Article

The Effectiveness of I-AM Human Resources Information System Application at PT Pertamina (Persero)

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Abstract: This study discusses the effectiveness of implementation of Human Resource Information System (HRIS) I-AM application in improving the quality of employee service at PT Pertamina (Persero). Although this I-AM application helps employees, most of them are reluctant to use it. Therefore, this research intends to evaluate the effectiveness of the I-AM HRIS implementation by using the Delone model, McLean Information System Success model, and Quality Function Deployment analysis. Fifty employees are selected by performing convenience sampling techniques . The result shows that there are four indicators in the dimension of system quality which did not fulfil the employees' desire. Out of four indicators which failed to fulfill the employees' desire, The speed of administration process as well as the ease of the human resource administration process are among the highest technical importance rating and relative weight which literally means high-interest rate and should be redesigned to improve employee service through I-AM HRIS.

Keywords: Human Resource Information System, Quality Service, Quality Function Deployment, House of Quality

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1. Introduction

Technological advancement in the industrial Era 4.0, is the reason to implement HRIS application in human resource management in the company. Consequently efficiency should be able to provide qualified competitive human resources era. Putting that into practice, the company needs to have a thorough understanding of new literacy called data literacy, technological literacy, and Humanities literacy [1].

In 2017, the platform of Human resource management service provider, had made a research [2] on the 161 companies in Indonesia on the management of human resources applied in the company. The research shows that there are more or less 4 annual reports that should be completed by most of the companies in Indonesia such as attendance list

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reports, earning statements, paid leave statements, and sick leave reports. If they are carried out manually the risk of error is not only high but also time consuming [2].

However, despite the advantages found in implementing HRIS in the company there are still some deprivation faced by the company along the way. Evidence shows that the implementation of HRIS applications in Indonesian companies were not being used in full capacity [2], the results showed that out of 161 companies being surveyed, there were still 73% or about 117 companies which have not implemented the application HRIS, and only about 27% or 44 companies in total that have implemented the application. This is due to the reason that each company has a different strategy and management, therefore implementing the assessment of application HRIS will be difficult.

Ever since 2016, PT Pertamina (Persero) has been developing a new digital-based innovation to facilitate the HR administration process and that is a HRIS application referred as I-AM (Information About Me) with the intention to bring "One Pertamina" in the uniformity of the working system. Currently, there are about 500 Employees of PT Pertamina and its subsidiaries who use I-AM that are under the SSC HC function (created by PT Pertamina, in 2016). The I-AM HRIS Pertamina is used by employees to simplify the process of Human Resource duty, (PT Pertamina, 2016). However, based on the data taken from the survey (pilot test) distributed to employees in PT Pertamina (Persero) and its subsidiaries, It came out that 67.8% out of the total 37 respondents are still in capable of knowing the employee service facilities provided by the I-AM HRIS Pertamina. In addition, out of the total 37 respondents, 52.4% of employees do not use the I-AM application frequently in performing their service. Thus, based on the survey, it can be concluded that only the minority of the employees experienced the benefits of using HRIS I-AM Pertamina.

Based on the background being developed, and later deprived the problems that will be discussed, the authors describe the research problem formulation as follows:

1. What is the employee's expectation of the I-AM HRIS application?
2. What is the level satisfaction of employee with the I-AM HRIS application?
3. What are the technical characteristics the I-AM HRIS application can offer?
4. What is the connection between employee expectations and the I-AM HRIS application?
5. What is the evaluation of the I-AM HRIS application result to refer to so that it can meet the expectations of employees?

2. Literature

2.1. Human Resource Management

Human resources are the main source of the company to produce high-quality goods as well as providing good services in order to bring advantage to the company. Therefore, human resources management plays an important role in achieving the company goal.in detail, human resources management should conduct certain tasks such as planning on finding qualified human resources in relation to procurement or recruitment, going through employee selection process, implementing training, and developing human resources available in the company [3]. Human resource management is also responsible for the comfort of the working environment, as well as the maintenance, and on top of that is to be responsible to appoint the right person in delivering the task. Through the function of human resource management, the company is expected to be better in managing human resources in the future so that the company's objectives can be achieved.

2.2. Human Resource Information System

HRIS is defined as an integrated system used to collect, store, manage, and analyze THE HR information of organizations based on the database, applications, hardware, and software managed by the company's HR in making use of its functions [4]. The effectiveness of HRIS can be measured or evaluated using a theory developed about the success of the information system known as D & M which can also be a successful model [5]. The theory implemented by D & M as a successful model, explained that the success of information systems or information effectiveness can be measured with 6 (six) construction or dimensions, namely quality, information quality, usage, user satisfaction, Individual Impact, and Organizational Impact [5].

2.3. The I-AM HRIS Pertamina

I-AM is an HR service application designed by Pertamina web-based to give easier access to the workers in terms of updating personal data, as well as gaining information related to personal data of workers individually, quickly, transparently, and accurately. The existence of I-AM application can assist some activities related to the personnel department with an automated rapid process. The HR process will be integrated into one system and carried out in the process of data submission, approval, supervision, and reports related to personnel tasks [6]. The existence of I-AM application will familiarize the workers who were previously accustomed to the manual of systematized, facilitate and help its users systematically in performing the activities in connection with human resources.

2.4. Service quality

A service quality provided should be in accordance with the wishes of customers, and it is necessary to explore more about the expectations and perceptions of customers by conducting voice of customer analysis using service quality [7,8]. Undoubtedly the Service Quality is a tool for measuring the quality of the services available and it can also be used to analyze the causes of problematic services [9,10]. There is the possibility in which the quality of service provided has already reached the points of customer expectations or less than customer expectations or even beyond customer expectations. In details QFD is used to analyze and measure customers' expectations. QFD itself is defined as the customer private translator to complete adequate company requirements in every single stage, starting from doing research all the way into designing and developing the product, manufacturing, distributing, marketing, and after sales service [10].

2.5. Quality Function Deployment (QFD)

QFD is a systematic approach in determining what customers wish and accurately implementing such wishes into the right technical design, manufacturing, and production planning. QFD is used to improve the planning process, and at the same time overcoming the problems aroused in the system, and provide any assistance in making improvements to the company's culture [7,9,10].

3. Methods

A descriptive quantitative approach and QFD are used in this research with its tool called house of quality matrix. Descriptive research is a study conducted to find out the value of self-variables of either one or more variables without making comparisons or linking in one another variable [11]. A descriptive research on this study investigates the ability of HRIS I-AM in improving the quality of employee services. The conceptual

framework of this research is depicted in Figure 1. There are six variables and thirty-two indicators to be evaluated in the HOQ matrix, namely quality system, quality information, frequencies usage, user's satisfaction, individual impact, and organizational impact as presented in Table 1. The respondents of this research are employees and users of HRIS I-AM of PT Pertamina. According to [8,12-14], in conducting research, the fewest sample sizes were 30 respondents and The closed-ended questionnaires were distributed using google form.

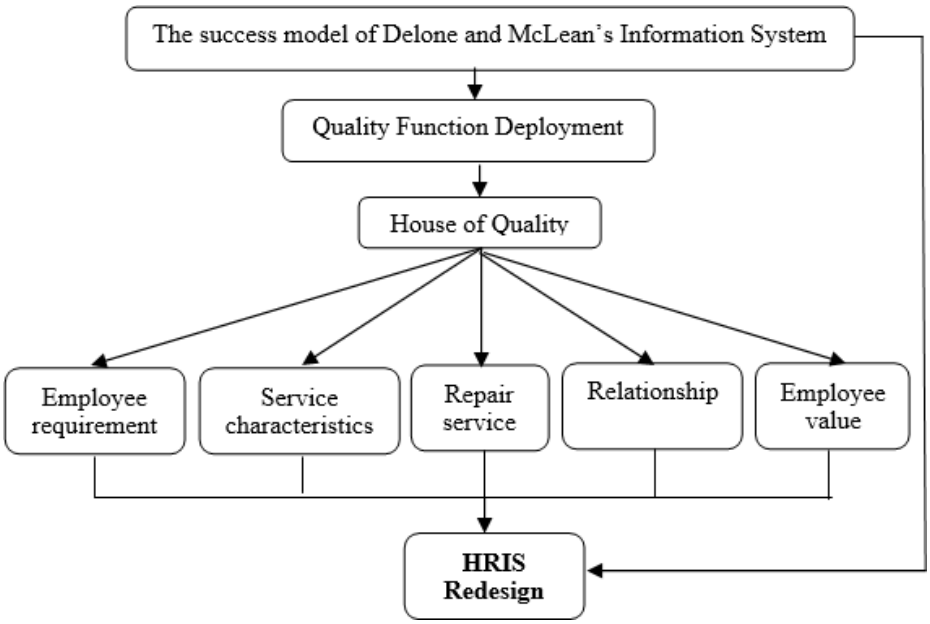

Figure 1. Conceptual Framework

To ensure that all indicators used in this study can genuinely measure each variable, the validity and reliability of the instrument should be carefully tested prior to the usage [15]. Some invalid indicators are removed and are not included in the next process. Only valid indicators will be included in the first room of the HOQ chart (employee requirements room) and other rooms until Pertamina HRIS is redesigned.

4. Results and Discussion

Out of the 32 service indicators served as Employee Requirement in this research, only 31 are valid after going through the validity test. One of the indicators that is not valid is the data change information created with the HRIS I-AM Pertamina which does not accommodate the duration of the time that is included in the Information Quality variable that is why the indicator is not included in the first chart. All indicators that passed the validity test is then implemented with a gap analysis method. Gap analysis method itself is a tool to compare the level of employee expectations of the I-AM HRIS application with actual performance in assisting the administrative process of employees. If the results of

the analysis are negative, it indicates that the system performance is below the employee's expectations, in other words, it fails to satisfy the employee's wish.

Table 1. Variables, Sub Variables, and Indicators

Variable	Sub variables	Indicators
Quality system (X_1)	Easily implemented	1. Easy to use (user friendly) 2. Comfortable to use
	Access speed (Response Time)	3. Fast response
	Reliability	4. Stable and no malfunction occurrence
	Flexibility (Flexibility)	5. Flexible in use
	Security	6. Secured Data security
Information Quality system (X_2)	Completeness (Completeness)	1. Completeness of data/information
	Relevance (Relevance)	2. Relevant information
	Accuracy	3. Accurate information
	Timeliness	4. Timeliness of data processing 5. Data information up to date
	Presentation of information (Format)	6. Clear Format 7. Easy-to-understand form
Frequency of usage (X_3)	Frequency of usage (X_3)	1. Use of system to request Employee Service 2. Usage intensity 3. Usage system relate to feature completion 4. Usage system relate to speed
User Satisfaction (X_4)	Efficiency	1. The system is useful in obtaining efficient service
	Effectiveness	2. Effective system in coping with user
		3. Satisfaction of the service system
	Pride (Proudness)	4. A pleasant experience in using the system 5. Feel proud to use the system
Individual Impact (X5)	User perception of the system increase Individual (user) performance	1. Improved user productivity 2. Improved user performance 3. Improved user effectiveness 4. Increased motivation 5. Improved user satisfaction
Organizational Impact (X6)	User perception of the system will give an influence on the quality of organizational performance	1. Improved organizational performance 2. Increased organizational productivity 3. Increased organizational effectiveness 4. Increased organizational efficiency 5. Improved organization service quality

4.1. Employee' Requirement

Having easy access to use the I-AM HRIS system for the employee in order to be more convenient in getting a rapid response, which is reliable, flexible, and secured using the I-AM HRIS system, there are some points that must be concerned first before measuring their satisfaction toward the application of the system. Similarly, it should be applied, along with other dimensions that should be identified first before making an assumption about the satisfaction of the employees upon using the I-AM HRIS system designed by PT. Pertamina. This research provides four alternatives to show the level of importance of the above mentioned indicator to the employee ranked as; very unimportant (1), unimportant (2), important (3), utmost important (4). The outcomes proves that there is only one indicator which is considered not important for the majority of respondents that is feeling proud of using the system (X_4.5). More than that, the usage of the technology aims to assist employees in doing their work or taking care of various individual and company administrations [6]. According to [16] employees are a very valuable asset of the company, thus the company should prioritize their needs by overcoming problems that occur in their working environment more quickly.

4.2. Employee Satisfaction

The satisfaction level category is ranked into 4 groups which are very dissatisfied (1), dissatisfied (2), satisfied (3), and very satisfied (4). Respondents' answers are generally scattered in the categories of satisfied and dissatisfied. There is only 1 indicator satisfied. Owing to the fact that The I-AM HRIS Pertamina has never encountered an error (X_1.4), more description of employee satisfaction can be referred to 2.12 .

4.3. Employee Competitive Assessment

From the Employee Competitive assessment chart it is clearly shown that the level of the satisfaction rate outcome against the I-AM HRIS Pertamina is 15 indicators are very satisfied, 7 indicators are satisfied, 8 indicators are dissatisfied. Encountering an error was the lowest satisfaction rate. The analysis carried out at this level is sufficient to explain why many employees are reluctant to use the I-AM HRIS system. The fact that in many cases this system . On the other hand, employee competitive assessment for the former HR service system showed the same result that is not satisfied. The two-lowest satisfaction value for both improve the quality of the services.

4.4. Service Characteristics

The third room of the HOQ chart contains service characteristic data. Service characteristics are obtained by interviewing the Service Center Human Capital Function of PT Pertamina. Furthermore Service characteristics contains data Based on the interview results and the service characteristics of PT Pertamina are described as follows.

1. Cost-effectiveness (Paperless)
2. Manual process automation
3. Rapid of HR administration process
4. Easy HR Administration Process
5. Flexibility of place accessibility
6. Flexibility of Time accessibility
7. Individual Data Monitoring
8. Data format security and recalling progress flexibility
9. Data integration
10. Data validity

Additionally, each service characteristic is equipped with a corrective direction symbol. The improvement direction symbols are divided into three group (Table 2), 1) higher target better (▲); 2) optimal target (Q); and 3) lower target better (▼). Some service characteristics should be improved especially for negative indicators in gap analysis. The negative sign shows the employee's expectations are higher than the working performance. It is obviously clear that other indicators should show their performance since the company is providing excessive facilities which are not required by the employee (Figure 2).

Table 2. Description of two-way improvement of service characteristics

Symbol of improvement direction	Explanation
▲ Q ▼	Higher target better Optimal target Lower target better

There are four service characteristics that have achieved optimal target, namely speed of HR administration process, flexibility of time accessibility, data integration, and validity of data. Those points mentioned previously are essential for the companies to improve their performance in cost effectiveness, implementation of automation process, individual data monitoring, and data format security as well as recalling the progress of flexibility.

Column #	1	2	3	4	5	6	7	8	9	10
Direction of Improvement	▼	▼	*Q*	▲	▲	*Q*	▼	▼	*Q*	*Q*
Service Characteristics	Cost-effectiveness (Paperless)	Process automation	Speed of HR administration process	Easy HR Administration Process	Flexibility of place access	Flexibility of time access	Individual data monitoring	Data format security and recall progress flexibility	Data integration	Data validity

Figure 2. Improvement Direction

4.5. Relationship Matrix

The fourth room in the HOQ chart contains the relationship between the first room (employee requirement) and the third room (service characteristics). This part is meant to show how far the influence of service characteristics of the I-AM HRIS is in addressing value of the relationship is subjective based on the qualitative data acquired by the researcher through interviews with related parties, field observation, and the author's knowledge as a researcher [10] with the following description.

1. ● Symbol with a value of 9, describing a very strong relationship
2. ○ Symbol with a value of 3, describing a strong relationship
3. ▽ symbol with a value of 1, describing a weak relationship
4. Without symbol describes no relationship.

4.6. Services Correlation

The fifth room of The House of Quality (HOQ) building contains a technical correlation that indicates the interactions between service characteristics themselves [8,15]. The service correlation formed a matrix in resembling a roof, so it is often referred to as the roof of matrix. The following chart are translations or meanings of the symbols of the correlation as shown in Table 3.

Table 3. Description of Technical Correlations symbol analysis

Symbol	Description
(+)	Strong relationship
(-)	Weak relationship
( )	No relationship

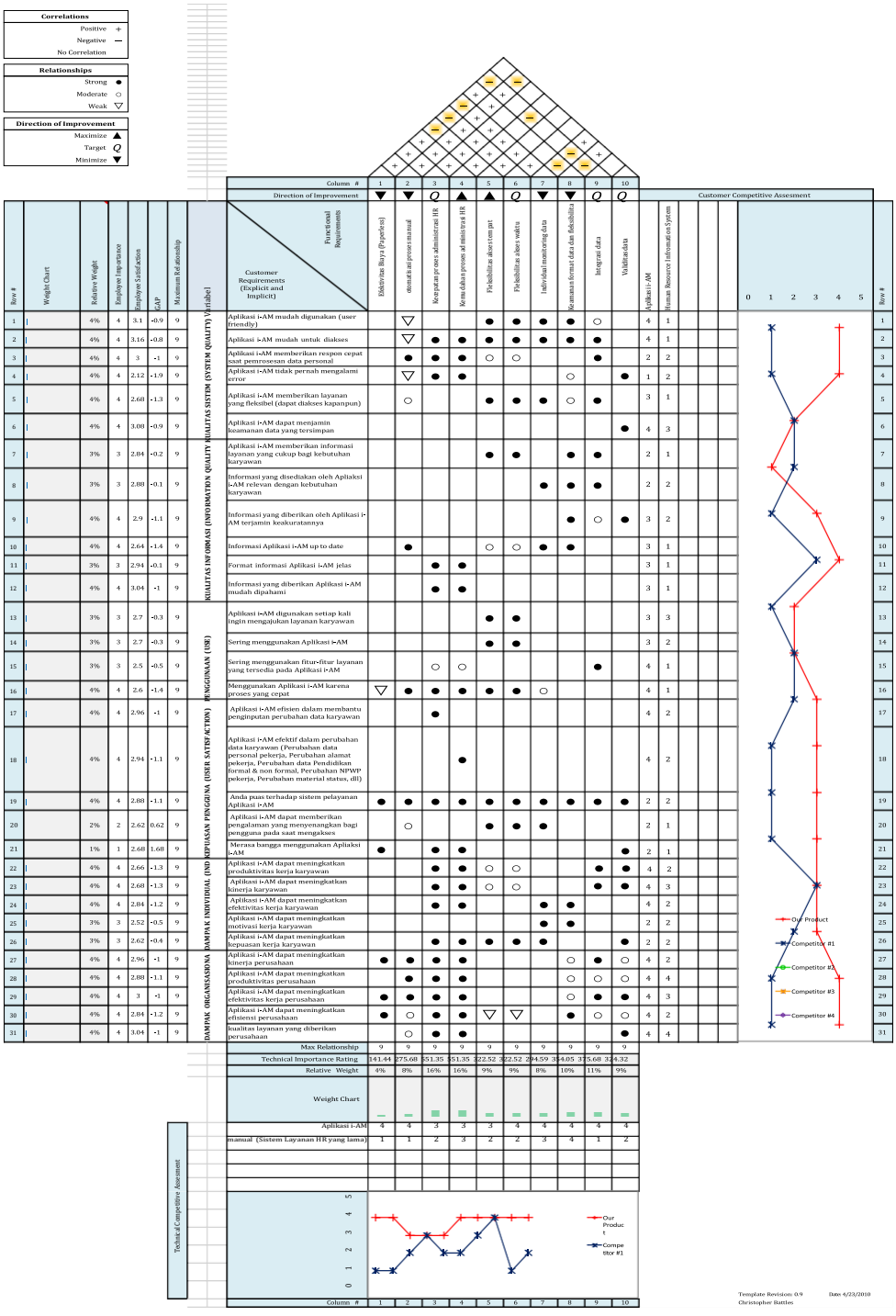

Figure 3. The House of Quality Matrix

4.7. Service Matrix

The sixth room in the HOQ chart is the service matrix room. This room is divided into 2 parts namely the technical importance rating and relative weight (Table 4). Technical importance rating reflects a form of technical action that can be performed by the company based on employees' wishes in accordance with the company's capabilities. In Table 4, the speed of the HR administration process and the easy HR administration turned out to be the technical characteristics with the highest value in technical importance rating and has the same value amounting to 551.35 whereas the cost effectiveness (paperless) has become the technical characteristics that have the lowest technical importance rating value with a value of 141.44.

Table 4. Service Matrix

Service Characteristics	1	2	3	4	5	6	7	8	9	10
Max Relationship	9	9	9	9	9	9	9	9	9	9
Technical Importance Rating	141.44	275.68	551.35	322.52	322.52	322.52	294.59	354.05	375.68	324.32
Relative Weight	4%	8%	16%	16%	9%	9%	8%	10%	11%	9%

The greater the relative weight percentage the higher the importance level. The Table 4 above showed the highest relative weight of 16% for service characteristic speed process of HR administration and easy of HR administration process. The full HOQ matrix is presented in Figure 3.

Table 5 shows the priority attention given to the company's technical characteristics. It's the fact that All technical characteristics are sorted by relative value importance from the highest to the lowest. The order presented in Table 5 is in accordance with the relative importance value. The larger this value the more urgent this indicator should be rectified and redesigned.

Table 5. Priority of Importance Relative Value

No. Priority	No. Service Characteristic	Service Characteristic	Importance Relative
1	3	Speed of HR administration process	16
2	4	Easy HR Administration Process	16
3	9	Data integration	11
4	8	Saved documents in the Web, and can be accessed any time	10
5	5	Flexibility of place access	9
6	6	Flexibility of time access	9
7	10	Data validity	9
8	2	Manual process automation	8
9	7	Individual data monitoring	8
10	1	Cost-effectiveness (Paperless)	4

4.8. Technical Competitive Assessment

Technical competitive assessment itself shows the comparison of employees' assessment to I-AM HRIS and the former human resource administration process (presented in Figure 4. Meanwhile, the technical competitive assessment is separately presented in Figure 3. This part is in the sixth room of the house of quality chart. It is obvious that many employees are reluctant to use the I-AM HRIS, despite the fact that the new system offered many advantages compared to the former system. Moreover, there are only two indicators that have the same rating such as individual data monitor (7) and cost effectiveness (1).

5. Conclusion and Recommendation

Various things that employees expect from the I-AM HRIS application system to achieve have been identified and summarized in the first room of the HOQ chart. Additionally, in order to analyze the employees satisfaction, a validity test was conducted to achieve these expectations [15]. As for the next steps, invalid indicators will no longer be used in this research.

All and all, there are 31 indicators with high level of satisfaction. The highest one is easy to access by 3.16 score and the lowest one is held by never encountering an error score**.** In clarity, the positive gap score means the customer requirements attribute is reaching the points of satisfactory whereas the negative gap score indicates the dissatisfactory condition. It is evidence that customer satisfaction is a level where the approximate performance of the product fulfils the customer expectations [17-19]. Meanwhile, the never encountered an error as the fourth indicator of quality system has the negative and the lowest score by -1.9. In summary, it is crystal clear that this indicator failed to fulfil the desire of employees. Key informants acknowledged that it is true the I-AM HRIS system application often encountered problems that could not be fixed quickly. Therefore, many employees are reluctant to use the system. The fact that the new system still has many problems, does not make the employees lose their trust in it as they strongly believe that sooner or later this system will be improving and will assist them in doing their work.

This research recommends redesigning the I-AM HRIS Pertamina to improve the quality to reach the satisfaction of employee's services as the user of this new application. Based on HOQ analysis, the speed of the instrument for the administration process and the easy usage of the new system should be redesigned to achieve the best performance of application.

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