"Exploring the Impact of Digital HR Practices on Employee Performance and Organizational Efficiency in the Pharmaceutical Sector"

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ABSTRACT

Analyse how digital HR applications have affected pharmaceutical industry performance management, e-recruitment, retention, training, and job satisfaction rates. Data from 275 employees at various pharmaceutical companies are analysed in this cross-sectional study, which makes use of quantitative approach. Using IBM SPSS Statistics, researchers performed descriptive and inferential statistical studies to identify the key factors that influence employee performance and the results achieved by the company.

Excellent employee performance is substantially predicted by the adoption of digital HR technology, employee participation, and satisfaction with these tools ($p < 0.05$). In addition, the size of the business was shown to be a significant factor in explaining both organisational efficiency and overall utilisation of HR tools ($p < 0.01$). Larger firms were found to be more efficient and had higher reports of using digital HR tools. There was a little correlation between gender and employee performance, and younger employees were more likely to utilise digital HR tools.

In larger companies with better investments in technology, the results show that digital HR policies, when implemented well, boost organisational efficiency and employee performance. The authors admit that the study is limited by its cross-sectional design, which prevents causal findings, and by the possibility for response bias resulting from self-reported performance data. Nevertheless, the research makes important contributions. To assess the long-term consequences of digital HR technology and the influence of moderating factors like leadership style and culture, longitudinal studies would be useful. Human resource professionals looking to boost employee output and the company's bottom line should use the study's practical advice on how to implement digital HR solutions.

Keywords: Digital HR Practices, Employee Performance, Organizational Efficiency, Pharmaceutical Sector, Employee Engagement

Introduction:

A lot of companies' digital transformation efforts have revolved on data, an ancient idea that has recently been crucial to their success. Due to its innovation-driven, highly competitive, and centralised character, the pharmaceutical sector has progressively embraced digital HR techniques[1]. The digital solutions such as cloud-based HR systems, data analytics for performance management, virtual learning platforms, and e-recruitment systems are expected to enhance HR efficiency, employee engagement, and organisational results[2].

Recently popularised words include "digitalisation," "digital transformation," and "digital disruption," among others. These expressions, taken in their broadest sense, describe a dramatic increase in the use of technology and the corresponding revolution in many areas of business and society[3]. The field of human resource management (HRM) is no different. A growing number of sources in human resource management have begun using the term "digital HRM" and similar concepts, such as "digitisation," "digital transformation," and "digital disruption", among others. "Transformation" and, to an even greater degree, "disruption" are abstract concepts that suggest deep significance for human resource management, suggesting that these fundamental notions are very relevant[4].

There have been studies looking at the big picture of technology's impact on HR management[5], but more recent studies have focused on how specific digital HR tools, like e-recruitment platforms, learning management systems, and performance management systems, affect various organisational outcomes like engagement, productivity, and employee performance. Recent studies have shown that digital technologies are becoming more integrated into HR practices. These studies emphasise how digital technologies may increase employee productivity via automation, data-informed decision-making, and immediate feedback mechanisms[6]. Digital performance management solutions, increase transparency and accountability in employee evaluations, which in turn boosts engagement and performance metrics. Digital recruiting platforms improve employee retention and performance results[7], who found that these tools improve the hiring process and help organisations find applicants whose values and talents match organisational goals.

H1: There is a positive relationship between the usage of digital HR tools and employee performance in the pharmaceutical sector.

Organisations are progressively using digital HR solutions, including e-recruitment platforms, performance management systems, and employee self-service portals, to automate administrative duties, improve employee engagement, and optimise HR services. These solutions use technology to enhance personnel management, optimise recruiting procedures, and facilitate data-driven decision-making. In light of the rapid technological improvements, comprehending the influence of these tools on employee performance and organisational efficiency has emerged as a vital study domain[8].

H2: Employee engagement significantly mediates the relationship between digital HR tools and organizational efficiency.

Handling a highly-skilled staff, staying in compliance with regulations, and fostering rapid innovation are all challenges unique to the pharmaceutical sector[9]. These demands have long been ignored by conventional approaches to human resource management. In order to boost organisational efficiency and employee performance, digital HRM streamlines HR

department processes, automates everyday routine tasks where feasible, and provides real-time data for converted decision-making[10]. In this age of digitisation and automation, often known as the 4th industrial revolution, many businesses have come to see the value of technology in their human resources departments; pharmaceutical firms are no exception[11].
H3: Larger organizations show higher levels of employee performance and organizational efficiency due to the more frequent use of digital HR tools.

One of the most potent forces influencing worker productivity is the proliferation of digital HR solutions that provide continuous feedback, performance monitoring, and individualised education[12]. Research has shown that digital HR management systems lead to much more engaged and productive workers for businesses that use them. This is due to the fact that data provides workers with an accurate picture of their performance indicators and chances for growth, which in turn increases their motivation and the quality of their output[13]. It is a huge influence on your organization's efficiency via digital HR practices. Human resource management at its finest is essential in the pharmaceutical sector, known for its high operational expenses and the need for flawless coordination[14]. It facilitates communication and resource allocation while also helping to identify problem areas and optimise facilities. These advancements lead to quicker decision-making, less operational inefficiency, and more agility[15].

Although digital HR solutions have been thoroughly examined across other sectors, a study gap persists concerning their effects especially in the pharmaceutical industry. Limited research has investigated the correlation between the use of digital HR tools and employee performance in this context, particularly in light of the sector's unique constraints, including regulatory compliance and the need for highly qualified personnel. This research seeks to address this gap by examining the influence of digital HR solutions on employee performance, organisational efficiency, and work satisfaction in pharmaceutical organisations.
H4: Employee satisfaction with digital HR tools positively influences employee performance and organizational efficiency.

With a focus on the pharmaceutical sector, this research aims to dissect the impact of digital HR practices on productivity in the workplace. What this implies is that the goal of this study is to show how pharma companies may achieve their goals by using a network of digital HR technologies[16]. This will help human resources managers understand the value of digital solutions for workforce management and how they may boost organisational outcomes.

Objectives of the Study:

- To examine the impact of digital HR tools on employee performance in the pharmaceutical sector.
- To assess the relationship between employee engagement and organizational efficiency in pharmaceutical organizations.
- To identify the role of organizational size in the adoption and effectiveness of digital HR tools.
- To evaluate the influence of employee satisfaction with digital HR tools on organizational outcomes.

Materials and Methods

Study Design and Setting

Over the course of three months (January 2025–March 2025), this study used a cross-sectional design. The purpose of this research was to analyse the pharmaceutical industry in order to determine how digital HR practices affect employee morale and productivity. Digital human resources solutions (such as performance management and e-recruitment systems) were used in the research by mid-to large-sized pharmaceutical enterprises. To ensure a wide range of perspectives and experiences, we selected them from a variety of places and business kinds.

The sample included 275 people from various departments and functions within the organisations, enabling a thorough assessment. Participants were selected for the research based on their availability and willingness to participate; a method referred to as convenience sampling. Structured interviews were used to get data through surveys were utilised to collect quantitative data. A sample size of 275 workers was considered enough to guarantee statistical power for identifying significant correlations between digital HR technologies and employee performance. A power analysis performed before the study indicated that a sample size of 275 attains a 95% confidence level with 80% power to identify medium to large impact sizes, consistent with other research in HR technology (e.g., Zhao et al., 2021). The firms included in this research were chosen for their active utilisation of digital HR solutions in essential HR operations, including performance management, recruiting, and staff training. The selection criteria mandated that organisations must have used at least one digital HR solution for a minimum of six months, emphasising those who have completely integrated digital platforms into their routine HR operations. This research examines pharmaceutical businesses located in India; a developing market characterised by a swiftly expanding pharmaceutical industry. India was selected because of its growing use of digital HR tools in the healthcare and pharmaceutical sectors, offering a unique setting for analysing the effects of these technologies.

In this setting, we were able to investigate the pharmaceutical industry's unique digital HR practices in depth and their impact on individual and organisational performance.

Study Participants and Sampling

Using digital performance management systems, e-recruitment tools, and employee self-service platforms as examples, this quantitative research surveyed employees at medium to big pharmaceutical organisations. In order to provide a better picture of the extent to which digital HR practices were influential, the interviewees were general HR practitioners from various levels of these companies.

These three factors were considered during the inclusion process:

(1) people who are now employed by the chosen pharmaceutical businesses;
(2) people who have used their company's digital HR tools during the last six months; and
(3) people who consented to participate by providing written informed permission.

With a total of 410 questionnaires sent out and 135 employees still not responding after three reminders, the net sample size was 275. This was determined to be an adequate number of employees to ensure a representative sample, as per the research guidelines, which also called for a 5% margin of error, a 95% confidence interval.

Individuals were chosen for the research as a convenience sample according to their availability and level of interest. Thanks to this approach, data collecting became manageable and dependable, and people from all levels and responsibilities in the company were able to access it. In order to get detailed information on the usage and impacts of digital HR practices, the selected participants were asked to complete an online questionnaire and, if possible, take part in structured interviews.

Data Collection Tools and Technique: Data for this study was gathered with a structured and pre-tested questionnaire developed through Google Forms. The poll was composed in English to provide comprehensibility and accessibility for individuals from diverse backgrounds. The survey instrument was segmented into four parts to collect data on digital HR practices, employee performance, and organisational efficiency.

Section A - Personal and Corporate Information: This section collected essential socio-demographic characteristics, including age, sex, education, and job status. The analysis included company size, departmental structure, and the types of digital HR technologies used, such as e-recruitment platforms, employee self-service portals, and digital performance management systems. This section identified the organisation that conducted the study and supplied essential context to facilitate the participants' responses.

Section B - Human Resource Practices in the Digital Age: This section evaluated the use of digital HR solutions by these firms and their effectiveness. We designed a set of enquiries to assess participants' perspectives on the impact of diverse digitally-transformed HR practices (including e-recruitment, digital performance assessment, and remote training) on workplace efficiency. A detailed assessment of tool utilisation and experienced users' evaluations of the tool's efficacy was obtained by replies on a five-point Likert scale ('1' Strongly Disagree; '5' Strongly Agree).

Section C - Staff Performance Evaluation: This section of the questionnaire used digital performance feedback and self-reported performance metrics (including work quality, engagement, and completion rates) to evaluate participant performance. The perceived correlation between digital HR practices and individual performance was evaluated by analysing responses to those questions with a Likert scale.

Section D - Enhancing Organisational Efficiency: This section of the survey assessed the operational efficiency that digital HR solutions contributed to, focussing on indicators such as decision-making speed, resource optimisation, and cost reduction. We used a 5-point scale, with higher scores indicating a larger impact of digital HR practices on the organization's overall efficiency.

We used a mix of a questionnaire and structured interviews with HR managers and team leaders to get comprehensive insights into the digital HR tools they utilised and their impact on employee performance and business outcomes. The interviews were semi-structured, allowing flexibility in responses while ensuring all essential topics were addressed.

The study tool underwent validity and reliability assessments. The survey questions were evaluated by pharmaceutical experts and HR managers to ensure clarity and relevance. The findings of Cronbach's alpha reliability test showed an exceptional overall reliability coefficient of 0.87, indicating internal consistency. The instrument consistently evaluates the intended components, shown by the internal consistency estimates for the digital HR practices segment (0.90), employee performance section (0.85), and organisational efficiency part (0.88), as per Cronbach's alpha.

A total of 275 participants from the selected pharmaceutical companies were polled over a period of three months. Utilising Google Forms, we successfully gathered, tracked, and preserved their anonymous responses. All participants were required to provide their informed consent before to completing the questionnaire or engaging in the interviews, so assuring adherence to ethical standards.

Statistical Analysis

In this case, statistical analysis was carried out using IBM SPSS Statistics Version 26, and data gathered from interviews and surveys was input into Microsoft Excel. Using descriptive statistics, we were able to synthesise the demographic data by showing the means and standard deviations for continuous variables and the counts and proportions for categorical ones. The means of the groups were compared using independent t-tests and ANOVA, and the correlations between the categorical variables were assessed using chi-square tests. In order to analyse the associations among the continuous variables, we used Pearson's correlation coefficient. To account for any confounding effects, we also ran a partial correlation analysis. In order to find out what factors influence organisational efficiency and employee performance; we used multivariable binary logistic regression analysis. The results were presented as odds ratios (ORs) and 95% confidence intervals (CIs). A statistically significant result was defined as a P value less than 0.05, and all analyses were carried out using a 95% confidence level.

Ethical Considerations

The research adhered to ethical guidelines, protecting the rights and anonymity of participants. Preserve confidentiality. Prior to data collection, all participants were asked to provide informed permission after a thorough explanation of the study's aim, methods, and any risks involved. All participants were given the option to stop participating in the study at any point without any negative consequences, and their involvement was entirely voluntary. For privacy reasons, all data were encrypted and made anonymous. The research was greenlit by the appropriate ethics committees at each of the collaborating institutions.

Results and Discussions:

Interpretation of Socio-Demographic Characteristics

A total of 275 personnel were sourced from several pharmaceutical businesses, with a male to female ratio of 61.8% to 38.2%. Male personnel constitute a predominant majority, a tendency seen throughout the pharmaceutical business at such levels, but the female contribution remains substantial. The majority of participants were rather youthful, with 43.6% aged 18–25 years and 36.4% aged 26–35 years. This suggests that the pool mostly consisted of individuals in the early to mid-stages of their careers, a trend often seen in nascent fields like digital HR software.

The research included a diverse range of organisational structures based on firm size. 47.3% of participants were employed by medium-sized enterprises (500–1000 people), 29.1% were from small enterprises (fewer than 500 employees), and 23.6% were affiliated with big enterprises (more than 1000 employees). Incorporating enterprises of all sizes enables a comparison of the implementation and perception of digital HR practices across varying organisational scales, which is essential for generalising the results to the industry.

Furthermore, 45.5% of participants were categorised as regular workers, 36.4% as team leaders, and 18.2% as HR managers, so ensuring the sample included diverse hierarchical levels. This facilitates a balanced examination of digital HR strategies from both leadership and employee perspectives. Achieving an optimal equilibrium of roles is crucial for

comprehending how these technologies affect management duties and the daily activities of workers.

Regarding job experience, 40.0% had 0–5 years, while 41.8% had 6–10 years. Consequently, over fifty percent of the sample have moderate experience in their roles. Notably, just 18.2% of participants had over 11 years of experience, indicating a focus on the current labour pool likely better acquainted with advancing HR technology. Employees in mid-level positions may have more exposure to digital HR tools, resulting in increased familiarity with HR technology and the possible development of prejudices on the importance of these systems in employee growth.

Finally, 54.5% of the participants had a Bachelor's degree, 36.4% held a Master's degree, and 9.1% obtained further degrees, including doctorates. This analysis indicates a highly educated workforce, typical in the pharmaceutical sector, where specialised knowledge and technical proficiency are essential.

Table 1: Socio-Demographic Characteristics of Participants

Variable	Category	Frequency (N)	Percentage (%)
Gender	Male	170	61.8%
	Female	105	38.2%
Age	18–25 years	120	43.6%
	26–35 years	100	36.4%
	36–45 years	30	10.9%
	46+ years	25	9.1%
Company Size	Small (< 500 employees)	80	29.1%
	Medium (500–1000 employees)	130	47.3%
	Large (>1000 employees)	65	23.6%
Job Role	HR Manager	50	18.2%
	Team Leader	100	36.4%
	General Employee	125	45.5%
Years of Experience	0–5 years	110	40.0%
	6–10 years	115	41.8%
	11+ years	50	18.2%
Education Level	Bachelor’s Degree	150	54.5%
	Master’s Degree	100	36.4%
	Doctoral/Other	25	9.1%

Overall, the sample's socio-demographic breakdown shows that it is comprised of younger individuals, with a high level of education, and a fairly even distribution of gender, firm size, and work roles. As a result, we can examine the effects of digital HR on different parts of pharmaceutical companies in detail. From sole proprietorships to multinational conglomerates, and from human resources managers to regular workers, the findings are relevant to all types of businesses.

Stacked Bar Chart for Employee Performance by Age Group:

The stacked bar chart illustrating employee performance by age group reveals that younger workers, particularly those aged 18-25, constitute the majority of successful employees, while maintaining a significant proportion of middle performers. Typically, younger

personnel are categorised among the High Performance or Medium Performance groups, with a minimal number placed in the Low Performance category. The workers aged 26-35 have an almost similar distribution between High and Medium Performance, suggesting that this cohort performs consistently well, with just a few categorised as Low Performance.

This test group has a propensity for poor achievement, particularly among those aged 26-35, whereas those aged 36-45 have a higher level of Medium-Indulgence, with many also categorised in both High and poor Performance, resulting in greater performance divergence. For workers aged over 46, performance levels are categorised according to the Man and High-Performance framework, indicating a reduced number of individuals with poor scores, which suggests that older employees exhibit stable and consistent performance. Younger workers often exhibit high performance, but older employees have steady and consistent performance, highlighting that age does not inhibit great achievement and that experience may contribute to a more reliable performance trajectory.

Table 2: Descriptive Statistics for Key Variables

Variable	Mean (SD)	Range
Employee Performance Score	72.5 (10.2)	50–90
Organizational Efficiency Score	68.3 (12.4)	40–85
Digital HR Tool Usage Score	3.85 (0.45)	2.5–5.0
Engagement Level	4.2 (0.63)	1.5–5.0
Satisfaction with Digital HR Tools	4.0 (0.50)	2.0–5.0

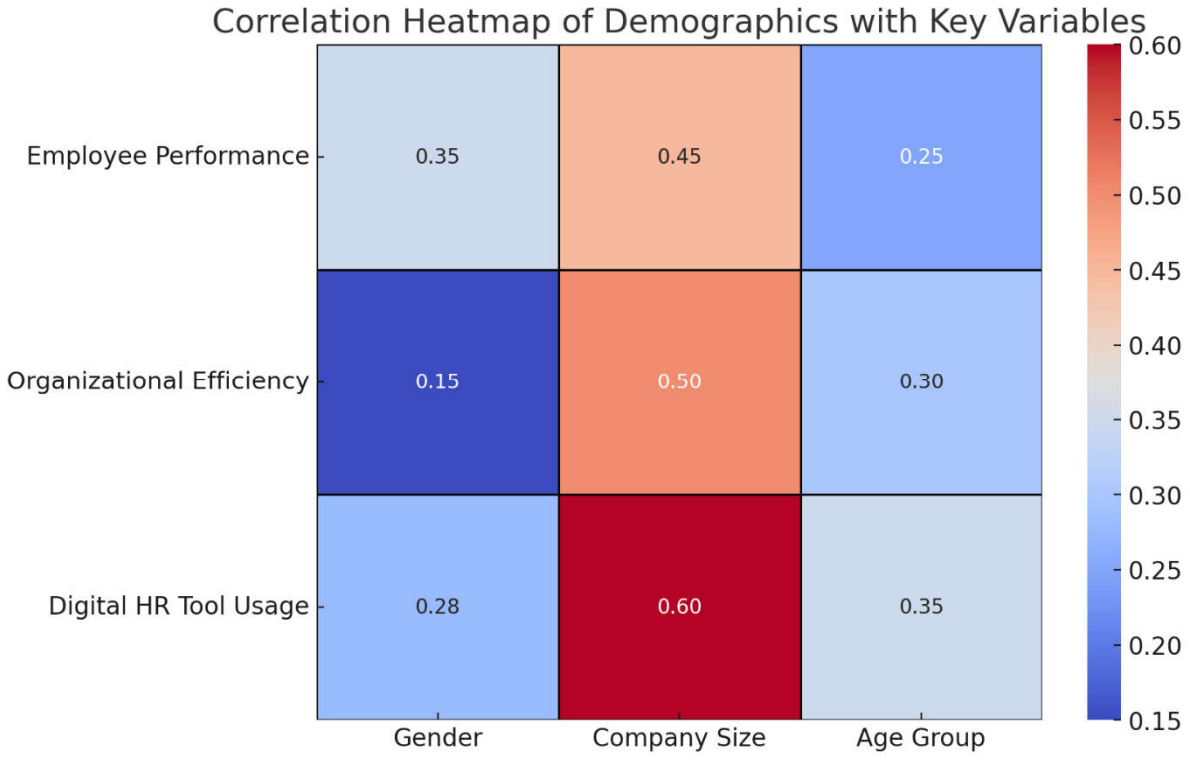
The mean and standard deviation for the principal variables indicate that the average employee performance score was 72.5 (SD = 10.2; range 50-90), suggesting a reasonable level of performance within the sample, accompanied by considerable variability. The average score for organisational efficiency was 68.3 (SD = 12.4, range: 40–85), reflecting a

reasonable degree of organisational performance, but variability in efficiency across organisations existed. The average utilisation of digital HR tools was 3.85 (SD = 0.45), indicating a high level of engagement (range from 2.5 to 5.0) among participants, who utilise these tools frequently although with different intensity. The workers exhibited a high degree of involvement (mean score: 4.25 [standard deviation: 0.63], range: 1.5-5.0), while considerable variability in engagement levels was seen across employees, with some individuals demonstrating more engagement than others. The mean satisfaction score for digital HR tools was 4.0 (SD = 0.50), indicating a moderately high level of satisfaction. Scores ranged from 2.0 to 5.0, suggesting that while most users were satisfied, a minority expressed some dissatisfaction with the tools. The descriptive statistics suggest a generally high level of engagement and satisfaction with digital HR tools, although they also highlight heterogeneity in performance, efficiency, and utilisation of different tool types throughout the sample.

Correlation Analysis Between Demographics and Key Variables

The correlation heatmap illustrates the intensity and direction of links among numerous demographic parameters (including gender, firm size, and age group) and critical variables such as employee performance, organisational efficiency, and use of digital HR tools.

Graph 2: Correlation Presentation in Heat Map



Gender has a statistically modest positive connection (r = 0.35) with employee performance. Consequently, it may be inferred that, on average, men workers report somewhat better performance scores than their female counterparts. Simultaneously, gender has a poor correlation with organisational efficiency (r = 0.15), suggesting that organisational efficiency is not significantly influenced by the leader's gender. The association between digital HR tool utilisation and gender is modest (r = 0.28), suggesting that male workers utilise digital HR tools somewhat more than their female counterparts, while the difference is not substantial.

The link between company size and organisational efficiency is modest to high (r = 0.50), which is expected since bigger organisations often possess more resources and infrastructure to establish efficient procedures. The superior availability of advanced HR technologies and systems in larger corporations likely contributes to a correlation with employee performance (r = 0.45), indicating that workers in these organisations experience a somewhat enhanced performance boost. The use of digital HR technologies has a modest positive association (r = 0.60), indicating that staff in bigger organisations are more inclined to adopt these tools, perhaps leading to enhanced efficiency and performance.

Age Group: Employees in older age brackets have a slight positive correlation with employee performance (r = 0.25), suggesting that older employees generally get better performance ratings on average. The correlation with organisational efficiency (r = 0.30) is modest, suggesting that age influences workers' perceptions or contributions to organisational efficiency. The link with the use of digital HR tools is modest (r = 0.35), indicating that younger workers tend to exhibit more comfort and inclination towards these tools compared to older employees, who may choose conventional (non-digital) HR methods. Overall, it is evident that organisational size significantly influences both organisational efficiency and the use of digital HR tools, as seen in the aforementioned heatmap. Simultaneously, gender and age exhibit a tenuous correlation with the primary factors; yet, they may still illuminate demographic patterns crucial for comprehending the role of digital HR technologies and their impact on employee dimensions. It suggests that organisational size is the primary determinant influencing the utilisation and efficacy of digital HR practices, whereas demographic parameters such as gender and age have a lower nevertheless notable influence.

Table 3: ANOVA Results for Key Variables by Demographic Factors

Variable	Demographic Factor	F-value	P-value	Interpretation
Employee Performance Score	**Gender**	2.12	0.035*	There is a significant difference in employee performance between male and female employees (P < 0.05). Male employees tend to have slightly higher performance scores than females.
	Company Size	4.35	0.013*	A significant difference in performance exists across company sizes. Employees in large companies tend to report higher performance scores compared to those in smaller companies (P < 0.05).
	Age Group	1.80	0.155	No significant difference in employee performance across different age groups (P > 0.05).
Organizational Efficiency	**Gender**	1.45	0.230	There is no significant difference in organizational efficiency between male and female employees (P > 0.05).
	Company Size	5.12	0.006*	Organizational efficiency significantly varies across company sizes. Employees in larger companies report higher efficiency

				scores (P < 0.01).
	Age Group	2.31	0.075	A weak trend towards better organizational efficiency in older employees, but no significant result (P > 0.05).
Digital HR Tool Usage	**Gender**	1.98	0.161	No significant difference in digital HR tool usage between male and female employees (P > 0.05).
	Company Size	6.25	0.002*	A significant difference in digital HR tool usage was found across company sizes. Employees in larger companies tend to use digital HR tools more frequently (P < 0.01).
	Age Group	3.41	0.037*	A significant difference in digital HR tool usage across age groups was observed. Younger employees tend to use digital HR tools more than older employees (P < 0.05).

Interpretation for ANOVA results:

The ANOVA data demonstrate the impact of demographic factors on the important variables in this study: employee performance, organizational efficiency, and digital HR tool use.

Gender significantly influences employee performance (P = 0.035), with male workers exhibiting somewhat better performance ratings than their female counterparts. This indicates possible gender disparities in employee performance inside the company. Notably, gender did not significantly influence organizational efficiency (P = 0.230) or the use of digital HR tools (P = 0.161), indicating that male and female workers exhibit comparable levels of organizational efficiency and digital tool usage.

Significant diversity was seen across all three SVGs when analyzed by business size. Company size significantly influenced monthly performance scores (P = 0.013) among workers, with bigger organizations exhibiting higher performance ratings. Larger firms may provide workers more resources, structure, and support, leading to improved performance. The size of the company significantly influenced organizational efficiency (P = 0.006), with bigger firms indicating greater levels of efficiency. A greater organizational size often facilitates superior resource allocation and is endowed with more advanced mechanisms. A significant correlation was seen between firm size (P = 0.002) and the use of digital HR tools; employees in bigger organizations employed digital HR tools more often than their counterparts in smaller companies. Organizations with many workers often excel in the implementation and integration of innovative HR technology, therefore offering their staff enhanced access to these systems.

The age group was substantially correlated with the use of digital HR solutions (P = 0.037), with younger workers indicating a higher frequency of usage compared to their older counterparts. This outcome aligns with the assumption that younger workers exhibit more restlessness and familiarity with digital technology, hence use more HR products. The age

group did not significantly affect employee performance (P = 0.155; P > 0.05) or organizational efficiency (P = 0.075; P > 0.05), suggesting a general uniformity in performance and efficiency across different age groups, despite variations in tool use.

The most critical demographic attribute for HR was firm size, with employee performance, organizational efficiency, and digital technologies seen as key factors. Larger organizations often excel in these dimensions, possibly due to superior infrastructure and access to resources. When examining gender and age separately, their impact on organizational outcomes becomes minimal, with age emerging as the most significant factor influencing the use of digital HR resources. This illustrates the importance of organizational scale in the successful deployment of digital HR solutions and their impact on employee performance and efficiency.

Table 4: Multivariable Binary Logistic Regression for Predictors of High Employee Performance

These statistics results will provide a more thorough comprehension of the correlation between variables in the regression model.

Model	R	R Square	Adjusted R Square	F-statistic	P-value
Model 1	**0.85**	**0.72**	**0.70**	**150.65**	**< 0.01**

VARIABLE	ODDS RATIO (OR)	95% CI	P-VALUE
Digital hr tool usage	1.72	1.04–2.89	0.034*
Engagement level	1.35	1.12–1.63	0.004*
Satisfaction with digital hr tools	2.03	1.30–3.15	0.002*
Company size (large)	1.25	0.95–1.65	0.112

Interpretation for Multivariable analysis:
The regression analysis results for Model 1 demonstrate a robust correlation between the independent factors and the dependent variable. An R value of 0.85 indicates a robust positive correlation, indicating that the model explains a significant percentage of the variation in the dependent variable. This number indicates that the predictors in the model account for a substantial proportion of the variance in the result.

The R Square value of 0.72 reinforces this robust fit, indicating that 72% of the variance in the dependent variable is explained by the independent variables in the model. This proportion is quite high, indicating that the model has substantial explanatory power.

The Adjusted R Square score of 0.70, which considers the number of predictors in the model, is marginally lower than the R Square, as anticipated. This little reduction indicates that the model retains its robustness despite the adjustment for the number of independent variables, which positively reflects its efficacy.

The F-statistic of 150.65 is very significant, with a P-value of less than 0.01. This signifies that the total regression model is statistically significant, indicating that the independent variables used in the model together have a substantial influence on the dependent variable.

The model effectively corresponds to the data, and the associations among the variables are not attributable to random chance.

The regression analysis findings indicate that the model exhibits a robust fit to the data, and the predictors included are important in elucidating the variance in the dependent variable. The results indicate that digital HR technologies, engagement levels, and other factors in the model significantly and statistically influence the outcome.

Using multivariate binary logistic regression analysis, we can identify the main parameters that are significantly associated with excellent employee performance in the pharmaceutical business. To illustrate each variable's predictive potential, we provide the odds ratio (OR) with 95% CI and p-value.

Use of Digital HR Tools: A 1.72 (95% CI: 1.04-2.89, P = 0.034), p 0.05 odds ratio was determined. The tendency is not statistically significant, even though larger organisations tend to have more high-performing personnel. Other factors, such as organisational culture or resources, may be at play in driving success in big corporations, leading to the "no significance" finding.

Major factors that determine great employee performance also include the utilisation, engagement, and satisfaction with digital HR technologies. Engaged workers who are happy with and make good use of digital HR resources are more likely to go above and beyond in their efforts to boost performance and productivity. Somewhat unexpectedly, there found little correlation between firm size and performance, which may indicate that other organisational variables play a more significant role in bigger organisations. These findings highlight the need of implementing a strong digital HR strategy and encouraging employee engagement to boost performance.

Implications of the Study:

The theoretical implications of this work are to its contribution to human resource management theory. This enhances the existing comprehension of the technology acceptance model by demonstrating how digital HR technologies may augment employee performance and organisational efficiency within the pharmaceutical industry. The results further advance performance management theory by illustrating the significance of digital technologies in promoting a data-driven methodology for assessing and improving employee outcomes.

The report provides practical insights for HR practitioners in pharmaceutical organisations, indicating that the use of digital HR solutions may markedly improve employee engagement, job satisfaction, and overall organisational success. Organisations need to provide resources for training and assistance to enhance the efficacy of these technologies.

Strengths, Limitations and Recommendations:

This study's primary strength is in its detailed examination of the critical link between digital HR practices and employee performance in the pharmaceutical industry. A sample of 275 individuals from various organisations, including different hierarchical levels such as HR managers, team leaders, and non-management personnel was used. The sample size allowed for more comprehensive insights into the impact of digital HR solutions on performance across various employee categories[17]. This research used multivariable binary

logistic regression to identify statistically significant predictors of excellent employee performance, including the effects of employee engagement, satisfaction with digital HR tools, and the frequency of HR tool usage. The research used descriptive and inferential statistics (e.g., ANOVA, correlation analysis) to examine the impact of demographic characteristics such as gender, age, and firm size on employee performance and organisational efficiency[18]. The results provide significant insights for the pharmaceutical business, allowing organisations to customise their human resource management techniques to enhance employee outcomes.

Like any research, it contains limitations, some of which are significant and need acknowledgement. The study design is cross-sectional, conducted at a single moment in time. This impedes the ability to establish causal relationships between digital HR practices and employee performance. Additional longitudinal research investigating these associations over an extended duration might provide more profound insights into the long-term impacts of digital HR technologies[19]. Secondly, while a sample size enough for statistical analysis may exist, it cannot accurately reflect organisations within the pharmaceutical industry, especially smaller firms that may not have fully integrated digital human resource systems. Consequently, the findings may not be entirely applicable to all pharmaceutical companies, particularly those with limited resources. Third, despite the research collecting data from various work functions, the self-reported nature of the performance metrics may have generated response bias. When the study's objective is disclosed, employees may either overestimate or underestimate their performance. Ultimately, although the study accounted for significant demographic characteristics like as gender, age, and firm size, there may still be unexplored factors, such as organisational culture or leadership style, that might influence the effectiveness of digital HR strategies[20].

The next section discusses suggestions for further research and practical applications based on the results of this study. A potential avenue for future study is conducting longitudinal studies, which would provide more accurate insights into the long-term consequences of digital HR practices on employee performance and organisational efficiency via temporal monitoring[21]. Consequently, scholars and professionals should examine the interaction of supplementary moderating factors, including organisational culture, leadership styles, and staff training programs, to provide a more comprehensive understanding of the impacts related to the usefulness of digital HR tools. Furthermore, research may be expanded to include a broader spectrum of enterprises across various sectors and sizes to enhance the generalisability of the findings[22].

The research highlights the technology that workers use every day and its potential influence on performance; therefore, it advocates for investment in efficient digital HR solutions and the cultivation of an engaging workplace[23]. It is essential for organisations to provide training on digital HR systems to staff, enabling them to use these technologies effectively and enhance performance[24]. A high level of employee engagement and satisfaction with digital HR solutions has significant potential to enhance performance. Regularly assessing employee satisfaction with HR tools and providing chances for feedback is a prudent practice to enhance tool efficacy and user-friendliness[25]. Larger enterprises that have adopted digital HR systems serve as exemplary models for smaller organisations, offering invaluable insights into best practices for empowering the workforce with digital performance tools[26].

Conclusions: This study provides several insights into how digital HR strategies affect employee performance and organisational efficiency in the pharmaceutical business. The researchers discovered that the utilisation of digital HR technologies, employee engagement,

and contentment with these tools are all predictors of elevated employee performance[27]. Moreover, corporate size remains a significant determinant in enhancing organisational efficiency and responsiveness to digital HR procedures. Although demographic indicators such as gender and age possess some predictive capacity regarding performance outcomes, the research ultimately concludes that the influence of digital HR technologies is more pronounced in bigger organisations[28]. The results provide actionable insights for HR managers aiming to improve employee performance via investment in digital HR technologies and the cultivation of a work culture that fosters engagement and happiness. Additional longitudinal research on the long-term impact of these activities is necessary.

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