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User Satisfaction Analysis Using EUCS And TAM Methods of Public Digital Library Application

Anisya Caty Praniffa[1], Tengku Khairil Ahsyar[2], Muhammad Jazman[3], Syaifullah[4], Arif Marsal[5]
12050323145@students.uin-suska.ac.id[1], tengkukhairil@uin-suska.ac.id[2], jazman@uin-suska.ac.id[3], syaifullah@uin-suska.ac.id[4], arif.marsal@uin-suska.ac.id[5]
[1,2,3,4,5] Information System Departement, Faculty of Science and Technology, State Islamic University of Sultan Syarif Kasim Riau

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Abstract

iRiau is a digital platform that makes it easier for people to access the Soeman HS library. User satisfaction assessments are made to access the extent of iRiau application being relevant and effective. The study use the EUCS and TAM methods to identify factors affecting user satisfaction. The study sample involved 125 analyzed respondents using SPSS. According the research, five of the seven hypotheses tested were accepted. Variable Perceived Usefulness, Content, Accuracy, Format, and Timeliness significantly impact user satisfaction. However, variables of Perceived of Use and Ease of Use are insignificant. Variables with the most significant influences are Perceived Usefulness and Timelliness. The linar regression model produces an R-Square of 0.959, showing that such independent variables explain 95.9% of user satisfaction.

A. Introduction

Information Technology (IT) development affects various aspects of life, including library service. The transformation toward the digitalization of library services allows for more flexibility without time and location [1]. One of the innovations in transformation is done in *iRiau* applications. *iRiau* is a digital platform developed by the Soeman HS library in Riau. The application provides various features, such as digital book borrowing, book reviews, and social interaction with users that aim to make it easier for people to read and borrow books online [2].

iRiau is the library's digital application for library services and archives in Riau province. *iRiau* is a social-based digital library app equipped with an e-reader to read ebooks. With social media features, users can connect and interact with other users. Users can recommend the books that they read, submit book reviews, and make new friends.

Table 1. Library Visitors 2023-2024

Month	Total
July	2.788
August	3.435
September	4.674
October	8.103
November	7.524
December	5.509
January	6.616
February	10.275
March	4.666
April	2.906
May	7.315
June	6.577

Table 1 is the table of visitors to the Soeman HS library over one year. The table shows that the Soeman HS library has been unstable, with an unpredictable rise and decline because of some factors, including school holidays, test periods, and special activities held in the Soeman HS library area. The decrease in year-end visits is due to holidays; at the same time, increased visitors at the beginning of a particular year and month may refer to students looking for references in the work of duty or the thesis.

In 2022, a study was made on user satisfaction with various aspects of digital applications. As for research on "Online Application Analysis for Public Access Catalog (OPAC) in the Soeman HS library using EUCS and TAM." Analysis has found that the quality of information and systems significantly increased user satisfaction [3]. In addition, the study "The User Satisfaction Analysis of the Application DANA Uses the EUCS and TAM Method." Studies have shown that factors such as punctuality and usefulness that are beneficial have significant effects on user satisfaction [4].

However, despite many studies that have used EUCS and TAM to analyze application and user satisfaction, studies have yet to study social media-based digital library applications such as *iRiau*. Technical problems often encountered by

users, such as automatic logout, automatic error, and not delivered book comments, point to a gap between expectations and application user experiences.

One of the key components used to improve application performance in a feeling is user satisfaction. User satisfaction increased user pleasure with an application [5]. User satisfaction determines the application's success rate. It concerns the EUCS method, which evaluates users' satisfaction with the *iRiau* application's quality and usefulness [6].

End-User Computing Satisfaction (EUCS) approach was created in 1988 by Doll and Torkzadeh [7]. EUCS put models in place to gauge how satisfied end users are with the *iRiau* application. An application must be reliable and regarded well if it has good qualities and meets user needs. Once the user is satisfied, the application is received. There are five variables in the EUCS model [8]. Those variables are content, accuracy, format, ease of use, and Timeliness. Furthermore, there's also user satisfaction [9].

Technology Acceptance Model (TAM) is the technique for determining the degree of reception prescribed by Fishbein in 1975 [10]. TAM explains user reception in an application. TAM gave the theory to determine what affected the acquisition of technology in an institution [11]. TAM clarifies the causal link between an application's advantages and usage and user behaviour, purpose, and use of the application [12]. According to Hartono, TAM focuses on the attitude toward the use of. TAM as a model is enabled to describe and predict the user's attitudes toward applications based on two perceptions: perceived usefulness and perceived ease of use [13].

Based on the above review, the researchers suggests combining the EUCS and TAM models to evaluate the factors associated with *iRiau* application satisfaction [14]. The goal of measuring the level of *iRiau* application satisfaction and analysis is to be a guide for the library service and the Riau province's archive for the application's improvement and development more relevant to user needs. And then, the study must be have a broad impact potential on the Soeman HS library scope, among other things, as a guide to the development of digital libraries in different areas, increased educational accessibility, optimizing digital applications of public services, and enhancing digital transformation in government institutions.

B. Research Method

This process start with the planning phase and ends with the data processing phase. Picture 1 is a research stage.

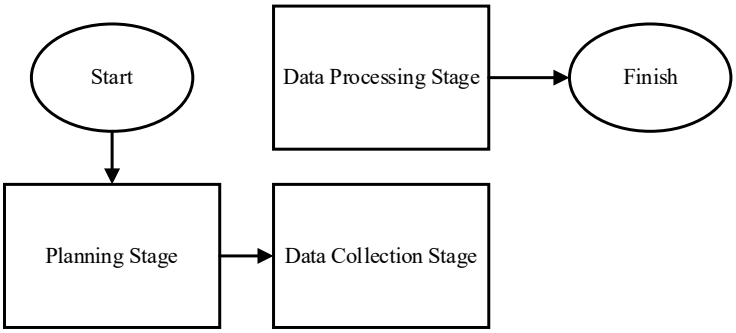

Figure 1. Methodological Approach

Planning Phase : The planning process begins by determining the problem using the *iRiau* application. Once the problem is discovered, the next step is adapting case studies to appropriate methods, such as field and literature studies. This was accomplished through interviews and observations with the library service chief of staff and archives of the Province of Riau and *iRiau* application users. The study will use EUCS and TAM as methods. Next, there are seven hypotheses to be used:

Table 2. Research Hypotheses

Hypotheses	Information
H1	End-user Satisfaction significantly affects Perceived Usefulness
H2	End-user Satisfaction significantly affects Perceived Ease of Use
H3	End-user Satisfaction significantly affects Control
H4	End-user Satisfaction significantly affects Accuracy
H5	End-user Satisfaction significantly affects Format
H6	End-user Satisfaction significantly affects Ease of Use
H7	End-user Satisfaction significantly affects Timeliness

Data Collection Phase : After data is collected, the data-gathering stage is used to achieve goals and results. Data is obtained from a questionnaire (Google form) sent to online media users on Instagram. The questionnaire contains 35 statements that include eight variables of EUCS and TAM methods. Table 3 is the variable indicator table and questionnaire's statement.

Table 3. Variables Indicators and Questionnaire Statement

Variables	Code	Indicator	Statement
Perceived Usefulness	PU1	Productivity	The system supports user productivity
	PU2	Performance	The system improves performance
	PU3	Convenience work	The system makes work easier
	PU4	Information	The system provides useful information
Perceived Ease of Use	PEU1	Easy to understand	The characteristics of the system are simple for consumers to comprehend
	PEU2	Easy to use	The system is easy to operate and easy to access
	PEU3	Flexible	The system can be accessed at any time
	PEU4	Facilities	The system can be accessed via PC and handphone
Content	C1	Relevance	The system presents information-related content as needed.
	C2	Completeness	The system displays all available information

	C3	Benefit	The system loads user-friendly content
	C4	Quality	The system provides content that has good quality
	C5	Transparency	The system provides clear content
Accuracy	A1	Accuracy	The system provides correct and accurate information
	A2	Reliable	The system provides reliable information
	A3	Output	The system produces data according to what is ordered
	A4	Standardization	The system operates based on established standarts
Format	F1	Interesting	The system format provided is interesting
	F2	Clear	The system format is clear and easy to follow
	F3	Quality	The output format provided by the system is a high quality
	F4	Convenience users	The system format is easy to use
Ease of Use	EU1	Easy to use	The system is easy to use
	EU2	Easy to understand	The system is easy to understand
	EU3	Comfort	The system is comfortable to use
	EU4	System interaction	The system makes it easy for users to interact
	EU5	Information	The system simplifies information tetrrieval
Timeliness	T1	Up-to-date	The system produces up-to-date information
	T2	Timeliness	The system delivers timely information to users
	T3	Availability information	The system can provide information when needed
	T4	Information quality	The system ensures the accuracy of the information
End-User Satisfaction	EUS1	Adequacy	Job fulfilment system
	EUS2	Convenience	The system simplifies work
	EUS3	Effectiveness	The system effective when used
	EUS4	Efficient	The system works efficiently when used
	EUS5	User Convenience	Users are satisfied with the system's performance

Assessments of the questionnaire show that user behaviour is being measured, and opinions and perceptions of the *iRiau* application are being made on the Likert scale. Scale viewed in Table 4 [4].

Table 4. Likert Scale

Point	Respondent Perception
1	Highly Disagree
2	Not Agreed
3	Neutral
4	Agreed
5	Fully Agreed

The sequence is done using a Simple Random Sampling method as a sample of the *iRiau* application user [15]. Next, sample results were obtained using a margin of error of 10% in the Slovin formula. So, the number of 94 respondents was minimal, and then the researcher rounded to 125 authors [16].

Data Processing Stage : Data analysis from previous questionnaires is performed before this stage. The study was prepared using SPSS 27 and Microsoft Excel 2016 for validity and reliability tests. Further, hypothetical testing is done to confirm reliability and research data; t-test (partial), f-test (simulated), and R-Square test is used. Recommendations will be made, and problems will be solved based on the data analysis of *iRiau* applications. This recommendation can be a basis for a new proposal to increase the *iRiau* application [15].

C. Result and Discussion

The services of the library and archives of the province, Riau, are responsible for managing the library and archive services. To improve services and quality reading in the environment of Riau province, *iRiau* is a digital library app that can be accessed through smartphones and social media. The application has a spacious, mobile, mobile reader [15].

Respondent Analysis : The respondents in this study case a total with 125 people, and the respondents were users of *iRiau* applications.

1. Gender-based responders
   Figure 2 is a percentage-based diagram of the gender of respondents. The diagram shows that 70 (56%) of the population are women and 55 (44%) are men.

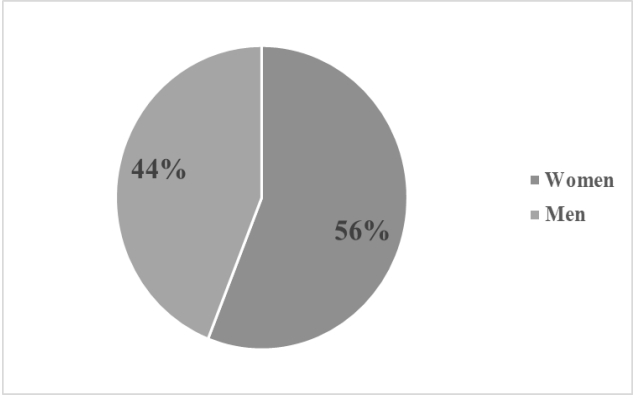

Figure 2. Respondent Characteristics Based on Gender

2. Respondents by Age

Figure 3 is a percentage diagram based on age. Out of 125 individuals, respondents under the age classification were divided into 17-25, 75 (60%), 26-35 years of 23 (18%), and > 35 years of 27 (22%).

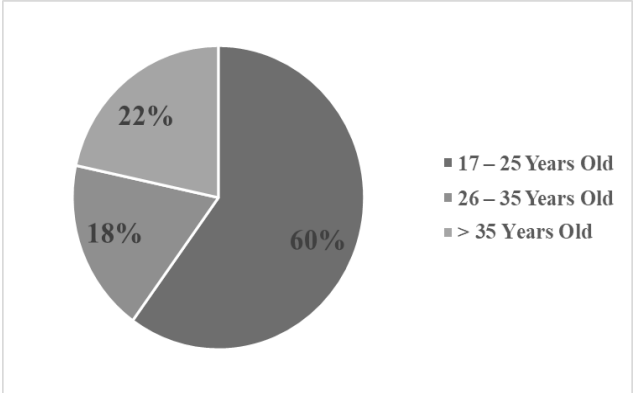

Figure 3. Respondent Characteristics Based on Age

3. Job-based responders
   Figure 4 shows the percentage of respondents based on work. It can be seen that the majority of respondents' jobs or activities are as many as 66 students (53%), as many as 29 government/private employees (23%), as many as 15 teachers (12%), and as many as 15 (12%).

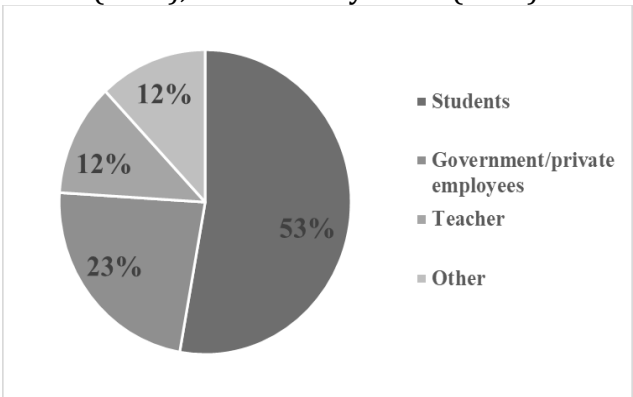

Figure 4. Respondent Characteristics: Job-Based

4. Respondents Based on the Mass Use of Application.
   Figure 5 shows the percentage of respondents who use an *iRiau* application by mass. From the diagram, it is known that the respondents used an application for 45 years (36%), 1- 2 years with 53 people (42%), and users > 2 years with 27 (22%).

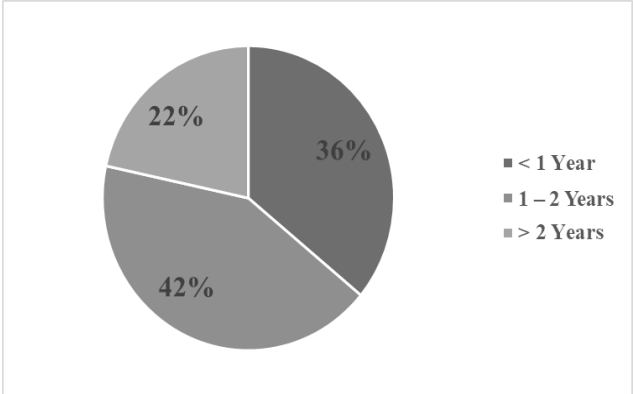

Figure 5. Respondent Characteristic Based on Application Usage Mass

5. Respondents Based on Application Function
   Figure 6 is the percentage of respondents based on the role of the *iRiau* application. From the diagram, it is known that as many as six people (5%) are very satisfied, 67 people (54%) are satisfied, 49 people (39%) are satisfied enough, three people (2%) are less satisfied with the role of the *iRiau* application.

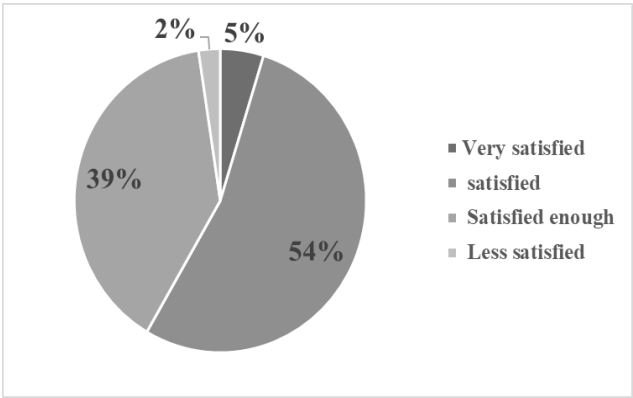

Figure 6. Respondent Characteristics Based on Application Function

6. Respondents by the Role of the Application
   Figure 7 represents the percentage of respondents based on the *iRiau* application's function. From the diagram, it is known that as many as 19 people (15%) feel the *iRiau* application is helpful, 64 people (51%) feel the *iRiau* application is helping, and 42 (34%) feel the *iRiau* application is helping enough.

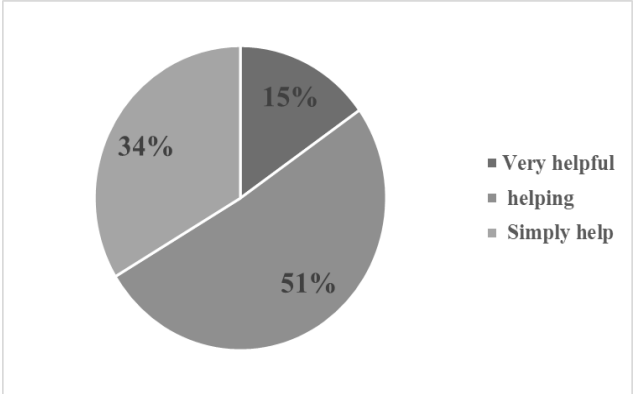

Figure 7. Respondent Characteristics Based on Application Role

Validity Test : Bivariate tests were used to measure the validity. It measures valid or invalid item statements on the questionnaire [17]. The value of the r-table is 0.1757 [18].

Table 5. Validity Value

Assessment Aspects	Variable	r_{count}	r_{table}	Description
Perceived Usefulness	PU1	0.9316.	0.1757	Valid
	PU2	0.9452	0.1757	Valid
	PU3	0.8505	0.1757	Valid
	PU4	0.9402	0.1757	Valid
Perceived Ease of Use	PEU1	0.8884	0.1757	Valid
	PEU2	0.8773	0.1757	Valid
	PEU3	0.8692	0.1757	Valid
	PEU4	0.7681	0.1757	Valid
Content	C1	0.7394	0.1757	Valid
	C2	0.9028	0.1757	Valid
	C3	0.9014	0.1757	Valid
	C4	0.8836	0.1757	Valid
	C5	0.900	0.1757	Valid
Accuracy	A1	0.8623	0.1757	Valid
	A2	0.8066	0.1757	Valid
	A3	0.8737	0.1757	Valid
	A4	0.8674	0.1757	Valid
Format	F1	0.8881	0.1757	Valid
	F2	0.8532	0.1757	Valid
	F3	0.8920	0.1757	Valid
	F4	0.6148	0.1757	Valid

Ease of Use	EU1	0.8282	0.1757	Valid
	EU2	0.6692	0.1757	Valid
	EU3	0.8568	0.1757	Valid
	EU4	0.8751	0.1757	Valid
	EU5	0.8141	0.1757	Valid
Timeliness	T1	0.8723	0.1757	Valid
	T2	0.8087	0.1757	Valid
	T3	0.8136	0.1757	Valid
	T4	0.7378	0.1757	Valid
End-User Satisfaction	EUS1	0.7148	0.1757	Valid
	EUS2	0.5966	0.1757	Valid
	EUS3	0.8045	0.1757	Valid
	EUS4	0.7618	0.1757	Valid
	EUS5	0.8484	0.1757	Valid

Reliability Test : Reliability tests determine whether all questionnaire items can be used in research and whether the results are consistent [13]. See the chart of the reliability coefficient in Table 6.

Table 6. Reliability Values

Variable	Reliability Coefficient	Term	Description
Perceived Usefulness (PU)	0.936	0.7	Reliable
Perceived Ease of Use (PEU)	0.872	0.7	Reliable
Content (C)	0.968	0.7	Reliable
Accuracy (A)	0.873	0.7	Reliable
Format (F)	0.833	0.7	Reliable
Ease of Use (EU)	0.957	0.7	Reliable
Timeliness (T)	0.822	0.7	Reliable
End-User Satisfaction (EUS)	0.905	0.7	Reliable

From the table above it states that the value of constructively is religious, accurate, consistent, stable, and reliable. All statement items on the questionnaire have a score of reliability coefficient > 0.7, so the whole variable is said to be religious or reliable so that the research droplets can be used in future research.

R-Square : The R-Square test determines how independent variables affect the dependent variable.

Table 7. R-Square Table

R-Square	Adjusted R-Square
0.959	0.956

Based on Table 7, R-Square scores indicate an influence with a score of 0.959. This value explains all X-related variables, 95.9%, whereas 4.1% are anchored to other research variables.

T-Test (Partial) : The t-test was used to determine the coefficient value of its parameters and the value of its statistical significance. It is also done to determine whether hypotheses on variables are accepted or partially rejected. The t-table value on test t is 1.980 [19].

Table 8. T-Test Results

Variable	Standardized Coefficients Beta	t	Sig.
Perceived Usefulness	0.665	6.106	0.000
Perceived Ease of Use	-0.226	-1.829	0.070
Content	-0.824	-8.004	0.000
Accuracy	0.438	4.029	0.000
Format	0.334	4.802	0.000
Ease of Use	0.047	0.796	0.428
Timeliness	0.649	10.484	0.000

Based on Table 8, you can see the results of user satisfaction with *iRiau* applications as follows:

1. H1: t-count 6.106 > t-table 1.980. This indicates that the relationship between End-User Satisfaction and Perceived Usefulness is accepted.
2. H2: t-count -1.829 < t-table 1.980. This indicates that the relationship between End-User Satisfaction and Perceived Ease is rejected.
3. H3: t-count -8.004 > t-table 1.980. This indicates that the relationship between End-User Satisfaction and the hypothetical content is accepted.
4. H4: t-count 4.029 > t-table 1.980. This indicates that the relationship between End-User Satisfaction and Accuracy hypothesis is accepted.
5. H5: t-count 4.802 > t-table 1.980. This indicates that the End-User Satisfaction relationship and the hypothetical format are accepted.
6. H6: t-count 0.796 < t-table 1.980. This indicates that the relationship between End-User Satisfaction and Ease of Use is rejected.

7. H7: t-count 10.484 > t-table 1.980. This indicates that the relationship between End User Satisfaction and Hypothetical Timelines is accepted.

F-Test (Simultaneous) : The test shows whether dependent variables (Y) and independent variables (X) influence one another. Test results assessments are within Table 9.

Table 9. Output of Simultaneous Test

Model	Mean Square	F	Sig.
Regression	96.873	70.536	<.001
Residual	1.373		

Based on the output SPSS image, the findings of the investigation above demonstrate of significance < 0.05 and the value of t-table (2.09) < f-count (70.536). Results suggest that independent and dependent variables affect one another in *iRiau* applications.

Recommendation for Improvement

1. Instances can increase Timeliness variables of service or provide information on a timely basis so that applications can have a quick and appropriate response time with the goal increases user experience when accessing the application,
2. Concerned with accuracy variables, like the book data shown on applications, so that there is no incorrect or biased information,
3. Increasing content variables, like the latest books that can be read on *iRiau* applications, then optimizing the application's interface with more appealing visuals,
4. Instances may add a new feature that enables users to communicate, such as live chat or messaging bot, if faced with a problem.

D. Conclusion

The analysis of the t-test and f-test reveals that independent variables, such as Timeliness and Content, significantly influence the dependent variable, namely end-user satisfaction. Among these, Timeliness has the most substantial impact, underscoring the critical role of punctuality in the effectiveness of the *iRiau* application. Interestingly, both Perceived and Actual Ease of Use do not directly affect user satisfaction, suggesting that these factors play a supporting rather than central role. Furthermore, the f-test results confirm that all independent variables collectively influence user satisfaction, indicating their simultaneous contribution to the overall experience. The R-Square value of 0.959 (95.9%) demonstrates a strong relationship between the dependent and independent variables, leaving only 4.1% of user satisfaction influenced by other external factors.

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