

# Analysis of User Satisfaction Level of the Care Health Insurance System Solution Application in an Indonesian Private Insurance Company Using the PIECES Method

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**Abstract**— This study analyzes user satisfaction with the Care Health Insurance System Solution (CHISS) application at a private insurance company in Indonesia using the PIECES method, which covers aspects of Performance, Information, Economic, Control & Security, Efficiency, and Service. Data were collected through questionnaires from 65 respondents, with subgroup determination from various divisions of CHISS users. The analysis results indicate that, overall, users are satisfied with the CHISS application. The Performance indicator obtained an average score of 4.069, Economic 3.973, Information 4.046, Control & Security 4.107, and Efficiency 4.115, all categorized as "Satisfied." Meanwhile, the Service indicator achieved the highest score of 4.142, classified as "Satisfied". Although the majority of users expressed satisfaction, several aspects require improvement, such as system stability, the provision of more accurate information, and enhanced data security. Therefore, this study recommends that developers and companies optimize features and provide user training to improve the CHISS application experience in the future. "Satisfied". training to improve the CHISS application experience in the future.

**Keywords**— Analysis; User Satisfaction; PIECES; CHISS; Insurance; Information System; Likert Scale.

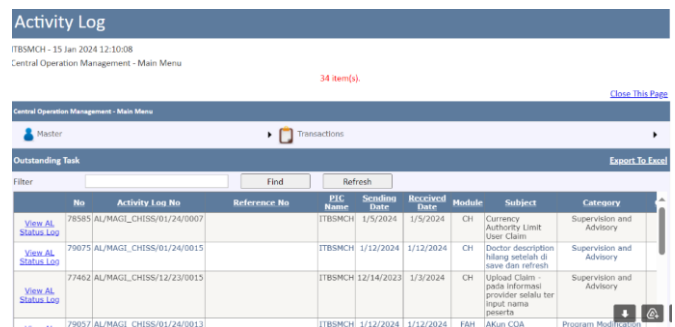
## I. INTRODUCTION

The rapid development of technology has significantly transformed various activities and services, including those in the insurance sector. Insurance, or indemnity, is defined as an agreement whereby the insurer binds itself to the insured, in exchange for a premium, to provide compensation for a loss, damage, or loss of expected profit that may arise due to an uncertain event (Article 246 of the Indonesian Commercial Code / *Kitab Undang-Undang Hukum Dagang*).

The increasing level of competition in the insurance industry, combined with advancements in information technology, encourages management to adopt a core system application that aligns with the company's operational needs. One such application is the Care Health Insurance System Solution (CHISS), which functions as a core system. CHISS is specifically designed for health or life insurance operations and is used by employees to input claim data, policy data, quotations, and other related information, up to generating the required outputs. The CHISS application is utilized by one

private insurance company in Indonesia and was developed by an IT vendor company.

After implementing the CHISS application for more than one year, from April 2023 to December 2024, the company has continued to receive numerous reports from users regarding system-related issues. These issues can be observed from the constraints recorded in the 2024 Care Activity Log. The 2024 Care Activity Log is a website that documents user-reported problems or bugs occurring within the CHISS application.



No	Activity Log No	Reference No	PIC Name	Scanning Date	Received Date	Module	Subject	Category
<a href="#">View As Status Log</a>	78585/AL/MAGI_CHISS/01/24/0007		ITBSMCH	1/5/2024	1/5/2024	CH	Currency Authority Limit User Claim	Supervision and Advisory
<a href="#">View As Status Log</a>	79075/AL/MAGI_CHISS/01/24/0015		ITBSMCH	1/12/2024	1/12/2024	CH	Doctor description hilang setelah di save dan refresh	Supervision and Advisory
<a href="#">View As Status Log</a>	77462/AL/MAGI_CHISS/12/23/0015		ITBSMCH	12/14/2023	1/3/2024	CH	Upload Claim - tidak informed provider selalu ter input nama peserta	Supervision and Advisory
<a href="#">View As</a>	79057/AL/MAGI_CHISS/01/24/0013		ITBSMCH	1/12/2024	1/12/2024	FAH	Akun CDA	Program Modification

Figure 1.1 Activity Log

Every issue experienced by users of the CHISS application from various divisions is recorded and reported in the Activity Log and categorized according to the type of problem encountered. These issues include insufficient information regarding required documents or reports, system instability such as error bugs within the application, data security concerns, and the lack of certain system features needed by users. As a result, employee performance cannot improve optimally, as users are still adapting to the system. Based on these emerging issues, it is necessary to analyze the performance of the CHISS application to determine whether it has sufficiently satisfied users or whether improvements are still required.

Several methods can be used to analyze user satisfaction levels. For example, the Multivariate Analysis method was applied in research conducted by Irnada Pratiwi (2013), which examined the measurement of broadband internet service satisfaction to support marketing strategy focus. Additionally,

the Webqual 4.0 method was utilized in research conducted by Sariasih Findi Ayu Sariasih and Yumi Novita Dewi (2018), which discussed the measurement of non-customer internet user satisfaction with the website of Bank Negara Indonesia (BNI) using Webqual 4.0. Furthermore, the PIECES method was applied in research conducted by Dila Seltika, Elvin Leander, and Susi Febiola (2022), which evaluated community satisfaction with the DG BANKALTIMARA application using the PIECES framework.

The PIECES framework is a method used to classify problems, opportunities, and directives within the scope definition, system analysis, and system design stages. By applying this method, new insights can be generated to serve as considerations for system and application development.

Previous research related to the PIECES method includes a study conducted by Susanti, Dila Seltika Cantan, and Elvin Leander Hadisaputro (2022), which discussed the implementation of the PIECES Framework in analyzing user satisfaction levels of the Livin' by Mandiri application. The study aimed to analyze user satisfaction with the information system used in the Livin' by Mandiri application. It is expected that the application of the PIECES Framework in this research can provide recommendations and system improvements for CHISS based on user satisfaction.

TABLE 1.1 Research References

No	Researcher	Title	Research result
1.	Jakaria, Joy Nasher (2022)	Analysis of User Satisfaction with the Lazada Application Among the Community of Penajam Using the PIECES Framework Method	Based on the overall recapitulation of the PIECES variables, the Lazada application plays a positive role in improving service quality, thereby providing user satisfaction.
2.	Dila Seltika, Elvin Leander, Susi Febiola (2022)	Evaluation of Community Satisfaction Level Toward the DG Bankaltimara Application Using the PIECES Framework	Based on the PIECES framework analysis, the information system has adequately provided satisfaction to its users.
3.	Evan Albernan Wibisono, Fenni Agustina, Rifiana Arief, Marleen Onny. (2023)	Analysis of User Satisfaction Level of the Sukha Feature in the Livin' by Mandiri Application Using the PIECES Method	The results from the six PIECES variables indicate that the level of customer satisfaction falls into the "Satisfied" category.

II. RESEARCH METHOD

The research framework developed in this study serves as an overview outlining the stages involved in analyzing the level of user satisfaction with the CHISS application at a private insurance company in Indonesia using the PIECES method. The stages are as follows:

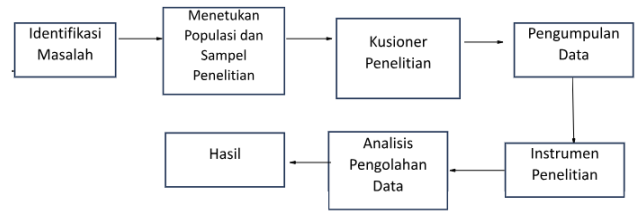


Figure 2.1 Step of Research Metode

a. Problem Identification

Referring to the Activity Log collected in October 2024, several issues were recorded during the peak season, particularly toward the end of the year. These included problems related to provider information reported by the Claims Division, errors in COA (Chart of Accounts) calculations identified by the Finance Division, and other operational constraints. Based on these recurring issues, this study was conducted to analyze the level of user satisfaction with the CHISS application using the PIECES method. The data were adjusted to align with the research design and the variables examined. The research object or population consists of users of the CHISS application within a private insurance company in Indonesia.

b. Determination of Population and Sample

The subjects of this study are CHISS users at a private insurance company in Indonesia. CHISS users are categorized into four groups: the Claims Division, the Policy Division, the Finance & Accounting Division, and the IT & Others Division.

TABLE 2.1 Total Registered Population in Each Division

NO	Division	Population
1	Claim	30
2	Policy	48
3	Finance Accounting	44
4	IT & others	50
	<b>TOTAL</b>	<b>172</b>

CHISS application users are further classified into two categories: active users and passive users. Active users are those who regularly use the CHISS application to input data and generate output data, while passive users utilize the system only for limited purposes, such as approving claims, policies, and other transactions.

The total number of active CHISS users is 65. In accordance with the quota sampling criteria, the sample used in this study consists of all active CHISS users, amounting to 65 respondents. Subsequently, the sampling distribution was determined using the quota sampling method, with calculations based on Formula (1).

$$Sample\ Quota = \frac{Population\ in\ each\ division}{Total\ Population\ Number} \times 100\% \quad (1)$$

Based on these calculations, the number of respondents obtained is presented as follows:

TABLE 2.2 Sample Distribution Data

NO	Division	Respondents	Percentage
1	Claim	11 persons	17 %
2	Policy	18 persons	28%
3	Finance Accounting	16 persons	26%
4	IT & others	20 persons	29%
	Total	65 persons	100%

c. *Research Questionnaire*

In this study, data were collected using a questionnaire distributed through a Google Form link provided to the respondents. The researcher formulated statements to be answered by the respondents based on the indicators of the PIECES method, namely Performance, Information, Economics, Control, Efficiency, and Service.

The questionnaire consisted of 26 statements, distributed as follows: 6 statements on Performance, 4 statements on Information, 4 statements on Economics, 4 statements on Control, 4 statements on Efficiency, and 4 statements on Service.

The measurement scale used in this questionnaire was the Likert scale, with response options as follows: Strongly Agree (5 points), Agree (4 points), Neutral (3 points), Disagree (2 points), and Strongly Disagree (1 point) (Adi Supriyatna & Vivi Maria, 2017).

d. *Data Collection*

Data collection in this study utilized primary data obtained directly through the questionnaire. The researcher distributed statements to respondents in questionnaire form, based on the PIECES indicators (Performance, Information, Economics, Control and Security, Efficiency, and Service). The questionnaire contained 26 statements divided into: 6 statements on Performance, 4 statements on Information, 4 statements on Economics, 4 statements on Control and Security, 4 statements on Efficiency, and 4 statements on Service. The Likert scale was used with the following scoring criteria: Strongly Agree (5 points), Agree (4 points), Neutral (3 points), Disagree (2 points), and Strongly Disagree (1 point).

e. *Research Instrument*

At this stage, validity and reliability tests were conducted. The validity test was used to determine the validity of the statement items utilized in the study. An instrument is considered valid if it measures what it is intended to measure. Validity was measured by comparing the calculated r-value (r-count) with the r-table value based on the Pearson Product-Moment table. A statement item is considered valid if the r-count value is greater than the r-table value. Reliability refers to the stability and consistency of respondents' answers related to the construct of the statements representing a variable dimension and structured in questionnaire form. The reliability test was conducted to determine consistency over time. Reliability was measured using Cronbach's Alpha coefficient.

f. *Data Analysis and Processing*

At this stage, the data obtained from the questionnaires completed by 65 respondents were analyzed using the Likert scale. The Likert scale is a measurement scale used to assess attitudes, opinions, and perceptions of individuals or groups. It can also be used to evaluate the success of a policy, program, or the level of satisfaction with a particular system or service. To calculate the average level of satisfaction, the following formula was used [8],[2]:

$$RK = \frac{JSK}{JK} \quad (2)$$

RK = Average Satisfaction Score

JSK = Total Questionnaire Score

JK = Total Number of Questionnaires

TABLE 2.3 Satisfaction Level Classification (Safarudin, 2018)

Score	Satisfaction Level
1 – 1.79	Very Dissatisfied
1.8 – 2.59	Dissatisfied
2.6 – 3.39	Neutral
3.4 – 4.19	Satisfied
4.2 – 5	Very Satisfied

g. *Final Research Result*

This stage represents the final phase of the study, in which the overall results are obtained to determine the calculation and analysis of user satisfaction based on the questionnaire data across the six PIECES variables: Performance, Information, Economics, Control & Security, Efficiency, and Service. The results of this analysis provide a comprehensive overview of the level of user satisfaction with the CHISS application and serve as the basis for drawing conclusions and formulating recommendations for system improvement.

III. RESULT AND DISCUSSION

After conducting the validity and reability tests on the questionnaires distributed to 65 respondents, the next step was to perform data calculation and analysis. The questionnaires data were analyzed using the *Likert Scale* method to determine the category of user satisfaction levels with the CHISS application based on the selected responses and corresponding score

a. *Performance*

This variable is used to evaluate the performance of the system. The Performance aspect measures how well the CHISS application operates in terms of speed, stability, responsiveness, and overall system reliability in supporting users' operational activities. The following are the results of the questionnaire analysis for the Performance variable:

TABLE 3.1 Summary of Questionnaire Result – Performance

Response	Performance				
	STS	TS	N	S	SS
Score	1	2	3	4	5
Total	0	14	51	219	106

The next step is to apply formula (2) to obtain Likert Scale value which used to measure user satisfaction of CHISS Performance.

$$RK = \frac{(1 * 0) + (2 * 14) + (3 * 51) + (4 * 219) + (5 * 106)}{390}$$

$$RK = \frac{0 + 28 + 153 + 876 + 530}{390}$$

$$RK = \frac{1587}{390} = 4.069$$

Based on the calculation of the average satisfaction score, a value of 4.069 was obtained for the *performance* parameter. Therefore, it can be concluded that the level of user satisfaction of CHISS Application in the private insurance company in Indonesia, in term of *performance*, falls into the "Satisfied" category.

b. *Information*

This variable is used to analyze the completeness and clarity of information produced by the system. The following presents the questionnaires for the *Information* variable :

TABLE 3.2 Summary of Questionnaire Result – Information

Information					
Response	STS	TS	N	S	SS
Score	1	2	3	4	5
Total	0	14	38	130	78

Next, Formula (2) was applied to obtain the Likert scale value used to measure user satisfaction with the Information aspect of the CHISS application :

$$RK = \frac{(1 * 0) + (2 * 14) + (3 * 38) + (4 * 130) + (5 * 78)}{260}$$

$$RK = \frac{0 + 28 + 114 + 520 + 390}{260}$$

$$RK = \frac{1048}{260} = 4.046$$

Based on the calculation of the average satisfaction score, a value of 4.046 was obtained for the *information* parameter. Therefore, it can be concluded that the level of user satisfaction of CHISS Application in the private insurance company in Indonesia, in term of *information*, falls into the “Satisfied” category.

c. *Economy*

This variable is used to analyze whether the implemented system is financially beneficial and cost-efficient for the organization. The following presents the results of questionnaire analysis for the *Economy* variable:

TABLE 3.3 Summary of Questionnaire Result – Performance

Economy					
Response	STS	TS	N	S	SS
Score	1	2	3	4	5
Total	0	5	68	116	71

Subsequently, Formula (2) was applied to determine the Likert scale value used to measure user satisfaction with the Economy aspect of the CHISS application.

$$RK = \frac{(1 * 0) + (2 * 5) + (3 * 68) + (4 * 116) + (5 * 71)}{260}$$

$$RK = \frac{0 + 10 + 204 + 464 + 355}{260}$$

$$RK = \frac{1033}{260} = 3.973$$

Based on the calculation of the average satisfaction score, a value of 3.973 was obtained for the *economy* parameter. Thus, it can be concluded that the level of user satisfaction of CHISS Application in the private insurance company in Indonesia, in term of *economy*, falls into the “Satisfied” category.

d. *Control & Security*

This variable is used to determine the extent to which supervision and control mechanism has implemented to ensure the system operates properly. The following presents the results of questionnaire analysis for the *Control & Security* variable :

TABLE 3.4 Summary of Questionnaire Result – Control & Security

Control/Security					
Response	STS	TS	N	S	SS
Score	1	2	3	4	5
Total	0	7	46	119	88

The next step is to apply formula (2) to obtain Likert Scale value which used to measure user satisfaction of CHISS *Control & Security*.

$$RK = \frac{(1 * 0) + (2 * 7) + (3 * 46) + (4 * 119) + (5 * 88)}{260}$$

$$RK = \frac{0 + 14 + 138 + 476 + 440}{260}$$

$$RK = \frac{1068}{260} = 4.107$$

Based on the calculation of the average satisfaction score, a value of 4.107 was obtained for the *Control & Security* parameter. Thus, it can be concluded that the level of user satisfaction of CHISS Application in the private insurance company in Indonesia, in term of *Control & Security*, falls into the “Satisfied” category.

e. *Efficiency*

*Efficiency* is a variable to determine whether the system operates efficiently, meaning that minimal input can produce optimal and satisfactory output. The following is the questionnaire results for *Efficiency* category:

TABLE 3.5 Summary of Questionnaire Result – Efficiency

Efficiency					
Response	STS	TS	N	S	SS
Skor	1	2	3	4	5
Total	0	1	39	149	71

Next, Formula (2) was applied to obtain the Likert scale value used to measure user satisfaction with the *Efficiency* aspect of the CHISS application.

$$RK = \frac{(1 * 0) + (2 * 1) + (3 * 39) + (4 * 149) + (5 * 71)}{260}$$

$$RK = \frac{0 + 2 + 117 + 596 + 355}{260}$$

$$RK = \frac{1070}{260} = 4.115$$

Based on the calculation of the average satisfaction score, a value of 4.115 was obtained for the *Efficiency* parameter. Therefore, it can be concluded that the level of user satisfaction of CHISS Application in the private insurance company in Indonesia, in term of *information*, falls into the “Satisfied” category.

f. *Service*

This variable is used to evaluate the quality of service provided and to identify issues related to system support and user assistance. The following presents the questionnaire results for the *Service* variable.:

TABLE 3.6 Summary of Questionnaire Result – Service

Service					
Response	STS	TS	N	S	SS
Skor	1	2	3	4	5
Total	0	5	35	138	82

Subsequently, Formula (2) was applied to obtain the Likert scale value used to measure user satisfaction with the Service aspect of the CHISS application.

$$RK = \frac{(1 * 0) + (2 * 5) + (3 * 35) + (4 * 138) + (5 * 82)}{260}$$

$$RK = \frac{0 + 10 + 105 + 552 + 410}{260}$$

$$RK = \frac{1077}{260} = 4.142$$

Based on the calculation of the average satisfaction score, a value of 4.142 was obtained for the Service parameter. Therefore, it can be concluded that the level of user satisfaction with the CHISS application in terms of Service falls into the “Satisfied” category.

The overall questionnaire results calculated using the PIECES method and the Likert scale are summarized in Table 3.7, which presents the recapitulation of respondents’ answers.

TABLE 3.7 Questionnaire Answer Recapitulation

Indicator	Value	Category
Performance	4.069	SATISFIED
Information	4.046	SATISFIED
Economy	3.973	SATISFIED
Control & Security	4.107	SATISFIED
Efficiency	4.115	SATISFIED
Service	4.142	SATISFIED

The highest score was obtained in the Service category with a value of 4.142, with majority of respondents expressed Satisfied. It indicates that the service aspect of CHISS application has achieved a satisfactory level in supporting productivity. Meanwhile, the lowest score was recorded in the Economy category, with a value of 3.973, which overall still falls within the Satisfied category.

IV. CONCLUSIONS AND REFERENCES

Based on the analysis of user satisfaction with the CHISS application at a private insurance company in Indonesia using the PIECES method, the findings indicate that, overall, respondents or users are satisfied with various aspects of the CHISS application.

The indicators of Performance, Information, Control & Security, and Efficiency obtained average scores of 4.069, 4.046, 4.107, and 4.115, respectively, all of which fall into the “Satisfied” category. The Economic indicator achieved an average score of 3.973, which is also categorized as “Satisfied,” although several respondents expressed concerns regarding costs and whether the resulting quality fully meets user needs. The Service indicator obtained the highest average score of 4.142 and is likewise categorized as “Satisfied.”

Overall, this analysis demonstrates that users at the private insurance company perceive the CHISS application positively and are generally “Satisfied” with its use. Although certain aspects require further attention, the results provide valuable insights for both the company and the application developers in understanding user needs and improving service quality in the future.

Based on the research findings, several recommendations are proposed to enhance the quality and future development of the CHISS application:

For the company, it is important to provide a more comprehensive user guide and conduct regular training sessions for CHISS users. This would ensure that users fully understand each process within the application and are better equipped to address any issues they encounter. Additionally, strengthening

security protocols and establishing clear Standard Operating Procedures (SOPs) are recommended to safeguard data against potential fraud and cybercrime.

For the application developers, it is recommended to expand the research sample in future studies to obtain a broader measurement of user satisfaction. This would enable developers to further refine and develop the CHISS application in accordance with the specific needs of insurance companies that utilize the system.

By implementing these recommendations, it is expected that both the company and the developers can enhance user satisfaction levels and ensure that the CHISS application operates optimally in supporting the company’s operational requirements.

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