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Analysis of User Satisfaction of Online Transportation Users with the end User Computing Satisfaction Method

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Abstract

The development of information and communication technology has significantly impacted various sectors, including transportation. In Medan City, app-based online transportation services have emerged as a practical solution to meet the community's mobility needs while simultaneously creating new job opportunities. This study aims to analyze user satisfaction levels with online transportation services using the End User Computing Satisfaction (EUCS) approach, which includes five key dimensions: content, accuracy, format, ease of use, and timeliness. Data were collected through an online questionnaire distributed to 100 active users of online transportation services in Medan and analyzed using descriptive statistics and frequency distribution. The findings are presented through an interactive website to facilitate interpretation. This study is expected to provide a comprehensive overview of user experience and offer strategic insights for service providers to improve service quality and develop marketing strategies aligned with user needs in the digital era.

Keywords: *Online transportation, User satisfaction, End User Computing Satisfaction*

1. Introduction

The development of technology has led to an increase in vehicle usage [1]. Medan is one of the cities in Indonesia experiencing rapid growth in the use of online transportation services. Every consumer will have different evaluations of their experiences when using a service [2]. Price also becomes an important consideration, because the prices set will certainly affect the level of demand for the product [3]. Customer satisfaction is the key to winning the market and sustaining the business. The fundamental goal of any business is to create continuous customer satisfaction and gain benefits such as building loyalty, which leads to recommendations from one individual to another, ultimately generating positive results for the company and fostering a harmonious relationship between the company and its customers [4].

The research problems addressed include: (1) how to design a website to analyze user satisfaction with online transportation services, and (2) how to analyze the influence of service quality, price, and brand image on user satisfaction using the End User Computing Satisfaction (EUCS) method. This study aims to present an analysis of user satisfaction with online transportation services in an interactive and informative manner, as well as to analyze the influence of service quality, comfort quality, and timeliness on online transportation users using the EUCS approach. In addition, the results of this research are expected to provide an easily accessible visual medium to communicate the results of the user satisfaction analysis effectively as a basis for evaluation and decision-making. It also aims to offer insights into the factors that affect user satisfaction in order to support improvements in service quality, comfort, and timeliness provided by service providers.

A. Online Transportation

The increasing development of information technology has made information technology one of the most important resources for both government organizations and private organizations. The advancement of computer technology has grown very rapidly, and computers have started to replace many people as operators and controllers on production lines.

Online motorcycle taxis use a basic region-based system around turns and edges, known as Gojek, Grab, Maxim, and Indriver [5]. The presence of application-based transportation is seen as an e-business model because transportation is a fundamental need for human life when moving from one place to another, and it has a major impact on society by enabling all activities to be carried out quickly and efficiently. The existence of these online transportation services has led to regulatory changes in many countries, forcing governments to adjust regulations to accommodate the new business model [6].

B. Service Quality

A dynamic condition that is always related to people, service products, processes, and the environment, capable of meeting or exceeding consumer expectations. Providing excellent service to customers is the key to success and quality [7].
The five (5) dimensions proposed by Parasuraman, Berry, and Zeithaml are as follows:
a. Reliability – the ability to accurately and reliably deliver a service, especially to do so without errors every time and on time, as well as the capability to provide what has been promised.
b. Responsiveness – the willingness or ability of employees to help consumers and provide the services they need.
c. Assurance – meaning knowledge, competence, friendliness, politeness, and the credibility of contact personnel in addressing questions.
d. Empathy – maintaining contact between representatives and various age groups to address the needs required by consumers.
e. Tangibles – the physical facilities available, equipment, as well as elements that can or should exist within the service process [4].

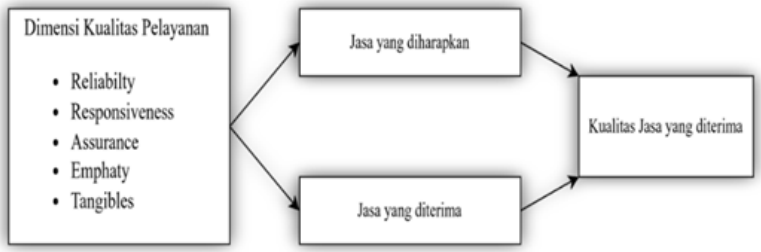

Fig. 1: Service Quality Dimensions

C. Website

According to Hakim Lukmanul, the internet provides a means that enables the interconnection of documents, both locally and globally. The documents available on a website are called web pages, and the presence of links within them makes it easy for users to navigate from one page to another, whether on the same server or on servers across the world. These pages can be accessed and displayed using browser software such as Google Chrome, Mozilla Firefox, Microsoft Edge, Internet Explorer, and various other browser applications [9].

D. End User Computing Satisfaction (EUCS)

End User Computing Satisfaction (EUCS) is a method for measuring the level of user decision-making on an application system by comparing the expectations of an information system with reality. According to Doll & Torkzadeh, the definition of End User Computing Satisfaction (EUCS) is the overall evaluation of user satisfaction toward an information system, which has been extensively evaluated in several studies and considers end users as factors that can help build a better information system.
The evaluation methodology of End User Computing Satisfaction focuses on user satisfaction with an information system in technical aspects by measuring content, accuracy, format, timeliness, and ease of use. The following are the research aspects of the EUCS method:

1. Content: This aspect of user satisfaction is based on the relevance of the information provided by the system to the users' needs.
2. Accuracy: Refers to the level of precision of the data generated by the system, both during data input and output processes, which affects user satisfaction.
3. Format: An indicator of user satisfaction evaluated from the design of the user interface, covering visual appeal, information placement, and ease of access.
4. Ease of Use: Represents the level of comfort users experience when operating the system, especially if it can be used simply and efficiently.
5. Timeliness: Indicates how quickly and accurately the system responds to commands, including data processing time in real-time or when entering data [10].

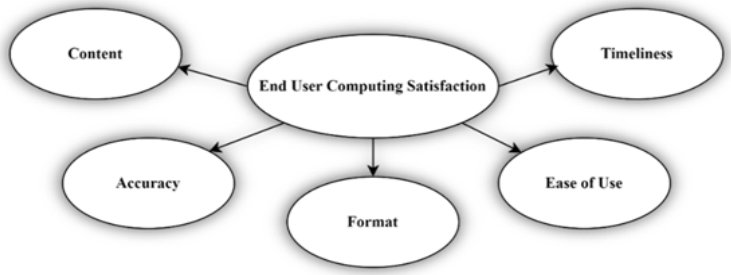

Fig. 2: End User Computing Satisfaction Model (EUCS)

2. Main Body

A. Problem Analysis

Problem analysis is a structured process to identify and evaluate the root causes of an issue in order to fully understand the factors that influence it. In the context of this research, the analysis is carried out in three (3) stages: analysis of the processes currently running in the field, analysis of the methods used, and analysis of the proposed system.

There is also an analysis that describes the current system in online transportation services from the user's perspective. The process starts with receiving feedback through the application in the form of ratings and reviews, which are then used by the company to evaluate service quality. However, the high volume of text-based reviews often makes interpretation difficult, and mistakes in analysis can lead to inaccurate decisions.

Therefore, this study uses the EUCS approach to improve the accuracy of user satisfaction analysis by assessing five key dimensions: content, accuracy, format, ease of use, and timeliness.

B. Analysis of Method Used

The questionnaire was developed based on the five dimensions of the EUCS method: Content, Accuracy, Format, Ease of Use, and Timeliness, each measured using a Likert scale. In addition, there is a dependent variable, namely User Satisfaction. Each dimension has question indicators relevant to users' experiences in using online transportation services. The data collected through the questionnaire will be analyzed using descriptive statistical tests and frequency distribution to determine the level of user satisfaction. Furthermore, the types and sources of data, the research population, sampling techniques, and data analysis methods used to process and interpret the research results are also described.

1. Type of Data: The type of data used is quantitative data, which is numerical data collected to support the analysis of relationships, comparisons, or statistical hypothesis testing.
2. Sources of Data:
   a. Primary Data: Obtained directly from respondents through surveys, interviews, and observations. The advantages include data accuracy and relevance, though it requires significant time and cost.
   b. Secondary Data: Sourced from journals, research reports, and other publications. This data is easily accessible and cost-effective, but it may be less relevant or outdated.
3. Research Population: Includes all users of online transportation services in Medan who have used these services for at least the last three months. The selection of this population is based on geographic considerations and relevant user experience.
4. Sampling Technique: This study uses purposive sampling with criteria: active users, minimum usage frequency of three times per month, age ≥18 years, and having access to technology. The sample size is set at 100 respondents, considering resource efficiency and the representativeness of online transportation service users in Medan.
5. Sampling Method: The technique used is non-probability sampling of the purposive sampling type, where samples are deliberately chosen based on predetermined criteria that align with the research objectives.
6. Data Analysis Technique: In this study, data obtained through questionnaires will be analyzed using quantitative methods. Data processing is conducted using a website that functions for statistical analysis, such as calculating averages, and so on. Here are the steps the researcher will take in analyzing the data:
   a. Determining scores for each respondent.

Table 1: Score Determination

Description	Skor
Very Satisfied	4
Satisfied	3
Dissatisfied	2
Very Dissatisfied	1

Although the terms used in the questionnaire may vary, such as Very Easy – Very Difficult or Very Good – Very Bad, their meaning still refers to four levels of satisfaction, ranging from very positive to very negative.

   b. Score Calculation:
   • The score for each question is determined based on the respondent's answer.
   • The respondent's total score is obtained by summing all answer values.
   • The average for each indicator will be calculated to measure the level of satisfaction across the five EUCS method dimensions, namely: Content, Accuracy, Format, Ease of Use, and Timeliness.
   Each indicator, which consists of several related questions, will have its total score calculated by adding up the values given by respondents for the questions relevant to that indicator. After that, the average score for each indicator will be calculated using the following formula:

$$\text{Average Score for an Indicator} = \frac{\text{Total Indicator Score}}{\text{Number of Respondents}}$$

   c. Overall Average Calculation
   After calculating the average for each indicator, the overall user satisfaction average will be calculated by summing the averages of all indicators and then dividing by the total number of indicators. The calculation formula is as follows:

$$\text{Overall Average} = \frac{\sum (\text{Average of Each Indicator})}{\text{Number of Indicators}}$$

   d. Scale Interpretation
   After calculating the overall average, the result will be interpreted using the following scale:

Table 2: Assessment Scores

Assessment Scores	Category
1,00 – 1,75	Very Dissatisfied
1,76 – 2,50	Dissatisfied

2,51 – 3,25	Satisfied
3,26 – 4,00	Very Satisfied

Below are the research steps described as follows:

Fig. 3: Research Stages

The following section will detail and explain the research stages illustrated in the diagram above, as follows:

1. Literature review stage: A literature review will be conducted by reading and collecting journals related to the research, especially journals about evaluation using the EUCS method. The literature review is used to gain an understanding of how to evaluate an information system.
2. Questionnaire development process: The researcher will create a questionnaire based on the indicators of the EUCS method.
3. Data collection stage: All data obtained from distributing the questionnaire will be gathered and then processed.
4. Data analysis stage: The researcher will analyze all processed results and evaluate them in more detail.
5. Conclusion and recommendation stage: After completing all the previous stages, the researcher will draw conclusions and provide suggestions based on the data obtained.

C. Proposed System Analysis

The analysis of the proposed system is modeled using a Use Case Diagram. The following image shows the Use Case Diagram of the proposed system.

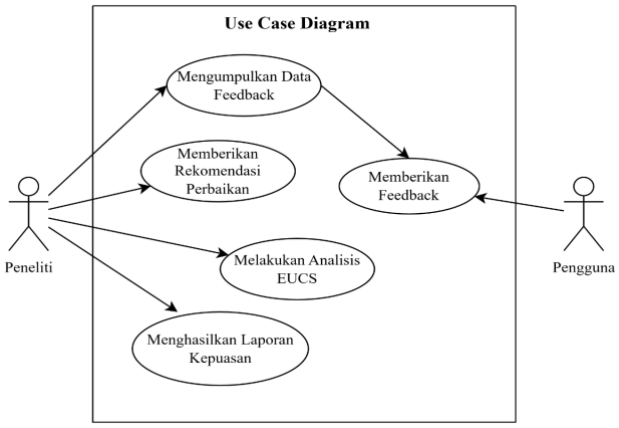

Fig. 4: Use Case Diagram

In the Use Case Diagram above, there are two actors: the user and the researcher. The process flow of the Online Transportation Customer Satisfaction Survey website includes the user first needing to enter their personal data, such as name and other personal details. Once the data is successfully entered, they will be directed to the survey page, which contains questions related to online transportation. After completing the survey, the data will be stored in the database. For the researcher actor, the researcher must log in first. After successfully logging in, the researcher will be directed to a page containing a list of users who have completed the survey, along with their personal data. On this page, the researcher can also view several statistical tests for survey purposes. The survey data will be processed, and the results will be displayed there

D. Design

The system design includes the user interface design and database structure tailored to the survey process needs. Users are first asked to fill out a personal data form, then directed to the survey page to answer a series of questions. After completing the survey, the data is saved into the database. For researchers, the system provides a dedicated login page that will redirect to the admin page upon successful login. On the admin page, researchers can view the data of users who have completed the survey, perform statistical calculations, and review the overall results of the conducted survey.

E. Results and Discussion

1. Results

This chapter describes the implementation results of the web-based online transportation survey information system that has been designed and developed in the previous stages. This system was built to facilitate the collection of data from the public regarding their perceptions of online transportation services, starting from filling in personal data, conducting the survey using a Likert scale, to data management and analysis by the admin.

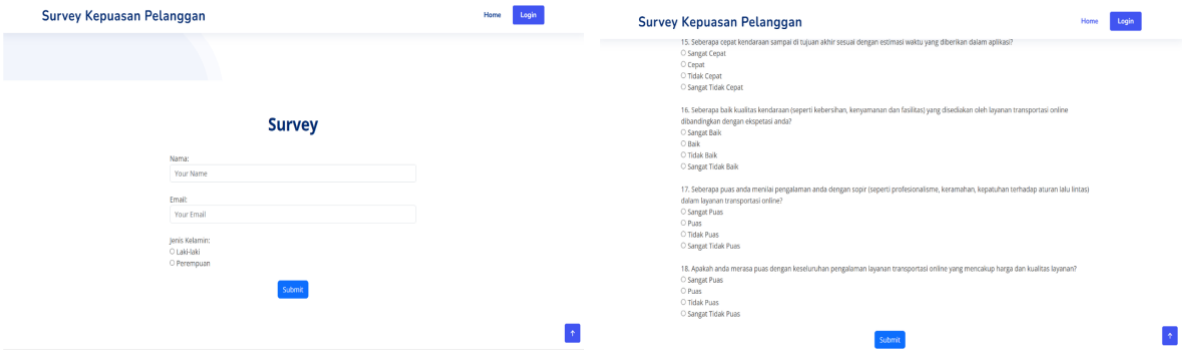

Fig 5: Survey Page

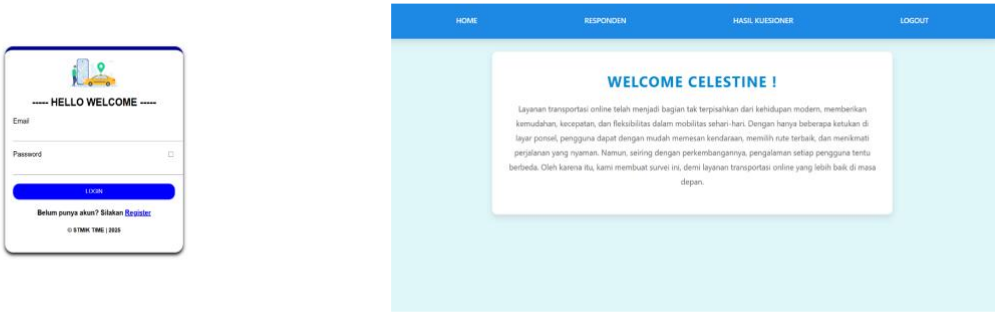

Fig 6: Login and CMS Page

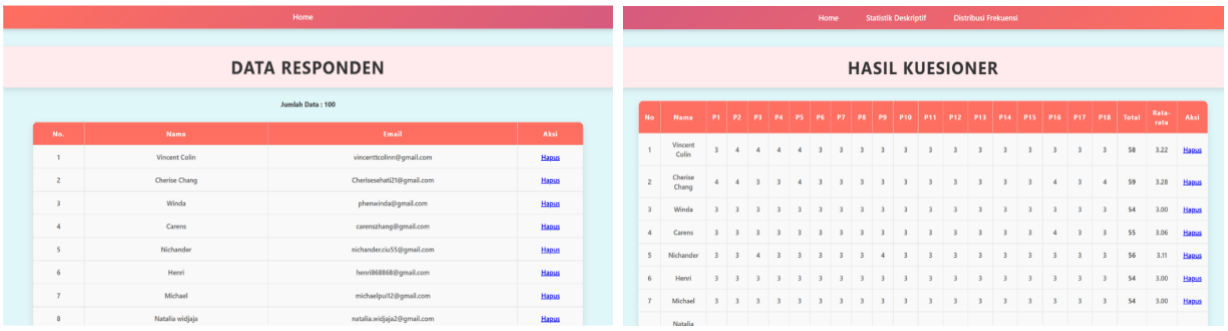

Fig 7: Respondent Data And Survey Results

Fig 8: Statistic Result Page

2. Discussion

This online transportation survey website is designed to simplify the collection of public perceptions regarding online transport services. It features a simple, responsive interface accessible from various devices. Key features include a personal data form, a survey page using a 4-point Likert scale (without a neutral option), and an admin dashboard for data management and analysis. Survey results are processed automatically using descriptive statistics such as mean, median, standard deviation, and frequency distribution, presented in tables and interactive charts. An admin login feature ensures data security and system integrity.

However, the system has some limitations: there is no response history for users, data validation is limited due to the lack of email verification or CAPTCHA, and it does not yet support automatic export of results to PDF or Excel formats.

3. Conclusion

Based on the research and development of the online transportation user satisfaction survey system using the EUCS method, several conclusions can be drawn as follows: A web-based survey system was successfully developed and can be used to collect and analyze user satisfaction data. Users fill in their personal data and answer questions based on the five EUCS indicators — Content, Accuracy, Format, Ease of Use, and Timeliness — using a 4-point Likert scale, enabling quantitative analysis. The system supports the evaluation process of the influence of service quality and price on user satisfaction. The structured data and descriptive statistical analysis features, along with frequency distribution, help the admin easily interpret users' perceptions and make data-driven decisions.

4. Suggestions

For further development, this survey system can be improved in several ways:

1. Adding data export features to Excel or PDF formats to make it easier for the admin to save and print survey results.
2. Integrating search and sorting features for respondent data based on specific criteria, such as name or submission date, to support more efficient data analysis.
3. Providing a direct print feature from the admin page so that survey result documentation can be done quickly and practically.

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