The Effect of Implementing iHCMS Portal on Employee Satisfaction Moderated by Electronic Service Quality

Ade Saepullah
Universitas Padjajaran; Bandung, Indonesia
E Mail: de.saepulloh@gmail.com

Rora Puspita Sari
Universitas Padjajaran; Bandung, Indonesia
E Mail: rora.puspita@unpad.ac.id

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ABSTRACT

The implementation of an information technology-based human resource management system is a strategic element in enhancing the effectiveness of human resource management and employee satisfaction. This study aims to analyze the effect of the implementation of the Integrated Human Capital Management System Portal on employee satisfaction with electronic service quality as a moderating variable. The study involved 348 permanent employees of PT Biofarma as active users of the Integrated Human Capital Management System Portal. Data were collected through an online questionnaire and analyzed using Structural Equation Modeling Partial Least Squares (SEM PLS). The results show that the implementation of the Integrated Human Capital Management System Portal has a positive and significant effect on employee satisfaction. Moreover, the implementation of the Integrated Human Capital Management System Portal positively affects the quality of electronic services, and the quality of electronic services significantly influences employee satisfaction. The findings also reveal that electronic service quality strengthens the relationship between the implementation of the Integrated Human Capital Management System Portal and employee satisfaction. the implementation of the Integrated Human Capital Management System Portal, directly and indirectly through the moderating role of electronic service quality, positively contributes to increasing employee satisfaction.

Keywords: *Electronic Service Quality, Employee Satisfaction, HRIS Adoption, Portal Integrated Human Capital Management System.*

ABSTRACT

Implementasi sistem manajemen sumber daya manusia berbasis teknologi informasi merupakan elemen strategis dalam meningkatkan efektivitas manajemen sumber daya manusia dan kepuasan karyawan. Studi ini bertujuan untuk menganalisis pengaruh implementasi Portal Sistem Manajemen Sumber Daya Manusia Terpadu terhadap kepuasan karyawan, dengan kualitas layanan elektronik sebagai variabel moderasi. Studi ini melibatkan 348 karyawan tetap PT Biofarma sebagai pengguna aktif Portal Sistem Manajemen Sumber Daya Manusia Terpadu. Data dikumpulkan melalui kuesioner daring dan dianalisis menggunakan Structural Equation Modeling Partial Least Squares (SEM PLS). Hasil penelitian menunjukkan bahwa implementasi Portal Sistem Manajemen Sumber Daya Manusia Terpadu berpengaruh positif dan signifikan terhadap kepuasan karyawan. Lebih lanjut, implementasi Portal Sistem Manajemen Sumber Daya Manusia Terpadu berpengaruh positif terhadap kualitas layanan elektronik, dan kualitas layanan elektronik berpengaruh signifikan terhadap kepuasan karyawan. Temuan penelitian juga mengungkapkan bahwa kualitas layanan elektronik memperkuat hubungan antara implementasi Portal Sistem Manajemen Sumber Daya Manusia Terpadu dan kepuasan karyawan. Penerapan Portal Sistem Manajemen Sumber Daya Manusia Terpadu, secara langsung maupun tidak langsung melalui

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peran moderasi mutu layanan elektronik, memberikan kontribusi positif terhadap peningkatan kepuasan karyawan.

Kata Kunci: *Kualitas Layanan Elektronik, Kepuasan Karyawan, Adopsi HRIS, Portal Sistem Manajemen Sumber Daya Manusia Terpadu.*

INTRODUCTION

In the era of rapidly evolving digital transformation, nearly all industrial sectors are being required to adapt to advances in information technology, including Human Resource (HR) management. These changes are not merely cosmetic but fundamental and structural, directly impacting how organizations manage their key functions, including employee recruitment, training, performance appraisals, and career development. The ability to adapt to global competition and changes in technology and human resources is one of the important things to survive in managing a business sustainably (Florkowski, 2018; Haeraniet al., 2020). Technology emerges as an important element in shaping the expansion of the organization in the daily work environment (Iqbal et al., 2019; Kwan et al., 2019)

Modern Human Resource Management (HRM) has evolved from a traditional administrative function into a strategic element that plays a crucial role in achieving an organization's vision and mission. HR is no longer positioned as a mere support function, but rather as the primary driver determining an institution's competitive advantage. One key indicator of this transformation is the adoption of digital technology in HR management. The help of technological systems allows human resources to provide better services to provide better access to information, for example, the number of recruitment documents that take a lot of time can be replaced by digital files (Parry, 2011; Alfes et al., 2013; Paschen et al., 2019; Iqbal et al., 2019). Recent studies showed the impact of electronic human resource management on both organizational performance and employee performance (Johnson and Guetal, 2011; Kamal et al., 2016; Onuorah et al., 2019).

Human Resource Information System (HRIS) is an information technology-based system that enables organizations to manage employee data and information efficiently, in an integrated, real time, and accurate manner (Ngai & Wat, 2006; Pane et al., 2022). This system facilitates administrative processes such as attendance recording, payroll, and leave management, while also supporting strategic functions such as competency management, performance evaluation, succession planning, and HR data analysis for long term decision making. In a study conducted by Nusair and Parsa (2007a) and Khan et al. (2017) HRIS was proven to improve process efficiency, information transparency, and reduce HR operational costs. Furthermore, HRIS allows organizations to have comprehensive visibility into workforce development potential and needs, which can ultimately drive increased productivity and employee retention. A significant increase in HRIS usage was recorded during the COVID 19 pandemic. In emergencies that demand flexibility and speed in remote workforce management, HRIS has become a key solution for maintaining the continuity of HR functions. This trend is predicted to be more than temporary, but will persist as awareness of the importance of digitizing business processes grows (Zhang et al., 2024; Biswas et al., 2024).

PT Biofarma is a national strategic state-owned enterprise and the largest vaccine producer in Southeast Asia. To strengthen its HR management in the digital era, PT Biofarma implemented the Integrated Human Capital Management System (iHCMS) Portal in 2023. This portal is an HRIS system developed to replace the previous partial and non-integrated personnel system. The iHCMS Portal is built with two main components, namely: Talent Resources Experience (T REx) A digital interface for employees that provides self service for personnel information, attendance, training, performance appraisals, and competency development, and Data Operation Center (DOC). A data management center that integrates all activities and processes in the HR

management cycle, from recruitment to retention. This system aims to improve efficiency, effectiveness, accuracy, transparency, and employee work experience through digital based services. This initiative is part of PT Biofarma's commitment to implementing a comprehensive digital transformation, including human capital aspects.

An initial survey of five permanent employees at PT Biofarma showed that the majority of respondents were satisfied with the use of the iHCMS Portal. However, several weaknesses were also identified, such as suboptimal features, less intuitive navigation, and limitations in service personalization. This condition indicates that although the implementation of HRIS has had a positive impact, there is still room for improvement, especially in improving the quality of digital services, which is an important determinant in influencing the level of user satisfaction (Beulen, 2009; Parasuraman et al., 2005; Rondowunu et al., 2022; GC et al., 2024).

Previous research has shown that the use of HRIS can significantly impact employee job satisfaction, especially if the system can provide a good user experience, high data accuracy, and support career achievement and employee information needs in real time (Wege et al., 2019; Jadayil et al., 2020; Bhojak et al., 2024; Ibrahim et al., 2024). One relevant theory for measuring service quality in a digital context is the SERVQUAL approach from Parasuraman et al. (1988) and the advanced ES QUAL model from Parasuraman et al. (2005). In the context of HRIS, ES QUAL dimensions such as efficiency, privacy, system reliability, and trust are important indicators in evaluating user perceptions of the service quality of digital systems. Although HRIS has been shown to improve employee performance and organizational efficiency, little research examines how e service quality, such as efficiency, reliability, privacy, and trust, moderates the impact of HRIS on employee job satisfaction, particularly in the context of integrated systems like PT Biofarma's iHCMS Portal. Thus, this study will examine how e service quality moderates the relationship between HRIS implementation and employee job satisfaction. This is important because job satisfaction is a key indicator in creating a positive work climate, employee loyalty, and ultimately improving overall organizational performance.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

Portal iHCMS Application on Employee Satisfaction

Employee satisfaction is a key indicator in assessing the success of information systems implementation in the workplace. Generally, employee satisfaction refers to an individual's positive attitude toward their work and the systems they use. In the context of information technology, this satisfaction can be influenced by perceptions of the reliability, ease of use, and practical benefits of the adopted system (Bano et al., 2017; Siboro & Taufik, 2022). Studies by Zahari et al. (2018) and Salem and Yousif (2023) show that HRIS that can provide information quickly, accurately, and easily accessed contribute significantly to increasing user job satisfaction. Employee satisfaction with HRIS systems is also influenced by several other factors, such as the quality of digital services, trust in the system, and perceptions of data security. Ashiq and Hussain (2024) emphasize the importance of ease of use and interface clarity in creating a positive user experience. In practice, a user-friendly system will encourage more consistent use and increase positive perceptions of the HRIS overall.

Furthermore, psychological factors such as technostress and self efficacy also act as moderating variables in the relationship between HRIS use and job satisfaction. Ibrahim and Mohd Zin (2024) showed that the stress burden resulting from technology use (technostress) can reduce job satisfaction levels if not balanced with adequate training or organizational support. On the other hand, user confidence in using the system (self efficacy) plays a role in strengthening the positive influence of HRIS on job satisfaction. This variable is described in specific indicators and measurement items adapted from trusted academic sources, such as Shahreki (2022), for employee satisfaction in the context of digital HRM. HRIS adoption is driven by Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Information Quality, and Task

Technology Fit influencing Behavioral Intention and usage (Ruël et al., 2011; Alkhwaldi et al., 2023; Shahreki & Lee, 2024).

H1: Portal iHCMS application has a positive and significant effect on employee satisfaction.

The Effect of Electronic Service Quality

Electronic service quality or e Service Quality is a concept used to evaluate the extent to which a digital system meets user expectations in terms of efficiency, reliability, and security. One theoretical model widely used in measuring e Service Quality is the ES QUAL model developed by Parasuraman et al. (2005). This model includes four main dimensions: efficiency (ease and speed of use of a site or application), fulfillment (accuracy and consistency in providing services as promised), system availability (stable and uninterrupted technical performance), and privacy (protection of users' data). The ES QUAL model is highly relevant in the context of HRIS use because these systems operate within the digital service domain. According to Zeithaml et al. (2002) and Mamakou et al. (2024), the four dimensions of ES QUAL interact to shape user perceptions of the quality of the digital systems they use, including HRIS. If an HRIS system lacks responsiveness or frequently experiences technical disruptions, users will tend to be dissatisfied even if other functionalities are complete. Therefore, assessing digital service quality is an important aspect in a comprehensive evaluation of HR information system performance. This variable is described in specific indicators and measurement items adapted from trusted academic sources, Parasuraman et al. (2005), for e service quality.

The relationship between these variables is supported by affordance theory and empirical findings which show that the implementation of the iHCMS Portal increases the perception of e-service quality, which in turn has a positive effect on employee satisfaction and moderates the relationship between the two (Chang et al., 2009; Ma Sabiote et al., 2012; Heslina & Syahruni, 2021).

H2: Portal iHCMS application has a positive and significant effect on the perception of the quality of electronic services felt by employees
H3: E-service quality has a positive effect on employee satisfaction
H4: E-service quality moderates the relationship between iHCMS Portal implementation and employee satisfaction

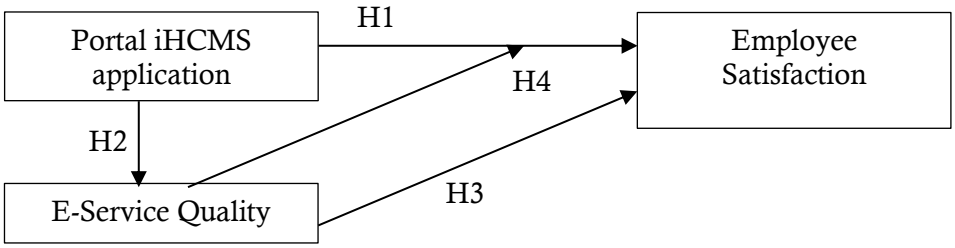

Figure 1. Research Framework

Figure 1 explains the hypothesis development in this study. This research framework illustrates the relationships between the implementation of the Portal iHCMS, e service quality, and employee satisfaction. The implementation of Portal iHCMS is assumed to have a direct effect on employee satisfaction (H1) and to influence employees' perceptions of the quality of electronic services provided (H2). In turn, e service quality is expected to have a positive impact on employee satisfaction (H3) and also serve as a moderating variable that strengthens the relationship between Portal iHCMS implementation and employee satisfaction (H4). Thus, this framework integrates the direct effect of the HRIS

system, the role of digital service quality, and the moderating interaction to understand the key factors determining employee satisfaction in the context of using the iHCMS Portal.

RESEARCH METHODS

This study employed a quantitative research approach, which is systematic, objective, and measurable, with the primary goal of testing hypotheses and examining relationships among the variables. The quantitative design was chosen because it is suitable for analyzing the effect of the Portal iHCMS implementation on employee satisfaction, with e service quality serving as a moderating variable. The study followed methodological guidelines from Blumberg et al. (2014) and Saunders et al. (2022), emphasizing replication, consistent measurement, and generalizability of findings.

The research was conducted at PT Biofarma (Persero), a state-owned biopharmaceutical company and the largest vaccine producer in Southeast Asia. Since 2021, the organization has implemented the HRIS Portal iHCMS as part of its digital human resource management strategy. The study population consisted of all 1,271 permanent employees who actively use the iHCMS Portal. The research location was selected based on its accessibility, relevance to HR digitalization, and the company's advanced HR technology initiatives.

A stratified random sampling technique was applied to ensure proportional representation across position, department, length of service, and education level. Based on the Krejcie and Morgan (1970) table and an expected response rate of 80%, the sample size was determined to be 348 respondents (Saunders, 2022).

Three main variables were operationalized in this study: the independent variable, Portal iHCMS implementation; the dependent variable, employee satisfaction; and the moderating variable, portal service quality (e service quality). Each variable was measured using validated indicators adapted from established literature, including Venkatesh et al. (2003) for HRIS, Parasuraman et al. (2005) for e service quality, and Shahreki (2022) for employee satisfaction in digital HRM contexts. A total of 50 questionnaire items were rated on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Data were collected through a self-administered online questionnaire distributed via corporate email. Ethical considerations were strictly followed, including obtaining informed consent, ensuring respondent confidentiality, and respecting the right to withdraw at any time.

Data analysis involved both descriptive and multivariate techniques. Descriptive statistics summarized respondent characteristics and response distributions, with Likert scale results categorized from "very poor" to "very good." For hypothesis testing, Structural Equation Modeling (SEM) using the Partial Least Squares (PLS) approach was applied via SmartPLS 4.0. PLS SEM was selected for its suitability in handling complex models with latent variables, small sample sizes, non normal data distributions, and moderating effects. The analysis followed guidelines from Hair et al. (2017), including assessments of convergent validity, discriminant validity, composite reliability, and path coefficients. Overall, this methodology provides a rigorous, replicable, and scientifically grounded framework to investigate the relationships between Portal iHCMS implementation, e service quality, and employee satisfaction within a real-world organizational context.

RESULTS

In general, the analysis process is carried out in two main stages, namely testing the measurement model (outer model) to assess the validity and reliability of the indicators and Structural model testing (inner model) to test hypotheses. First, the results for outer model testing include outer loading values, Average Variance Extracted (AVE), Composite Reliability (CR), and Discriminant Validity.

Table 1. Reliability Testing Results

Variable	Cronbach's Alpha	Composite Reliability
iHCMS Portal Implementation	0.892	0.925
Electronic Service Quality	0.879	0.917
Employee Satisfaction	0.864	0.905

The results presented in Table 1. Reliability Testing Results indicate that all variables in the study exhibit a very high level of reliability. The Cronbach's Alpha values for the three variables iHCMS Portal Implementation (0.892), Electronic Service Quality (0.879), and Employee Satisfaction (0.864) all exceed the minimum threshold of 0.70 recommended by Hair et al. (2021). This demonstrates that the indicators within each construct have strong internal consistency. Furthermore, the Composite Reliability (CR) values for all variables also surpass the minimum required level of 0.70, with 0.925 for iHCMS Portal Implementation, 0.917 for Electronic Service Quality, and 0.905 for Employee Satisfaction. These values confirm that all three constructs possess excellent combined reliability in measuring their respective latent concepts.

Table 2. Validity Testing Results

Variable	AVE	Information
iHCMS Portal Implementation	0.675	Valid
Electronic Service Quality	0.661	Valid
Employee Satisfaction	0.657	Valid

The results presented in Table 2. Validity Testing Results show that all variables in the study meet the criteria for convergent validity. The Average Variance Extracted (AVE) values for each construct iHCMS Portal Implementation (0.675), Electronic Service Quality (0.661), and Employee Satisfaction (0.657) are all above the minimum threshold of 0.50, as recommended by Hair et al. (2021). These findings indicate that more than 50% of the variance of the indicators is explained by their respective latent constructs, meaning that the indicators used in this study have a strong ability to represent the variables they are intended to measure.

The structural model was tested using a bootstrapping method on 5,000 subsamples to obtain estimated values, t statistics, and significance (p value) for each relationship path.

Table 3. Summary of SEM PLS Hypothesis Testing Results

Hypothesis	Path Coefficient (β)	T-Statistic	P-Value
iHCMS Portal → Employee Satisfaction	0.473	11.624	< 0.001
iHCMS Portal → Electronic Service Quality	0.475	10.943	< 0.001
Electronic Service Quality → Employee Satisfaction	0.390	9.758	< 0.001
Moderation: Electronic Service Quality x iHCMS Portal → Employee Satisfaction	0.095	3.921	< 0.001

Based on Table 3, the results of the inner model testing produced the following findings. First, the implementation of Portal iHCMS on Employee Satisfaction shows a positive and significant influence with a path coefficient value of $\beta = 0.473$, $t = 11.624$, and $p < 0.000$. This indicates that the implementation of a good Portal iHCMS system, including features that support digital administration and personnel processes, is able to directly increase employee satisfaction levels. Second, the implementation of the iHCMS Portal on the Quality of Electronic Services also shows a positive and significant influence, with a coefficient of $\beta = 0.475$, $t = 10.943$, and $p < 0.001$. This indicates that the more optimal the use of the iHCMS Portal, the better the quality of electronic services perceived by employees, including in terms of ease, speed, and reliability of access to the system. Third, Electronic Service Quality on Employee Satisfaction also showed a significant influence, with $\beta = 0.390$, $t = 9.758$, and $p < 0.001$. This means that the higher the perceived electronic service quality (based on the dimensions of efficiency, fulfillment,

system availability, and privacy), the higher the level of employee satisfaction with the company's digital services. The Moderation Effect of Electronic Service Quality on the relationship between Portal iHCMS and Employee Satisfaction produces an interaction coefficient of $\beta = 0.095$, $t = 3.921$, and $p < 0.001$, which means that the moderation is significant. This indicates that the influence of Portal iHCMS on satisfaction will stronger if supported by high quality electronic services.

DISCUSSION

The findings show that a digital based HRIS system, such as Portal iHCMS, has a significant impact on employee satisfaction. This demonstrates that digital transformation in human resource management, particularly through the implementation of efficient and easily accessible information systems, can improve employee positive perceptions and work comfort. The Portal iHCMS system simplifies various administrative processes such as attendance, leave, reimbursement, and performance reports, which were previously done manually. Thus, employees feel more facilitated, appreciated, and have more control over their data and personal needs. Therefore, the use of electronic human resource management has a positive impact on employee performance in the fields of talent management, selection, and training and development (Heslina & Syahruni, 2021; Nurimansjah, 2023).

Previous research asserted that E HRM can boost organizational outcomes (Cedar, 2008; Foster, 2009; Davoudi, 2012; Khashman, 2015; Al Hmouze, 2016; Ahmed, 2019; Wage, 2019). This finding is in line with research conducted by Shahreki and Lee (2024), which states that digital HR information systems have a positive correlation with engagement and job satisfaction, especially in organizations undergoing digitalization. Ammupriya and Preeta (2022) also stated that the application of human resource information systems has a significant relationship with employee motivation and employee job satisfaction. Employee satisfaction is important for developing employee motivation. If employees feel satisfied, their performance will increase (Susanti & Budiantoro, 2024).

Furthermore, the implementation of the iHCMS Portal has also been shown to significantly improve the quality of e services perceived by users. This suggests that the quality of an HRIS system is not only determined by the features available, but also by how the system efficiently, quickly, and securely meets user needs. In this context, the ES QUAL concept by Parasuraman et al. (2005) becomes highly relevant, with its four main dimensions, efficiency, compliance, system availability, and privacy playing a role in shaping user perceptions of digital service quality.

The role of information systems implemented by HR has a positive impact on the services provided to users (Nurlina et al., 2020; Muchsinati et al., 2024). This technology helps human resource management to optimize real time information, improve self service, and facilitate work efficiency, to form an interactive work environment for stakeholders (Lengnick Hall & Mortis, 2003; Ruel et al., 2007; Bondarouk et al., 2009; Younis et al., 2024). Some forms of service can be in the form of e training programs. E training programs are regarded to be a more efective and efcient means of learning due to their ability to recall and retain information (Srivastava & Bagga, 2014; Pourghaznein, 2015). According to Stefanović et al. (2015), these features help employees save time and enhance performance.

It was also found that e service quality has a significant impact on employee satisfaction. Employees not only want systems to be readily available, but also demand that they be reliable when needed, secure from data breaches, and meet administrative needs quickly and accurately. High service quality creates a sense of trust and comfort, which ultimately increases overall satisfaction with the company.

One of the key findings of this study is the moderating role of e service quality in the relationship between Portal iHCMS implementation and employee satisfaction. These results indicate that even after HRIS implementation, its impact on employee satisfaction will be maximized if accompanied by excellent service quality (Al dweeri et al., 2019). In

other words, system quality is not simply about the presence or absence of features, but how employees directly experience the digital services in supporting their daily work activities. These findings reinforce the affordance theory framework, which explains that the value of a system is determined by users' perceptions of the action possibilities offered by the system. An iHCMS Portal system that is easily accessible, flexible, and relevant to user needs will create higher affordance, thus driving greater adoption and satisfaction.

CONCLUSION

Based on the data analysis and hypothesis testing, several important findings were obtained. The result showed that the implementation of the iHCMS Portal has been shown to have a positive impact on employee satisfaction. The implementation of the iHCMS Portal also positively impacts the quality of e services, the quality of e services positively impacts employee satisfaction. Electronic service quality positively moderates the relationship between iHCMS Portal implementation and employee satisfaction. In general, the results of this study confirm that the success of HRIS system implementation is not solely determined by the technical features or availability of the system itself, but is also significantly influenced by user perceptions of the quality of service provided through the platform. These findings provide an important contribution to the digital human resource management literature and provide practical guidance for organizations in optimizing the use of HRIS to improve employee satisfaction and engagement.

The results indicate that the implementation of Portal iHCMS significantly enhances employee satisfaction, especially when the system is user friendly and reliable. High quality electronic services further strengthen this effect, emphasizing that service efficiency, accessibility, and privacy are key to a positive user experience. These findings suggest that organizations should not only implement integrated HRIS systems but also continuously improve their digital service quality to maximize employee satisfaction and overall organizational performance. The research limitations include a limited number and scope of respondents, a research scope limited to one company, and research variables are not yet comprehensive because the research focuses only covers three main variables: iHCMS Portal implementation, e service quality, and employee satisfaction. Suggestions that can be considered for future research are increasing the number and diversification of respondents, involving multiple companies as study objects, and developing a more comprehensive research model.

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