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Factor analysis satisfaction levels of users toward the JKN mobile application in the COVID-19 era using the PIECES framework

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Abstract

This study aimed to prove the researcher's hypothesis regarding users' factor analysis satisfaction of the Mobile JKN application in the Covid-19 era in Sungai Penuh City using the PIECES framework. The measurement variables of the PIECES framework were performance, information, economy, control, efficiency, and service. In this study, researchers used quantitative descriptive methods with data sources from questionnaires via google form with 101 respondents, and data processing was carried out using SEM-pls. The results of this study indicated the value of R square was 0.732. It can be concluded that the interpretation of the users' satisfaction level of the application was 73.2%, which R-square identifies in the Strong/Good category. Several PIECES variables that has a significant effect on people's satisfaction with the JKN mobile application were efficiency and performance variables with P values of 0.004 and 0.033 while variables that did not have significant effect were control, economy, information and services.

Keywords: Satisfaction; Application Usage; Mobile JKN; COVID-19.

Introduction

The Covid-19 pandemic firstly occurred in Wuhan City, China [1]. Since then, many things change in the people's lives worldwide, including Indonesia. The government announced the first case of Covid-19 virus infection in Indonesia on March 2, 2020 [2]. The pandemic has significantly impacted health services [3], [4]. In dealing with the problem of the Covid-19 pandemic, the government has implemented strategic policies to adjust to a new normal life. Some policies that have been implemented to break the chain of Covid-19 spread were social distancing, physical distancing, work from home, and the implementation of Large-Scale Social Restrictions (PSBB) [5].

The Covid-19 pandemic can be seized by taking it as an exciting opportunity to explore the acceleration of change provided by digital technology because the pandemic has caused many government and private organizations to undergo fast-paced digital transformation to deal with this extraordinary situation [6]. All of this happens in almost every government worldwide, including in Indonesia, where social steps should be taken by public authorities to stop the spread of Covid-19 including minimizing public physical activities. This then forces the community, government, and private sectors massively to rethink how to provide the best service [7].

In the era of revolution 4.0, technology, information and communication have become essential issues in all areas of human life, efficient technology and applications in e-service processes can be the solution [8]. The transformation of digital services has experienced a significant change, from face-to-face to electronic services. During the COVID-19 pandemic, traditional services are increasingly difficult to reach customers with the existence of social distancing policies, physical distancing, and the implementation of the lockdown system in various regions, that causes a new order in the bureaucracy to provide services and the public to obtain services. This condition demands service delivery must be optimized with technology applications. This condition has been happening and becoming a challenge toward a new normal life [6] including in Indonesian health care system.

BPJS, Indonesian health insurance agency, has implemented a digital transformation in the form of a JKN mobile application to support the convenience of the public in obtaining easy access, more optimal, and efficient services for its users[9]. The JKN Mobile application is an application that can be accessed via a smartphone. The Mobile JKN application is a newly breakthrough for BPJS health care system that can provide convenience in health services for members, namely easy registration and easy to change the membership data, easy to submit, easy to obtain information on family participant data; it is also easy to get FKTP (First Level Health Facilities) and FKTL (Advanced Level Referral Facilities) services and it is easy for the members if they want to submit suggestions or complaints [10]. Through mobile applications, people can get services anytime and anywhere without having to come to the office [11]. The presence of the Mobile JKN application provides innovation to improve services to Indonesian people, especially in the health sector [10].

Users' satisfaction level analysis of the JKN Mobile application in Sungai Penuh City has never been analyzed. Furthermore, there is no measurement of variables on the factors that affect the users' satisfaction on digital services using the JKN mobile application in Sungai Penuh city. Thus, it is not known whether the application has met users' satisfaction or not. The quality of the mobile application will affect users' satisfaction. The researchers realize that the Mobile JKN application in Sungai Penuh City needs to measure the level of users' satisfaction and determine the factors that influence the level of users' satisfaction. The users' perception on the Mobile JKN application will be analyzed using the PIECES framework in terms of performance, information, economics, control, efficiency, and service [12].

In previous studies, researchers investigated the Application of the JKN Mobile application in improving the quality of health services during the COVID-19 with the following research results. In terms of its ease, it was reported that the JKN Mobile application has made it easier for the public to access health services for example this application can reduce the level of queues in accessing public services online and many other useful features. In terms of the trust, the JKN Mobile application has won the public trust. The public know that the JKN Mobile Application is indispensable during the COVID-19 pandemic. In terms of reliability, the JKN Mobile application provides easy access for the people to obtain health services. Then in terms of content and information display, the features provided in the JKN Mobile application received positive feedback from the public because it is easy to understand; people need to choose the health services they need, especially during the COVID-19 pandemic. Lastly, citizen support to the JKN Mobile application provides information and complaints features that are useful for serving community problems and difficulties in accessing health services and required information. In the future, the JKN Mobile application is expected to be better and more reliable in assisting the community in obtaining health services [13]. Hence, in this study, researchers analyze the factors influencing the users' satisfaction level using the JKN Mobile application in Sungai Penuh City in the Covid-19 Era using the PIECES Framework.

Method

This type of research is descriptive quantitative aiming to describe, summarize, share conditions of various situations or various variables, object of research, that arise in the community. In this study, the researchers used simple random sampling of the respondents using the JKN Mobile application. The number of samples in this study were 101 users with the population of the sample was all the users in the city of Sungai Penuh.

This research instrument was a questionnaire which explored information about the satisfaction level of the JKN Mobile application users. This questionnaire was created based on the 6 focus analyzes of the PIECES Framework. The PIECES framework was a framework used to classify problems, opportunities, and directives contained in the scope definition section of system analysis and design as follows **Table 1**:

Tabel 1. Instrument PIECES Framework

No	PIECES Framework	Indicator	Number of Questions
1	Performance	The JKN Mobile application has fast loading quality when accessed	1
		The interaction interface is easy to understand	1
		It has an easy input process	1
		It has complete features	1
2	Information	It provides information according to user needs	1
		It provides precise and accurate information	1

		It does not take a long time to provide information	1
		It provides up-to-date information	1
3	Economic	It offers appropriate service fees	1
		It Ensures the users' data security	1
4	Control	It has user access restrictions	1
		It is safe from virus attacks	1
5	Efficiency	It is easy to operate	1
		It saves time, cost, and effort	1
		It does not require a lot of human resources to run app cation	1
		It offers accurate help center services	1
6	Service	It provides bed doctors' availability	1
		There is a feature for registration service	1
		There is feature for doctor consultation feature	1
		It provides information and complaint features	1
		The Application provides service history feature	1
		Total Number of Questions	21

from *primary data, 2022*

Framework Pieces

A. Performance

Performance analysis was carried out to determine the performance of a system, whether it was running well or not [14]. Performance was a system's ability to complete tasks quickly so that targeted services can be achieved immediately [15].

B. Information

Information analysis was used to determine how much and how clear the information generated for one search [16]. Information was important because information management and users can take the next step. If the information system's ability was good, the user would get accurate, timely, and relevant information as expected [17].

C. Economic

Economic value was an analysis to determine whether a system was appropriate to be applied in terms of financial and cost. This information would influence the expenses. Sufficient economic information can affect cost control and increase the benefits of information systems [17].

D. Control and Security

Control and Security analysis determined the extent of supervision and control carried out so that the system runs well [18]. Power relates to system integrity, ease of access, and data security [15].

E. Efficiency

Efficiency analysis was carried out to determine whether a system was efficient, with few inputs but can produce a satisfactory output [19]. Efficiency was related to how these resources can be used optimally [15].

F. Service

Service analysis was used to identify how services running and to find out existing service problems [20]. Better service improvement for management, users, and other parts was a symbol of the quality of an information system [17] see **Figure 1**.
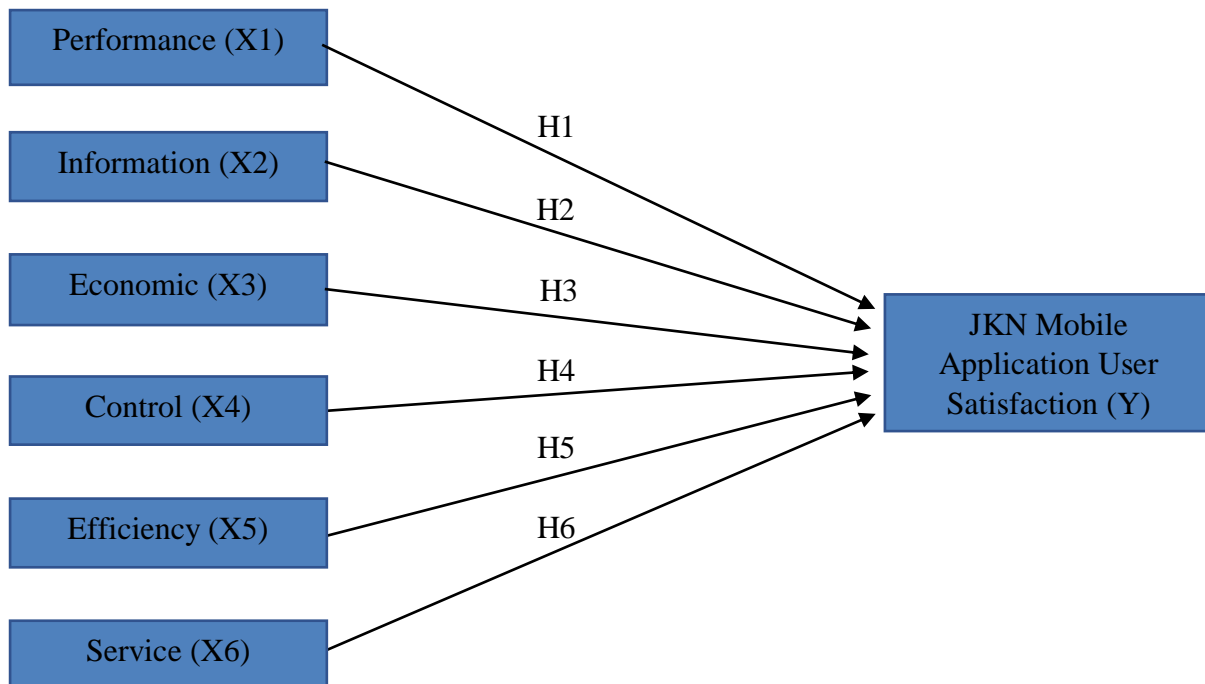
Figure 1. *Theoretical Framework*

H1: Performance (X1) significantly affects users' satisfaction with the JKN Mobile application (Y).

H2: Information (X2) significantly affects users' satisfaction with the JKN Mobile application (Y).

H3: Economic (Economic Value) (X3) has a significant effect on users' satisfaction with the JKN Mobile application (Y).

H4: Control and Security (X4) significantly affect users' satisfaction with the JKN Mobile application (Y).

H5: Efficiency (X5) significantly affects users' satisfaction with the JKN Mobile application (Y).

H6: Service (X6) significantly affects users' satisfaction with the JKN Mobile application (Y).

This research used a primary data model obtained from the results of a questionnaire. Questionnaire is a data collection technique which is done by giving a series of written questions to respondents to be answered. The questionnaire was designed in the form of a google form. The researchers distributed google form to residents who used the JKN Mobile Application randomly.

The data management used SEMpls software to test the existence of a correlation between research variables or proof of hypotheses made by researchers and regression tests to obtain valid data for indicators of questionnaire value using a Likert scale approach (1) Strongly Disagree, (2) Disagree, (3) Average, (4) Agree, and (5) Strongly Agree.

Results and Discussion

A.   Respondents' Demographic Profile (n = 101)

The demographic profile of respondents in the study was the people of Sungai Penuh city, both male and female with ages from 15 to 59 years of age from various types of educational background, namely junior high school level to master degree level with long experience using the internet, no less than one year to more than seven years.

Table 2. Respondents demographic profile

Characteristics	of Sungai Penuh City Jambi Province	
	Freq	*%*
Age		
15-25 years	28	27%
26-35 years	23	23%
36-45 years	25	25%
>45 years	25	25%

Characteristics	of Sungai Penuh City Jambi Province	
	Freq	*%*
Gender		
Male	56	55.4%
Female	45	44.6%
Last Education		
Elementary	0	0%
Junior	3	3%
Senior High School	11	11%
Diploma/S1	74	73%
Masters Degree	13	13%
Internet Experience		
<1 year	2	2%
1-3 years	2	2%
4- 6 years	16	15.8%
>7 years	81	80.2%

from *primary data, 2022*

Table 2 above regarding the respondent's data in this study shows that for the age group, the majority of respondents consist of respondents aged 15-25 years and with an education level of Diploma/S1 (Bachelor). Most male respondents have used the internet for more than seven years.

B. Research Variable Reliability

Tabel 3. Results of Composite Reliability and Cronbach Alpha

Construction	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)	
Control	**0.895**	**0.897**	**0.950**	**0.905**	Reliabel
Economic	**0.862**	**0.871**	**0.935**	**0.879**	Reliabel
Efficiency	**0.927**	**0.931**	**0.948**	**0.822**	Reliabel
Information	**0.950**	**0.951**	**0.964**	**0.869**	Reliabel
Performance	**0.935**	**0.935**	**0.953**	**0.836**	Reliabel
Service	**0.935**	**0.938**	**0.953**	**0.837**	Reliabel
Kepuasan Pengguna	**0.945**	**0.954**	**0.958**	**0.820**	Reliabel

Source: Processed by primary data, 2022

In the **Table 3** above, the reliability test results (output Composite Reliability and Cronbach Alpha) show that the value of each variable reaches > .70 for Composite Reliability & Cronbach Alpha [21]. The JKN Mobile application in Sungai Penuh City with the variable of users' satisfaction level has the most considerable Composite Reliability value with .964, and the largest Cronbach Alpha is .950. At the same time, the variable with the lowest value in economics is .935 and .862. From the various explanations related to the reliability test results, which obtained the highest and lowest values of not less than .70, it can be concluded that each research in this test already has good reliability.
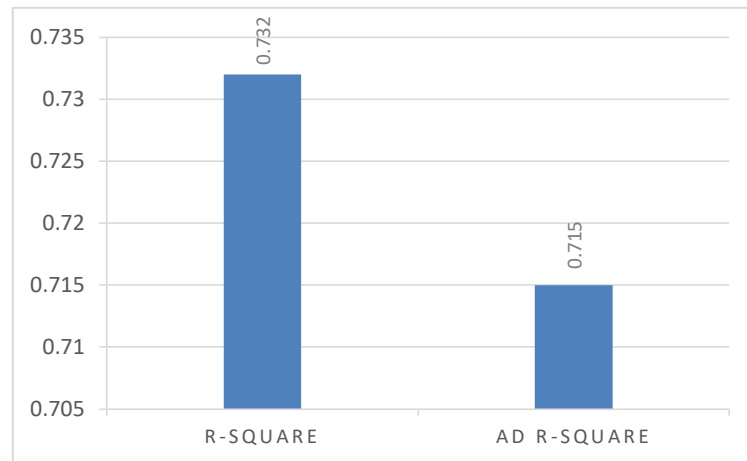
C.   Regression Analysis

Figure 2. *User Satisfaction Regression Results*

Source: Processed by primary data, 2022

Figure 2 above is an R-squared diagram, the output of the JKN Mobile application (JKN) explains control (C), economic (E), efficiency (EF), information (I), performance (P), service (S), of 0.732. Which means that it can be concluded that the users' satisfaction toward the application is 73.2%, in which the R-square structural model identifies that there are 3 scales, namely 19% - 33% (weak/moderate), 33% - 67% (moderate), and > 67% (strong/good/substantial). Looking at the interpretation of the results of the regression and R-square on the Users' Satisfaction variable for the JKN Mobile application, the scale obtained is in the Strong/Good category. Therefore, it can be concluded from the results of this regression test that the independent variable has a very immediate impact on the dependent variable.
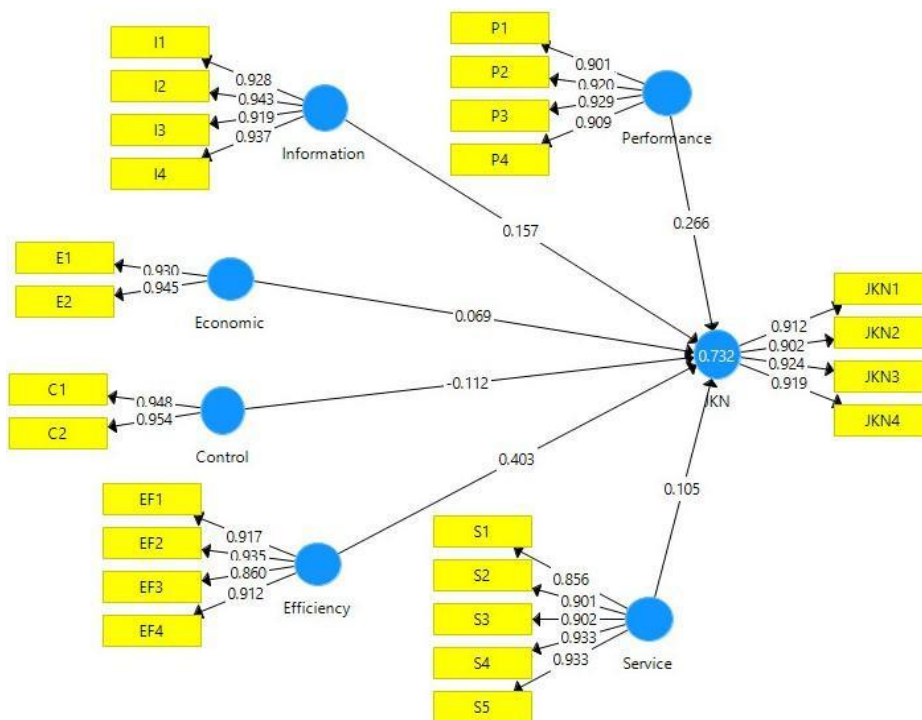
D.   Hypothesis Testing

Figure 3. *Output Bootstrapping*

Source: Processed by primary data, 2022

In **Figure 3**, hypothesis testing has been carried out between independent and dependent variables using the bootstrapping method on SEMpls to determine the validity and reliability of the research data. This test used T-statistics and P-values. The result are presented as a t-table, to find valid research data, of course, for t-statistics value is > 1.96 and P-value is < 0.05 [22]. The following table showed the results of the hypothesis test "Effect" community Satisfaction Level of JKN Mobile application users in Sungai Penuh City during Covid-19 pandemic:

Table 4. Hypothesis Testing for JKN Mobile Application Users

Variabel	Original Sample (O)	Sample Mean (M)	STDEV	T-Statistics (|O/STDEV|)	P value	Hipotesis
Control-JKN	-0.112	-0.109	0.082	1.369	0.172	Rejected
Economic-JKN	0.069	0.062	0.128	0.537	0.592	Rejected
Efficiency-JKN	0.403	0.400	0.139	2.896	0.004	Supported
Information-JKN	0.157	0.150	0.135	1.158	0.247	Rejected
Performance-JKN	0.266	0.280	0.124	2.138	0.033	Supported
Service-JKN	0.105	0.109	0.132	0.795	0.427	Rejected

Source: Processed by primary data, 2022

a) Control Hypothesis (C) – JKN Mobile Application User Satisfaction (JKN)

other than that the P-value is 0.172 (ideal score <0.05). It can be concluded that control as the first measured variable In the hypothesis table above, it can be seen that the statistical findings on control's value was 1.369 (ideal score >1.96), did not have significant effect on the satisfaction of the application users.

b) Economic Hypothesis (E) – JKN Mobile Application User Satisfaction (JKN)

In the Economic (E) hypothesis table on JKN Mobile application Users' Satisfaction (JKN), the T-statistic value was 0.537 (ideal score >1.96) whereas the P-value was 0.592 (ideal score <0.05). It can be said that economic variable did not have significant effect on the satisfaction of the people who used the JKN Mobile application.

c) Efficiency Hypothesis (EF) – JKN Mobile Application User Satisfaction (JKN)

In the Efficiency (E) hypothesis table on the JKN Mobile application User Satisfaction (JKN), the T-statistic value was 2.896 (ideal score > 1.96) whereas the P-value was 0.004 (ideal score <0.05). The scores indicated that the efficiency variable significantly affected the users' satisfaction.

d) Information Hypothesis (I) – JKN Mobile Application User Satisfaction (JKN)

In the information (I) hypothesis table, the T-statistic score was 1.158 (ideal score >1.96) whereas the P-value of 0.247 (ideal score <0.05). According to the test result, it can be said that the information does not have a significant effect on the satisfaction of the users of the JKN Mobile application.

e) Hypothesis Performance (P) – JKN Mobile Application User Satisfaction (JKN)

In the Performance (P) hypothesis table, the T-statistic score was 2.138 (ideal score >1.96) whereas For a P-value of 0.033, which provides for a deal (ideal score < 0.05), the explanation means that performance significantly influenced the community's satisfaction using the JKN Mobile application.

f) Hypothesis Service (S) – JKN Mobile Application User Satisfaction (JKN)

In the Service (S) hypothesis table indicated the T-statistic score was 0.795 (ideal score > 1.96) whereas the P-value was 0.427 (ideal score < 0.05). These results indicated that service variable did not significantly affect the satisfaction of the people who use the JKN Mobile application.

Discussion

This study empirically examins the performance, information, economic, control, efficiency, and service variables on the users' satisfaction level using the JKN Mobile application. This study finds that the performance variable significantly affects the positive perception of using the JKN Mobile application in Sungai Penuh City. This finding confirms previous findings regarding quality of a system effects e-government or smart government services. These

findings confirm the conclusion that quality of a system affects e-government services [23] and the statement that the quality of mobile applications does not have a significant effect on users' satisfaction [24].

In addition, this study finds that the information variable deos not have significant effect on satisfaction od the JKN Mobile application users in Sungai Penuh City. This study does not agree with the results of previous studies stating that the quality of information was influenced by using technology [25]. This study also disagrees with previous research stating that the information provided in the JKN mobile application was adequate [10].

Furthermore, this study finds that the economic variable also does not have significant effect on users' satisfaction of the JKN Mobile application in Sungai Penuh City. This study confirms the result of previous investigations finding that cost does not significantly affect users' satisfaction and intention to sustainable use of the JKN Mobile application[26].

Control variable also does not have significant effect on the users' satisfaction of the JKN Mobile application in Sungai Penuh City. The finding does not agree with previous results reporting that control has a significant impact on users' satisfaction, and power is also quite good in the Mobile JKN application [27].

While the efficiency variable significantly affects users' satisfaction application in Sungai Penuh City, this finding confirms previous findings. In bureaucratic reform of public services, especially in the health sector, mobile applications have made it easier for the community in various aspects [28].

Finally, the service variable does not have significant effect on the users' satisfaction. This finding does not support the previous result saying that the services provided in the JKN mobile application are satisfactory [10]. This finding justifies earlier findings by concluding that other factors influence users' dissatisfaction on the application service. One of which is unstable signal in some areas, so they only used the application if they wanted to check membership and due bills and prefered to come directly to the office to get services [29].

Conclusion

The purpose of this study was to prove the researcher's hypothesis in relation to the satisfaction analysis of the Mobile JKN application users during the Covid-19 using the PIECES framework. The results of this study indicate the value of R square was 0.732. Therefore, it can be concluded that the interpretation of the users' satisfaction level of the JKN mobile application was 73.2%. The R-square identifies quality in the form of strong/good category. Several PIECES variables that have a significant effect on people's satisfaction with the JKN mobile application are efficiency and performance variables with P values of 0.004 and 0.033 while control, economic, information, and service variables with P values of 0.172, 0.592, 0.247, and 0.427 have no significant effect on satisfaction the community of users of the JKN mobile application in Sungai Penuh City.

The results of this study are expected to be useful as input for improving the JKN Mobile Application in supporting community needs to increase public satisfaction using the JKN Mobile Application for the realization of the effectiveness and level of public satisfaction in e-government services. This research is also expected to enrich knowledge about JKN Mobile applications and e-government. The weakness of this research is that it is carried out in a limited time, namely six months. Recommendation for the further research is that further study should be able dig deeper into the effectiveness of the JKN Mobile application.

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