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Unlocking the Potential: Assessing the Influence of Electronic Human Resource Management on Innovative Performance, Productivity, and Cost Efficiency with Employee Satisfaction as a Key Mediator

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ABSTRACT

Human resources (HR) have taken on a new face with the advent of electronic human resource management (E-HRM), which results from intranet and internet technology. This study investigates the function of E-HRM in Pakistan and its impact on HRM productivity, innovation performance, and cost efficiency, given the significance of HRM in a company's competitive advantage. The research employs multiple linear regression as a model to examine the effect of E-HRM activities (e-recruitment, e-training, e-compensation, e-communication, and e-performance appraisal) and also assess the impact of employee satisfaction on HRM performance (productivity, innovation performance, and cost efficiency). Moreover, the study analyses 205 respondents' complete answers by substantiating the research. The study's findings showed that information technology improves employee satisfaction and productivity in HRM, performance in innovation, and cost-effectiveness. The findings of this study may also help managers in various organisations to focus on the elements that can increase employee motivation and satisfaction levels. It can assist the organisation in achieving its objective, which may improve organisational performance.

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INTRODUCTION

Technological advancement remains a primary cause of revolutionising the organisational activities with results that enable the concepts, i.e. e-commerce, digital business and E-HRM, to produce modern and integral operations (Bissola & Imperatori, 2018; Bondarouk et al., 2017). Moreover, organisational capabilities expand by utilising technological tools — artificial intelligence, cloud computing and mobile applications. Subsequently, the collaboration between employees and the organisation shifted to network-based by sharing information and accessing materials, which enhanced the productivity of the organisation (Johnson et al., 2016; Stone et al., 2015).

As a further matter, in contributing to the technology advancing the economy into knowledge-based, HR performance could never be minimised, which essentially maintained the environment of competitive advantage, on the one hand. On the other hand, E-HRM streamlined activities on web-based technologies by entertaining the role of managers and offering self-service portals. Subsequently, it managed the data efficiently. As advancement is progressive in its nature; thus, predictive analytics and AI-driven recruitment are recently advanced recruitment tools that not only optimise the HR process but also provide extensive insights to manage the workforce and enhance the capabilities of decision-making (Strohmeier, 2020).

In this paper, the technological advancement in HR can be substantiated by sorting out the following objectives:

TO ASSESS THE INFLUENCE OF E-HRM ACTIVITIES ON EMPLOYEE SATISFACTION

TO ANALYSE THE RELATIONSHIP BETWEEN EMPLOYEE SATISFACTION AND HR PERFORMANCE

This research contributes to the existing body of knowledge by addressing a broader range of E-HRM activities and their relationship with employee satisfaction and organisational performance. Unlike prior studies, which often focus on isolated aspects, this study provides a holistic perspective, filling a significant gap in the literature (Strohmeier & Parry, 2021;) (Bondarouk et al., 2017). The findings offer actionable insights for HR managers to foster a positive work environment, enhance productivity, and improve cost-efficiency through targeted E-HRM practices.

LITERATURE REVIEW

Background of Problem

HRM requires IT for at least three reasons: first, it can handle the complexity of all HRM challenges (for example, legislator-mandated reporting), and second, it can measure the performance indicators that HRM practices must monitor and learn about.

E-HRM encompasses a wide range of technological interventions in HR practices. According to Parry and Tyson (2011), E-HRM can be categorised into three primary dimensions: operational, relational, and transformational. Operational E-HRM focuses on automating HR administrative tasks, relational E-HRM enhances employee communication and interaction, and transformational E-HRM aims to align HR strategies with organisational goals, fostering innovation and strategic agility.

HRM strategies can enhance managerial influence by demonstrating their effectiveness through tangible outcomes. The American Society for Personnel Administration, which later became the Society for Human Resource Management (SHRM), began setting professional standards to assess HRM success in 1984 (Shrm, 2021). HRM performances should encompass technical HRM, providing essential HRM services, and strategic HRM, all aimed at directly improving organisational performance (Boxall & Purcell, 2016; Gould-Williams, 2007).

While E-HRM provides cost-effective and rapid solutions, its implementation requires significant investment, raising questions about its tangible impact on organisational outcomes. Existing research highlights the strategic role of HRM systems in driving performance and achieving competitive advantage (Bissola & Imperatori, 2019). However, the extent to which E-HRM enhances employee satisfaction and HR performance remains underexplored. This study examines how E-HRM activities—such as electronic training, communication, performance evaluation, and recruitment—impact employee satisfaction and HR performance within oil companies in Karachi, Pakistan.

In conclusion, debates over the discrepancy between Human Resource Management (HRM) and Information Technology (IT) have been ongoing. This stems from scepticism regarding its impact on enhancing HRM processes' efficiency. The main points of contention involve the leadership roles of HRM and IT functions. Scholars have raised concerns about HRM-related technology's unintended and dysfunctional consequences, such as the "digital divide" and potential privacy violations (Parry & Tyson, 2011; Strohmeier, 2007). HRM professionals are encouraged to foster strong collaboration between HRM and IT and to address any misalignment by focusing on IT management issues (Cascio & Boudreau, 2016). The researcher aims to enhance understanding of this problem and provide further insights through this study.

This finding is corroborated by a study by Nwibah (2020), which highlighted that satisfied employees are generally more engaged, innovative, and productive, contributing positively to the organisation's bottom line.

Technology and Business

The majority of organizations for economic corporation and development (OECD) and European union (EU) nations have set goals for growing public and corporate research and development (R&D) spending, with the more or less explicit belief that these investments will pay off. According to Wright and Dunford (2001), there are six ways that research might be profitable: 1) Increasing the body of information that is helpful; 2) educating highly qualified advances; 3) developing new scientific instruments and techniques; 4) establishing links and promoting social contact; 5) enhancing the ability to solve scientific and technological problems; and 6) establishing new businesses.

As previously mentioned, investing in R&D is a required but not enough condition for raising TFP, according to economic growth theories. The empirical data is, in fact, inconclusive. For example, F Freeman and Kleiner (2000) have argued that, in comparison to what is socially optimal, the decentralised economy typically underinvests in R&D. F Fairbank and Williams (2001) agree, arguing that conservative approximations suggest that the most favourable R&D investment is at least two to four times actual investment. This "under-investment" could help explain Hennig-Thurau's (2004) conclusion that R&D contributes very little to productivity growth.

Some tiny northern European nations, like Estonia and Ireland, saw fast business enterprise expenditure on research and development (BERD) growth from low levels combined with strong economic development (at least until the financial crisis) starting in the early 2000s. Both instances have growth-promoting external factors: while inward investment businesses account for a sizable portion of innovative activity, state R&D spending and support for commercial R&D were greatly increased by the EU's Structural Funds. In terms of policy, creating plans to integrate industrial learning into the community's economics may be crucial.

Electronic Human Resource Management

The works on E-HRM demonstrate that its three primary goals are improving HR services, reducing costs, and boosting tactical orientation (; Ruël et al., 2007) (Kassim et al., 2012). Furthermore, the following list of four seeming stresses may be alleviated by organisations through the use of IT. Cost management is one of the demands on the HR department that must be effectively handled. First and foremost, the HRM division needs to focus on strategic matters. Second, the policies and procedures of this department must

be flexible. Thirdly, the HRM division should be aware of the costs and run as efficiently as feasible. Being service-oriented towards management and staff is the last major pressure that has been mentioned (Ruël et al., 2007).

The relationship between HRM, a firm's strategy, and performance has been examined in earlier research on human resource management and strategy by McEvoy and Cascio (1989). First, the role that human resources play in providing organisations with a competitive edge was demonstrated through an analysis of relevant literature. Their multi-level approach illustrated how human resource management affects both the organisational and individual parts of an organisation's strategy. Technologies and analytics for human resources have completely changed the way businesses provide HR services. There is little research on application, management, or selection because HR is complicated and regulated. The study was conducted in 2012 with the goal of creating a framework that clarifies the choice characteristics, data needed, HR metrics for decision-making, and different levels of HR activity. Stone and Dulebohn (2013) provided several study concepts and model implications.

Research Hypothesis

The development of the hypotheses aims to achieve the study's objectives. For this investigation, there are two primary hypotheses and eight supporting hypotheses.

H1: There is a significant relationship between e–HRM activities and employee satisfaction.

H1A: There is a significant relationship between e-recruiting and employee satisfaction.

H1B: There is a significant relationship between e-training and employee satisfaction.

H1C: There is a significant relationship between e-communication and employee satisfaction.

H1D: There is a significant relationship between e-compensation and employee satisfaction.

H1E: There is a significant relationship between e-performance appraisal and employee satisfaction.

The analysis was conducted using five variables: e-training, e-recruitment, digital communications and interactions, e-compensation, and e-performance appraisal. Previous quantitative and qualitative research suggests that information technology could be a major factor in directing more effort towards providing services that have brought specific value to the company. E-HRM

activities involve recruiting, training, development, remuneration, benefits, communication, and performance review to provide and deploy human resources.

E-HR's impact on the HR industry can be viewed as both a challenge and an opportunity. First off, regular activities and administrative work take less energy from employees. Second, in order to adapt HR department operations to new, evolving business conditions, e-HR professionals who comprehend both business operations and information technology are required. Thirdly, in order to collaborate with managers who possess advanced education, E-HR requires HR specialists. To address the likely issues, they must comprehend the business (Bartol & Liu, 2002; Bell et al., 2006; Bondarouk & Ruël, 2009).

According to Bondarouk and Ruël (2009), e-HR eliminates the "HR middleman," potentially requiring fewer HR specialists. More precisely, HR departments will leverage information technology appropriately to offer a range of services to employees, senior management, and line managers (Strohmeier, 2013). This presents an additional chance for the HR industry to assume the lead in creating E-HR features. It does, however, require the HR specialist to learn about fundamental IT matters as well in order to maximise the effectiveness of IT-based communication.

Internal communication amongst human resource professionals is the highest use of technology in various HR activities, as communication is the most specific role that the internet plays in business. The expected decline in internal communication can be attributed to issues with online communication that organisations face, such as a higher risk of misinterpretation and misunderstanding, as well as the already high use of technology relative to other functions. If HR departments can use information technology to give accurate, comprehensive, and sufficient information, managers and employees will participate more actively in the strategic planning process (; Ruël et al., 2007) (Palaiologos et al., 2011). The HR department uses information technology to make it more strategic.

H2: There is a significant relationship between employee satisfaction and HRM performance.

H2A: There is a significant relationship between employee satisfaction and HRM productivity.

H2B: There is a significant relationship between employee satisfaction and HRM cost efficiency.

H2C: There is a significant relationship between employee satisfaction and HRM innovation performance.

Three factors are considered while evaluating performances: cost-effectiveness, productivity, and innovation performance. Most studies that discuss the effects of E-HRM point to lower costs and fewer administrative chores; however, we also need to consider the additional time that employees and middle managers require to complete their own administrative responsibilities. The company's revised strategy, culture, and structure—which promotes decentralisation and standardisation of the HR process—are the most significant effects of E-HRM. For instance, line managers and employees both experience changes as a result of E-HRM. They have the chance to participate in online forums or stay informed about organisational advancements (Parry & Tyson, 2011; Ruël et al., 2004). On the one hand, the removal of administrative responsibilities frees up more time for strategic operations, as previously noted in the literature.

In contrast, personnel reductions and lower employee turnover result from technological investments, as claimed by H Halbesleben and Buckley (2004). According to a study, there is a strong correlation between HR practices and HRM outcomes including commitment, motivation, absenteeism, turnover, and satisfaction in particular. Furthermore, a correlation has been established between these results and overall organisational performance outcomes, such as productivity, quality, and customer satisfaction (Savaneviciene & Stankeviciute, 2011).

Ruel and Bondarouk (2007) proposed four alternatives that allow both HRM and E-HRM activities to achieve their overall goals. First off, a high level of dedication indicates that the staff is driven enough to communicate with the manager about changes taking place in the work environment. Second, high competence denotes a trustworthy working relationship between management and employees. Thirdly, cost-effectiveness is mentioned in relation to "employees' turnover rate" and pay level competitiveness. Finally, there is a relationship between higher congruence and the personnel's "input, throughput, and output," as well as the internal organisation and reward system. The interests of the stakeholders should determine how these components are arranged. In keeping with the stated objectives, results will eventually surface if both the parties and the individual wish to be impacted by E-HRM. Enhancing HR services, cutting costs, and strengthening strategic orientation are the three main objectives of E-HRM, as demonstrated by the literature on the subject.

Conceptual Framework

The conceptual framework used in this study is based on Strohmeier's 2007 model, which is modified and adapted in Figure 1. grasp the broad effects of electronic human resource management (E-HRM) on industry competitiveness and its use in different HR roles requires a grasp of this paradigm. The aforementioned positions cover a wide variety of E-HRM tasks., such as HR

planning, acquiring HR (recruitment), HR evaluation (performance appraisal), communication, rewarding HR (performance appraisal, compensation and benefits), and developing HR (training and development, career management).

Figure 1 attempts to clarify the current discussion on the relationships between E-HRM, its results, and organisational performances. It illustrates how HR operations interact with technology's revolutionary effects on HR results and overall organisational success.

In conclusion, this section offers a visual aid for comprehending the complex interrelationships among E-HRM practices, their HR domain outcomes, and the ensuing effects on an organisation's competitiveness and overall performance. This paradigm is helpful in pinpointing the main areas where E-HRM may contribute significantly and showing how these efforts result in observable advantages for the business.

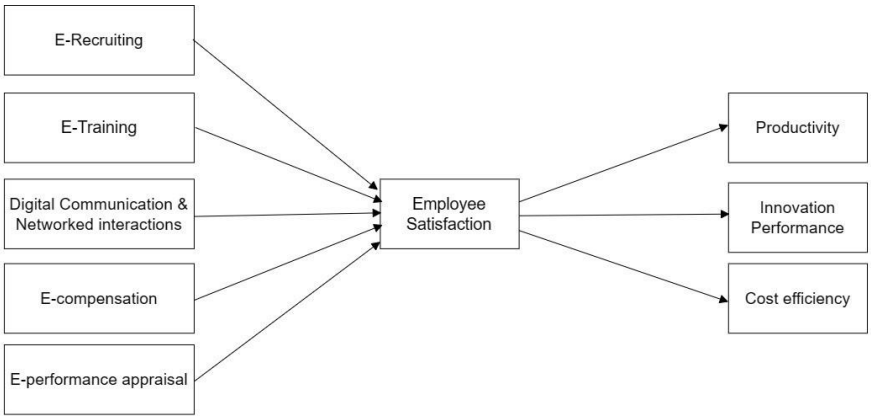

Figure 1: *Conceptual framework*

METHODOLOGY

Variables and Measures

This study uses a survey instrument that was influenced by Shane's study methodology to discover important aspects influencing human resource management (HRM) in an organised manner (Shane, L., 2009). The survey is carefully broken down into three sections: E-HRM activities, HRM outcomes, and HRM performances. Each segment focuses on a different facet of HRM. Appendix A offers a comprehensive overview of the survey items for your

reference.

The study quantifies the responses using a five-point Likert scale, an interval data measurement instrument; a score of 1 indicates strongly disagree, and a score of 5 indicates strongly agree. This scale is valuable in assessing the degree to which individuals agree or disagree with statements (Likert, 1932). The Likert scale is a useful tool in social science research due to its ease of use and ability to standardise responses, facilitating a thorough understanding of respondents' attitudes and perspectives on various HRM-related topics (Garland, 1991).

Additionally, the structure of the Likert scale simplifies data collection and analysis, enabling the application of statistical techniques to derive meaningful insights (Babbie, 2010). It provides a solid foundation for examining the effects of E-HRM activities on HRM outcomes and performance by quantifying subjective evaluations. This method ensures a comprehensive assessment of the perceptions of electronic HRM tools and their effectiveness in achieving HR and organisational goals (Devellis, 2017).

Sampling Design

Online questionnaires were used in this study's data collection, and only willing participants were given access to them. Usually, it took fifteen to twenty minutes to complete the survey. The personnel of Pakistani pharmaceutical companies were the main focus of the investigation. Email was used to distribute these questions, and emphasis was placed on the value of precise and comprehensive answers.

The convenience sampling strategy, which is a non-probability sampling method, was followed in selecting the sample size. This approach was selected because it is workable and simple to use, especially in an online environment. A total of 205 people provided responses. The study's intended demographic is reflected in the sample size, which also offers a sizable data set for analysis, guaranteeing a variety of viewpoints and insights pertinent to Pakistan's pharmaceutical industry.

DATA ANALYSIS PROCEDURE

SMARTPLS version 3.2.8, a powerful tool for Structural Model Partial Least Squares (PLS) analysis, was used in this work to analyse the data. This selection is in line with the study's goal of examining intricate connections between several factors in the context of HRM. Because of its ability to handle models with multiple predictors and its resilience when working with medium-sized samples like ours, SMARTPLS is especially well-suited for this type of research. Exploratory research is best done with PLS-SEM, which is a favoured method that

enables a thorough analysis of the direct and indirect effects of E-HRM activities on HRM outcomes and performances. This strategy follows the precedent set by related studies and is consistent with modern research procedures, guaranteeing that the study's conclusions are trustworthy and compliant with current academic standards.

Data Analysis

Response Rate and Sample Profile

205 responses in all were fully completed and used for analysis. The study employed the multiple linear regression method to examine the impact of E-HRM initiatives.

In order to determine whether there are any disparities between these groups, the respondents were split into four age groups: 18–24, 25–34, 35–44, and 45–55. 36.78% of participants are female, and 63.22% of participants are male overall.

Reliability and Normality Test

The degree to which responses collected simultaneously for different items exhibit strong correlations is measured by Cronbach's alpha. Cronbach (1951) developed this reliability coefficient, which has a range of 0 to 1. Alpha values greater than 0.65 are often considered appropriate in social science research (Cortina, 1993). The reliability test results for each item in this study are shown in Table

Table 1.
Reliability test

Factors	Cronbach's Alpha Value
E-Recruiting	0.819
E-Compensation	0.764
E-Training	0.802
Digital communication & interactions	0.819
E-Performance Appraisal	0.559
Employee Satisfaction	0.838
Productivity	0.722
Cost Efficiency	0.840
Innovation Performance	0.798

The majority of the study's criteria, according to the table, either satisfy or surpass this standard. The following exhibit good to exceptional reliability: employee satisfaction, productivity, cost efficiency, innovation performance, e-compensation, e-training, digital communication and interactions, and alpha values ranging from 0.722 to 0.840. With an alpha of 0.559, the E-Performance

Appraisal factor, however, is below the acceptable threshold, indicating that its measures do not have enough internal consistency and might use more examination or adjustment.

To determine whether the data were normal, a test was run. The purpose of this test was to ascertain the normal distribution of a random variable. In the event that the data were not regularly distributed, a key variable might be missing, the dependent variable might have the incorrect functional form, or at least one of the independent variables might. This study can determine the normalcy based on skewness data. For a normal distribution, skewness within the range of -1.05 to +1.05 is acceptable (Jarque & Bera, 1980). The skewness of the variable in this investigation is displayed in Table 2.

Table 2.
Skewness for measuring normality distribution

Factors	Skewness
E-Recruiting	-0.892
E-Compensation	-1.031
E-Training	-0.542
Digital communication & interactions	-0.814
E-Performance Appraisal	-0.425
Employee Satisfaction	-0.886
Productivity	-1.027
Cost Efficiency	-0.664
Innovation Performance	-0.581

llustrates that the study's factors, ranging from -1.031 for E-Compensation to -0.425 for E-Performance Appraisal, have skewness values that are all within an acceptable range. This suggests that the data distribution is adequately normal. Regression analysis cannot be valid unless the data are normal, which verifies that the data are suitably distributed for such parametric statistical operations. Therefore, the skewness test confirms that regression analysis was used in this study.

Hypotheses Test Results

Effect of E-HRM Activities on Employee Satisfaction

llustrates the findings from a multiple regression analysis examining the influence ofE-HRM activities on employee satisfaction. The analysis serves to test hypotheses H1a through H1e pertaining to the impact of specific E-HRM activities on employee satisfaction levels.

Note: ** Significant at the 0.05b^{ns} Not significant

Table 3.
Multiple regression analysis among E-HRM activities and employee satisfaction

Independent variables Employee Satisfaction			
Standardised	β	**T**	**P**
E-Recruiting	0.011	0.199	0.408
E-Compensation	0.281	4.892	0.000**
E-Training	0.340	4.874	0.000**
Digital communication & interactions	0.345	5.654	0.000**
E-Performance Appraisal	0.022	0.52	0.317
Adjusted R^2 = 0.853			
F = 568			

The link between each independent variable and the dependent variable, employee satisfaction, is indicated by the standardised beta coefficients (β). Employee satisfaction is found to be positively impacted by e-training (β =0.340, p<0.001), e-compensation (β =0.281, p<0.001), and digital communication and interactions (β =0.345, p<0.001). While their p-values are more than 0.05, e-performance appraisal (β = 0.022, p = 0.317) and e-recruitment (β = 0.011, p = 0.408) do not, in contrast, significantly impact employee satisfaction.

The adjusted R^2 value of 0.853 suggests that approximately 85.3% of the variance in employee satisfaction is explained by the model, which is a strong fit. The F statistic of 568, significant at p<0.05, further indicates that the regression model as a whole reliably predicts employee satisfaction.

According to the analysis, the three E-HRM activities that have the biggest beneficial impacts on employee satisfaction are e-training, Digital Communication and interactions, and e-compensation. In this context, the use of tools like email, social media, instant messaging, chat rooms, video conferencing, online training courses, and electronic payment systems is crucial. However, in the context of this study, e-performance appraisal and e-hiring do not provide a statistically significant positive contribution, suggesting that they might not be as important for raising employee happiness.

Effect of Employee Satisfaction on HRM Performances

The connection between employee happiness and HRM performance is examined using regression analysis. To determine if the developed hypotheses are rejected or not, they are compared to the analysis's findings. Multiple regression analysis was employed to examine H2a, H2b, and H2c. The findings are displayed in Tables 4, 5, and 6.

Note: ** Significant at the 0.05

Table 4.
Regression analysis between employee satisfaction and productivity

Independent variables Productivity			
Standardised	β	**T**	**P**
Employee Satisfaction	0.879	26.892	0.000**
Adjusted R^2 = 0.692			
F = 224.67			

The high standardised beta value of 0.879 indicates that productivity inside the company is highly predicted by employee satisfaction. It suggests a nearly one-to-one relationship in which shifts in productivity closely correspond to shifts in employee satisfaction.

The t-value, which is 26.892, is extremely significant, much over the standard cutoff point for statistical significance. This means that there is very little possibility that the link seen is the result of chance.

With a result of 0.692, it can be concluded that employee satisfaction variability accounts for 69.2% of production variability, indicating an excellent model fit for the social sciences. Given that employee, happiness is a strong predictor of productivity, and that the regression model fits the data well, the F value of 224.67 is very significant.

Table 5.
Regression analysis between employee satisfaction and cost efficiency

Independent variables Cost efficiency			
Standardised	β	**T**	**P**
Employee Satisfaction	0.811	15.433	0.000**
Adjusted R^2 = 0.658			
F = 192.39			

The correlation between cost-effectiveness and employee satisfaction is also substantial in Table 5. An organisation's cost efficiency is expected to grow when employee satisfaction levels rise, as indicated by the standardised beta of 0.811, which indicates a strong and positive relationship between employee satisfaction and cost efficiency. These results are reliable, as indicated by the t-value of 15.433 and the corrected R-squared of 0.658, which shows that the model explains a significant amount of the variation in cost efficiency. The F-statistic of 192.39 provides additional evidence for the reliability of the model by showing that cost efficiency is consistently predicted by employee happiness.

hows the results of the examination of the relationship between employee satisfaction and Innovation Performance.

Table 6.

Regression analysis between employee satisfaction and Innovation Performance

Independent variables Cost efficiency			
Standardised	β	**T**	**P**
Employee Satisfaction	0.725	20.09	0.000**
Adjusted R^2 = 0.566			
F = 130.4			

The effect of employee happiness on innovation performance is summarised down in Table 6. The organisation's ability to innovate is thought to be positively correlated with increased employee satisfaction, as indicated by the standardised beta value of 0.725. A statistical association that is very significant is indicated by the t-value of 20.09. Satisfaction with work accounts for more than half of the variability in innovation performance, with an adjusted R-squared value of 0.566—not bad by social science standards. The model's statistical significance is confirmed by the F-statistic of 130.4, which emphasises the role that employee satisfaction plays in creating a creative workplace.

DISCUSSION

Discussion of Hypotheses

Hypotheses H1

The purpose of hypothesis 1 was to investigate the connection between employee satisfaction and the use of E-HRM activities. There were five auxiliary hypotheses to this hypothesis:

E-recruitment contributes positively to enhancing employee satisfaction.

The findings in Table 3 do not support hypothesis H1A, which asserts that e-recruitment has a favourable influence on employee satisfaction. By traditional standards, the coefficient result for e-recruitment is.011 with a p-value of 0.408, meaning that it is not statistically significant ($p<0.05$). This suggests that the study does not provide any evidence for a meaningfully beneficial association between employee satisfaction and electronic recruitment. Rather, the results suggest that, within the parameters of this study, e-recruitment has no appreciable effect on job satisfaction. This could imply that variables other than the hiring process may have a greater impact on worker satisfaction levels.

E-training has a positive impression on employee satisfaction.

This study provided support for this hypothesis. The information from Table 3 provides excellent support for hypothesis H1B, which claims that e-training increases employee satisfaction. The results show that e-training is a significant predictor of employee satisfaction, with a coefficient of 0.340 and a highly significant p-value ($p<0.001$). This shows that employee satisfaction with the company is favourably connected with the use of electronic training delivery techniques. The impact of e-training on employee happiness may be explained by the adaptability, accessibility, and customizability of e-learning platforms, which can create an environment that is more motivating and empowering for workers. The results emphasise how crucial it is to fund e-training programs as a calculated move to raise worker happiness and, consequently, improve overall organisational performance.

E-performance appraisal has a positive effect on employee satisfaction.

This study did not provide evidence for this concept. The results in Table 3 contradict hypothesis H1C, which contends that e-performance appraisal increases employee satisfaction. With a p-value of 0.317 and a coefficient of 0.022 for e-performance evaluation, it is statistically significant over the traditional cutoff of $p<0.05$. This suggests that e-performance appraisal does not, in the context of this study, have a statistically significant beneficial effect on employee satisfaction. The lack of relevance shows that either other factors may be more important in influencing employee satisfaction, or the electronic performance appraisal process may not have a measurable impact on employees' satisfaction levels. Organisations might find it useful to investigate the particular e-performance appraisal system elements that could be improved or to take into account other elements that affect employee satisfaction.

E-compensation has a positive effect on employee satisfaction.

This study provided support for this hypothesis. E-compensation's coefficient is 0.281, and it has a statistically significant p-value ($p<0.001$). This bolsters the idea that there is a favourable correlation between employee happiness and e-compensation, which frequently entails computerised systems for tracking salaries, incentives, and perks. The statistical significance of e-compensation indicates that effective and transparent methods for managing pay can raise employee satisfaction levels. This is probably because processes connected to compensation are now clearer, more accurate, and more timely. This research emphasises how crucial it is to incorporate e-compensation systems into the HRM procedures of the company in order to improve employee satisfaction.

E-communication has a positive effect on employee satisfaction.

This study provided evidence in favour of this theory. Digital Communication & Interactions has a standardised beta coefficient of 0.345 and a statistically significant p-value of less than 0.001. This suggests that there is a direct and positive correlation between employee satisfaction in the workplace and the use of digital communication technologies. The statistically significant result indicates that digital communication channels, such as social networking, email, instant messaging, and video conferencing, have a beneficial impact on employees' job satisfaction. This could be explained by the improved information-sharing, teamwork, and connectedness that digital communication tools offer. The findings highlight how crucial reliable digital channels of communication are for increasing employee satisfaction in the workplace.

Hypothesis 2

The purpose of hypothesis 2 was to investigate the relationship between HRM performance and employee satisfaction. Two sub-theories were part of this hypothesis:

Employee satisfaction has a positive effect on HRM productivity.

Hypothesis H2A is highly supported by the evidence in Table 4. The results of the regression analysis demonstrate that employee happiness has a strong positive impact on HRM productivity, with a high standardised beta coefficient of 0.879. A significant t-value and a p-value of less than 0.001 support this further and show that there is a considerable rise in HRM productivity that corresponds with higher employee satisfaction.

Employee satisfaction has a positive effect on HRM cost efficiency.

With a substantial standardised beta coefficient of 0.811 for employee satisfaction, Table 5 offers evidence in favour of Hypothesis H2B and shows a positive and significant association with HRM cost efficiency. This finding is supported by a strong t-value and a p-value of less than 0.001, which indicate a positive correlation between increased employee satisfaction and improved cost-effectiveness in HRM procedures.

Employee satisfaction has a positive effect on HRM innovation performance.

rovides evidence infavour of Hypothesis H2C, showing that innovation performance is positively impacted by employee satisfaction. A substantial, standardised beta coefficient of 0.725, a significant t-value, and a p-value of less than 0.001 are obtained from the regression analysis, indicating a robust correlation between improved employee happiness and improved innovation performance.

LIMITATION OF STUDY

This study exhibits several limitations that impact its comprehensiveness, applicability, and depth. The use of convenience sampling with only 205 respondents from the pharmaceutical industry in Pakistan restricts the generalizability of the findings, lacking a comprehensive representation of the broader community's diversity. The reliance on multiple linear regressions, cross-tabulation, and frequency distributions, while valuable, overlooks the potential insights provided by additional statistical techniques like factor analysis, analysis of variance (ANOVA), and t-tests. The exclusive use of questionnaires for data collection raises concerns about missing nuanced information and the broader context of respondents' experiences. Time constraints further hindered the extent and depth of the study, potentially affecting research thoroughness. The findings, specific to the pharmaceutical sector in Pakistan, may not be universally applicable, emphasising the need for future research to encompass diverse sectors, industries, and countries for broader relevance. Additionally, the study's specific aims limited the measured factors, suggesting that a more expansive exploration of variables could yield deeper insights into the factors influencing employee

CONCLUSION & RECOMMENDATIONS

The study looks at the impact of E-HRM on performance, innovation and cost efficiency, considering them as things that might cause a change (independent variable). Ultimately, this exploration reinforces the idea that organisations must proactively embrace E-HRM as a strategic tool, not just for operational efficiency, but as a vital component for fostering an engaged, satisfied, and innovative workforce capable of thriving in an increasingly competitive landscape.

Enhancing the understanding of E-HRM's impact on both employee satisfaction and organisational performance requires a multifaceted approach. Longitudinal studies are recommended to assess the sustainability and lasting effects of E-HRM practices, allowing insights into how employee satisfaction evolves over time with the integration of digital HRM systems. Broadening the research scope across various companies, sectors, and cultural contexts can provide a comprehensive viewpoint on the applicability and efficacy of E-HRM practices globally. Comparisons between traditional HRM and E-HRM practices, facilitated by cross-cultural research, can elucidate the pros and cons of HR digital transformation, offering valuable insights for firms considering the switch. Qualitative research methods, such as focus groups and interviews, delve deeper into employee perceptions of E-HRM procedures, uncovering subjective experiences and identifying factors influencing job satisfaction. Investigating why e-performance appraisals may not significantly impact employee happiness,

as indicated by the current study, presents an opportunity for further research to enhance the effectiveness and acceptance of these systems. Additionally, continual examination of emerging technologies like machine learning and artificial intelligence is crucial to understand their impact on E-HRM system efficacy.

satisfaction and HRM performance. In conclusion, while the study provides valuable insights, addressing these limitations through diverse sampling methods, employing a broader range of statistical techniques, incorporating qualitative data, and expanding the research scope would enhance the study's overall robustness and relevance.

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