

# QUALITY ANALYSIS OF PAYROLL INFORMATION SYSTEM BASED ON ISO 9126 IN PT KARYA PRIMA USAHATAMA

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## Abstract

PT Karya Prima Usahatama is a company that engaged in Cleaning Service, Gardener Service and Office supporting facilities, the main activities of PT Karya Prima Usahatama are very closely related to human resource management and in 2016 PT Karya Prima Usahatama took the initiative to built Payroll Information System that serves to facilitate its operational activities. The purpose of this study is to analyze the quality of Payroll Information System at PT Karya Prima Usahatama based on ISO 9126 which consist of six quality aspect such as functionality, reliability, usability, efficiency, Portability and maintainability.

This Analysis carried out by the method of observation, interview, questionnaire and assisted with software such as SPSS, WAPT 10.0, GTMetrix and Web Browser. The Result for Payroll Information System Analysis with Six Quality aspect from ISO 9126 are still have deficiency in the aspect of Efficiency, in the other words the software still has deficiency in providing the appropriate performance. There are five priority issues from the test result using GTMetrix for efficiency aspect such as Leverage Browser Caching, Inline Small CSS, Avoid Bad Request, Minify JavaScript and Optimize Image

*Keywords: Analysis, Payroll Information System, ISO 9126.*

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## 1. Introduction

PT Karya Prima Usahatama realizes the importance of following the development of communication technology to be able to compete in the globalization era, since the revitalization of the business process in 2014, the main activity of PT Karya Prima Usahatama is very close to human resource management, a follow-up to revitalizing the business process, in 2016 PT Karya Prima Usahatama built a Human Resources Information System that functions to facilitate activities so that more effective and efficient performance results can be obtained.

Malayu SP Hasibuan (2014: 10) Human Resource Management is the science and art of managing the relationships and roles of the workforce to be effective and efficient in helping the realization of company, employee and community goals and according to Veithzal Rivai (2014: 729) Human Resource Information Systems, namely systematic procedures for collecting, storing, retaining, retrieving and validating data needed by a company to improve HR decisions.

Hamzah B. Uno and Nina Lamatenggo (2011: 57) also suggest that information technology is a technology used to process data. Processing includes processing, obtaining, compiling, storing, manipulating data in various ways to produce quality information, namely information that is relevant, accurate, and timely from the above explanation. It can be concluded that the Human Resource Information System is a computer application program that organizes governance. governance and management of Human Resources in the company to support the decision-making process or can be called a Decision Support System by providing a variety of information needed by both the company and employees.

Wignyowiyoto & Rofiah, (2017) stated that the payroll information system is part of the Human Resources information system which is a sub system of the Management Information System (SIM). Some information such as attendance history, pay slips and other information needed by employees can be accessed easily, making it easier for management to find out the track record of employees while working at the company.

The payroll process carried out by PT Karya Prima Usahatama can be said to be quite complicated because it involves quite a lot of employees, both organic and outsourced employees, if an error occurs in the payroll

process, this will result in a reprimand from the employer even to termination of the work contract (default). Seeing the importance of the payroll information system in supporting the business activities of PT Karya Prima Usahatama, it is necessary to conduct a quality analysis by referring to a standard. After making observations on several journals, the payroll information system is proposed to be tested with ISO 9126 standards which have been identified based on Dr. Rafa E. Al-Qutaish (2010) ISO 9126 consists of six quality aspects, namely functionality, reliability, usability, efficiency, maintainability, and portability. ISO 9126 was chosen because it is an international quality standard whose validity and reliability have been tested (Tika Novita, 2016).

Referring to the ISO 9126 standard, it is hoped that the results of the quality analysis of the Payroll Information System obtained can be a positive feedback and input for the company to develop the Payroll Information System at PT Karya Prima Usahatama to be better in the future.

## 2. Literature Review

### A. Software Performance Testing

Strategies in creating and maintaining software are needed to ensure the quality of a software. Previous research such as MG Beniazi, MKA Kamran, and A. Ghaebi, "Iranian State University Web sites," International Journal of Information Science and Management (IJISM), Vol. 13, No. 1, pg. 71-85, 2015, analyzing appropriate evaluations in measuring and drawing conclusions on web application quality. The purpose of conducting the evaluation is to find out how far the web application has met the quality aspects according to international standards, one of which is ISO / IEC 9126, so that it is aligned with user needs, so that every organization that develops web applications can strive to improve the quality of web applications with an understanding of the quality of web applications that they have.

### B. Strategy, Quality and Assurance

Strategy is the direction and scope of the organization in the long run to achieve organizational benefits through the configuration of its resources in overcoming environmental challenges while meeting the needs of the business environment and the expectations of interested parties. D. Paul, D. Yeates, and J. Cadle (2011). The development of a software application requires a Master Strategy H. Oja (2016), which includes Enterprise Strategy, Corporate Strategy, Business Strategy and Functional Strategy.

The process of making software, apart from the functionality side of a program, must also consider the quality and assurance side. Quality in software is the level of a system component or process that is produced in accordance with user expectations and is free from defects A. Vetro, N. Zazworka, C. Seaman, and F. Shull, (2012). Guarantee in software is a systematic and planned pattern of all stages carried out to provide assurance that an application meets technical needs and activities that have been designed to evaluate applications that have been made.

### C. Human Resources Information System

Vikas (2012) stated "Human resource information system (Human Resources Information System) is an integrated system designed to provide information used in HR decision making. This means that the human resource information system is an integrated system designed to provide information used in HR decision making. Sadique Shaikh (2012) states "Human Resource Information System is a key management tool which collects, maintains, analyzes and reports information on people and jobs. It is a system because it integrates all the relevant data, which otherwise might have been lying in a fragmented and scattered way at various points in the larger system; converts this data into meaningful conclusions or information and makes it accessible to the persons, who need it for their decisions.

Human resource information systems also aim to obtain, store, manipulate, retrieve, and distribute information related to human resources in organizations, such as the opinion of J. Anitha & M. Aruna, (2014)

which states that HRIS or Human Resource Information System is a system of gaining, storing, manipulating, retrieving and distributing pertinent information about an organization's human resources.

#### *D. Payroll Information System*

Wignowyoto & Rofiah, (2017) The payroll information system is part of the Human Resources information system which is a sub system of the Management Information System (SIM). In order to overcome errors and irregularities in the calculation and payment of salaries, a payroll system is necessary. The salary accounting system is also designed by the company to provide a clear picture of employee salaries so that it is easy to understand and easy to use. According to Mulyadi (2016) states that the payroll information system is designed to handle salary transactions or payment of employee wages. The payroll accounting information system can be used by company management to plan and control company operations.

According to Krismiaji, (2015) An accounting information system is a system that processes data and transactions to produce useful information for planning, controlling, and operating a business. While the payroll system plays an important role because this system will determine how much salary employees should receive (Satyawan et al, 2013).

Based on some of the above definitions, it can be understood that the Payroll Information System is the entire procedure and technique needed to collect data and manage it so that it becomes information material for interested parties so that it can meet effective payroll needs.

#### *E. ISO 9126*

*American Heritage Dictionary* defines the word quality as "an aspect or attribute of something". As an attribute of something, quality refers to aspects that can be measured, something that can be compared with known standards. Software is said to be good if it can completely and "perfectly" meet the specific criteria of the required company organization. This is often termed the fulfillment of "User requirements" or user needs. Factors affecting the quality of the Software can be categorized into two major groups, namely: 1. Factors that can be directly measured. 2. Factors that cannot be directly measured.

Software quality can be assessed by certain measures and methods, as well as through software testing. One of the benchmarks for Software quality is ISO 9126, which was created by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). ISO 9126 defines the quality of Software products, models, quality aspects, and related metrics used to evaluate and determine the quality of a software product. The ISO 9126 standard has been developed in an attempt to identify the key quality attributes for computer software.

### **3. Research Method**

The process and stages to be carried out in this study are in accordance with Stages as follows:

#### *A. Research Object*

This research was conducted at PT Karya Prima Usahatama and several information about the payroll application system.

#### *B. Study of Literature*

Scientific research must be carried out with a systematic arrangement technique to facilitate the steps to be taken. Likewise, what was done in this study, the first step was to conduct literature studies on scientific books and articles that discuss Payroll Information Systems and ISO 9126.

#### *C. Research Variable*

Determination of variables in this study were determined based on the results of the ISO 9126 standard. Rafa E. Al-Qutaish (2010) said that the ISO 9126 standard consists of six quality aspects, namely Functionality, Reliability, Usability, Maintainability, and Portability. Therefore, this research variable is focused on the quality aspects in accordance with ISO 9126.

**D. Preparation of Research Methode and Instruments**

The formulation of research methods and instruments was determined based on the results of the study and the collection of preliminary data in the form of journals and scientific obtained. Methods and Instruments This research consist of observation, interviews (checklist), questionnaires (questionnaire) and involves several software including SPSS, WAPT 10.0, GTMetrix, and Web Browser.

**E. Data Analysis**

Data analysis is based on the aspects contained in ISO 9126 while the data analysis aspects of ISO 9126 are divided into 6 aspects, namely:

1. Functionality data analysis
2. Usability data analysis
3. Efficiency data analysis
4. Analysis of Reliability data
5. Portability data analysis
6. Maintainability data analysis

**4. Research Results**

**F. Software Quality Analysis**

Analysis of the quality of this software is carried out on several aspects in accordance with ISO 9126 standards, namely aspects of functionality, aspects of usability, aspects of efficiency, aspects of portability, aspects of reliability, aspects of Maintainability. Payroll Information System analysis is not carried out on all sub aspects / characteristics due to limited information and data.

**G. Results of the Functionality Aspect Analysis**

Testing Functionality conducted using the interview method submitted to 3 (three) experts in web development, from the results of these answers then the data was collected using Microsoft Excel to get a recapitulation value. The recapitulation of the Functionality Test Results can be seen in Table 4.1 below:

<b>ANSWER</b>	<b>YES</b>	<b>NO</b>
<b>TOAL</b>	<b>180</b>	<b>0</b>

Table 4 1 Recapitulation of Test Results Functionality

Based on Table 4.1 above, it can be concluded that of the 60 (sixty) functions that were questioned to 3 (three) experts, all of them answered “Yes”, which means that all functions were running well so that a total value of 180 (one hundred and eighty) was obtained, from The results are then calculated to analyze fuctionality using the following formula:

$$X = 1 - A / B$$

Information :

A = The number of functions that are not functioning correctly

B = The number of functions evaluated

So that you get the following results:

$$X = 1 - 0/180$$

$$X = 1$$

Based on the test results above, it can be concluded that the software has good functionality according to the ISO 9126 standard, namely if the X value is close to 1 ( $0 \leq X \leq 1$ ) in other words the software has been able to provide functions according to user needs when used in certain conditions.

**H. Usability Aspect Analysis Results**

The results of the Usability Test were carried out on 75 respondents consisting of organic and outsourced employees at PT Karya Prima Usahatama using instruments USE Questionnaire and to get the reliability of the questionnaire variables, alpha Cronbach's was calculated on the test results (Arnold M. Lund) which was then processed using the SPSS tool, the results are in accordance with Figure 4.1 as follow:

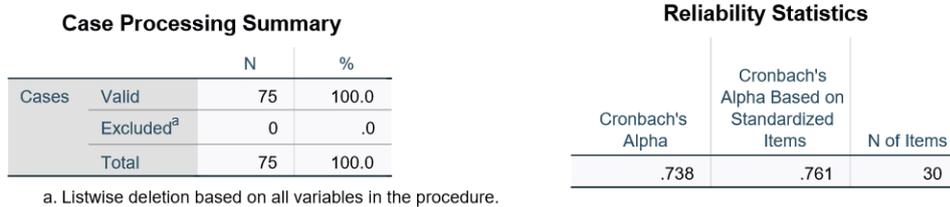


Figure 4. 1 The calculation results Alpha Cronbach uses SPSS

Based on Figure 4.1 above, the Cronbach Alpha value is 0.738. In other words, the reliability of the questionnaire variables used is included in the "Acceptable" category

	SS	ST	KS	TS	STS
<b>TOTAL</b>	<b>781</b>	<b>1285</b>	<b>161</b>	<b>23</b>	<b>0</b>

Table 4 2 Recapitulation of Test Results Usability

Based on Table 4.2 above, it can be concluded that the scores that give SS answers "Strongly Agree" are 781, ST "Agree" is 1285, KS "Disagree" is 161, TS "Disagree" is 23 and STS "Strongly Disagrees" is 0. From these results, then look for the score of each answer variable to get the total score and here are the results of the calculation according to Table 4.3:

	TOTAL	SCORE	TOTAL X SCORE
SS	781	5	3905
ST	1285	4	5140
KS	161	3	483
TS	23	2	46
STS	0	1	0
<b>TOTAL SCORE</b>			<b>9574</b>

Table 4 3 Calculation of the Total Test Score Usability

The formula for calculating the Usability value is Total Score / Maximum Score x 100%, the maximum score can be obtained from the following calculations:

Maximum Score  
 = Number of Respondents x Number of Questions Questionnaire x 5  
 = 75 x 30 x 5  
 = 11250

Percentage =  $9574/11250 \times 100\% = 85\%$

Based on the results above, the percentage value obtained is 85% "Very High" and has met the Usability aspect, in other words the software is able to be understood, studied, used, and attractive to users when used under certain conditions.

**I. Results of the Efficiency Aspect Analysis**

Efficiency testing is carried out using the GTmetrix tool, while the executive summary of the test can be seen in Figure 4.2 as follows:



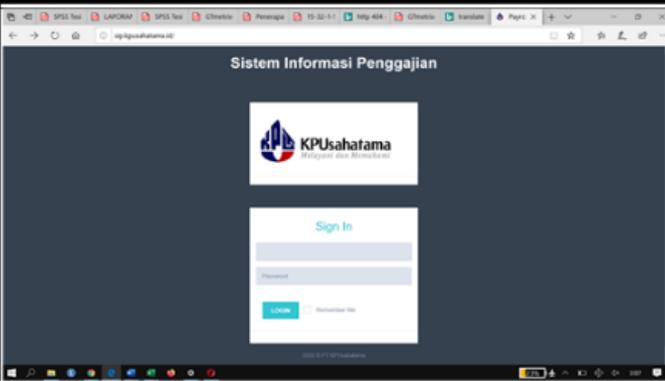
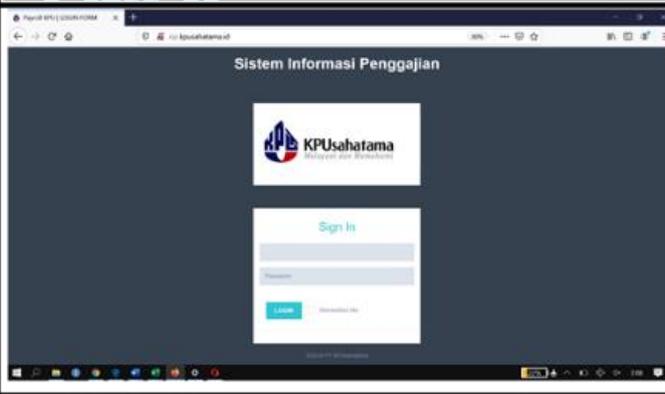
Figure 4. 2 Executive Summary Testing Applications using GTMetrix

Based on the test results according to Figure 4.2 above, the Pagespeed results are 84%, Yslow is 65%, Fully Loaded Time is 3.3 seconds, Total Page Size is 336 Kb and Request is 30.

The efficiency of the Payroll Information System based on the GTmetrix test still had shortcomings and there were several items that needed to be updated and adjusted to improve the performance of the PT Karya Prima Usahatama Payroll Information System.

**J. Portability Aspect Analysis Results**

Portability testing is carried out using four (four) types of browsers including Internet Explorer, Mozilla Firefox, Google Chrome and Opera and the results of the Portability test can be seen in Table 4.4 as follows:

NO	WEB BROWSER	DISPLAY	RESULTS
1	<i>Opera</i>		No Error
2	<i>Internet Explorer</i>		No Error
3	<i>Mozilla Firefox</i>		No Error

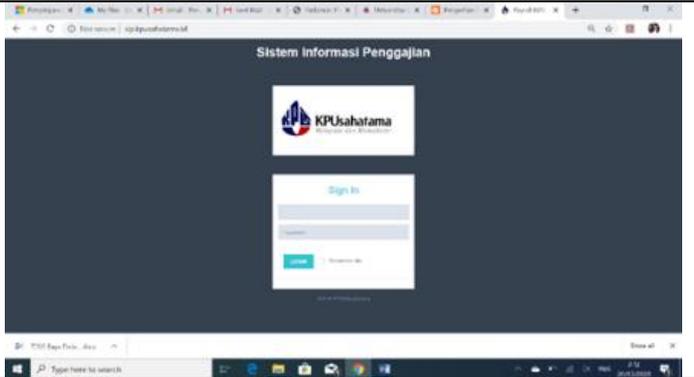
NO	WEB BROWSER	DISPLAY	RESULTS
4	Google Chrome		No Error

Table 4 4 Aspect Operational Test Results Portability

**K. Results of the Reliability Aspect Analysis**

This test is carried out with the help of WAPT (Web Application Performance Tools) 10.0 using the Stress Testing scenario within 10 minutes with the status test result Success according to Figure 4.3 as follows:



Figure 4. 3 Test result Reliability with the WAPT 10.0 application

Based on test above, the software has been able to maintain performance levels when used under certain conditions.

**L. Maintainability Aspect Analysis Results**

Testing on the Maintainability aspect is carried out operationally in accordance with the Land, R (Land, 2002) Version Instrument with results in accordance with Figure 4.4 below:

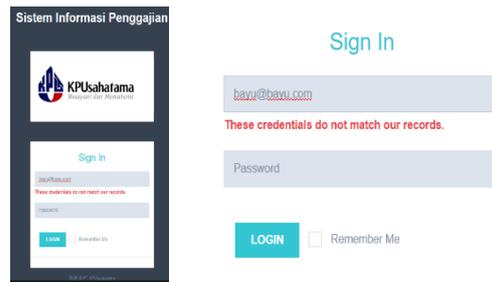


Figure 4. 4 Data Alerts Incorrect Log In

Figure 4.4 shows a warning issued by the Information System when logging in wrongly, when the data entered does not match the database that is owned, a warning will appear "These Credentials do not match our records" on the monitor.

From figures above, it can be concluded that the Payroll Information System at PT Karya Prima Usahatama has fulfilled one of the Maintainability aspects on the Instrumentation side based on (Land, 2002) where the system can provide a warning if an error occurs along with the identification of the error.

In addition to Instrumentation according to (Land, 2002) there is a Consistency aspect where the information system has one design in the entire system design, the following are the operational test results for the consistency aspect of the Payroll Information System at PT Karya Prima Usahatama in accordance with Figure 4.5 as follows:

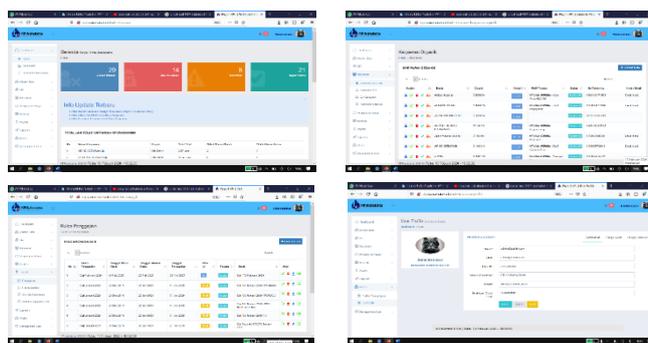


Figure 4. 3 Page View Similarity Test Operational The web

The system design model already has the same form, this can be seen from the display of the system implementation of each web page between one page and another which has the same form and is consistent. Based on this, the Payroll Information System at PT Karya Prima Usahatama has met the Consistency aspect. The results of the analysis for Maintainability testing in accordance with the Land test instrument (Land, 2002) can be seen in Table 4.6 as follows:

Maintainability instrument	Rated aspect	Result
<i>Instrumentation</i>	There is a warning on the data processing system to identify errors	When a user has committed an error, the system issues a warning to identify the error. For example, when there is a lack of data input in the Log In process, the system directly provides information if there is a lack of input.
<i>Consistency</i>	The use of one form of design in the entire system design	The system design model already has the same form, this can be seen from the display of the system implementation of each web page between one page and another which has the same form and is consistent

Table 4 5 Maintainability Testing Results Analysis

## 5. Conclusions and Recommendations

### Conclusion

To determine the quality of the Payroll Information System at PT Karya Prima Usahatama which refers to the ISO 9126 standard, testing and analysis has been carried out for six aspects of quality, namely functionality, reliability, usability, efficiency, maintainability, and portability.

Based on the results of the analysis carried out on the Payroll Information System at PT Karya Prima Usahatama with reference to the ISO 9126 standard, the aspects of quality functionality, reliability, usability, maintainability, and portability get good results but in terms of quality, software efficiency cannot provide appropriate performance. and relative to the number of resources used, so that improvements and adjustments are needed in order to obtain a better-quality Payroll Information System.

### Suggestion

Based on the test results above, there are still deficiencies, especially in terms of efficiency, the test results using GTMetrix there are 5 priority issues, namely Leverage Browser Caching, Inline Small CSS, Avoid Bad Request, Minify JavaScript and Optimize Image. This can be a positive input for PT Karya Prima Usahatama to be able to improve performance and service both to employees and to customers.

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