

Assessing HRIS Performance in Manufacturing Firms: A Factor Analysis Approach

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Abstract. The indispensable function of Human Resource Information Systems (HRIS) in facilitating Human Resource Management (HRM) activities via information technology for the supervision of human resources within an organization is paramount. This research aims to evaluate the effectiveness of an HRIS within a manufacturing firm in Indonesia, employing the methodology of Exploratory Factor Analysis (EFA). The research leverages the IT Balanced Scorecard and HRM functions as integral instruments. A survey encompassing 185 employees utilizing the HRIS application was conducted. The findings pinpoint four factors that significantly influence HRIS performance: lack of information quality, information systems integration, ease of application use, and IT division support. Notably, the ease of use of the application system emerges as a substantial determinant impacting HRIS performance, while inadequacies in information quality evoke widespread grievances regarding the existing HRIS application. This investigation augments scholarly understanding by uncovering outcomes that signify the potential effectiveness of HRIS in manufacturing companies under optimal conditions. Furthermore, the identified factors can serve as valuable insights for augmenting HRIS performance in subsequent contexts.

Keywords: Human Resource Information Systems (HRIS), system performance, Exploratory Factor Analysis (EFA), IT Balanced scorecard, and HRM function

1. Introduction

In the rapidly advancing era of information technology, information systems are a critical function in every line of business. Companies integrating information systems into their operations aim to enhance HRM, particularly in manufacturing. Human Resource Management (HRM) is entrusted with overseeing a company's human resources (HR), encompassing recruitment, selection, training, development, and compensation and benefits. Human resources represent a vital asset within an organization, capable of achieving the company's vision and mission goals (Panjaitan, 2023). Consequently, Human Resource Management (HRM) is widely acknowledged as an indispensable component within the operational framework of companies (Azizi et al., 2021), influencing both organizational and employee performance (Rosegrant, 2023). The primary goal of HRM is to ensure optimal utilization of employees to derive benefits from their human capital, thereby providing mutual advantages in both material and physical aspects of their work (Chen, 2021).

In managing human resources, HRM requires information technology that efficiently handles human resources in a company's business processes, known as Human Resource Information System (HRIS). HRIS represents a technologically driven infrastructure designed to facilitate the various functions inherent in HRM by integrating information technology. HRIS offers advantages such as efficiency, effectiveness, scope, structure, and opportunities (Setyowati et al., 2021). Implementing HRIS has resulted in a notable augmentation of efficiency in HR processes, concomitantly leading to a discernible reduction in operational costs. HRIS assists companies in managing human resources efficiently and effectively, enabling better decision-making related to workforce management. Nevertheless, the efficacy of HRIS implementation transcends the mere intricacies of the system, extending to the critical factors of employee acceptance and active engagement in its optimal utilization (Ainsworth, 2018). The enthusiasm and readiness of employees to truly understand and effectively use the system are crucial factors in optimizing its outcomes. In other words, close collaboration between management and employees in understanding and adopting HRIS effectively becomes the key to its successful implementation (Sidek et al., 2022).

Since implementing HRIS, few companies have analyzed their system acceptance (Oehlhorn et al., 2020), including the manufacturing companies to be investigated. In these companies, there are still numerous complaints about HRIS applications, leading to a lack of awareness within the company's management regarding the measures of HRIS acceptance and the factors influencing its performance (Kent et al., 2023). Therefore, the imperative for a systematic and standardized evaluation process becomes apparent, aiming to discern the system's quality from the user's perspective and facilitating requisite enhancements. This research endeavors to scrutinize the performance of HRIS applications within the manufacturing sector, specifically focusing on identifying the determinants influencing HRIS application performance from a user perspective. It also aims to provide solutions for companies to enhance HRIS application performance, ensuring user needs and expectations are met (Tambovcevs, 2022). This study utilizes the factor analysis method, specifically Exploratory Factor Analysis, to identify new factors representing variables taken from the IT Balanced Scorecard and HRM Function. These factors can explain the gap between reality and the company's expectations regarding complaints about HRIS applications. This approach identifies hidden relationships between indicators within HRIS (Das et al., 2019). Several studies (Harshith. N, 2022; Muttaqin et al., 2018; Sardjono et al., 2020, 2021) have used factor analysis and the IT Balanced Scorecard to research HRIS acceptance, resulting in new factors influencing HRIS implementation. Additionally, studies (Ahmed, 2019; Hosain et al., 2020) have used HRM Function as the basis for their research to analyze HRIS performance, proving effective in explaining user behavior.

This research aims to discern the factors influencing HRIS performance within a specified manufacturing entity in Indonesia, employing a quantitative research methodology. Data accrual will transpire through disseminating a meticulously designed questionnaire survey among 310 employees utilizing HRIS. IBM SPSS Version 27 will be deployed to process the amassed data and examine 32

indicators for formulating novel factors. The outcomes of this inquiry are anticipated to yield practical advantages and nuanced insights into the determinants steering HRIS performance, thereby furnishing companies with invaluable guidance to refine their systems.

2. Literature Review

2.1.Information System Evaluation Theory

An information system comprises interrelated components to collect, manage, store, and disseminate information to support organizational operational activities and decision-making (Nickerson et al., 2017). Evaluation is a systematic process to determine a system's benefits, value, and significance, providing evidence-based information to aid decision-making. (Duffy et al., 2013) assert that using evaluation methods allows for identifying strengths and weaknesses in the information system under evaluation. In the context of information systems, several methods are employed for evaluation, including qualitative, quantitative, and financial. One classification of quantitative evaluation methods is the use of the Balanced Scorecard.

2.2.Balanced Scorecard

Kaplan and Norton initially created the Balanced Scorecard (BSC) as a tool for performance measurement that evaluates performance from all three perspectives: the business's internal perspective, the customer perspective, and the innovation and learning perspective (Wang et al., 2022). Presently, this metric has also been extended to encompass the public sector. Through this measurement, organizations can understand how they involve customers, stakeholders, and employees in managing performance aligned with the company's goals and vision (Cheng et al., 2018). This framework, esteemed for its comprehensive evaluation, stands as an apt tool offering substantial insights into the internal and external determinants influencing the efficacy of organizational applications.

2.3.IT Balanced Scorecard

(Grembergen, 2000) introduced modifications to the Balanced Scorecard framework, tailoring it to gauge IT performance by incorporating viewpoints from an IT-centric vantage. Consequently, the Balanced Scorecard underwent refinement, giving rise to the IT Balanced Scorecard. Functioning as an evaluative instrument, the IT Balanced Scorecard assists organizations in assessing IT performance aligned with overarching corporate objectives. Through the deployment of the IT Balanced Scorecard, organizations gain the capacity to pinpoint areas necessitating improvement and make strategic decisions aimed at augmenting the efficacy of the company's information technology services and systems. The four perspectives of the IT Balanced Scorecard include:

1. User Orientation Perspective
The user orientation perspective directs its focus towards appraising IT performance through the lens of end-users, considering aspects such as user satisfaction, service quality, and the operational performance of IT systems.
2. Operational Excellence Perspective
The operational excellence perspective centres on evaluating IT performance concerning the efficiency and effectiveness of information technology processes. This perspective extends its purview to measure the impact of IT processes on organizational performance and operational costs.
3. Future Orientation Perspective
The future orientation perspective concentrates on assessing IT performance through the prism of human resources, endeavours to enhance organizational capabilities, and the long-term success trajectory of the organization.
4. Corporate Contribution Perspective
The business contribution perspective focuses on evaluating IT performance from the financial performance of IT services and investments in achieving business objectives and the value of IT

investments.

2.4. Enterprise Resource Planning (ERP)

The Enterprise Resource Planning (ERP) software system aims to integrate diverse functions and business processes within a consolidated platform. As posited by (Lutfi et al., 2022), this integration empowers organizations to optimize operations, heighten efficiency, and bolster decision-making capabilities by providing real-time access to precise and current information. ERP software functions by amalgamating diverse functions and business processes, spanning finance, human resources, manufacturing, distribution, and other domains, into a singular system to enhance productivity and efficiency. The ERP system notably comprises discrete modules, including Manufacturing Resource Planning, Financial and Accounting, Supply Chain Management, Customer Relationship Management, and Human Resources Management. The correlation between the utilization of ERP systems and the realization of ERP success plays a pivotal role in evaluating the efficacy of ERP implementation, as highlighted by (McCubbrey et al., 2009).

2.5. Human Resource Management (HRM)

One element of the ERP framework is human resource management (HRM), which is a systematic approach to improving productivity and quality of work within an organization to make work more effective and of higher quality in achieving company goals (Hecklau et al., 2016). (Mariki & Modest, 2017) articulated that the "strategic approach to managing employment relationships underscores the pivotal nature of leveraging individuals' capabilities to attain a sustainable competitive edge." According to (TareshSaif Al Marri et al., 2018), HRM involves amalgamating individuals and organizations to attain shared goals. HRM has several functions, including:

- a. Attendance: HRM is responsible for recording and managing the attendance of each individual within the company (Kucharčíková et al., 2015).
- b. Training and Development: The HR department is tasked with recognizing the training requirements of staff members and delivering training initiatives tailored to either the employees' needs or those of the company (Ma & Ye, 2015). The realm of Human Resource (HR) development signifies an ongoing process that aptly functions in both immediate and prolonged temporal horizons.
- c. Payroll: HRM functions in managing employee payroll within an organization.
- d. Performance Management: HRM also evaluates and manages individual performance within the company. Performance assessments are used to adjust compensation and salaries and identify the strengths and weaknesses of each employee (X. Wang, 2019).
- e. Personal Administration: HRM manages much individual information within the organization. Many researchers support and comment that the shift from personal administration functions to more strategic positions is present to redesign the nature of HRM functions to improve organizational performance.

2.6. Human Resource Information Systems (HRIS)

The use of technology in managing human resources has evolved drastically, continuously transforming HRM activities with stakeholders and employees (X. Wang, 2019). HRIS has become increasingly popular since the 1960s (Karikari et al., 2015). HRIS is crucial as an HRM function to enhance effectiveness in human resource management (Chakraborty & Mansor, 2013). Human Resource Information Systems (HRIS) are leveraged for administrative, strategic decision-making, and business-oriented purposes (Kannipamula, 2019). As specialized software, HRIS addresses organizational challenges by meticulously overseeing and managing employee data. Distinct from an Enterprise Resource Planning (ERP) system, HRIS stands out by exclusively concentrating on the Human Resource Management (HRM) facet of an organization (Zafar, 2013). The HRIS system operates with the primary objectives of recording, collecting, storing, modifying, and analyzing data about human

resource information. The encompassed data spans many aspects, including salary and payroll details, compensation structures, leave records, performance assessments, accident reports, retirement information, and employee benefits, among other pertinent elements (Jadesola Ololade et al., 2023). The pervasive utilization of HRIS has brought about a profound transformation in the execution of HRM activities and functions within organizational contexts (Obeidat, 2012). Numerous companies actively deploy HRIS to provide robust support for their HRM initiatives and broader business management strategies (Jaffe, 2015).

3. Methodology

3.1. Research Instrument Development

In measuring research variables, appropriate indicators are required. These indicators are determined based on the literature review, namely the IT Balanced Scorecard and HRM Function theories. These indicators are formulated into a research instrument that will be disseminated using a questionnaire for processing and analysis. Each research instrument is measured using a Likert scale. The development matrix of the research instrument is as follows.

Table 1 : Development of Research Instrument

	Factor	Indicator	Code	Reference	Statement
IT Balanced Scorecards	User Orientation	User Satisfaction With It Application	UO1	(Nicoletti Junior et al., 2018)	The HRIS application can help users to improve their professional performance.
		Major Project Success Score	UO2	(Akinyi & Moturi, 2015)	The HRIS Application function has helped users in carrying out their work.
		Attainment of Targeted Service Levels	UO3	(Akinyi & Moturi, 2015)	The HRIS application can be used easily.
		Service Quality And Responsiveness	UO4	(Nicoletti Junior et al., 2018)	Users receive training before using the HRIS application.
		Blended Labor Rates	UO5	(Akinyi & Moturi, 2015)	IT managers have a leadership mindset to help resolve issues in HRIS applications wisely.
		Contribution Business Objectives	UO6	(Akinyi & Moturi, 2015)	With the HRIS application, it helps businesses become more effective and efficient in business processes.
		Attainment Of Unit Cost Targets	UO7	(Nicoletti Junior et al., 2018)	The HRIS application supports business objectives and corporate strategies.
	Operational Excellence	Assessed Level Of Maturity And Compliance In Priority Processes With In Monitoring	OE1	(Gomes & Romão, 2017)	With the HRIS app, it is easy to keep track of the happening transactions.
		Benchmark Based Measures Of Incident Occurrence Levels	OE2	(Gomes & Romão, 2017)	The performance of the IT division in dealing with problems that arise in the application systems is fast, good and resolvable.

		Benchmark Based Measures of Responsiveness	OE3	(Tanaamah et al., 2019)	The functions of the HRIS application system are easy to use to evaluate employee performance.
		Benchmark Based Measures Of Change Management Effectiveness	OE4	(Gomes & Romão, 2017)	Support of the HRIS application system by the IT division is good.
		Function Point Measures of Quality	OE5	(Tanaamah et al., 2019)	The HRIS application system is easy to use and understand by the user.
	Future Orientation	Employee Satisfaction Scores In Feedback	FO1	(Maria et al., 2021)	Users are satisfied with the HRIS application system in job aid.
		Results Against Staff Turnover	FO2	(Gomes & Romão, 2017)	The IT division maintains a dedicated segment focused on researching novel technologies to enhance the efficacy and efficiency of business operations.
		Professional IT Team	FO3	(Tawse & Tabesh, 2023)	Even if there are changes, users can easily understand the usage of the HRIS application.
		Delivery of Internal Process Improvemenets to Cybary	FO4	(Maria et al., 2021)	Users are involved in the planning, developing and implementing the HRIS application system.
		Implementation of Lessons Sharing Process	FO5	(Tawse & Tabesh, 2023)	The IT department helped and provided explanations in case of problems or maintenance in the HRIS application.
	Corporate Contribution	It Organization Integration	CC1	(Hansen & Schaltegger, 2016)	HRIS application adds business value to compete with other businesses.
		Attainment of Targeted Integration Cost Reductions	CC2	(J. S. Wang et al., 2022)	The HRIS application helps to manage personnel data transactions accurately.
		Results of Internal Audits	CC3	(Suárez-Gargallo & Zaragoza-Sáez, 2023)	The HRIS application must continue to evolve according to technological developments.
		Attainment of Expense And Recovery Targets	CC4	(Suárez-Gargallo & Zaragoza-Sáez, 2023)	The HRIS application can help the user if an error occurs in a personnel transaction.
		Attainment of Unit Targets Cost	CC5	(Hansen & Schaltegger, 2016)	The HRIS application helps serve user needs.
		Integration of Business and IT Decisions	CC6	(J. S. Wang et al., 2022)	The HRIS application has been integrated into the company's business processes.

		Measured in Business Unit Performance	CC7	(Suárez-Gargallo & Zaragoza-Sáez, 2023)	Application systems serve as valuable tools for enhancing performance and aligning with the requisites of business processes.
		Operational plan/budget approval	CC8	(J. S. Wang et al., 2022)	Users can easily explain the use of the HRIS application to new employees.
ERP HR Module	HRM Function	Attendance	HR1	(Yu et al., 2020)	On the HRIS application, I have accurate and well-recorded attendance records.
		Training and Development	HR2	(Vaideeswaran & Kulandai, 2020)	The HRIS application provides clear information on available training programs.
			HR3		The training programs available are relevant to my work.
		Payroll	HR4	(Yu et al., 2020)	The HRIS application provides information on payslips and other benefits in real-time or ad hoc every month.
		Performance Management	HR5	(Bhardwaj et al., 2019)	The application performance evaluation process is conducted fairly and objectively.
			HR6		I receive helpful and constructive feedback on my performance.
		Personal Administration	HR7	(Bhardwaj et al., 2019)	I can easily update my personal information if anything changes.

3.2. Population and Samples

This research is conducted by distributing a questionnaire through Google Forms to all employees who use HRIS applications, using a Likert scale of 1-5 for the statements on the questionnaire. The research population consists of all employees who use or are directly related to the HRIS application in one manufacturing company in Indonesia. Based on interview results, the total population of employees in that company is 310 individuals. To determine the sample, the researchers employed a simple random sampling technique in conjunction with the Solvin formula. One can calculate the number of samples needed for that study. The required quantity of samples is.

$$n = \frac{N}{1 + (N \times e^2)}$$

$$n = \frac{310}{1 + (310 \times 0.05^2)}$$

$$n = 174.6$$

From the above calculation, the required sample size for respondents in this study is 174.6 or 175 samples, with 5% margin of error, totaling 16 samples.

3.3. Data Collection

Data collection is carried out through three methods: company observation, interviews, and questionnaires. Observation and interviews are conducted directly at a manufacturing company in

Indonesia to identify issues related to the use of HRIS applications. A questionnaire survey is used to collect data for processing and obtaining direct information from respondents' assessments of the use of HRIS application systems, thereby identifying factors influencing HRIS application performance. The questionnaire is distributed to all manufacturing company employees as HRIS application users via the Google Forms platform.

3.4. Data Analysis

The Likert scale from 1 to 5 measures each variable on the questionnaire. The quantitative method is employed for data analysis using IBM SPSS Statistics version 27 software. Using the research instrument to establish validity and reliability, this study adheres to validation and reliability phases throughout the data analysis process. The factor analysis method was the data analytic technique used for this study.

3.4.1. Reliability Test

This examination is conducted to assess the accuracy and consistency of the measurement instruments employed in the study. Reliability is ascertained by applying Cronbach's Alpha and Composite reliability metrics. A variable is deemed reliable when its Cronbach's alpha value exceeds 0.70.

3.4.2. Factor Analysis Method

Numerous investigations within the realm of social research, particularly those delving into human psychological matters that often involve intangible data, rely on the factor analysis technique for data processing (Jaffe, 2015). Factor analysis is a methodological tool that condenses the original variables' data and information into novel dimensions by elucidating the underlying structure through data syntheses (Watkins, 2018). This study's employed data analysis technique focuses on Exploratory Factor Analysis (EFA), its purpose is to explore new factors that correspond to the variables identified in the literature review. The following are the phases of factor analysis research.

1. KMO (Kaiser-Meyer-Olkin) and Bartlett's Test. KMO tests were utilized to assess the correlation of each variable, determining the validity and suitability of the study sample for further analysis. An MSA value exceeding 0.5 indicates the validity of the variable, warranting further scrutiny.
2. Anti-Image Correlation. It is used to see if the variables can be used as components. If the MSA value is ≥ 0.5 , it can be predicted more accurately.
3. Factor extraction. Perform factor extraction on variables formed to form one or more new factors. The criteria are to observe one's values. If the eigenvalue of each variable is greater than 1, it can be used as a new factor.
4. Rotation of factors. This step aims to streamline the factor matrix for a more straightforward interpretation using the varimax rotation method. The outcomes of the rotated component matrix disclose the indicators associated with each newly formed factor.
5. New Factor. Form a new factor name that corresponds to the variable represented. Moreover, create an HRIS research model from the factor analysis results.
6. Factor scoring. Its objective is to carry out the additional factor development analysis required in this research.

4. Results

4.1.Respondent Profile

According to the results of the questionnaire distribution, 185 respondents completed the questionnaire. The respondent's profile is described below, broken down by age, gender, educational background, division, duration of work, and duration of use of the HRIS.

Table 2 : Respondent Data

Characteristics	Category	Quantity	Percentage
Age	18 – 24 Years	34	18%
	25 – 35 Years	105	57%
	36 – 45 Years	28	15%
	46 – 55 Years	18	10%
Gender	Male	128	69%
	Female	57	31%
Educations	High School/ equivalent	27	15%
	Associate Degree	36	19%
	Bachelor Degree	109	59%
	Master Degree	12	6%
	Postgraduate	1	1%
Division	Financial & Accounting	16	9%
	Internal Audit	11	6%
	Corporate Secretary	6	3%
	Legal	3	2%
	Risk Management & PMO	9	5%
	HCM	14	8%
	IT & Digital	16	9%
	Infrastructure I	17	9%
	Infrastructure II	60	32%
	Other	33	18%
Duration of work	< 6 months	13	7%
	6 - 12 months	32	17%
	1 – 3 years	24	13%
	> 3 years	116	63%
Duration of use of the HRIS	< 6 months	21	11%
	6 – 12 months	40	22%
	1 – 2 years	23	12%
	2 – 3 years	28	15%
	> 3 years	73	40%

4.2. Reliability Test

According to Table 3, the reliability test results found a Cronbach's Alpha value of 0.958 among 185 respondents with 32 indicators. This value is more significant than 0.7, indicating that the statements in the questionnaire are considered reliable.

Table 3: Reliability Test Results

Cronbach's Alpha	N of Items
.958	32

4.3. Validity Test

According to Table 4, the validity test results exhibit a KMO-MSA value of 0.922, exceeding the prescribed threshold of 0.5. This outcome substantiates the appropriateness of the study sample for factor analysis based on its validity. Additionally, Bartlett's test of sphericity rendered a significant value of 0.000. Given that this value falls below 0.05, it affirms the correlation among the variables.

Table 4 : KMO-Bartlett's Test Results

KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy			.922
Bartlett's Test of Sphericity	Approx. Chi-Square		3735.203
	df		496
	Sig.		.000

4.4. Anti-Image Correlation

Based on the calculation of the Anti-Image Correlation values, the MSA values for all variables are below 0.5. This indicates that all variables meet the criteria for further analysis, and none are excluded. Therefore, processing can proceed to the next stage.

4.5. Total Variance Explained

Based on Table 5, the outcome of data processing signifies the potential formation of 4 novel factors from the analysis of 32 variables. The cumulative extraction variance attributed to all components accounts for 57.940% of the total variance. Subsequent data processing proceeds with the factor extraction procedure employing a predetermined number of factors within the SPSS software to condense the freshly generated elements.

Table 5 : Factor Extraction Results

Fixed number of factors	Cumulative %
1 factor	19.333
2 factor	33.579
3 factor	47.745
4 factor	57.940

4.6. Component Matrix

Based on Table 6, the rotated component matrix elucidates the loading factor values corresponding to each variable. These loading factors indicate the correlation between a specific variable and the formulated element. The decision to incorporate variables is contingent upon the highest correlation factor.

Table 6 : Rotated Component Matrix

Rotated Component Matrix^a				
	Component			
	1	2	3	4
FO4	.733			
HR6	.702			
HR5	.687			
CC6	.683			
HR2	.674			
CC7	.648			
HR3	.620			
UO4	.546			
CC5	.538			
HR4				
FO5				
UO6		.749		
UO1		.684		
UO7		.618		
OE3		.579		
CC1		.569		
OE1		.559		
CC3		.526		
UO2		.512		
FO3			.723	
CC8			.670	
UO3			.652	
OE5			.625	
HR7			.609	
HR1			.541	
CC2			.506	
CC4				
FO1				
OE2				.790
OE4				.643
UO5				.612
FO2				

4.7. Development of the Factors

In factor analysis, a crucial step involves data reduction, wherein a "filtering" process identifies the components deemed appropriate to serve as indicators. These metrics, in turn, are utilized to assess IT performance. In this study, the newly formed factors are interpreted according to the statements associated with each variable. The interpretation of these factors is detailed in Table 7 below.

Table 7 : New Factors Finding

No	Indicator	New Factor
1	The HRIS application provides clear information on available training programs (HR2).	Lack of Information Quality
	The training programs available are relevant to my work (HR3).	
	The application performance evaluation process is conducted fairly and objectively (HR5).	
	I receive helpful and constructive feedback on my performance (HR6).	
	The HRIS application helps serve user needs (CC5).	
	The HRIS application has been integrated into the company's business processes (CC6).	
	Application systems serve as valuable tools for enhancing performance and aligning with the requisites of business processes. (CC7).	
	Users are involved in the planning, developing, and implementing the HRIS application system (FO4).	
	Users receive training before using the HRIS application (UO4).	
2	The HRIS application can help users to improve their professional performance (UO1).	Information Systems Integration
	The HRIS Application function has helped users in carrying out their work (UO2).	
	The HRIS application helps businesses become more effective and efficient in business processes (UO6).	
	The HRIS application supports business objectives and corporate strategies (UO7).	
	The HRIS application adds business value to compete with other businesses (CC1).	
	The HRIS application needs to be continuously developed to keep up with technological developments (CC3).	
	With the HRIS app, it is easy to keep track of the happening transactions (OE1).	
	The functions of the HRIS application system are easy to use to evaluate employee performance (OE3).	
3	The HRIS application helps in processing personnel data transactions accurately (CC2).	

	Users can easily explain the use of the HRIS application to new employees (CC8).	Ease of Application Use
	Even if there are changes, users can easily understand the usage of the HRIS application (FO3).	
	The HRIS application can be used easily (UO3).	
	The HRIS application system is easy to use and understand by the user (OE5).	
	On the HRIS application, I have accurate and well-recorded attendance records (HR1).	
	I can easily update my personal information if anything changes (HR7).	
4	The performance of the IT division in dealing with problems that arise in the application systems is fast, good and resolvable (OE2).	IT Division Support
	Support of the HRIS application system by the IT division is good (OE4).	
	IT managers have a leadership mindset to help resolve issues in HRIS applications wisely (UO5).	

4.8.Models Used In Measuring HRIS Performance

After conducting factor analysis, four new factors influencing HRIS application performance were identified: Information System Quality, Information System Integration, Ease of Application Use, and IT Division Support. The next step involves calculating factor scores for the four identified factors for regression analysis to determine the most dominant factor. Factor scores are used as the independent variable with the level of understanding of HRIS application usage as the dependent variable.

Table 8 : Regression Analysis Coefficients Results

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig
1	(Constant)	7.443	.131		56.927	<.001
	REGR factor score 1 for analysis 1	-.084	.131	-.042	-.642	.522
	REGR factor score 2 for analysis 1	.513	.131	.254	3.910	<.001
	REGR factor score 3 for analysis 1	.708	.131	.351	5.402	<.001
	REGR factor score 4 for analysis 1	.457	.131	.226	3.486	<.001

From the regression analysis results in Table 8, it is found that the first factor has a significant value above 0.05%, i.e., 0.522. In contrast, the second, third, and fourth factors have important values below 0.5%, with values <0.001, <0.001, and <0.001, respectively. These values can be considered reliable and relied upon as an HRIS application system evaluation model because they have

significance values below 0.5%. Following the computation through regression analysis applied to the derived factor scores, the values assigned to the first factor (X1) is -0.084, the second factor (X2) is 0.513, the third factor (X3) is 0.708, the fourth factor (X4) is 0.457, and the constant value is 7.443. The model created to measure HRIS application performance is as follows:

$$Y = 7.443 - 0.084X_1 + 0.513X_2 + 0.708X_3 + 0.457X_4$$

Where : Y = Evaluation of HRIS application performance in manufacturing companies, X1= Lack of information quality, X2= Information system integration, X3 = Ease of application use, X4 = IT division support.

The regression analysis equation is interpreted in a model evaluating HRIS application system performance in the figure below.

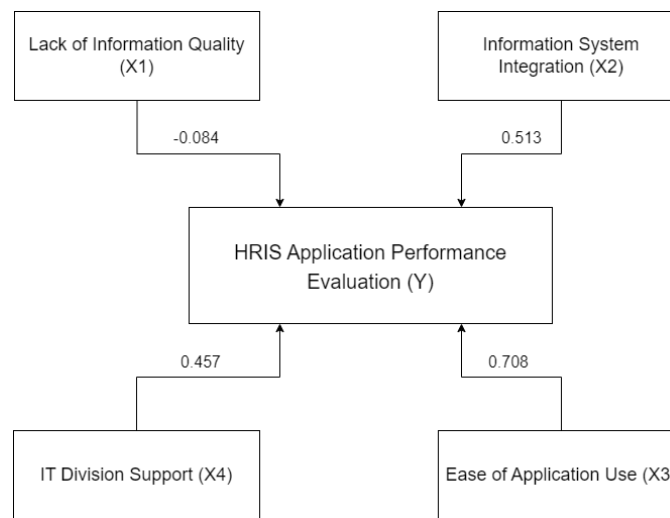


Fig. 1 : Research Model Regarding Factors That Influence HRIS Application Performance

From the model seen in Fig.1 above, it can be concluded as follows:

1. The first factor, namely the lack of information system quality, has a negative value of 0.084 regarding respondents' understanding of HRIS application usage. This indicates limitations in the quality of the first factor, representing several variables that can influence -0.084 towards respondents' lack of knowledge of HRIS application usage in the company. This is interpreted as users expressing dissatisfaction with the application system. User expectations include receiving training programs before using the application, user involvement in application development, providing clear and data-based information, the system's ability to track transactions, integrating application functions, providing services as expected, and providing up-to-date information.
2. The second factor, information system integration, exhibits a positive value of 0.513. This suggests that enhancing the quality of the second factor, as illustrated by its indicators in Fig. 1, will result in a 0.513 increment in respondents' comprehension of HRIS application usage within the company.
3. The third factor, ease of application use, manifests a positive value of 0.708. This signifies that an enhancement in the quality of the third factor and its associated indicators presented in Fig. 1 will lead to a 0.708 rise in respondents' understanding of HRIS application usage.
4. The fourth factor, IT division support, demonstrates a positive value of 0.457. This indicates that an amelioration in the quality of the fourth factor, incorporating its indicators as depicted in Fig. 1, will result in a 0.457 increase in respondents' understanding of HRIS application usage.

Table 9 : Simulation of HRIS Application Performance Evaluation in Manufacturing Companies

Condition	Constant	X1	X2	X3	X4	Y
Currently	7.443	0	0	0	0	7.443
Un-expected	7.443	-3.987	-3.810	-3.197	-3.643	1.895
Expected	7.443	2.077	4.330	3.277	2.613	11.434

From the simulated calculation of the model in Table 9, it is known that the understanding value of users regarding the use of HRIS applications is 7.443. However, suppose the company considers the four HRIS application performance factors. In that case, it will increase to 11.434, whereas if due attention is given to these factors. Conversely, if the company neglects these factors, the value of user understanding of HRIS application system usage is anticipated to decrease to 1.895. To achieve maximum performance, the user understanding value of 11.434, the company must improve the factors: X1 to 2.077, X2 to 4.330, X3 to 3.277, and X4 to 2.613.

5. Discussion

Upon scrutinizing the outcomes of the survey-based data processing and analysis, four discernible factors were unveiled, influencing the performance of Human Resource Information System (HRIS) applications in an Indonesian manufacturing company. These factors include the lack of information system quality, information systems integration, ease of application use, and IT division support. Therefore, considering these four new factors, companies must continually develop and improve the HRIS application to reduce user complaints. The following are suggested strategies for the company:

1) Lack Of Information Quality

The simulation results found that factor X1 has a negative value, indicating a decline in user understanding of HRIS application usage due to a lack of information quality. This is because inaccurate or unclear information can cause users to misinterpret the information provided by the application, leading to ineffective and inefficient use of the HRIS application and a decrease in user trust. Research (Ibrahim & Ali, 2023) emphasizes that information system quality is one of the factors influencing HRIS effectiveness. A well-implemented HRIS can assist companies in attaining their objectives and remaining competitive in the market. Other studies (Noutsu et al., 2017) reveal that information system quality is a crucial factor influencing HRIS usage acceptance and user satisfaction. (Khan et al., 2015) affirms that both technology and the organizational environment play a positive role in contributing to the successful adoption of HRIS. Therefore, to minimize the lack of HRIS application quality, the company can:

- Improve the quality of presented information by enhancing data accuracy, information clarity, information timeliness, and regularly auditing data to ensure submitted data is constantly updated and verified.
- Involve users in HRIS application development to understand user needs, ensuring the application is built according to user expectations. The company can collect user input regarding desired features.
- Enhance the application's ability to track employee performance evaluation processes, as most complaints arise from dissatisfaction with non-transparent performance evaluations.
- Provide a helpdesk feature or chatbot to assist users with technical issues.

2) Information System Integration

Based on simulation results, the company needs to improve factor X2 until it reaches the maximum value of 4.330. Enhancing information system integration in the HRIS application is crucial to achieving the company's business goals, optimizing HRIS performance, improving

company effectiveness and efficiency, and supporting business strategies. Information system integration in HRIS significantly impacts organizations utilizing it, affecting HRIS application performance (Phudphad et al., 2017). An integrated HRIS introduces a distinct environment compared to disparate yet related systems. The concept of centralized data storage intrinsic to HRIS necessitates an integrated workflow to execute tasks and activities consistently. Therefore, it is recommended that the company can improve information system integration (Alam., 2017):

- a) Review and fortify the integration of other organizational systems to bolster overall software security.
- b) Review potential security risks to identify insecure systems, then decide to improve HRIS applications.
- c) Evaluating the overall IT infrastructure by conducting a comprehensive audit of the company's IT infrastructure to ensure that network components, software, and hardware operate smoothly.

3) Ease of Application Use

Based on simulation results, factor X3 has a positive value, and the company must improve the ease of application use factor until it reaches the maximum value of 3.277. According (Johnson et al., 2016), employees perceive HRIS applications as beneficial when equipped with sufficient knowledge and skills, making it easy to use the HRIS application. If users are satisfied with its use, it will undoubtedly enhance the performance of the HRIS application. Therefore, the company can improve the ease of application use factor by updating the application's user interface to be simpler, user-friendly, and easily understood. Provide user guides such as video tutorials and FAQs. Additionally, offer training for new and existing employees on updates to the HRIS application.

4) IT Division Support

Based on simulation results, factor X4 has a positive value, and the company must improve the IT division support factor until it reaches the maximum value of 2.613. According (Ibrahim & Ali, 2023), IT division support is pivotal in fostering HRIS application performance, encompassing management support and an appreciation of the significance of information technology adoption. According to (Sitompul, 2016), emphasizes that the IT division's support directly impacts technology's utility and user commitment. The result underscores that the support provided by the IT division for HRIS performance relies on factors such as awareness, encouragement, and the company's considerations regarding technology availability and user characteristics. Therefore, the company needs to improve the IT division support factor to enhance HRIS application performance by:

- a) Improving communication between the HRM and IT divisions to ensure they work together to develop and maintain the HRIS application.
- b) Enhancing the IT division's performance by ensuring that it is well-equipped and solution oriented.
- c) Building a helpdesk feature to assist in serving user needs or resolving issues with HRIS application users and improving communication between users and the IT division.
- d) Actively collecting feedback from users and responding promptly.

6. Conclusion

This exploratory study proposes a model for evaluating HRIS performance in a manufacturing company using Exploratory Factor Analysis (EFA). Four factors influencing HRIS application performance were identified: lack of information quality, information system integration, ease of application use, and IT division support, determined from a survey of 185 respondents. However, the limitation of sample collection restricts the generalization and contribution of this research. Further empirical research using more diverse organizational data and other conceptual theories as the basis for research instruments is

crucial to validate the findings. The outcomes of this study serve as an initial step in understanding HRIS performance issues that require further investigation. Practical implications for companies suggested by researchers can be considered for HRIS application performance evaluations in companies. Overall, this research provides an initial conceptual foundation to be developed through better research design.

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