



## Research article

# Analysis of JMO Application User Satisfaction Using the PIECES Framework: A Case Study of Workers in Indragiri Hilir Regency

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## ABSTRACT

JMO (Jamsostek Mobile) is the official application of BPJS Ketenagakerjaan (Social Security Administration Agency for Employment) that is used to facilitate participants in accessing social security services digitally, such as checking balances, updating data, and claiming JHT (Employment Benefits). The Social Security Agency (BPJS) Ketenagakerjaan utilizes this technology to provide convenience and accessibility for participants throughout Indonesia, including in Indragiri Hilir Regency, which faces significant geographical challenges. This study was conducted to evaluate the level of satisfaction of workers in Indragiri Hilir Regency regarding the effectiveness of the JMO application service. The method used was the PIECES Framework, which covers the dimensions of Performance, Information, Economics, Control and Security, Efficiency, and Service. Primary data was collected through an online survey using a questionnaire distributed to 125 active users in the region. The results of the study show that all PIECES variables achieved an average score of 4.16 on a scale of 5.00. These findings confirm that the JMO application plays a significant role in improving the quality of social security services for workers in Indragiri Hilir Regency. The Economics dimension is a major supporting factor due to the cost and time efficiency it provides to users in remote areas.

## 1. Introduction

In this digital age, information and communication technology (ICT) has become an important part of people's lives. The use of ICT has also expanded into various fields, including employment social security services. BPJS Ketenagakerjaan is one of the agencies that utilizes ICT to improve its services to the community through the JMO (Jamsostek Mobile) application. In Indragiri Hilir (Inhil) Regency, the presence of this application is very strategic in reaching workers spread across various sub-districts[1].

One of the ICT-based services provided by BPJS Ketenagakerjaan is the JMO application. This application allows workers to access their JHT balance information, update their data, and submit claims easily via their mobile devices. The JMO application is expected to provide easy access to information and services without being constrained by geographical distance to branch offices[2].

However, the success of an application does not only depend on its features and functions, but also on the level of user satisfaction. User satisfaction is an important factor that determines whether users will continue to use the application or not[3]. Given the diverse characteristics of users in Indragiri Hilir Regency, it is necessary to evaluate the level of user satisfaction with the JMO application[4].

This study aims to analyze user satisfaction levels with the JMO application in Indragiri Hilir Regency using the PIECES framework method. The PIECES framework method is an evaluation framework consisting of six main aspects [5]. These aspects include Performance to measure the speed and responsiveness of the JMO application[6], and Information and Data to assess the quality and accuracy of balance information and membership data[7]. In addition, there is the Economics aspect, which analyzes the utility and cost savings for users. In addition, there is the Economics aspect, which analyzes the utility and cost savings for users[8], serta *Control and Security* (Kontrol dan Keamanan) untuk mengevaluasi keamanan data pengguna dan sistem aplikasi secara menyeluruh[9]. The last two aspects are Efficiency, which measures the ease of use and navigation of the application menu [10], and Service, which assesses the quality of digital services provided by BPJS Ketenagakerjaan through the JMO application [11]. This study is expected to provide an overview of user satisfaction with the JMO application and assist managers in improving service quality, particularly for workers in Indragiri Hilir Regency.

## 2. Research Methods

### 2.1 Research Stages

Dalam In this study, the researcher used a descriptive method with a quantitative approach. This study was conducted based on factual data regarding user satisfaction in using the JMO (Jamsostek Mobile) application. The purpose of this method is to obtain a clear picture of a situation based on data obtained by collecting, presenting, and analyzing the data so that it becomes new information that can be used to analyze the problem being studied. This study was aimed at determining the level of satisfaction of workers as users of the JMO application. Each stage carried out by the researcher is described in the following flowchart:

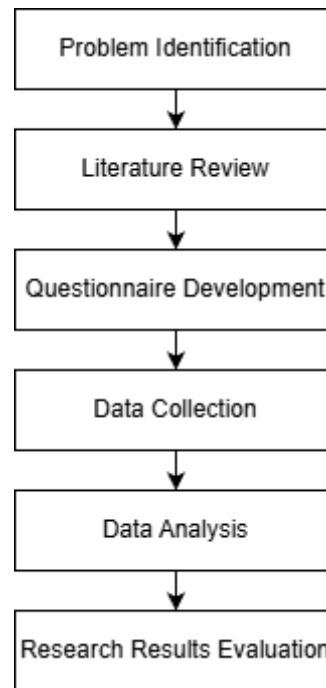


Figure 1 Research Stages

Problem identification at this stage begins with identifying problems. This research methodology begins with the Problem Identification stage, in which researchers conduct preliminary observations of the BPJS Employment service information system through the JMO application in the Indragiri Hilir Regency to find relevant issues. Once the problems were identified, a Literature Review was conducted to gather theoretical references related to the PIECES Framework method and previous research as the basis for this study. The next step was Questionnaire Development, which was the process of designing a set of questions based on the six PIECES variables (Performance, Information, Economics, Control, Efficiency, and Service) that would be used to measure respondents' perceptions in a structured manner[12]. The next stage was Data Collection, where the questionnaire was distributed online via Google Form to 125 informants who were active users of the JMO application in Indragiri Hilir Regency. The collected data was then processed in the Data Analysis stage using the Likert scale scoring technique to calculate the average satisfaction score for each variable in the PIECES framework. This series of studies ended with Research Results Evaluation, which is the stage of drawing conclusions based on the results of data processing to determine the level of user satisfaction and provide suggestions for improvement to the application service managers[13].

### 2.2 Universe and Excerpts

The universe and sample of this study were based on active users of the JMO application in Indragiri Hilir Regency, with a total of 125 informants. Informants in this study were determined using the random sampling method, which is a technique for randomly determining informants from the user population. The target informants were given a Google Form link containing a questionnaire to be filled out based on their experiences while using the JMO application.[14].

### 2.3 Data Collection Techniques

Data collection techniques are the first step in obtaining accurate information. The techniques used in this study are as follows:

### 2.3.1 Observation

Initial data collection through observation was conducted to understand the context of JMO application usage by workers in Tembilahan and surrounding areas. The focus of this research observation was on the effectiveness of the application in assisting membership administration[15]. The data collected included the application's navigation flow, the functionality of the balance check and claim features, and technical obstacles frequently encountered by users in the field. The purpose of this observation was to obtain information about the actual phenomenon of using digital social security services.

### 2.3.2 Questionnaire

To collect primary data, respondents were given a set of written statements. The questionnaire was used as an instrument to efficiently measure each PIECES variable and determine respondents' expectations. The statements in the questionnaire were derived directly from the PIECES framework domain, which includes Performance, Information, Economics, Control, Efficiency, and Service[16].

To evaluate the satisfaction level results, a Likert scale was used to measure individuals' opinions or perceptions of the application's service quality [8]. Each assessment option was given the following score weightings:

Table 1. Likert Scale

| Answer            | Criteria | Score |
|-------------------|----------|-------|
| Strongly Agree    | SA       | 5     |
| Agree             | A        | 4     |
| Neutral           | N        | 3     |
| Disagree          | D        | 2     |
| Strongly Disagree | SD       | 1     |

Based on Table 1.1, this is a Likert scale table with ratings from 1 to 5 using categories and ratings from the survey completed by informants.

## 2.4 Data Analysis

Researchers used the PIECES Framework approach to assess the level of satisfaction of JMO (Jamsostek Mobile) application users with the information system services provided. PIECES is a framework technique used to evaluate the quality of information system services and assess whether the variables applied are good or not[17].

This data analysis method was chosen to determine the level of satisfaction of workers in Indragiri Hilir Regency as users of the JMO application. The evaluation was conducted based on six main variables, namely Performance, Information, Economics, Control and Security, Efficiency, and Service. The Performance variable was used to analyze the application's performance in processing user requests quickly and responsively. The Information variable aims to measure the clarity, accuracy, and usefulness of the information presented by the application, such as JHT balance information and contribution details. The Economics variable is used to assess the economic benefits of using the JMO application, particularly in terms of cost and time savings for workers in Indragiri Hilir Regency. Furthermore, the Control and Security variable is used to determine the level of application security, protection of participants' personal data, and ease of access control through biometric or PIN features [18]. The Efficiency variable is used to analyze the extent to which the application's features are able to produce satisfactory output with minimal effort or navigation on the part of the user. Finally, the Service variable is used to assess the quality of services provided through the JMO application, including the system's ability to handle problems or disturbances experienced by users [19].

After the results of the questionnaire distributed to JMO application users were collected, the data was then processed as part of the data analysis[20]. The formula used in the PIECES Framework method is as follows:

$$AS = \frac{TQS}{NQ}$$

Explanation :

- AS = Average Satisfaction
- TQS = Total Questionnaire Score
- NQ = Number of Questionnaires

Based on the above formula, the average satisfaction score is calculated by dividing the total questionnaire score by the number of questionnaires for each variable. Table 2 below shows the characteristics of the assessment for the PIECES Framework:

Table 2. Assessment Characteristics

| Average Score | Rating Category    |
|---------------|--------------------|
| 4,93 – 5      | Very Satisfied     |
| 3,5 – 4,92    | Satisfied          |
| 2,7 – 3,49    | Somewhat Satisfied |
| 1,9 – 2,69    | Dissatisfied       |
| 1,0 – 1,89    | Very Dissatisfied  |

Table 2 explains that the ranking characteristics are based on a Likert scale with scores from 1 to 5 derived from the research framework.

### 3. Results and Discussion

#### 3.1 Topic Application and Problem Identification

Mobile applications are technologies that enable high mobility through devices such as smartphones for various activities, ranging from entertainment to social security matters. In this study, the PIECES framework was used as a method to classify problems into six main categories: performance, information, economy, control, efficiency, and service. The implementation of this method aims to narrow down the scope of issues surrounding the JMO (Jamsostek Mobile) application service in order to accurately measure the level of worker satisfaction in Indragiri Hilir Regency. The resulting analysis provides a clear picture of the relationship between the use of application features and customer satisfaction in accessing employment social security services.

#### 3.2 Description of Research Objects and Instruments (Questionnaires)

Based on the data collection stage through observation, the JMO application provides various key features that are the subject of evaluation in the questionnaire. The access process begins with a login form where users enter their email and password to log into the system in Figure 2.



Figure 2 Participant Login Screen

After successfully logging in, users are directed to the home page, which covers all BPJS Ketenagakerjaan digital service programs. The features on this home page, such as data updates, JHT balance checks, and claim simulations, are points that are included in the research questionnaire.



Figure 3 User home page display.

Figure 3 shows the user homepage, where the main display covers everything in the JMO application..

### 3.3 Data Analysis Based on the PIECES Framework

After collecting data from 125 informants through questionnaires, data processing was carried out using the satisfaction average formula (RK) for each variable. The analysis stages followed the following classification:

#### 3.3.1 Performance

The Performance variable is used to measure the extent of the JMO application's performance in responding to user commands, such as the speed of loading balances and the stability of the application when used in Table 3.

Table 3. Performance Indicators

| No    | Questions                                                                                         | Informant |    |    |    |    |
|-------|---------------------------------------------------------------------------------------------------|-----------|----|----|----|----|
|       |                                                                                                   | VS        | S  | SS | D  | VD |
| 1     | The JMO app has a fast response time when opened.                                                 | 56        | 53 | 1  | 8  | 7  |
| 2     | The JMO app rarely experiences errors or force closes when used to check balances or make claims. | 69        | 38 | 3  | 4  | 11 |
| Total |                                                                                                   | 125       | 91 | 4  | 12 | 18 |

$$AS = \frac{(125 * 5) + (91 * 4) + (4 * 3) + (12 * 2) + (18 * 1)}{125 + 91 + 4 + 12 + 18}$$

$$AS = \frac{1043}{250} = 4,17$$

Based on the average satisfaction calculation results for the performance variable, the final result is 4.17. If the final value is adjusted to the assessment characteristics, a score of 4.17 is categorized as **satisfied**. It can be concluded that the quality of the performance variable provides satisfactory results to informants and shows positive indications that the JMO application plays a good role in the performance field applied in the JMO application.

#### 3.3.2 Information

This variable is used to assess the quality and accuracy of information presented by the JMO application. Table 4 below shows the results of the distribution of the Information indicator questionnaire:

Table 4 Information Indicators

| No | Questions                                                                              | Informant |    |    |    |    |
|----|----------------------------------------------------------------------------------------|-----------|----|----|----|----|
|    |                                                                                        | VS        | S  | SS | D  | VD |
| 1  | The JHT balance and membership status information displayed on JMO is very accurate.   | 67        | 43 | 2  | 12 | 1  |
| 2  | Information about the program and claim requirements on the app is easy to understand. | 61        | 46 | 3  | 11 | 4  |
|    | Total                                                                                  | 128       | 89 | 5  | 23 | 5  |

$$RK = \frac{(128 * 5) + (89 * 4) + (5 * 3) + (23 * 2) + (5 * 1)}{128 + 89 + 5 + 23 + 5}$$

$$RK = \frac{1062}{250} = 4,25$$

Based on the average satisfaction calculation for the Information variable, the final result was 4.25. If this final value is adjusted to the PIECES assessment characteristics, a score of 4.25 falls into the **Satisfied** category. This shows that, in general, the quality of the information variable in the JMO application provides satisfactory results for informants in Indragiri Hilir Regency. However, in statement number 1 regarding the accuracy and detail of contribution details, there were informants who chose the answer "Disagree." The author then conducted a brief interview with the informants who were dissatisfied. Based on the interview results, the informants felt that the information provided by the application was sometimes lacking in depth, such as details of the monthly contribution payment history from employers, which was sometimes updated late. The informants expected information regarding contribution details and claim status to be displayed in more detail and in real time.

### 3.3.3 Economic

Table 5 below shows the results of the questionnaire distribution to informants based on economic variables.

Tabel 5 Indikator Ekonomi

| No | Questions                                                                                                      | Informant |     |    |    |    |
|----|----------------------------------------------------------------------------------------------------------------|-----------|-----|----|----|----|
|    |                                                                                                                | VS        | S   | SS | D  | VD |
| 1  | Using the JMO app saves me transportation costs because I don't have to go to the branch office in Tembilahan. | 50        | 60  | 1  | 9  | 5  |
| 2  | The digital process at JMO saves me time and effort in managing my BPJS Ketenagakerjaan administration         | 54        | 56  | 2  | 7  | 6  |
|    | Total                                                                                                          | 104       | 116 | 3  | 16 | 11 |

$$RK = \frac{(104 * 5) + (116 * 4) + (3 * 3) + (16 * 2) + (11 * 1)}{104 + 116 + 3 + 16 + 11}$$

$$RK = \frac{1036}{250} = 4,14$$

Based on the average satisfaction calculation for the Economics variable, the final result was 4.14. When adjusted to the PIECES assessment characteristics, a score of 4.14 falls into the **Satisfied** category. This shows that the use of the JMO application provides tangible economic benefits for workers in Indragiri Hilir Regency, especially in terms of cost savings.

The analysis results show that the majority of informants feel greatly helped because they do not need to spend money on transportation to come directly to the BPJS Ketenagakerjaan office in Tembilahan. For workers residing in remote subdistricts or waterways, the use of the JMO application eliminates the cost of renting a pompong (boat) or fuel costs for land vehicles. In addition, the time efficiency gained allows workers to continue their work activities without having to take leave or permission to leave work just to take care of membership administration.

However, in further analysis, several informants provided input regarding the cost of internet data quotas. Although the JMO application saves travel costs, some informants in areas with unstable internet signals feel that they have to make more effort (such as searching for signal points or using certain providers) in order for the application to run smoothly.

From this data, it can be concluded that the economic variables in the JMO application have had a significant positive impact on the working community in Indragiri Hilir. This application has successfully fulfilled its role as an economical and efficient digital service solution, in line with the objectives of ICT-based public service transformation.

### 3.3.4 Control and Security

Table 6 below shows the results of the questionnaire distribution to informants based on the variables of control and security.

Table 6. Control and Security Indicators

| No    | Questions                                                                                         | Informant |     |    |    |    |
|-------|---------------------------------------------------------------------------------------------------|-----------|-----|----|----|----|
|       |                                                                                                   | VS        | S   | SS | D  | VD |
| 1     | The facial verification (biometric) and PIN system at JMO makes me feel that my data is secure.   | 49        | 59  | 3  | 7  | 7  |
| 2     | I feel that I have complete control over the updating of my personal data within the application. | 62        | 45  | 4  | 10 | 4  |
| Total |                                                                                                   | 111       | 104 | 7  | 17 | 11 |

$$RK = \frac{(111 * 5) + (104 * 4) + (7 * 3) + (17 * 2) + (11 * 1)}{111 + 104 + 7 + 17 + 11}$$

$$RK = \frac{1037}{250} = 4,15$$

Based on the average satisfaction calculation results for the Control and Security variables, the final result was 4.15. If this value is adjusted to the PIECES assessment characteristics, then a score of 4.15 falls into the **Satisfied** category. This shows that the security system implemented in the JMO application has provided a sense of security for workers in Indragiri Hilir Regency in protecting their personal data and social security balances. The results of the study show that most informants are satisfied with the biometric verification features such as face recognition and the use of a PIN before accessing sensitive data. This system is considered effective in preventing account misuse by irresponsible parties. Informants in Indragiri Hilir Regency feel that control over changes to personal data is now entirely in their hands through the application.

However, in some cases, there were informants who complained of difficulties when performing facial verification in areas with poor lighting or technical problems with certain smartphone devices. This caused doubts about the control variable for a small number of users, because biometric verification failures prevented them from accessing the claim feature for a while. From the above results, it can be concluded that although the control and security variables are already in the satisfactory category, optimization of the verification feature is needed to make it more adaptive to various device and user environment conditions. Overall, the JMO application has demonstrated a good role in maintaining the integrity of BPJS Ketenagakerjaan participant data.

### 3.3.5 Efficiency

Table 7 below shows the results of the questionnaire distribution to informants based on the Efficiency variable.

Table 7. Efficiency Indicators

| No    | Questions                                                                       | Informant |    |    |    |    |
|-------|---------------------------------------------------------------------------------|-----------|----|----|----|----|
|       |                                                                                 | VS        | P  | VS | TP | VS |
| 1     | The menus in the JMO application are neatly organized so they are easy to find. | 58        | 49 | 2  | 7  | 9  |
| 2     | The steps for updating data in JMO are very simple and straightforward.         | 57        | 49 | 6  | 1  | 12 |
| Total |                                                                                 | 115       | 98 | 8  | 8  | 21 |

$$RK = \frac{(115 * 5) + (98 * 4) + (8 * 3) + (8 * 2) + (21 * 1)}{115 + 98 + 8 + 8 + 21}$$

$$RK = \frac{1028}{250} = 4,11$$

Based on the average satisfaction calculation for the Efficiency variable, the final result was 4.11. If this value is adjusted to the PIECES assessment characteristics, then a score of 4.11 falls into the **Satisfied** category.

This shows that the JMO application is considered efficient by workers in Indragiri Hilir Regency in terms of ease of navigation and simplicity of operational processes. The results of the data analysis show that informants feel that the flow of using the JMO application is much more concise than manual procedures. Key features such as checking balances and updating data can be accessed with just a few clicks, so users do not need to spend a lot of time understanding how the application works. In the Indragiri Hilir region, this efficiency is greatly beneficial because workers can complete administrative tasks during their work breaks..

However, there are notes on the efficiency aspect of the document upload process. Several informants stated that when updating data, the system sometimes experiences difficulties in reading uploaded documents if the device camera quality is low or the file resolution is too large. This forces users to repeat the process from the beginning, which, according to a small number of informants, slightly reduces the efficiency of the system. From this analysis, it can be concluded that the efficiency variable in the JMO application has played a positive role in facilitating services for participants. Nevertheless, improvements to the digital document reading algorithm are needed to make the data input process smoother and truly provide maximum output results for all users in Indragiri Hilir Regency.

### 3.3.6 Service

The Service variable is used to assess the quality of support provided by developers or agencies to users when using the JMO application. This aspect is very important to ensure that any obstacles encountered by workers in Indragiri Hilir Regency can be resolved properly through the available help features. Table 8 shows the results of the questionnaire distribution to informants based on the Service variable.

Table 8. Service Indicators

| No    | Questions                                                                                               | Informant |     |    |    |    |
|-------|---------------------------------------------------------------------------------------------------------|-----------|-----|----|----|----|
|       |                                                                                                         | VS        | P   | VS | TP | VS |
| 1     | The help feature or Customer Care in the JMO app is very helpful when I encounter problems.             | 59        | 49  | 3  | 6  | 8  |
| 2     | Overall, JMO's digital services meet my needs as a BPJS Ketenagakerjaan participant in Indragiri Hilir. | 54        | 56  | 2  | 5  | 8  |
| Total |                                                                                                         | 113       | 105 | 5  | 11 | 16 |

$$RK = \frac{(113 * 5) + (105 * 4) + (5 * 3) + (11 * 2) + (16 * 1)}{113 + 105 + 5 + 11 + 16}$$

$$RK = \frac{1038}{250} = 4,15$$

Based on the average satisfaction calculation for the Service variable, the final result was 4.15. If this final value is adjusted to the PIECES assessment characteristics, then a score of 4.15 is categorized as **Satisfied**. This indicates that, in general, the quality of digital support services provided by BPJS Ketenagakerjaan through the JMO application has yielded satisfactory results for informants in Indragiri Hilir Regency.

However, despite falling into the satisfied category, this variable recorded a lower score than other variables such as Economics. Through observation and brief interviews with several informants, it was found that users sometimes felt that the responses from the help feature or chatbot within the application were still normative and did not provide specific solutions to complex problems, such as NIK data synchronization failures. Informants expect more personalized interaction services or faster responses when they submit technical complaints. From these cases, it can be concluded that the JMO application system has performed well in providing a digital assistance channel. However, in terms of service, the system has not worked optimally because the solutions provided are sometimes not fully in line with the expectations or detailed problems faced by users in the field. Improving the quality of digital customer service is an important point to ensure that user satisfaction is maintained in the future.

## 3.4 Results of Satisfaction Analysis Using the Pieces Framework Method

After calculating each variable, the following table summarizes the average user satisfaction levels for the JMO application in Indragiri Hilir Regency:

Table 9. Recapitulation of the Average of All PIECES Variables

| Variable | Average satisfaction | Category |
|----------|----------------------|----------|
|----------|----------------------|----------|



|                    |      |           |
|--------------------|------|-----------|
| Performance        | 4,17 | Satisfied |
| Information        | 4,25 | Satisfied |
| Economics          | 4,14 | Satisfied |
| Control & Security | 4,15 | Satisfied |
| Efficiency         | 4,11 | Satisfied |
| Service            | 4,15 | Satisfied |
| Rata-rata Total    | 4,16 | Satisfied |

Based on the overall results of the PIECES variable recapitulation above, all variables consisting of Performance, Information, Economics, Control and Security, Efficiency, and Service are all in the **Satisfied** category. This means that the JMO (Jamsostek Mobile) application plays a significant role in improving the quality of employment social security services in Indragiri Hilir Regency, thereby providing satisfaction and positive responses to workers as customers or users of these digital services. The implementation of ICT through the JMO application has proven to be a solution to the geographical barriers that exist in the Indragiri Hilir region. The ease of access offered by each PIECES variable is in line with user expectations, although there are a few minor notes for future feature improvements to maximize service.

#### 4 Conclusion

Based on the results of research and discussion regarding the analysis of user satisfaction with the JMO application in Indragiri Hilir Regency using the PIECES Framework method, it can be concluded that the overall level of user satisfaction is in the satisfied category, which indicates that the JMO application has been able to meet the needs and expectations of workers in accessing BPJS Ketenagakerjaan services independently. The Economics aspect is the most appreciated variable because this application provides significant cost and time efficiency for the community, thereby helping to reduce dependence on face-to-face services. However, even though the Service variable is also in the satisfied category, improvements are still needed, especially in response speed and the quality of handling technical problems so that the user experience can be optimized. The results of this study are expected to serve as evaluation material for JMO application managers to improve service quality, while also contributing academically to the measurement of user satisfaction with information systems using the PIECES Framework.

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