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# "USER SATISFACTION ANALYSIS OF INTERMODAL INTEGRATION SERVICES" (CASE STUDY: CIMAHI CITY STATION)

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***Abstract***

*The increasing mobility of the population in Cimahi City has led to an increase in the needs and expectations of the community for the use of well-integrated public transportation services. This study aims to determine what factors can influence user satisfaction with intermodal integration services at Cimahi City Station. This study is expected to be a reference in improving facilities or services in carrying out intermodal transfers at Cimahi City Station, so that users of public transportation services will increase. This study discusses the coverage of public transportation in Cimahi City and those passing through the Cimahi City Station route, around 5 city transportation routes, with 1 stop at Cimahi City Station. This study uses a quantitative descriptive approach method, using a questionnaire with a sample of 230 respondents. The factors that influence intermodal integration services at Cimahi City Station are divided into 3 dependent variables, namely service quality, trust, and loyalty to the independent variable, namely user satisfaction. The results of the study showed that 3 factors in the dependent variable, namely service quality, trust, and loyalty, have a positive and significant effect. 0.000 < 0.05. Therefore, overall intermodal integration services such as service quality, trust, and loyalty need to be improved, in order to increase user satisfaction in changing modes at Cimahi City Station, and the availability of infrastructure services needs to be reviewed to increase user satisfaction.*

***Keywords:*** *Integration, Transportation, Station, Regression, Satisfaction.*

## Introduction

Cimahi City is one of the cities in West Java Province, geographically located west of Bandung City, and part of the Greater Bandung metropolitan area. According to the Central Bureau of Statistics in 2024, in Cimahi City there are public transportation such as trains and

city transportation (angkot). Trains become the main mode of public transportation after city transportation (angkot), which is supported by the available infrastructure, namely stations, bus stops, and city transportation terminals (angkot).

Based on direct observation at Cimahi City Station, and information obtained from the Cimahi City Transportation Office, currently people in Cimahi City face several obstacles in making intermodal transfers and causing many service user complaints when switching from one mode to another, one of which is the limited service of intermodal integration facilities.

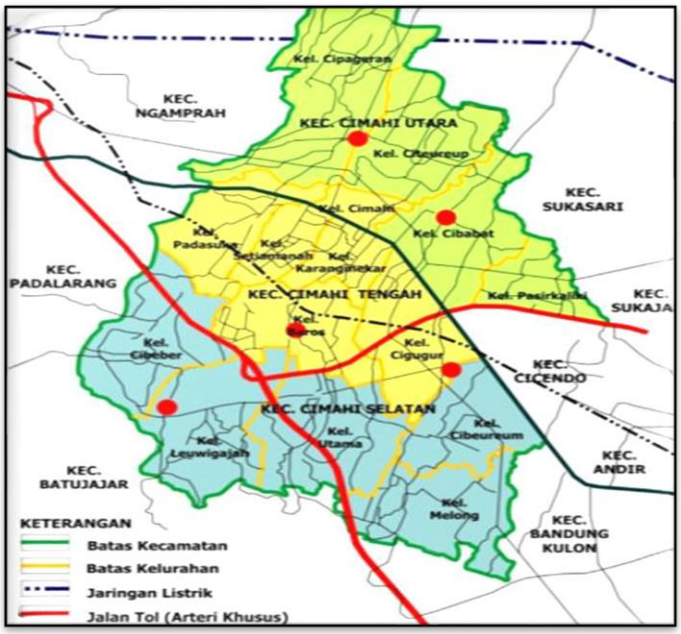


Image1. Map of Administrative Boundaries of Cimahi City

(Source: Local Government of Cimahi City)

Effective integration between transportation modes is needed as an effort to improve the quality of service that connects other modes in order to increase accessibility, efficiency, comfort, and be affordable for the community. (Ninvika & Wulandari, 2024) . Intermodal transfer connects from the node to public transportation services, (Leliana 2018) . The need for facilities and accessibility provided for transportation service users aims to facilitate transportation users to walk to the bus stop and waiting room, (Purwoko, Chotib, and Yola 2022) . *End-to-end* service availability is required for continuity in services to and from the

station, (Maulidya 2018) . Every company is required to be able to provide services as optimally as possible in meeting consumer needs, therefore planning of transportation services and scheduling is needed as optimally as possible, (Purnama and Nurhakim 2019) .

In research (Chen et al. 2021) , examines the mode shift between metro and bus in general in the Big City of Nanjing, China, by utilizing big data and smart cards which broadly focuses on understanding intermodal shift patterns from a macro and spatial perspective, but does not discuss aspects of user perception or satisfaction directly. The research according to (Fawwaz and Rakhmatulloh 2021) , has a main focus on the perception of the quality of intermodal integration services at KRL Sudirman Station Jakarta based on 5 ServQual dimensions using a combined IPA and CSI method. The research conducted by (Shabrina et al. 2023) , examines the satisfaction of train users with intermodal integration services and facilities at Poncol Station, using the *revealed preference* method and multiple linear regression, with the results obtained that there is a significant influence between service variables and facilities on customer satisfaction, by providing appropriate improvement recommendations.

Research on intermodal integration is important to find out information related to factors that affect user satisfaction of intermodal integration services at Cimahi City Station, such as service quality, trust, and loyalty to user satisfaction. Through the discussion in this intermodal integration research, it is expected to find practical solutions and recommendations to improve service quality and improve the intermodal integration system at Cimahi City Station, and is expected to have a positive impact on society.

**Research Method**

This research uses descriptive quantitative methods, and direct surveys to analyze the level of user satisfaction with intermodal integration services at Cimahi City Station. Data collection conducted for this study used secondary data obtained from PT KAI to determine the number of daily passengers, while primary data was obtained from a questionnaire that included an assessment of intermodal integration service factors such as service quality, trust, availability, loyalty, and user satisfaction, overall made into 18 questions.

The questionnaire to be distributed was designed based on relevant literature and previous research that discusses intermodal integration. Samples were taken from daily passengers of train users at Cimahi City Station, using the Slovin formula sampling technique, with a total of 230 respondents. Sample determination is used to determine the number of samples needed in the study and the respondents taken are in accordance with the user population, (Kumala Dewi, Ariffien, and Dwi Sparingga 2023) . After collecting data, data processing was carried out using

multiple linear regression analysis methods processed using SPSS *software* applications, then the results of the data processing were concluded to be discussed further regarding intermodal integration services at Cimahi City Station.

Regression analysis is needed to measure the influence of the independent variable on the dependent variable. Meanwhile, regression analysis aims to model the relationship between variables, where there is a variable *y* as a response variable, *output,* independent, or explained variable, while variable *x* as a predictor variable, input, free, or explanatory variable, (Kartiningrum et al. 2022). Multiple linear regression is a statistical analysis method or linear regression model to measure more than one independent variable with one dependent variable. This linear regression model shows how much influence the independent variable has on the dependent variable, (Sudariana and Yoedani 2022).

Multiple linear regression can be expressed in mathematical equation (1) as follows:

$$Y = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n \quad (1)$$

Description:

Y = dependent variable

$a$ = Constant

$X_1, X_2, X_3$ = Free (independent) variable

*b1, b2, b3, … , bn* = Regression Coefficient (the effect of each independent variable on Y)

**Discussion and Results**

**a. Discussion**

In this analysis, validity and *reliability* tests were carried out on the 20 attributes used, consisting of *reliability, tangible, responsiveness, assurance, empathy,* security, service consistency, service facilities, completeness of transportation infrastructure, intention to reuse, and so on.

1) Validity Test

The validity test is carried out as a reference to measure the extent to which the contents of the questions in the questionnaire are able to represent each indicator of the research variable, to carry out the validity test, it is known that the r table value is the number of samples (230), using a two-way decision of 5%, with a significance level of 0 05. So, the value of r table is 0.1294

From the measurement results in the table above, that the question variable indicator has a value of r count> r table, it is declared valid and can be analyzed further.

2) Reliability Test

Reliability test is carried out to measure that the results of data collection through the questionnaire used can be trusted and provide consistent results. The method used is *Cronbach's Alpha.* If, the *Cronbach's Alpha* value> 0.70 then the resulting value is good. From the results in the table above, it can be seen that all variables are reliable.

3) Assumption Test

Further tests to ensure that the data meets the requirements of the analysis, the classical assumption test includes:

a. Normality Test

The test in this study uses the *Kolmogorov-Smirnov* method*, the* data is declared normal if the significant value is> 0.05. So, it can be stated that the normality test results above are normally distributed, because they have a sig. > 0.05.

b. Multicollinearity Test

Multicollinearity test is conducted to ensure that the linear relationship between independent variables is not strong or unrelated. If the *Tolerance Value*> 0.1 does not occur multicollinearity, and if the VIF value< 10, there is no multicollinearity. So, it can be stated that the results of the nulticollinearity test in the table above are that there are no symptoms of multicollinearity or pass the multicollinearity test.

c. Heteroscedasticity Test

Next, conduct a heteroscedasticity test to ensure that the residual variance is constant. Performed using the *glejser* test. if the sig value.> 0.05 then passes the heteroscedasticity test, and if the sig..05 then it does not pass the heteroscedasticity test.

4) Multiple Linear Regression Analysis

This study uses multiple linear regression analysis methods to determine the effect of independent variables on the dependent variable. The independent variables in this study are Service Quality (X1), Trust (X2), Loyalty (X3), and the dependent variable is User Satisfaction (Y)

The regression equation is as follows:

$$Y = 1{,}243 + 0{,}160X_1 + 0{,}620X_2 + 0{,}343X_3 \quad (2)$$

5) Hypothesis Test

Hypothesis testing is carried out to measure the effect of the independent variable on the dependent variable, simultaneously and partially. The tests carried out are as

a. Partial Test (t)

To determine each independent variable's influence on the dependent variable. If the t value> t table, and sig. <0.05, then H0 is rejected and Ha is accepted, meaning that the independent variable has a significant effect on the dependent variable.

If, has a positive and significant influence, it means that if the independent variable increases, the dependent variable tends to increase, and vice versa.

b. Simultaneous Test (F Test)

To determine the joint effect of the independent variable on the dependent variable. If the value of F count> F table or sig. <0.05 then, ha is rejected and H0 is accepted. Independent variables (X1, X2, X3) simultaneously have a significant effect on the dependent variable (Y).

c. Coefficient of Determination

Obtained an ***R Square*** value of **0.354.** Where, this value shows that **35.4%** in the *dependent* variable, namely User Satisfaction (Y) can be explained by the *independent* variables, namely Service Quality (X1), Trust (X2), and Loyalty (X3). And the remaining (100% minus 35.4%), namely **64.6%**, is influenced by other factors or variables that are not included in this study.

**b. Result**

**1. Analysis of Respondent Characteristics**

It can be seen that this research measures the characteristics of respondents based on the age of the respondent, the type of work of the respondent, the origin of the trip, the purpose of the trip, the purpose of the trip, the angkot (city transportation) route used from Cimahi City Station, and the frequency of travel to do the number of times using angkot from Cimahi City Station.

**2. Factors that influence user satisfaction**

User satisfaction of intermodal integration services at Cimahi City Station is influenced by various factors that determine the experience when using intermodal integration services at Cimahi City Station.

**3. GAP Analysis**

The results obtained show that most of the facilities available in the context of intermodal integration are in accordance with existing minimum service standards, but

there are still important gaps that must be improved, namely related to security information, complaint services, and facilities for users with disabilities or special needs. Thus, the GAP assessment of the questionnaires distributed to service users with direct assessment (direct observation) which refers to the minimum service standards (SPM) that can be assessed has an influence in aspects of service quality, trust, and loyalty.

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