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ANALYSIS QUALITY OF EMPLOYMENT INFORMATION SYSTEMS USING WEBQUAL 4.0 AND IMPORTANCE PERFORMANCE ANALYSIS METHODS

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Abstract

Information system quality analysis is an aspect that information system managers must pay attention to, especially to meet user needs, increase comfort, and increase user productivity. SISNAKER, as the main information system used by the Department of Manpower and Energy and Mineral Resources of Bali Province to support services to the community digitally, also requires a quality analysis process to ensure user comfort when interacting with SISNAKER. This research aims to measure the quality of the employment information system, often called SISNAKER belonging Department of Manpower and Energy and Mineral Resources of Bali Province based on user perceptions and provide recommendations to improve the system quality. SISNAKER quality is measured using a questionnaire based on domains of the WebQual 4.0 method especially, usability, information quality, and interaction quality parameters. Mapping recommendations to improve SISNAKER quality is made based on four priority quadrants of the Importance Performance Analysis (IPA) method. The sampling of research was based on a proportionate stratified random sampling technique, involving a total of 98 respondents. The results of the research show that the gap between performance and user expectations is 0.02, which means that system performance is in line with user expectations. Improvement is found in information quality and interaction quality parameters, with -0.02 gap, so it still needs improvement.

Keywords : Analysis of Information System Quality, Recommendations for Quality Improvement, WeQual 4.0, Importance Performance Analysis (IPA)

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INTRODUCTION

Department of Manpower and Energy Mineral Resources of Bali Province or called Disnaker ESDM is one of the regional apparatus within Bali Provincial Government which is tasked with carrying out government affairs related to the field of labor and mineral resources energy [1]. Disnaker ESDM in carrying out its duties and services the community uses an information system to support and simplify the service process. This information system is known as Employment Information System or SISNAKER and it's created in a website platform, then it can be accessed from various types of devices.

SISNAKER, at the beginning of development, had a data collection feature for PMI (Indonesian Migrant Workers) who came from Bali Province. Along with the development of users and leadership policies regarding the digitization of services, SISNAKER is experiencing development, especially in terms of features. Feature development for SISNAKER was carried out by adding three features, namely the publication of recommendations for overseas apprenticeships for LPKS (Private Job Training Institutions), the registration and selection feature for training participants in the tourism industry, and the K3 work environment testing feature for companies. Three features are used to make it easier for the public to access the services provided by Disnaker ESDM. For Disnaker ESDM, the development of SISNAKER also provides convenience in terms of data management, document archiving, data searching, and report creation.

Disnaker ESDM, apart from having developed and supervised the SISNAKER implementation process, needs to carry out an analysis of SISNAKER. The purpose of the analysis is to determine the quality of SISNAKER in meeting user needs. The results obtained from this quality analysis can be used as a basis for evaluation and improvement at SISNAKER in the future. In order to make the quality analysis process more organized, a

method for the quality analysis process is needed. The methods commonly used for analysing the quality of information systems include McCall, ISO 9126-based mapping, and a combination of the WebQual 4.0 and Importance Performance Analysis (IPA) methods [2].

The information system quality evaluation model based on the ISO 9126 approach has been carried out for evaluating the quality of the e-Clinic website in 2019 [3] and testing E-Book software in 2019 [2]. The process of analysing system quality in both studies involves six testing parameters, namely functionality, reliability, usability, efficiency, portability, and maintainability, with more emphasis on analysing system quality in terms of functionality, system performance, and processes for system maintenance.

Another application of the implementation of the ISO 9126 model is to measure the quality of the e-letter processing system in Sambikerep Village, Surabaya, East Java, in 2022 [4]. The measurement of the quality of the e-letter processing system in the study was carried out based on the black-box testing method, with the main focus on testing each functional owned by the system. Based on the test results, the average value of the assessment results has a percentage of 82%, so it can be said that the e-letter system has very good quality.

The implementation of the McCall method has been carried out to measure the quality of the academic information system owned by Universitas Muhammadiyah Bengkulu in 2020 [5]. The measurement of system quality in the study has a main focus on assessing system operations with parameters including correctness, reliability, efficiency, integrity, and usability. The results of the study show that the quality of the system in terms of correctness and usability parameters is quite good, so it requires special attention and needs to be improved.

Another study on the application of McCall was conducted in 2020 with the aim of evaluating the quality of Riau University's KKN portal [6]. The main focus of the research is on the product operation aspect, with the largest percentage result in the efficiency aspect, which is worth 99.90%.

Implementation of the WebQual 4.0 and IPA methods has been carried out to measure the quality of the HSP Academy's website in 2023 [7] and analyze the quality of the Telkomsel website in 2022 [8]. The results for the analysis of HSP Academy's website show that the main priority is improvement in terms of information layout, information updates, and more detailed, accurate information, while the results for the Telkomsel website show that the level of suitability of the website for use reaches a percentage of 94.73%.

Another application of the combination of WebQual 4.0 and IPA methods was carried out to measure the quality of websites owned by the Palembang Open University in 2021 [9] and the quality of websites owned by Bengkulu Province in 2018 [10]. The results obtained for the quality of the website belonging to Palembang Open University show that the level of conformity of the website with user expectations reached 99.99%, while the results for the quality of the Bengkulu Province website show that the website has good values in terms of usability and information parameters and is of sufficient value in terms of service interaction. In 2020, a combination of WebQual 4.0 and IPA methods was also carried out for research related to measuring the quality of PT Citra Surya Indonesia's VISLOG website [11], with the results obtained in the form of a conformity level of 101.19% and a gap value between performance and expectations of 0.05.

The analysis and evaluation of the quality of SISNAKER required by Disnaker ESDM Bali Province, according to the results of observations and interviews, focuses on three main aspects of quality measurement based on user views. The three aspects are aspects of usability, information quality, and interaction quality that users feel when using SISNAKER. Based on these conditions and in accordance with several previous studies, the most suitable research method to meet the needs of the Disnaker ESDM is a combination of the WebQual 4.0 and IPA methods.

Apart from its objectives, the WebQual 4.0 method is specifically used for analysing and evaluating systems based on website platforms. In addition, another thing that makes Disnaker ESDM need to analyse the quality of SISNAKER (obtained from the results of interviews) is that Disnaker ESDM does not yet know the user's assessment and views on the quality of SISNAKER in meeting user needs since SISNAKER was officially launched in 2020. Given this, Disnaker ESDM requires quantitative SISNAKER quality results and, at the same time, a basis for the SISNAKER improvement and development process.

This research discusses in more detail related topics that have never been researched in previous research, especially regarding the application of WebQual 4.0 and Importance Performance Analysis (IPA) methods in analyzing SISNAKER quality, which is also the

aim of this research, namely to analyze the quality of SISNAKER and provide recommendations for improving the quality of SISNAKER. Application of the WebQual 4.0 method for SISNAKER quality analysis involves three parameters, namely usability, information quality, and interaction quality. The quality results obtained are then mapped into four IPA quadrants so that priorities can be identified that need to be improved in terms of performance. It's hoped that the results of this research will be able to provide an overview of the quality of SISNAKER quantitatively, provide recommendations for improvement, and be used as a reference in the SISNAKER evaluation process, with the ultimate goal of optimizing service delivery in accordance with the needs of SISNAKER users.

Analysis Theory

Analysis, according to the Indonesian Dictionary, is the decomposition of a subject into various parts and the study of these parts to describe relationships between parts with the aim of obtaining a correct understanding [12]. According to Nana Sudjana (2016:27), analysis is an effort to sort integrity into certain elements or parts to be able to develop a clear hierarchy. Analysis, according to Gorys Keraf (2004:67), is defined as a process for solving problems into parts that are related to each other. Based on several opinions from these experts, it can be concluded that analysis is an activity used to find new findings regarding an object being researched or observed based on accurate evidence of that object [12].

Website and Website Quality

Website is a term for a group of web pages, which generally consist of one domain name or sub domain and run on WWW (World Wide Web) protocol [13]. Websites in digital era are one of important things, which cannot be separated from an organization or company, including those related to the government. Because websites can be used as a medium for delivering information quickly and can be accessed at any time by the public, without being limited by space and time. Considering the importance of websites, it's very important to pay attention to the quality of the website, considering quality of a website will affect consumer satisfaction. Because a website is not only seen from it's attractive visual appearance, but the website must be able to make consumers feel helped by the existence of website, especially in terms of fulfilling consumer needs [13].

WebQual 4.0

WebQual is a measurement technique or method used to measure website quality [14]. WebQual has several versions, up to latest, namely WebQual 4.0 as a result of development of SERVQUAL which is widely used in measuring quality of a service. The research instrument used by the WebQual 4.0 method was developed using Quality Function Development (QFD), as a development and implementation process based on the user's voice or voice of customers regarding the quality of a product or service [15].

The WebQual 4.0 method for testing an application has several indicators that are formed in a model framework that can later be applied to measuring the application being evaluated [14]. The framework model of the WebQual 4.0 method involves three assessment parameters, namely usability, information quality, and interaction quality [16].

Usability explains the qualities related to a website design including appearance, ease of use, ease of navigation and image that can be conveyed to users. Measurements in usability include ease of the application to learn and operate, easy to understand, easy to navigate, and ability to display appropriate visuals.

Information quality is related to the quality of the content of the application, such as the suitability of the information presented to the user. Items used as measurements of information quality are accurate information, reliable information, latest information, information that is appropriate to discussion, complete information, and ease of users understanding the information.

Interaction quality explains the quality related to service interactions. Ability to provide security when making transactions, ease of user communication, confidence and trust in storing user information, and having a good reputation are measurement items in the interaction quality indicator.

Importance Performance Analysis (IPA)

Importance Performance Analysis (IPA) is a simple technique used to identify product or service attributes that most need development [17]. The IPA method was first introduced by Martilla and James (1977), which aims to measure the relationship between consumer perceptions and priorities for improving product and/or service quality, which can be described as a quadrant analysis [18]. The characteristic of IPA is that it combines the measurement factors of importance and level of satisfaction in a two-dimensional graph, which can make it easier to

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explain data and obtain practical suggestions [19]. The IPA graph is very easy to interpret because it is divided into four quadrants, which are obtained based on the results of measuring importance and performance [20]. Performance attributes in the IPA graph are depicted along the X axis, and importance attributes are depicted along the Y axis [21], as seen in Figure 1.

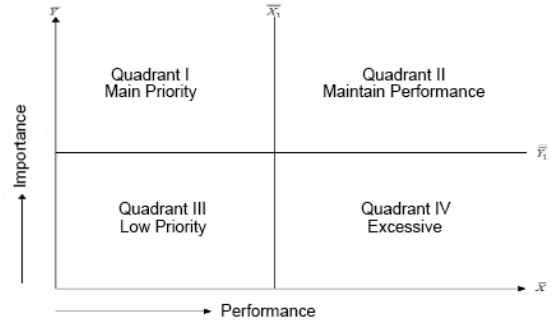

Figure 1 IPA Quadrant

The main components of Importance Performance Analysis (IPA) are quadrant analysis and gap analysis [22]. Quadrant analysis is used to determine consumer responses to attributes that have been grouped based on level of importance and performance. Gap analysis functions to see the gap between relative importance and consumer satisfaction with these attributes [23]. Quadrant analysis involves determining the average value of each performance and importance indicator, which can be calculated mathematically by equation 1, while gap analysis can be calculated mathematically by equation 2.

$$\bar{X} = \frac{\sum Xi}{n} \; dan \; \bar{Y} = \frac{\sum Yi}{n} \quad (1)$$

$$GAP = \bar{X} - \bar{Y} \quad (2)$$

X states system performance, Y states expectations or interests, and n is the number of respondents. Apart from involving quadrant analysis and gap analysis processes, IPA also functions to determine the level of conformity between system performance and user expectations, which is known as conformity level analysis. In mathematical analysis, the level of suitability can be calculated using equation 3, where Xi is the average performance score and Yi is the average importance score for a particular indicator.

$$Tki = \frac{Xi}{Yi} 100\% \quad (3)$$

Proportionate Stratified Random Sampling

Proportionate stratified random sampling is a type of probability sampling. Probability sampling itself is a sampling technique that provides an equal opportunity for each element or member of the population to be selected as a sample [24]. The proportionate stratified random sampling technique can be used if a population has members who are not homogeneous and diverse in terms of proportional strata. Examples of various proportional strata include having personnel consisting of different educational backgrounds, namely elementary, middle school, high school, bachelor's, or master's educational backgrounds.

The proportionate stratified random sampling technique will randomly take representative samples from the population used in the research. The mathematical calculations used to obtain the number of samples from the proportionate stratified random sampling technique can be seen in equation 4 [24], where n is the number of samples, N is the total population, and e is the limit of accuracy used in research.

$$n = \frac{N}{1+Ne^2} \quad (4)$$

Likert Scale

A Likert scale is a type of scale used as a measurement scale in research. The measurement scale itself can be defined as an agreement that is used as a reference in determining the range (length of the interval) that a measuring instrument has [25]. The Likert scale has two forms of statements, namely positive statements and negative statements. The scoring of positive statements has a score sequence of 5, 4, 3, 2, and 1, while the scoring of negative statements has a score sequence of 1, 2, 3, 4, and 5.

Table 1 Likert Scale

Score	General Form of Answer
5	Strongly Agree
4	Agree
3	Neutral
2	Disagree
1	Strongly Disagree

Validity Test

Validity is the degree of accuracy between the data that occurs in the research object and the data reported by the researcher. The general function of a valid test is to measure whether or not a questionnaire used in a study is valid or not. A questionnaire is said to be valid if

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the questions in the questionnaire are able to reveal something measurable, as the aim of distributing the questionnaire [25]. Mathematical calculations that can be used to carry out validity tests can be seen in equation 5, and the mathematical equation for calculating reference (comparative) values from the DF (degree of freedom) table can be seen in equation 6, with rxy as the correlation coefficient, N as the number of respondents, X as the stated score, and Y as the total score.

$$r_{xy} = \frac{N(\sum XY) - (\sum X \sum Y)}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}} \quad (5)$$

$$df = N - 2 \quad (6)$$

Reliability Test

Reliability testing can be used to measure the level of reliability of an instrument or measuring tool used in research; specifically, the measuring tool can be a questionnaire [25]. A questionnaire is said to be reliable if the respondent's answers to statements in the questionnaire are consistently stable over time. The technique commonly used for comparing parameters for reliability tests is Cronbach's alpha (Noor, 2014: 165), and mathematically, the equation used to measure validity tests is in equation 7.

$$r = \left(\frac{k}{k-1}\right)\left(1 - \frac{\sum \sigma_b^2}{\sigma_b^2}\right) \quad (7)$$

Reliability testing can be done using SPSS software via Cronbach's alpha technique. Cronbach's alpha technique has a reference value for the r calculation results that have been obtained, with a minimum reference value of 0.6, to have a high level of reliability.

METHOD

The method used in this research is a mixed method, namely research that combines approaches from several types of research with the aim of providing a more complete understanding of the object being studied. The first research method used in this research is quantitative research, with the main focus on collecting and analyzing data based on results collected in the form of numbers and statistics. The implementation of quantitative research occurs when the data analysis process uses a questionnaire as a data collection method, which is then processed to produce SISNAKER quality in the form of numbers.

The second research method applied in this research is evaluation research, with the main aim of measuring and evaluating the quality of SISNAKER based on the user's point of view. Based on this evaluation, recommendations can be made to improve the quality of SISNAKER.

Research Location and Time

This research was conducted at the Manpower and Energy and Mineral Resources Service of Bali Province, which is located at Jalan Raya Puputan, Renon, Dangin Puri Kelod, East Denpasar District, Denpasar City, Bali. The research is planned to take four months, starting in August 2023 and ending in November 2023.

Data Collecting Method

The data collection method in this research was obtained using three methods: observation, interviews, and questionnaires. Observation is used to collect data directly through the observation process and record every activity of using SISNAKER, especially in terms of service features that SISNAKER has.

Interviews are used to obtain information regarding user perceptions regarding SISNAKER's services, features, and capabilities in meeting its users' needs. Interviews are also used in the process of searching for information related to SISNAKER users (so that they are able to determine respondent criteria and obtain user profiles to be used as respondents).

Questionnaires are used to measure the quality of SISNAKER based on expectations and the suitability of SISNAKER to user perceptions. Questionnaire-based data collection is carried out by distributing questionnaires to respondents.

Research Population and Sample

Population is closely related to groups of people as well as the characteristics of people related to the research object. The research object was taken from Disnaker ESDM and the general public related to SISNAKER.

The sampling technique used was the proportionate stratified random sampling technique, and the sample size was calculated based on the number of SISNAKER users until 2023, which was recorded at 4267 users and using an accuracy limit of 10%, so the calculation of the research sample could be made as follows.

$$n = \frac{4267}{1+4267(10\%)^2} = \frac{4267}{43.67} = 97.7100985$$

The results of calculating the number of samples were then rounded up to 98 samples, and each respondent had to fill out a research questionnaire with a total of 23 questions. The selection of respondents is based on the criteria contained in Table 2.

Table 2 Criteria Contained

No	Criteria Contained
1	Be directly involved in using SISNAKER
2	Minimum age 18 years
3	Have access rights to SISNAKER (account)
4	Can access and use website
5	Have educational qualifications at one of the SMA/SMK/Equivalent, DI, DII, DIII, DIV/S1, Masters or Doctoral degrees

Research Flow

Research flow is used to describe the logical sequence of a series of steps carried out in this research. The flow used in this research can be divided into two categories: flow for analyzing system quality and flow for mapping priorities for improving system quality. All the flow of this research can be depicted as shown in Figure 2.

This research begins with an identification process of defining problems related to the quality of SISNAKER that will be researched. From these problems, a literature study process is carried out to find literature, documents, and theories that are able to support the analysis of SISNAKER quality. The identification process and literature study also involve an interview process with the Disnaker ESDM to find out the needs related to the SISNAKER quality analysis process. Based on the identification and literature study stage and interviews, the quality analysis of SISNAKER was agreed upon based on three main aspects, namely usability, information quality, and interaction quality, with a combination of WebQual 4.0 and IPA methods. The process continues to the SISNAKER quality analysis stage with the implementation of the WebQual 4.0 method, where the results are then used as the basis for mapping improvement priorities based on the IPA method. The final stage is making a summary or conclusion of the research and providing suggestions for future research.

Implementation of WebQual 4.0 for quality analysis begins with designing a WebQual 4.0-based assessment in the form of a research questionnaire, which consists of performance and importance indicators. The process continues to the data collection stage by distributing questionnaires to respondents. Data obtained from distributing questionnaires is then processed by calculating validity tests and reliability tests. The final stage of implementing WebQual 4.0 is creating a summary of the analysis results, which is then used in creating IPA-based priority mapping.

The implementation of the IPA method begins with processing summary data from the results of the SISNAKER quality analysis, involving the activity of analyzing respondent descriptions (based on gender, age, education, and occupation) and analyzing descriptions of the results of the WebQual 4.0 method in IPA as well as calculating the gap value (GAP) between performance and interests. The next stage is the formation of science quadrants, involving quadrant analysis activities and suitability level analysis. The results of the IPA quadrant are in the form of a Cartesian diagram with four priority areas for improvement, which is then continued to the final stage, namely making recommendations to improve the quality of SISNAKER.

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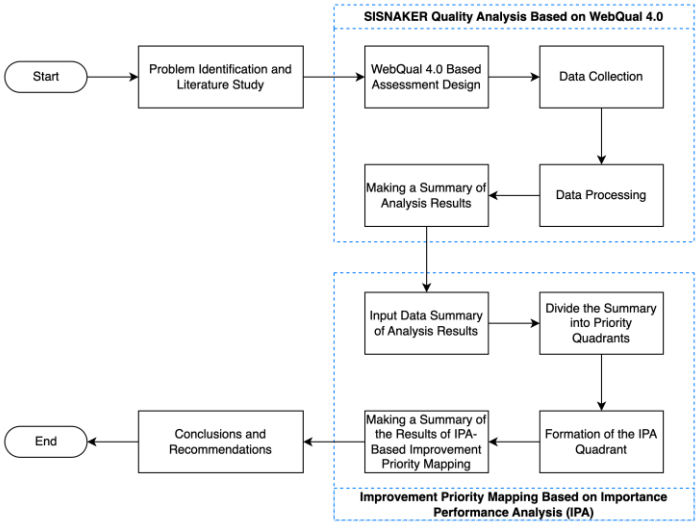

Figure 2 Research Flow

Table 3 Data Analysis Technique

No	Analysis Technique	Description
1	Descriptive analysis	Descriptive analysis is used to analyze data by describing or illustrating the collected data according to actual conditions. Descriptive analysis can also be used as a basis for forming statistical analysis to determine the characteristics of the data held.
2	Validity test analysis	Validity test analysis is used to test the level of validity of each question item in the research instrument. The validity test technique uses the product moment technique, with an accuracy limit value (e) of 10% and the calculation process uses SPSS software.
3	Reliability test analysis	Reliability test analysis is used to determine the level of accuracy, precision or consistency of research measuring instruments. The model used for reliability testing is Cronbach's Alpha and the calculation process is carried out using SPSS software.
4	Gap analysis	Gap analysis is used to determine the difference between SISNAKER's performance and interests based on the results of distributing questionnaires to respondents.
5	Conformity level analysis	Conformity level analysis functions to determine priority values that will be the main focus to determine parameters that need improvement or need to be maintained.
6	Quadrant analysis	Quadrant analysis is used to determine the position of each question on the Cartesian diagram with an average performance value for the X axis and an average importance value for the Y axis.

Data Analysis Technique

Data analysis techniques are closely related to the methods used to process and extract information from various data sources and aim to recognize relationships, patterns, and knowledge contained in the data. The data analysis techniques used in this research can be seen in Table 3.

RESULT AND DISCUSSION

SISNAKER Overview

SISNAKER is an abbreviation for Employment Information System, as it is one of the systems within the Bali Provincial Government and is owned and managed by the Bali Provincial Manpower and Energy and Mineral Resources Service, better known as the Disnaker ESDM. The purpose of the existence and development of SISNAKER is to assist the Energy and Mineral Resources Department in providing services to the public digitally, so that it can simplify and speed up every service process owned by the Disnaker ESDM. The

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front page and the public information page of the SISNAKER website can be seen in Figure 3.

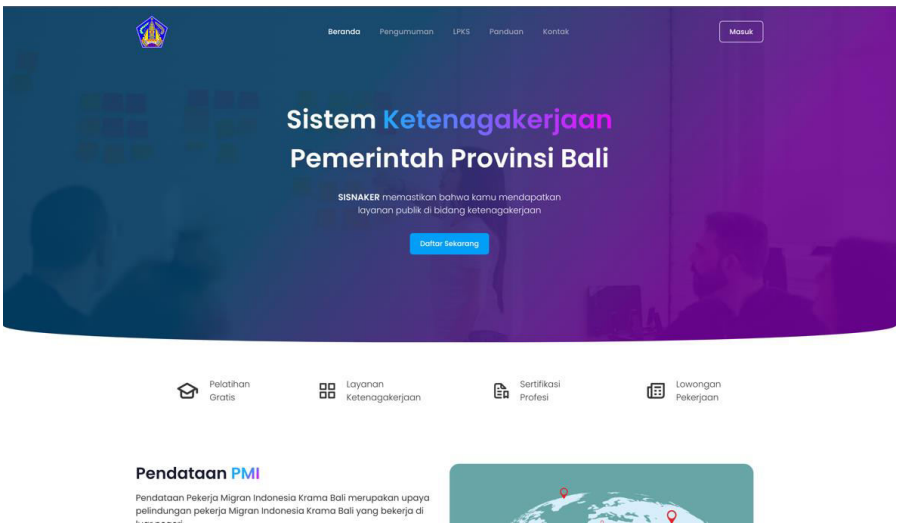

Figure 3 SISNAKER Public Page Views

Services for the Disnaker ESDM and contained in SISNAKER's service features include PMI data collection, issuing recommendations for overseas apprenticeships for LPKS, registration and selection of training participants in the tourism industry, as well as publishing work environments and K3 recommendations for companies. All of these features have become part of SISNAKER, so people only need to register and upload all service files digitally via SISNAKER.

Validity Test Analysis Results

The validity test in the research was divided into two, namely the WebQual 4.0 validity test performance indicators and the WebQual 4.0 validity test on interest indicators, using data obtained from distributing questionnaires to respondents. The number of respondents used in this research was 98; the r table value was obtained by DF = n-2 = 98 - 2 = 96, with an accuracy value of 0.1%, so the r table value was obtained at 0.167. The results of the validity test of the importance and performance indicators can be seen in Table 4.

Based on the results in Table III, it shows that the results of calculating the r value using SPSS software are greater than 0.167 for each assessment item. These results state that each assessment item from the research questionnaire has a valid value and can be continued to the reliability testing stage.

Reliability Test Analysis Results

Reliability testing aims to ensure that the research instrument has a high level of accuracy, precision, or stability if it is used as a research measuring tool in the future. The technique used for reliability testing is the Cronbach's alpha technique, and the mathematical calculation process for finding validation values is carried out in SPSS software. The criteria stating that a research instrument has a high level of reliability is if the r value (Cronbach's alpha) is greater than 0.6. The results of the reliability test calculations for the important indicators can be seen in Table 5.

Table 5 shows that each parameter of the SISNAKER quality measurement has a very high level of reliability. These results are known about the Cronbach's alpha value in each parameter, which is greater than 0.8, so it is classified in the very high category.

Table 4 WebQual 4.0 Validity Test Results

No	Code	Parameter	r count		r table	Description
			Importance	Performance		
1	US01	Usability	0.822	0.822	0.167	Valid
2	US02		0.845	0.825	0.167	Valid
3	US03		0.862	0.784	0.167	Valid
4	US04		0.809	0.821	0.167	Valid
5	US05		0.829	0.801	0.167	Valid
6	US06		0.872	0.878	0.167	Valid

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No	Code	Parameter	r count		r table	Description
			Importance	Performance		
7	US07		0.803	0.797	0.167	Valid
8	US08		0.787	0.791	0.167	Valid
9	IN01	Information Quality	0.881	0.881	0.167	Valid
10	IN02		0.878	0.887	0.167	Valid
11	IN03		0.881	0.898	0.167	Valid
12	IN04		0.902	0.906	0.167	Valid
13	IN05		0.851	0.871	0.167	Valid
14	IN06		0.926	0.926	0.167	Valid
15	IN07		0.895	0.902	0.167	Valid
16	IQ01	Interaction Quality	0.825	0.815	0.167	Valid
17	IQ02		0.875	0.877	0.167	Valid
18	IQ03		0.868	0.855	0.167	Valid
19	IQ04		0.851	0.882	0.167	Valid
20	IQ05		0.902	0.906	0.167	Valid
21	IQ06		0.872	0.874	0.167	Valid
22	IQ07		0.903	0.900	0.167	Valid
23	OV01	Overall	1.000	1.000	0.167	Valid

Table 5 WebQual 4.0 Reliability Test Results

No	Parameter	Cronbach's Alpha		N *of Items*	Reliability
		Importance	Performance		
1	Usability	0.934	0.939	8	Very high
2	Information Quality	0.955	0.958	7	Very high
3	Interaction Quality	0.947	0.947	7	Very high

Results of Descriptive Analysis of Respondents

Descriptive analysis of respondents functions to describe and group the number of respondents involved in this research based on certain groups. The descriptive groups of respondents that can be formed are as follows.

Responden By Gender

A total of 98 respondents were involved in this research. Based on the results of data processing, the grouping or profile of respondents based on gender can be displayed as in Table 6. The data in Table 6 shows that the number of male respondents was 57, and the number of female respondents was 41.

Table 6 Profilization of Respondents Based on Gender

No	Gender	Total	Percentage (%)
1	Man	57	58.16
2	Woman	41	41.84
Total		98	100

Respondents Based on Last Education

Grouping or profiling of respondents based on gender was carried out on the 98 respondents in this study. The results of the profiling of respondents based on their last education can be seen in Table 7. Based on Table 7, it can be seen that the most recent education of respondents came from SMA/SMK equivalent.

Table 7 Profilization of Respondents Based on Last Education

No	Last Education	Total	Percentage (%)
1	SMA/SMK Sederajat	40	40.82
2	DI	3	3.06
3	DII	2	2.04
4	DIII	2	2.04
5	DIV/S1	45	45.92
6	S2	6	6.12
Total		98	100

Respondents Based on Occupation

The total number of respondents, 98 people, was also profiled based on occupation. The results of grouping respondents based on occupation can be seen in Table 8. The majority of respondents

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involved in this research are not yet working, according to the data shown in Table 8.

Table 8 Responden By Occupation

No	Occupation	Total	Percentage (%)
1	ASN	23	23.47
2	Non ASN	12	1224
3	BUMN employee	1	1.02
4	Private employees	21	21.43
5	Other	16	16.33
6	Not yet working	25	25.51
	Total	98	100

Respondents Based on Age

Age was also used as an indicator in profiling the 98 respondents involved in this research. The results of the profiling of respondents based on age can be seen in Table 9. Based on Table 9, it can be stated that the respondents involved were mostly aged in the 18–30 year range, for a total of 48 people.

Table 9 Respondents Based on Age

No	Age	Total	Percentage (%)
1	18-30	48	48.98
2	31-40	21	21.43
3	41-50	18	18.37
4	>50	11	11.22
	Total	98	100

Respondents Based on Access to SISNAKER Over the Last 6 Months

The final category used to profile respondents is grouping respondents based on frequency of access to SISNAKER during the last 6 months. The results of this grouping can be seen in Table 10. Based on Table 10, it can be seen that the highest value of frequency of access to SISNAKER is 26, which is a frequent frequency.

Table 10 Respondents Based on Access to SISNAKER

No	Access to SISNAKER	Total	Percentage (%)
1	Very often	5	5.1
2	Often	26	26.53
3	Currently	33	33.67
4	Seldom	24	24.49
5	Very rarely	10	10.2
	Total	98	100

Percentage Results of Likert Scale Assessment

The percentage results of the Likert scale assessment are the results of the overall representation of respondents' answers in the form of a Likert scale on importance and performance indicators. Based on the data processing carried out on the questionnaire results, a representation of the overall Likert scale answers on importance (Imp) and performance (Per) indicators can be seen in Table 11.

Table 11 Percentage Results of Likert Scale Assessment of Importance and Performance Indicators

No	Answer		Likert Scale	Frequency		Percentage	
	Imp	Perf		Imp	Perf	Imp	Per
1	Very important	Strongly agree	5	476	485	21.07%	21.52%
2	Important	Agree	4	1495	1486	66.18%	65.93%
3	Quite important	Neutral	3	288	270	12.75%	11.98%
4	Not important	Don't agree	2	-	10	-	0.44%
5	Very unimportant	Strongly disagree	1	-	3	-	0.13%
		Total		2259	2254	100%	100%

Based on Table 11, the majority of respondents chose the important answer for the importance indicator. These results can be seen from the frequency and percentage of important answers that have the highest scores, namely 1495 and 66.18%. Meanwhile, for performance indicators, the majority of respondents chose the answer "agree".These results can be seen from the frequency and percentage of agreeable answers that have the highest scores, namely 1486 and 65.93%.

Gap Analysis Results

Gap analysis functions to determine the value of the gap between system performance and the expectations (interests) desired by users. The gap value is calculated by finding the difference between the average value of performance and importance for each assessment parameter. The results of calculating the gap value for each parameter can be seen in Table 12.

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Table 12 Results of Calculation of Gaps for Each Parameter

No	Parameter	*Perf*	*Imp*	GAP
1	Usability	4.10	4.08	0.02
2	Information Quality	4.08	4.10	-0.02
3	Interaction Quality	4.04	4.06	-0.02
4	Overall	4.24	4.18	0.06

The calculation of the gap value, according to Table 12, shows that the gap value for the information quality and interaction quality parameters is negative, namely -0.02. The gap value for the usability parameter is 0.02, and the gap value for the overall parameter is 0.06. The representation of SISNAKER quality can be determined by calculating the overall average value of the importance and performance indicators. The calculation to obtain the overall average value for the important indicators is as follows.

$$\bar{X}\ importance = \frac{4.08 + 4.10 + 4.06 + 4.18}{4} = 4.10$$

The overall average value of the important indicators was obtained in 4.10. Meanwhile, the calculation of the overall average value of performance indicators is as follows.

$$\bar{X}\ performance = \frac{4.10 + 4.08 + 4.04 + 4.24}{4} = 4.12$$

The overall average value of performance indicators was obtained at 4.12. A depiction of SISNAKER's performance in fulfilling user expectations as a whole can be seen by looking for the average value of the gap in the overall average importance and performance. The calculation to obtain the average gap value is as follows.

$$Qi\ (GAP) = 4.12 - 4.10 = 0.02$$

The overall average value of the gap is 0.02. Based on the calculation of the gap value and the overall average value, it can be stated that a positive gap value indicates that the website performance is in line with user expectations, while a negative gap value means that the website performance is not in line with user expectations and requires improvement.

Results of Conformity Level Analysis

The suitability level analysis aims to determine the priority order for improvement items that influence the quality of the SISNAKER website. This priority order can then be used by the Bali Province ESDM Manpower Office to identify items that need to be improved in terms of performance, with the hope of improving the quality of SISNAKER in meeting user needs. Calculations for the suitability level analysis are made using the IPA method suitability analysis equation, which is in equation 3. The results of the calculation of the suitability level analysis and the priority order of each question item are shown in Table 13.

The lowest level of conformity and the main priority for improvement is the item with code IQ05, related to providing communication space for the employment community, with a percentage value of 99.49%. The item with the code US03, related to the ease of using and running the SISNAKER website menu, is the item with the highest level of stability, with a percentage of 102.54%.

Quadrant Analysis Results

Quadrant analysis is useful for visualizing the average value of SISNAKER quality on importance and performance indicators in the form of a Cartesian diagram. Quadrant analysis is a further process in the IPA method after analysis of the level of suitability. The output of the quadrant analysis process is in the form of a Cartesian diagram, which has been divided into four quadrants based on the level of improvement priority. The formation of these quadrants is based on the average value of each assessment item, with the average value of performance indicators occupying the X axis and the average value of interest indicators occupying the Y axis. The data used to create the IPA quadrant is contained in Table 13. The results of the IPA quadrant with four priority quadrants can be seen in Figure 3.

Table 13 Conformity Level Analysis Results

No	Parameter	Code	Xi	Yi	Tki	Priority
1	Usability	US01	4.04	4.05	99.75%	13
2		US02	4.08	4.04	101.01%	20
3		US03	4.12	4.02	102.54%	23

No	Parameter	Code	Xi	Yi	Tki	Priority
4		US04	4.00	3.98	100.51%	19
5		US05	4.11	4.05	101.51%	22
6		US06	4.08	4.10	99.50%	7
7		US07	4.17	4.17	100.00%	14
8		US08	4.17	4.19	99.51%	11
9	Information Quality	IN01	4.08	4.10	99.50%	7
10		IN02	4.17	4.19	99.51%	11
11		IN03	4.02	4.04	99.49%	2
12		IN04	4.10	4.10	100.00%	14
13		IN05	4.02	4.04	99.49%	2
14		IN06	4.06	4.06	100.00%	14
15		IN07	4.11	4.13	99.51%	10
16	Interaction Quality	IQ01	4.09	4.11	99.50%	9
17		IQ02	4.04	4.06	99.50%	5
18		IQ03	4.05	4.05	100.00%	14
19		IQ04	4.04	4.06	99.50%	5
20		IQ05	3.99	4.01	99.49%	1
21		IQ06	4.02	4.04	99.49%	2
22		IQ07	4.06	4.06	100.00%	14
23	Overall	OV01	4.24	4.18	101.46%	21
Grand Average			93.90	93.87		
Average			4.083	4.081		

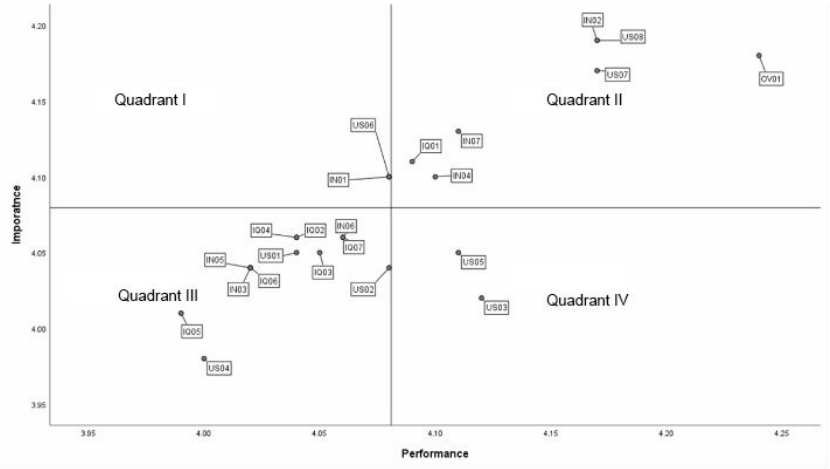

Figure 3 IPA Cartesian Diagram Results

The formation of the IPA quadrant in Figure 6 was carried out with the help of SPSS software. An explanation of each item from each quadrant can be seen in Table 14.

Table 14 Item Details from Each Quadrant

Quadrant	Item	Assessment Topics
Quadrant I (Main priority)	US06	Suitability of SISNAKER design with employment websites
	IN01	Accuracy of SISNAKER website information
Quadrant II (Maintain Performance)	US07	The ability of the SISNAKER website to convey employment competencies.
	US08	Positive experience felt by users.
	IN02	The level of trust in the information held by SISNAKER
	IN04	SISNAKER's ability to provide relevant matters related to employment

Quadrant	Item	Assessment Topics
	IN07	Suitability of SISNAKER information format to the employment sector
	IQ01	The SISNAKER website has a good reputation
	OV01	The overall quality of SISNAKER is good.
Quadrant III (Low Priority)	US01	Easy understanding of SISNAKER operation
	US02	The interaction impression is clear and easy to understand on SISNAKER
	US04	Easy access to website addresses
	IN03	Current and timely information
	IN05	Information that is easy to understand
	IN06	Detailed information held by SISNAKER
	IQ02	SISNAKER website security
	IQ03	Security of user personal data
	IQ04	Attract users' interest and attention to using SISNAKER
	IQ05	Provide space for interaction in the community
	IQ06	Ease of interaction between admin and users
	IQ07	Convince users regarding the suitability of the services and functions they have
Quadrant IV (Excessive)	US03	Ease of running each menu
	US05	Interesting display

Recommendations for Improving Quality

Based on the results of the priority quadrant based on the IPA method, there are items that require quality improvement. The items that require improvement and quality improvement are in Quadrant I and Quadrant III, because they still have relatively low performance. The recommendations that can be given can be seen in Table 15.

Table 15 Recommendations for Improving SISNAKER Quality

No	Quadrant	Recommendations
1	Quadrant I	Disnaker ESDM should add visualizations in the form of graphics related to the employment sector, such as the distribution of job vacancies, as well as paying attention to the responsiveness of the website, so that it can attract user interest.
2		The information presented in SISNAKER must have a clear and transparent source, so that it can increase the quality and trust of users.
3	Quadrant III	The ESDM Manpower Office can add visualization in the form of a tour guide which can assist users in operating SISNAKER.
4		Clarify the appearance of SISNAKER in terms of narrative actions on buttons, button colors, or menu appearance.
5		Use terms or words that are easy to remember to make it easier for users to access the SISNAKER website address.
6		The ESDM Manpower Office must always pay attention that the information held by SISNAKER is the latest and correct information at the time of publication.
7		The information held by SISNAKER must use terms, language styles and word choices that are common and easy to understand by users.
8		The details of each piece of information must be paid attention to by the Energy and Mineral Resources Department, so that the information can be conveyed completely and accurately.
9		SISNAKER's security also needs to be tested and improved, either by implementing penetration testing to find security gaps and be able to close these gaps.
10		Ease of communication between admins, users and the community also needs to be considered, such as adding a chat feature, so that communication can be carried out continuously.
11		Explanations regarding SISNAKER features need to be added, such as by

No	Quadrant	Recommendations
		using video-based content, so that it can convince users that SISNAKER features and services can be used properly and correctly, and are able to help and make things easier for users.

CONCLUSION

Based on the results obtained from each research process, analysis of the results, and discussion of the results, several conclusions can be drawn regarding this research. Some of these conclusions include.

SISNAKER quality analysis begins with the process of designing research instruments and distributing questionnaires, then continues to the validity and reliability testing stages. The research stage then proceeded to descriptive analysis of the questionnaire results, gap value analysis, suitability level analysis, and quadrant analysis, which then continued to the stage of forming the science quadrants as well as recommendations for improving quality in the priority quadrants.

SISNAKER quality results, based on the results and analysis of distributing questionnaires to 98 respondents, have the highest level of suitability at a percentage of 102.54%, the lowest at a percentage of 99.49%, and a performance and importance gap value of 0.02. These results indicate that SISNAKER's performance is in line with user expectations and still requires improvement in the information quality and interaction quality parameters.

Recommendations for improving the quality of SISNAKER are focusing on items that have low performance, which are specific items that are in Quadrant I and Quadrant III of the IPA diagram.

Based on the results obtained from this research, it can be said that, in general, SISNAKER has good quality in meeting user needs and expectations. Even so, an evaluation of the quality and performance of SISNAKER should be carried out regularly, for example, every six months.

Future research also needs to be carried out in a more complex scope with a lower accuracy value and the selection of a more complex sampling method so that it can involve more respondents as research objects. The selection of respondents must also be considered, so that the respondents involved are those who play an active role in using the system, always follow and use the latest version of the system, but still pay attention to the availability of adequate respondents.

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