

Customer Satisfaction Index (CSI) Analysis Of The Performance Of City Transportation Services Within The Province (AKDP) In Gorontalo Province - Indonesia

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ABSTRACT

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Transportation is a vital sector that supports the socio-economic activities of the community, including Angkutan Kota Dalam Provinsi (AKDP) in Gorontalo Province, Indonesia. This study aims to analyze the level of customer satisfaction (Customer Satisfaction Index) towards AKDP service performance in Gorontalo Province, based on parameters in the five dimensions of service quality, namely reliability, responsiveness, assurance, empathy, and physical condition (tangible). This study used a survey method with a questionnaire to collect data from 348 AKDP user respondents. The analysis was conducted by measuring CSI and evaluating the performance of each service indicator. The results showed that AKDP CSI in Gorontalo is at a low level or has not met user expectations, with an average score of 53.81%, with a Gab value of -2.07. This shows the need to improve service quality on 5 (five) aspects, especially reliability, tangible, empathy, responsiveness and *assurance*. This study provides strategic recommendations for AKDP service providers and policy makers to improve transportation performance in Gorontalo.

Keywords: Customer Satisfaction Index, AKDP performance, Gorontalo, service quality.

I. INTRODUCTION

Gorontalo Province, one of the developing provinces in Sulawesi, has a population of 1,192,737 people with a growth rate of 1.16% per year (BPS Gorontalo, 2022). Gorontalo City, as the provincial capital, plays a strategic role in economic and social activities. The increase in population directly impacts the increase in

the number of vehicles, both two-wheeled and four-wheeled, thus triggering an imbalance between vehicle volume and road capacity. Therefore, planned traffic management is needed to balance the volume, speed, and density of vehicles so that road capacity can meet the needs of increasing transportation flows. As one of the main modes of transportation, Angkutan Kota Dalam Provinsi (AKDP) serves to connect

various regions in Gorontalo. However, the system faces significant challenges in meeting the needs of the community while adjusting to user expectations[1], [2], [3] . Initial surveys show that public interest in public transportation in the region is low, which is caused by a less than optimal service system. Many people prefer private vehicles or online transportation services (ojek online) due to the ease of access, time efficiency, and convenience they offer.

The existence of poorly managed public transportation is an obstacle to the effectiveness of community movement between Gorontalo City and other areas within the province[4], [5], [6] . Therefore, it is necessary to conduct an in-depth analysis to measure the level of user satisfaction, identify service aspects that need to be improved, and provide recommendations to improve the quality of this transportation system.

This research aims to measure the level of user satisfaction with AKDP in Gorontalo Province; Analyze service indicators that affect user satisfaction; Provide strategic input to improve service quality and competitiveness of AKDP in the future; and This research is expected to be the basis for route planning, system evaluation, and public transport service development in order to be more effective in meeting the mobility needs of Gorontalo people.

Table 1: Results of the Calculation of the Number of Sample Respondents of AKDP Users in Gorontalo Province

NO.	Region	Population (people)	Minimum sample size (people)	Number of samples obtained (people)
1.	Gorontalo Regency	398.801	200	200
2.	North Gorontalo Regency	128.563	65	65
3.	Bone Bolango Regency	166.200	83	83
Total		693.564	348	348

B. Data Collection Methods

1. The survey used questionnaires to collect primary data. The questionnaires were distributed to 348 random AKDP users, spread across three districts in Gorontalo Province.
2. The questionnaire consisted of 20-30 questions, including:

- Respondent characteristics (age, gender, occupation)
- AKDP usage experience (frequency, destination)
- Satisfaction with the quality of 5 (five) dimensions of AKDP services, namely reliability, responsiveness, assurance, empathy, and physical condition (tangible) . [2]

II. RESEARCH METHOD

This research was conducted in Gorontalo Province which consists of five regencies and one city including Boalemo Regency, Bone Bolango Regency, Gorontalo Regency, North Gorontalo Regency, Pohuwato Regency and Gorontalo City. This research uses a quantitative approach with primary and secondary survey methods, both static and dynamic surveys, passenger interviews, and home interviews.

A. Population and Sample

The population in this research is all AKDP users in Gorontalo Province totaling 693,564 people, while the determination of the research sample is 438 respondents, selected randomly (random sampling), with the sample criteria used are AKDP users aged 18 years and over and have used AKDP at least 3 times. By using the Slovin formula in equation 1 [7], [8], [9] as follows:

$$n = \frac{N}{1+e^2} \dots\dots(1)$$

Description:

- n = Number of Samples
- N = Total Population
- e = Error Margin.

The 5 (five) service dimensions are derived in questions in sub-indicators as follows:

Table 2: AKDP Customer Satisfaction Index (CSI) criteria

Service Dimensions	Service Attributes
Reliability	1. Ease of reaching the location of transportation modes
	2. Availability of information related to the schedule
	3. Safety while on transit
	4. Seating comfort
	5. Luggage rack availability
	6. Availability of seat numbers
	7. Air temperature control facility
	8. Availability of seat belts/handrails
	9. The accuracy of departure and arrival of transportation modes according to the schedule
	10. Fast waiting time to use transportation mode
	11. Availability of transportation modes in 24 hours
	12. The ticket price offered is in accordance with the service
Tangibles	13. Bus fleet condition
	14. Cleanliness of transportation mode
	15. Lighting inside the transportation mode
Empathy	16. Friendliness and politeness of officers to passengers
Responsiveness	17. Complaint facility in case of disturbance to passengers
Assurance	18. Availability of passenger handbook

C. Research Instruments

Once the data was collected, the challenges faced by ECD teachers were classified into six main categories namely: (a) adaptation to technology and the digital era, (b) enhancing professionalism, (c) collaboration with parents, (d) innovative curriculum development, (e) managing the use of technology, and (f) conducive learning environment. The number of relevant studies for each category was counted and converted into percentages.

Table 3: Customer Satisfaction Index (CSI) criteria

Index value (%)	Customer Satisfaction Index Criteria	Scale Value	Description
81,00-100,00	Very Satisfied (SP)	5	Very good
66,00-80,99	Satisfied (P)	4	Good
51,00-65,99	Moderately Satisfied (CP)	3	Good enough
35,00-50,99	Dissatisfied (TP)	2	Bad
0,00-34,99	Very Dissatisfied (STP)	1	Very bad

D. Data Analysis Method

The questionnaire survey data used 5 rating scales with the consideration of not forcing respondents to

choose one of the caps (positive-negative) for one service.

1. Customer Satisfaction Index (CSI) Analysis

This method is to determine the level of overall customer satisfaction with an approach that considers the level of importance of the indicators of a service measured using a rating scale. The magnitude of the CSI value can be done using the following steps:

- a. Determining the Mean Importance Score (MIS), MIS is the average of the importance scores of an attribute.

$$MIS = \frac{\sum_{i=1}^n (Y_i)^{X_i}}{n} \dots\dots(2)$$

Description:

Y_i = Attribute importance value

Y to i n = Number of respondents

- b. Mean Satisfaction Score (MSS), MSS is the average score for the level of satisfaction derived from the performance of services perceived by users.

$$MSS = \frac{\sum_{i=1}^n (X_i)^{Y_i}}{n} \dots\dots(3)$$

- c. Calculating Weight Factor (WF) or weighted factor. This weight is the percentage of the MIS value per indicator to the total MIS of all indicators.

$$WF = \left[\frac{MIS_i}{\sum_{i=1}^p MIS_i} \right] \times 100\% \dots\dots(4)$$

$\sum_{i=1}^p$ = Total Average of interests i to p

MIS_i = Average value of the i-th importance

- d. Calculate Weight Score (WS) or weighted score. This weight is the multiplication of WF by the average level of satisfaction.

$$WS = WF \times MSS \dots\dots(5)$$

Description:

WF = Weighted Factor

- e. Determining the Customer Satisfaction Index (CSI) with Eq.

$$CSI = \frac{WS}{HS} \dots\dots(6)$$

Description:

HS= Maximum scale used or Highest Scale

III. RESULTS AND DISCUSSION

A. Facts and Analysis

I. Study Area Characteristics

Geographically Gorontalo Province is located between the coordinates of 121°23' East to 123°43' East and 0°19' to 1°15' LU, and physically and administratively within the following spatial boundaries:

North side: Sulawesi Sea and Buol district (Central Sulawesi),

South side : Tomini Bay,

West side : Donggala Regency (Central Sulawesi),

East side : North Bolaang Mongondow district (North Sulawesi).

The land area of Gorontalo Province is approximately 6.5% of the Sulawesi Island area. The division of administrative areas of Gorontalo Province based on BPS Gorontalo data is detailed in the following table.

Table 4: Division of Administrative Area and Area per City/Regency in Gorontalo Province

District/City	Capital	Extensive		Number of Administrative Areas		
		(Km ²)	(%)	District	Village	Village
Gorontalo City	South City	70,933	0,59	9	14	0
Gorontalo Regency	Limboto	2160,364	17,97	19	0	192
Boalemo Regency	Tilamuta	1830,865	15,23	7	0	86
Pohuwato Regency	Marisa	4370,359	36,34	13	0	105
Bone Bolango Regency	Suwawa	1888,998	15,71	18	0	165
North Gorontalo Regency	Kwandang	1703,628	14,17	11	0	124
		12.025,15	100	77	64	672

Source: Extracted from Gorontalo in Figures, 2023

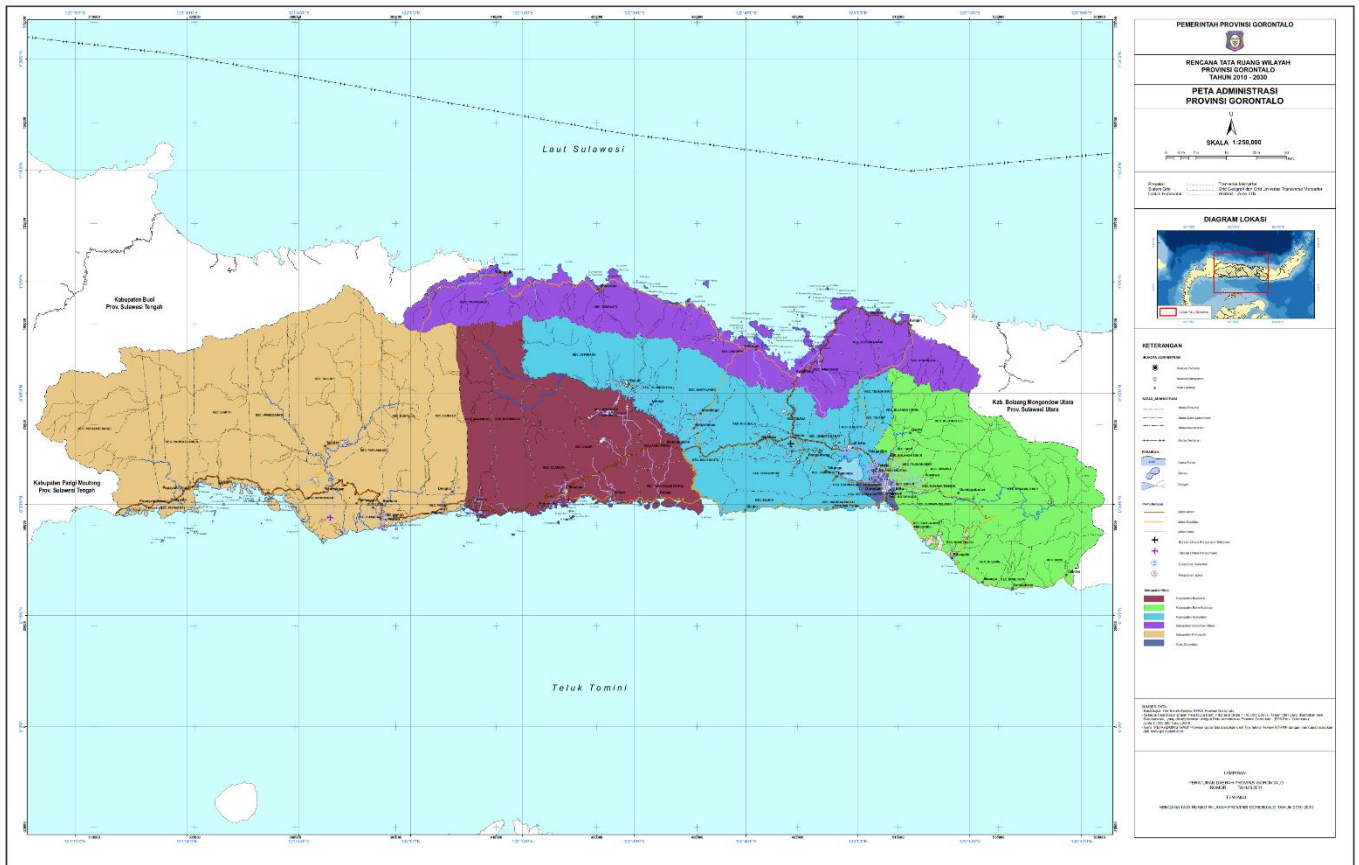


Figure 1: Administrative Map of Gorontalo Province

II. Results of the Validity and Reliability Test of the Questionnaire

The validity and reliability test of the questionnaire aims to ensure that the data collection instrument (questionnaire) has adequate quality, so that the data obtained can be trusted and accurate for further analysis. If used for transportation research, such as the analysis of AKDP service performance in Gorontalo Province, validity and reliability ensure that the data collected truly describes the needs and preferences of the community. The following are the results and explanations of each of these tests:

a. Validity Test

The purpose of this validity test is to measure the extent to which the questionnaire is able to measure what should be measured (validity of the instrument). Its function is to ensure that each question item is in accordance with the concept or variable being measured, avoid questions that are irrelevant or have no relationship to the research objectives, and ensure that the data collected is representative of the phenomenon to be studied:

Table 5: Results of the Validity Test of Performance Vs Satisfaction

Attributes	Validity of Performance		Satisfaction Validity		Description
	R _{count}	R _{table}	R _{count}	R _{table}	
1	0.721160	0.113	0.155830	0.113	Valid
2	0.796364	0.113	0.154456	0.113	Valid
3	0.773284	0.113	0.167549	0.113	Valid

Attributes	Validity of Performance		Satisfaction Validity		Description
	R _{count}	R _{table}	R _{count}	R _{table}	
4	0.780924	0.113	0.383982	0.113	Valid
5	0.835983	0.113	0.714977	0.113	Valid
6	0.781682	0.113	0.749858	0.113	Valid
7	0.877313	0.113	0.739858	0.113	Valid
8	0.795207	0.113	0.157688	0.113	Valid
9	0.783596	0.113	0.465881	0.113	Valid
10	0.773284	0.113	0.739607	0.113	Valid
11	0.782516	0.113	0.726373	0.113	Valid
12	0.873572	0.113	0.726373	0.113	Valid
13	0.799078	0.113	0.309246	0.113	Valid
14	0.852710	0.113	0.533018	0.113	Valid
15	0.752446	0.113	0.621049	0.113	Valid

Based on the validity test results obtained that the performance and satisfaction variables of AKDP transportation are greater than 0.113 (> 0.113), this means that the variable data is valid.

b. Reliability Test

The reliability test aims to ensure that the research instruments used can provide consistent and reliable results, reduce errors that can occur due to unreliable research instruments, and increase confidence in the research results.

Table 6: Results of Reliability Test of Performance Vs Satisfaction with AKDP Transportation

Performance Testing Criteria			Satisfaction Testing Criteria		
Reference Value	Cronbach's Alpha Value	Conclusion	Reference Value	Cronbach's Alpha Value	Conclusion
0,7	0,960	Realible	0,7	0,738	Realible

Based on results of the reliability test obtained that the performance and satisfaction variables of AKDP transportation are greater than 0.7 (> 0.7), this means that the variable data is valid.

III. Analysis of Satisfaction Level of AKDP Transportation Passengers in Gorontalo Province

In CSI research on AKDP Passenger Satisfaction Level in Gorontalo Province, based on Score, Mean, and Standard Deviation analysis, where:

- Score: used to measure the level of customer satisfaction with the attributes of AKDP transportation services.
- Mean: used to calculate the average score of customer satisfaction with the attributes of AKDP transportation services.

- Standard Deviation (SD): used to measure how much variation in customer satisfaction scores on the attributes of AKDP transportation services.

Specific guidelines for CSI research use the following standards:

- $SD \leq 0.7^*$: Considered as low variation and indicates that customer satisfaction is relatively homogeneous.
- $0.7 < SD \leq 1.2$: Considered as moderate variation and indicates that customer satisfaction has some variation, but is still relatively homogeneous.

- SD > 1.2: Considered as high variation and indicates that customer satisfaction has a large variation and is not homogeneous.
- Statistically scoring the respondents' assessment of the 15 attributes of the

Provincial Transport Service (AKDP) in Gorontalo Province in this study can be shown the results of the analysis in the following table.

Table 7: Scoring Statistics of Respondents' Assessment Results of 15 AKDP service indicators in Gorontalo Province

No.	AKDP Service Attributes	Score	Mean	Standard Deviation
1	Timeliness of departure and arrival at destination	50.75	2.537	1.127
2	Availability of transportation vehicles to be used	49.08	2.454	1.039
3	Vehicle condition (engine, steering, suspension, and brakes)	55.46	2.773	0.900
4	Reliable driver is available	58.39	2.920	0.936
5	Transport service provider's ability to overcome service problems to passengers	52.76	2.638	1.101
6	Availability of adequate transportation facilities (waiting room, counters, etc.)	52.30	2.615	0.967
7	Comfort Facilities for passengers (seats, air-conditioned rooms, etc.)	48.33	2.417	0.899
8	Availability of cleaning and lighting equipment for transportation facilities	50.46	2.523	1.017
9	Transportation fare in accordance with the service	55.57	2.779	0.889
10	Understand passengers' wishes	56.67	2.833	1.030
11	Community involvement in transit system management	52.64	2.632	1.050
12	Services provided by transportation service providers in the form of comfort, speed of travel, ease of adequate coverage	55.00	2.750	0.968
13	Information media in the form of telephones, information boards are adequate	55.34	2.767	1.022
14	The ability of transportation service providers to guarantee the safety of passengers and goods during the trip	56.15	2.807	0.921
15	Assurance of professionalism of driver, employee/staff services to passengers	58.16	2.908	1.059
Average Number		53.80	2.69	1.00

Based on the table above, stastically, it is considered a moderate variation and shows that the satisfaction of AKDP transportation users in Gorontalo Province has some variation, but is still relatively homogeneous, because it is in the standard interval $0.7 < SD \leq 1.2$.

IV. Socioeconomic Characteristics and Transportation Behavior of Respondents

Based on the results of the socio-economic survey of AKDP passenger respondents in Gorontalo Province,

data was obtained based on male gender 42.53% vs female 57.47%. Based on the level of education, the largest level is college degree 42.82%, high school 41.09%, elementary school 7.76%, junior high school 5.75% and junior high school 2.59%. The use of AKDP transportation is mostly done by school students 37.36%, the least used for recreation 3.45%. In terms of user travel frequency, the most "erratic" 72.41%, the least used once a month 4.60%. The

biggest reason users use AKDP transportation is due to fare 46.55%, followed by other reasons 27.87%, reasons of comfort, safety and security 21.26%, and timely reasons 4.31%. The complete results of the

analysis of socio-economic characteristics and transportation behavior of respondents are presented in the following figure:

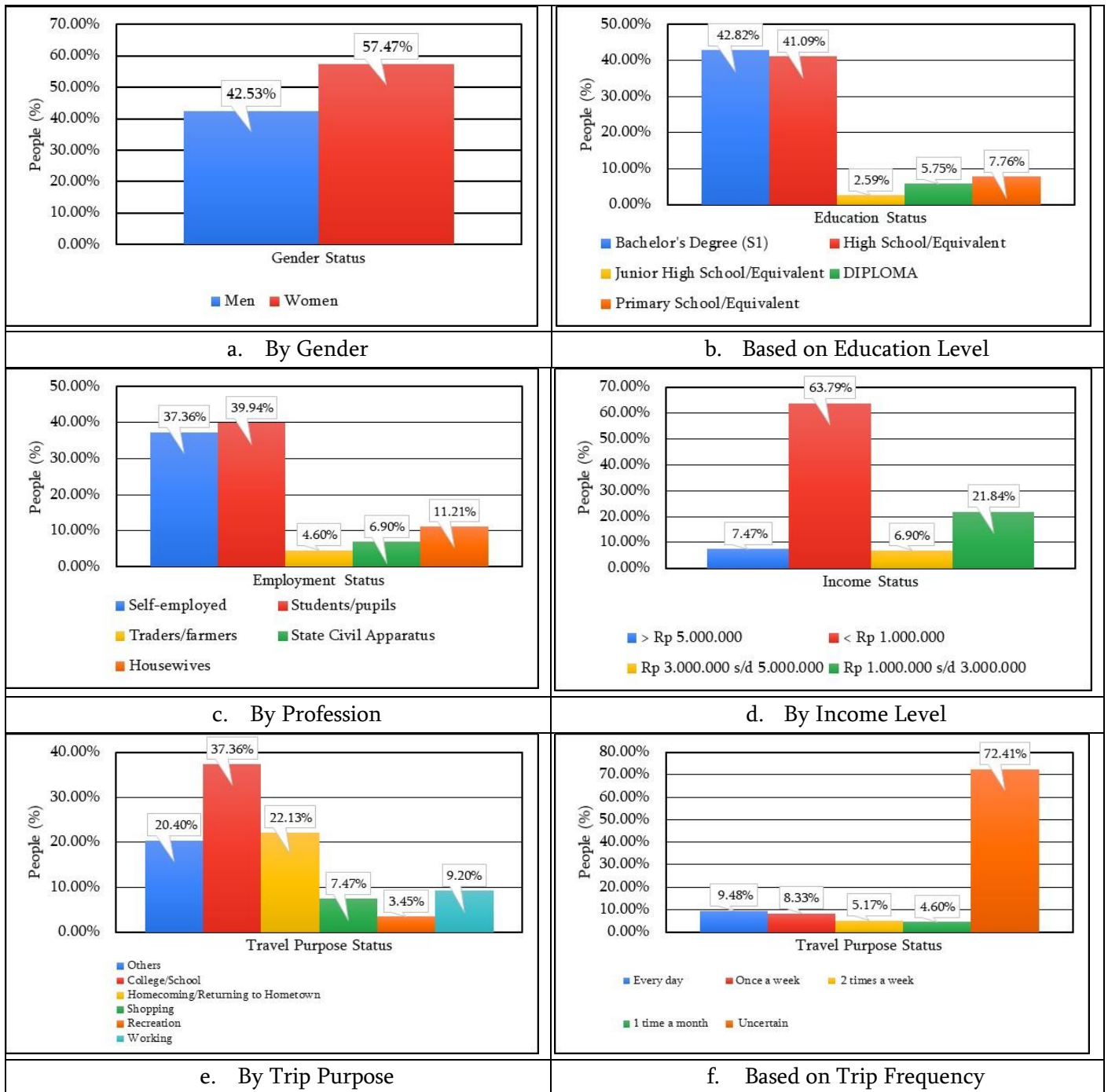


Fig. 2 Socio-economic Characteristics and Transportation Behavior of Respondents

B. Service Performance Analysis using the CSI method

The performance of AKDP services in Gorontalo Province is presented in Table 9. Based on the results

of the assessment of the satisfaction level of 348 respondents on AKDP, the average Customer Satisfaction Index (CSI) value is 53.81%. This means that service performance is still not good.

Table 12: Results of CSI Analysis of AKDP Service Performance in Gorontalo Province

No.	AKDP Service Indicators	MSS	MIS	WF (%)	WS	GAB
1	Timeliness of departure and arrival at destination	2.54	4.83	6.76	17.14	-2.29
2	Availability of transportation vehicles to be used	2.45	4.68	6.55	16.07	-2.23
3	Vehicle condition (engine, steering, suspension, and brakes)	2.77	4.37	6.11	16.95	-1.60
4	Reliable driver is available	2.92	4.93	6.90	20.15	-2.01
5	Transport service provider's ability to overcome service problems to passengers	2.64	4.85	6.79	17.92	-2.21
6	Availability of adequate transportation facilities (waiting room, counters, etc.)	2.61	4.9	6.85	17.92	-2.29
7	Comfort Facilities for passengers (seats, air-conditioned rooms, etc.)	2.42	4.91	6.88	16.62	-2.49
8	Availability of cleaning and lighting equipment for transportation facilities	2.52	4.47	6.25	15.77	-1.95
9	Transportation fare in accordance with the service	2.78	4.98	6.97	19.38	-2.20
10	Understand passengers' wishes	2.83	4.85	6.79	19.25	-2.02
11	Community involvement in transit system management	2.63	4.9	6.86	18.05	-2.27
12	Services provided by transportation service providers in the form of comfort, speed of travel, ease of adequate coverage	2.75	4.86	6.80	18.71	-2.11
13	Information media in the form of telephones, information boards are adequate	2.77	4.23	6.92	16.38	-1.46
14	The ability of transportation service providers to guarantee the safety of passengers and goods during the trip	2.81	4.83	6.76	18.97	-2.02
15	Assurance of professionalism of driver, employee/staff services to passengers	2.91	4.86	6.80	19.79	-1.95
Average Number		40.35	71.45	101.00	269.06	-31.10
Gab Value: MSS-MIS						-2.07
CSI Value: $(WS/5) \times 100\%$						53.81

IV. CONCLUSION

1. The level of performance and satisfaction of transportation services of Inner Province City Transportation (AKDP) in Gorontalo Province is quite good, or included in the CSI criteria is quite satisfied, with a CSI value of 53.81%, with a Gab Value of -2.07. This means that the service performance of AKDP in Gorontalo Province has not met user expectations.
2. To improve the performance of AKDP services in Gorontalo Province, improvements can be focused

on improving the service attributes included in the five service dimensions.

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