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# The Effect of Service Quality and Service Value on Suroboyo Bus Passenger Satisfaction

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# The Effect of Service Quality and Service Value on Suroboyo Bus Passenger Satisfaction

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**Abstract.**  It is important for the public transit operator to understand the effect of service quality and service value on passenger satisfaction, to maintain passengers loyalty and to attract more passengers. This study analyzed the effect of service quality and service value on Suroboyo Bus passengers satisfaction. Data were collected from a random sample of 300 Suroboyo Bus passenger and was analyzed using Structural Equation Modelling. Results show that service quality has significant positive effects on the service value, and both the service quality and the service value have significant positive effects on the passenger satisfaction. The results as well indicate that service quality only explains up to 4.5% variance of service value, while service quality and service value explains up to 48.8% variance of passenger satisfaction. Additionally, Suroboyo Bus passenger satisfaction more affected by service value, than by service quality.

*Keywords: service quality, service value, passenger satisfaction, suroboyo bus*

## 1. Introduction

Traffic congestion appears in Surabaya due to the unequal growth between road capacity (1%) and the amount of the vehicles (3%) [1].  On the other side, the demand for public transport in Surabaya also very low, only 11.8% of the total population [2]. Previous research confirmed that car users are willing to switch to public transport if the public transport are improved, i.e. lower fares, an increase frequency of service, and shorter travel time [3].

Thus to encourage passengers switching from private vehicles to public transport services, Surabaya City Government launched Suroboyo Bus on April 7, 2018 [4] as seen in Figure 1. Suroboyo Bus has capacity around 67 people, and equipped with different seat colors (pink for female, and orange for male passengers), CCTV cameras, door with sensors to detect if there are passengers standing near the door, and an emergency anticipation system in case of a fire or accident. There is also has a smartphone application called GoBis that can detect the real time position of each bus, and also a feature to scan the QR Code at the bus stop to notify the bus crew there is passenger waiting at the particular bus stop as seen in Figure 2. Another interesting feature of Suroboyo Bus is the payment system. To ride the bus, passengers should pay a specific amount of used plastic bottle, that later will send to the waste bank for recycling into useful materials.

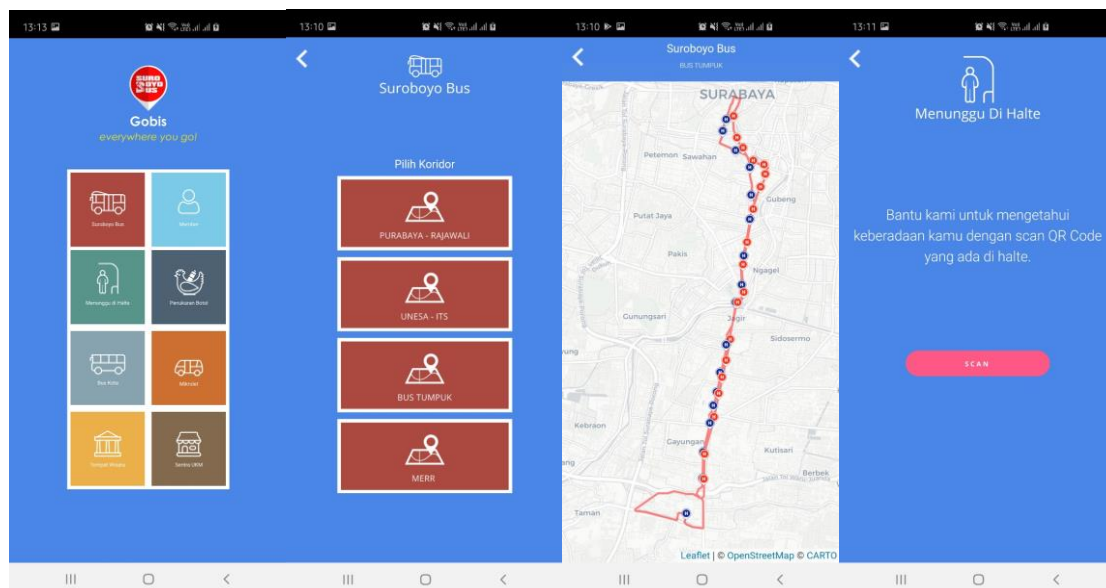**Figure 1**. Suroboyo Bus Exterior and Interior [5],[6]



**Figure 2.** Gobis App [7]

It is important for public transit agencies understand the effect of service quality and service value on passenger satisfaction, to maintain passengers loyalty, increased use of the service, attract more passengers, and improve public image [8], [9]. The focus of this research is to assess the effect of service quality and service value on Suroboyo Bus passenger satisfaction.

*1.1 Service Quality*

Public transit service quality reflects the passengers' perception of transit performance [8] and also an indicator of whether the public transit service level matches passenger expectations [10]. Previous studies have verified that public transit service quality may affect passenger loyalty directly or indirectly via public transit service value or

passenger satisfaction [11]. If public transit is an option, the passenger's decision to use that public transit rather than a competing mode will depend on how well the public transit service quality compares with the competing modes [12]. Previous research has suggested that perceptions of service quality directly and significantly influence service value and satisfaction [11], [13], [10], [12]. To measure Suroboyo Bus service quality, the list of service quality attributes were adopted from TCRP Report [9], [14], relevant modifications are needed in order to accommodate the specific characteristics of the Suroboyo Bus service.

*1.2 Service Value*

Public transit service value, also known as perceived service value, is understood as passengers' assessment of the economic costs and benefits of service quality [11], [12]. The relationship of service value on passenger satisfaction has been supported by previous research studies [11], [13], [10], [12]. To measure Suroboyo Bus service value, the list of service value attributes were adopted from previous research [11], [10], [12], relevant modifications are needed in order to accommodate the specific characteristics of the Suroboyo Bus service.

*1.3 Passenger Satisfaction*

Public transit passenger satisfaction can be defined as how well attainment of a passenger's expectations [8], [15]. Passenger satisfaction studies help public transit operators identify the greatest importance factors of the service from the passenger perspective, measure current condition, prioritize future service quality improvement strategy, and monitor changes of service quality over time [14]. Passenger satisfaction is the key factor that usually affects customer loyalty [11], [8], [13]. To measure Suroboyo Bus passenger satisfaction, the list of passenger satisfaction attributes were adopted from previous research [11], [13], [10], [12], relevant modifications are needed in order to accommodate the specific characteristics of the Suroboyo Bus service.

The conceptual model of this study can be seen in Figure 3. The conceptual model proposes that passenger satisfaction is directly affected by two variables: service quality and service value.
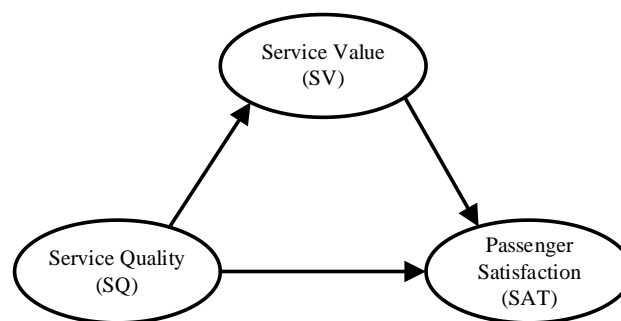


**Figure 3.** Conceptual Model

## 2. Methods and Materials

The self-report data on bus service quality, bus service value, and passenger satisfaction were collected from Suroboyo Bus passenger were approached to participate in the study. A total of 300 questionnaires were available for the analysis. The main characteristics of the Suroboyo Bus passengers surveyed are summarized in Table 1.

**Table 1.** Demographic Profiles

| Sample Characteristics | $n$ | (%) |
|---|---|---|
| *Gender* | | |
| Male | 162 | 54.0 |
| Female | 136 | 46.0 |
| *Age* | | |
| < 20 | 46 | 15.3 |
| 20-35 | 123 | 41.0 |
| 36-45 | 102 | 34.0 |
| 46-51 | 28 | 9.3 |
| > 61 | 1 | 0.4 |
| *Occupation* | | |
| Student | 118 | 39.3 |
| Private company staff | 120 | 40.0 |
| Government staff | 47 | 15.7 |
| Others | 15 | 5.0 |
| *Monthly income (IDR)* | | |
| < 0.3 million | 20 | 6.7 |
| 0.3-1 million | 61 | 20.2 |
| 1-2.5 million | 104 | 34.7 |
| 2.5-5 million | 104 | 34.7 |
| > 5 million | 11 | 3.7 |
| *Monthly expense for transport (IDR)* | | |
| < 0.1 million | 77 | 25.7 |
| 0.1-0.3 million | 149 | 49.7 |
| 0.3-0.5 million | 60 | 20.0 |
| 0.5-1 million | 13 | 4.3 |
| > 1 million | 1 | 0.3 |
| *Using Suroboyo Bus service per month* | | |
| First time | 58 | 19.3 |
| Everyday | 78 | 26.0 |
| Once a week | 103 | 34.3 |
| Every two weeks | 42 | 14.0 |
| Monthly | 19 | 6.4 |

**Table 1.** (continued)

| Sample Characteristics | n | (%) |
|---|---|---|
| *Trip purpose* | | |
| School/College | 50 | 16.7 |
| Work/business | 91 | 30.3 |
| Leisure | 106 | 35.3 |
| Visit | 14 | 4.7 |
| Others | 39 | 13.0 |
| *A competing mode for the same trip purpose* | | |
| Motorcycle | 153 | 51.0 |
| Car | 50 | 16.7 |
| Taxi | 22 | 7.3 |
| Angkot/Regular Bus | 67 | 22.3 |
| Others | 8 | 2.7 |
| *Reason for using Suroboyo Bus than a competing mode* | | |
| Cost effective | 187 | 62.3 |
| Safe from crime | 25 | 8.3 |
| Good facilities | 88 | 29.4 |

In this research, structural equation model was used to reveal the various relationships among attributes that compose customer satisfaction [16]. Table 2 outlines the variables and indicators of the present study. Each variable has two or more indicators and all items were coded using a 5-point scale.

**Table 2.** Variables and Indicators

| Variables | Indicators/observed variables (scale mean, std. dev.) |
|---|---|
| Service Quality/SQ (8 item, Cronbach's $\alpha$= 0.873)* | • Special space for people with a disability inside bus/Sb2 (4.1, 0.838) |
| | • Comfortable seat/Sc8 (4.41, 0.686) |
| | • Security at the bus stop/Se1 (4.12, 0.944) |
| | • Cleanliness at the bus stop/Se2 (4.06, 0.911) |
| | • Sheltered from the weather while at the bus stop/Se3 (3.95, 0.887) |
| | • Availability of bus lanes information/Se5 (4.04, 0.893) |
| | • Special space for people with a disability at the bus stop /Se6 (3.80, 1.002) |
| | • Ease of bus access for people with a disability/Se7 (3.89, 0.996) |
| Service Value/SV (2 item, Cronbach's $\alpha$ = 0.668)** | • Compared with the money I gave, the bus service was valuable/Bm4 (4.49, 0.552) |
| | • At the price I paid, the bus service was acceptable/Bm5 (4.44, 0.596) |
| Passenger Satisfaction/SAT (3 item, Cronbach's $\alpha$ = 0.747)** | • Overall, I was satisfied with this bus service/Bm1 (4.35, 0.549) |
| | • The perceived bus service was better than the expected /Bm2 (4.36, 0.610) |
| | • The perceived bus service was equivalent to my ideal service/Bm3 (4.40, 0.585) |

* scale: 1 = dissatisfy, 5 = satisfy; ** scale: 1 = disagree, 5 = agree

## 3. Results and Discussion

Table 3 outlines the results that met the statistical portion of the suitability of the final model. All latent variables have an internal consistency as measured by Cronbach's $\alpha \geq 0.60$. Both constructs reliability and variance extracted for each construct are reported in Table 4. Except for SV (0.673), all constructs reliabilities are above the recommended value of 0.70. For two constructs (SV and SAT) the average variance extracted has exceeded the recommended value of 0.50, the SQ constructs score lower (0.439). Based on the final model (Figure 4), service value was the strongest factor that influences passenger satisfaction. Service value significantly influences passenger satisfaction, and service quality significantly influences both service value and satisfaction. This study confirms previous research about the positive effect of service quality both on service value and passenger satisfaction [11], [10], and also the positive effect of service value and passenger satisfaction [11], [13], [10], [12].

**Table 3.** Goodness of Fit Index for Structural Model

| Absolute-Fit Measures | Acceptable Threshold Levels | Estimate |
|---|---|---|
| χ2 (Chi-Square) | expected low | 324.856 |
| Significance of Probability | ≥ 0.05 | 0.000 |
| Degree of Freedom |  | 149 |
| CMIN/df | ≤ 2.00 | 2.180 |
| GFI | ≥ 0.90 (good fit); 0.80 ≤ GFI < 0.90 (marginal fit) | 0.904 |
| RMR | ≤ 0.05 (good fit) | 0.037 |
| RMSEA | ≤ 0.08 (good fit); < 0.05 (close fit) | 0.063 |
| **Incremental-Fit Measures** |  |  |
| TLI |  | 0.901 |
| NFI |  | 0.868 |
| AGFI | 0.90 (good fit) | 0.865 |
| RFI | 0.80 ≤ GFI < 0.90 (marginal fit) | 0.831 |
| IFI |  | 0.924 |
| CFI |  | 0.922 |

**Table 4.** The Results of Convergent Validity and Reliability Test

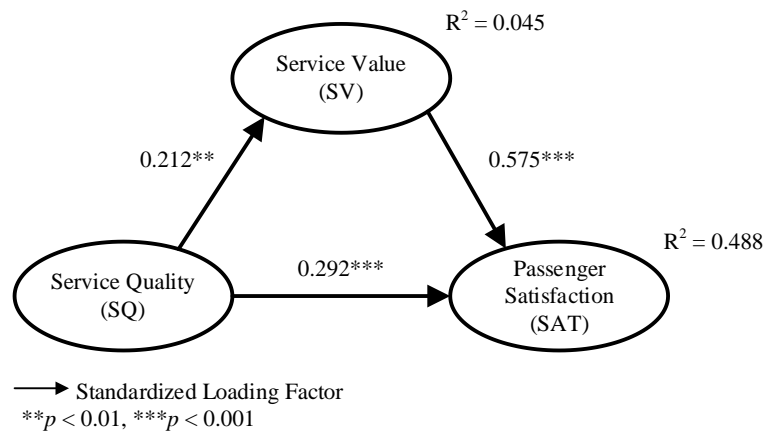| *Construct Reliability (CR)* | |
|---|---|
| SV | 0.673 |
| SAT | 0.750 |
| SQ | 0.861 |
| *Variance Extracted (AVE)* | |
| SV | 0.509 |
| SAT | 0.502 |
| SQ | 0.439 |

**Figure 4.** Results of Structural Model Analysis

## 4. Conclusion

The research results show that the factors that influence Suroboyo Bus passenger satisfaction are service quality and service value. Both the service quality and the service value have significant positive effects on the passenger satisfaction. The results as well indicate that service quality only explains up to 4.5% variance of service value, while service quality and service value explains up to 48.8% variance of passenger satisfaction. Additionally, Suroboyo Bus passenger satisfaction more affected by service value, than by service quality.

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