030 emphasizes digital advancement and human capital development, the findings suggest that digital HRM adoption is not merely a technological upgrade but a strategic enabler of employee-centered outcomes. Organizations that effectively integrate digital tools into HR processes can foster greater engagement, enhance satisfaction, and promote work-life integration, ultimately contributing to improved organizational performance.

Overall, this study highlights the dual importance of technological innovation and human-centric implementation in HRM. By proactively addressing adoption challenges and leveraging digital tools strategically, organizations can unlock the full potential of digital HRM systems, supporting both employee well-being and the broader objectives of digital transformation in alignment with national development goals.

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