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SEM Analysis in the Effect of Service Quality on Customer Satisfaction and Its Implications on Student's Loyalty Online Transportation Users in Madiun Municipality

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ABSTRACT

Online transportation is trend of modern transportation models in various countries in the world, including Indonesia. This transportation is very attractive to the public because it can reduce the consumption of the number private vehicles, lower cost and more efficient. This study aims to determine the effect of service quality on customer loyalty with customer satisfaction as moderating variable. Data collection instruments using questionnaire, with purposive sampling approach. The population was students of 6 colleges in Madiun City. The analysis technique uses validity and reliability test, multiple linear regression, classic assumption test, hypothesis test and moderation test.The results showed that service quality and customer satisfaction contributed to consumer loyalty. T test results concluded that the quality of service affects customer loyalty. Consumer satisfaction affects customer loyalty. Simultaneously the quality of service has significant effect on customer loyalty with customer satisfaction as moderating variable.

Keywords: service quality, customer satisfaction, customer loyalty, structural equation model

INTRODUCTION

Online transportation is becoming a trend of modern transportation models in various countries of the world, including Indonesia. Online transportation has been developing since 2015 (Agahari, 2017) and is in great demand because it is able to reduce the consumption of the number of private vehicles, low cost and more efficient (Bicocchi and Mamei, 2016). It cannot be denied that the emergence of online transportation services gives rise to new jobs for people in big cities throughout the world (Caulfield, 2009). This mode of transportation utilizes the use of the internet as a liaison between consumers and drivers. In addition, the influence of smartphone usage also underlies the development of online transportation business. The Indonesian Internet Service Providers Survey (APJII) in 2018 said that internet users in Indonesia reached 171.17 million people out of 264.16 million (65%) of Indonesia's population. In addition to using internet access, the motorcycle taxi mode based on android applications also uses the GPS feature as a support service. GPS provides benefits in terms of navigation and placement (Amajida, 2016). The use of GPS features gives users the opportunity to obtain certainty about distance, time and direction and be able to track the whereabouts of the fleet.

Online transportation services have become a new mainstream business in Indonesia. Interest in online-based transportation is very large in urban areas including Madiun, because it offers a transportation alternative that is much cheaper, easier and more convenient compared to conventional public transport in general. According to Dimitri Mahayana, Chief of the Bandung Vision Sharing Telematics Research Institute, the year of online transportation service trends is predicted to continue to climb and reach its peak in 2025 with a potential market of US $ 5.6 billion.

Referring to research in January 2019, Go-Jek became the most widely used online motorcycle taxi, while Uber and Grab Car became the most widely used online car. Go-Jek currently has several services. Based on the information available on the Go-Jek mobile application, the types of services available are Go-Send, Go-Ride, Go-Food, Go-Mart, Go-Tix, Go-Box, Go-Clean, Go-Car, Go-Car Mart, Go-Credit, Go-Massage, Go-Glam, Go-Auto, Go-Med. Whereas Grab has several services such as Grab Taxi, Grab Car, Grab Share, Grab Bike, Grab Food.

Some of the services provided by Gojek and Grab companies that are most often used and most popular among students are Go-Ride and Grab Bike because they become a necessity to support activities in lectures. With this transportation students can easily leave or return from campus and easily do other activities. Some reasons students choose online transportation are: (1) easy to find; (2) prices are more transparent; (3) safer and more comfortable and
(4) flexible.

In Madiun City, only Go-jek and Grab Bike are engaged in online motorcycle transportation services, so this has created competition between these companies. The two companies have almost similar services, so they compete with each other to provide the best service for users. If a business wants to survive, it must think of effective ways to compete. One way is to improve the quality of services that are managed, because it is closely related to customer satisfaction. If the customer feels satisfied, we can be sure to be loyal to the product or service offered.

Customer loyalty has an important role to improve financial performance and maintain the continuity of the performance of Gojek and Grab. Besides that, loyal users can encourage development by providing ideas or suggestions in order to improve the quality of their products. Customer loyalty is influenced by five factors: (i) satisfaction is a measurement of customer expectations with the reality that they receive or feel; (ii) Emotional bonding, brand appeal so consumers can be identified in a brand, because a brand can reflect the characteristics of these consumers. The bond that is created from a brand is when consumers feel a strong bond with other consumers who use the same product or service; (iii) trust, a person's willingness to entrust a company or a brand to perform or carry out a function; (iv) convenience, which is a sense of comfort for consumers with a quality product and brand when the situation they make a transaction provides convenience and (v) history with company (Mittal and Gera, 2012).

This study analyzes factors that influence student satisfaction as online transportation's users so that it has implications on customer loyalty.

LITERATURE REVIEW

Service Quality

Service classification scheme suggest and predict the dimensions that will likely be dominant in the mass service context are: (i) Tangibility, includes the physical facilities, equipment, and appearance of personnel; (ii) Responsiveness, the willingness or readiness of employees or professionals to provide service targeted to customers' specific needs; (iii) Knowledge, the knowledge and competence of service providers, possession of necessary skills, etc.; (iv) Accessibility, the service provider's ability – through its location, operating hours, employees and operational systems – to design and deliver the service capable of adjusting to the demands and wishes of customers in a flexible way and (v) Reliability, the degree to which customers can rely on the service provider to keep promises and perform with the best interests of the customers (Olorunniwo and Maxwell, 2006).

Service quality can answer the problems that arise in determining service quality because after all consumers will be able to assess the quality received from certain producers not on the perception of service quality in general. An important factor in determining service quality is perceived quality, which is the level of service quality felt by users, which is influenced by previous service experience (Sureshchandar, 2002).

Many researchers have developed a number of different scales to measure e-service quality. Yang et al. (2001) identified 19 internet service quality dimensions in three categories: product cost and availability; customer service and the online information system. Ribbink et al. (2004) discussed five dimensions in case of e-service viz. assurance; ease of use; e-scape; responsiveness; and customisation. Similarly, Yang and Jun (2002) redefined the service quality dimensions from online services perspective, and proposed seven dimensions such as reliability, access, ease of use, personalisation, security, credibility and responsiveness.

Tsikriktsis (2002) found two dimensions of customer culture were related to quality expectations in online transportation. Ibrahim et al. (2006) investigated service quality for various forms of e-banking services and revealed six dimensions of electronic service quality: (i) convenient/accurate operations; (ii) accessibility and reliability; (iii) good queue management; (iv) service personalization; (v) friendly and responsive customer service provision and (vi) targeted customer service provision.

Customer satisfaction

Satisfaction is usually considered as a broader concept than service quality assessment, with service quality being a constituent of customer satisfaction or dissatisfaction (Zeithaml and Bitner, 2003). Boeselie et al. (2002) explained satisfaction as a positive, affective state resulting from the appraisal of all aspects of a party's working relationship with another.

Satisfaction is a feeling of pleasure or disappointment someone who appears after comparing the performance (results) of the product thought to expected. Olorunniwo and Maxwell (2006) express customer satisfaction is a feeling of enjoyment, which comes from feedback as a result of consumption, in another definition. Ribbink et al. (2004) argues customer satisfaction is a relationship between customer perceptions of the performance of a product or service and expectations. Thus, the concept of customer satisfaction is a function of customer expectations, if the factors provided are in line with what they hope, customers will be pleased; if not, he feels disappointed and will not be satisfied.

Furthermore, Mittal and Gera (2012) argue if the factors presented are beyond expectations, customers will have a high level of satisfaction. This is an assessment that the product or service feature, or the product or service itself, provides a level of satisfaction related to satisfying consumption, including levels below or above fulfillment. Some specialists interpret satisfaction as an emotional assessment of how far customers believe that consumption of services can produce positive feelings). Kotler and Keller (2006) defined satisfaction as a state of expectation fulfillment when customers experience or feel the results

Customer Loyalty

Customer loyalty can be interpreted as someone's loyalty to a product, both certain goods and services. Important factor for the success of a business in the face of competitive competition is customer loyalty, which enables companies to develop long-term relationships with consumers. Consumer loyalty is an emotional relationship between a consumer and a company based on the consumer's love for the products and services offered and is proven by the desire to make a repeat purchase (Yang and Jun: 2002).

Retaining a customer is far more cost effective than acquiring a new one. In marketing literature, a large number of studies have been conducted to recognise the benefits that consumer loyalty brings to an organisation. Service loyalty is "the degree to which a customer exhibits repeat purchasing behaviour from a service provider, possesses a positive attitudinal disposition towards the provider, and considers using only this provider when a need for this service exists" (Boeselie et al.: 2002).

Customer satisfaction has been considered as leading determinant of loyalty (Kannan and Bramlett, 2006). Most of the studies focused on the financial benefits derived from retaining customers, in addition to impacts such as increase in the number of purchases; raise the value of purchases; spread of positive word of mouth and the consumer's better understanding of the organisation and vice versa.

Research hypotheses

In light of above literature review, a series of hypotheses were developed in order to explore the relationship among consumers' perception regarding service quality, satisfaction and loyalty in online transportation.

H1: Various dimensions of service quality factors have a positive and significant effect on service quality.

H2: Consumer perceptions about the quality of online transportation services have a positive and significant effect on customer satisfaction.

H3: Consumer satisfaction with online transportation has a positive and significant effect on consumer loyalty.

RESEARCH METHOD

On the basis of a literature review, a questionnaire for this study was designed and a trial was conducted with a sample of 200 students from the target population of 40 percent of students in Madiun Municipality. Some modifications in expressions and questions were made after the preliminary survey. The main survey was conducted online with a free survey which was held on the portal www.google.com. The question of questionnaire is a question that meets the requirements regarding whether respondents use online transportation or not. Respondents were asked to continue further if their answer to this question was 'yes'. A total of 205 complete responses were considered for this study.

The questionnaire looked for responses towards various statements related to service quality, satisfaction and loyalty in context of online transportation. Total 20 statements drawn from the relevant literature were considered in this section. These statements were measured by five-point Likert scales of agreement, running from strongly disagree to strongly agree. These statements were subjected to a factor analysis for identification of the key factors preferred by the respondents. All scale items were examined and reverse-coded wherever appropriate to reflect the hypothesized directions. Preliminary data screening was carried out for missing values and outliers, and the normality of the dataset was also tested. We have used structural equation modelling (SEM) as main analytical tool to analyze the cause and effect relation of the research model constructs.

Data Analysis

Factors influencing online transportation service quality

Principal component analysis (PCA) with varimax rotation was performed on 16 measurement items to filter it and identify the dimensions that underlie perceived service quality perceived by consumers. The minimum eigenvalue rule 1.0 is applied. Only items selected contain a factor of at least 0.50 in PCA. The five-dimensional measurement items SERVQUAL Tangible, Reliability, Responsiveness, Empathy and Assurance are used for the final analysis. PCA produces five factors: 5.4 responsive value, reliability with eigen value 2.3, accuracy with eigen value 2.1 and empathy with eigen value 1.8. The five factors identified affect consumer service quality perceptions explaining 73,795 of the total variants.

In study of Madiun online transportation, tangible dimension of SERVQUAL was considered. One possible justification for this is unique characteristics of online transportation services perceived by Madiun consumers. Respondents consider importance of visual appealing website and technology, as these seems to be the obligatory features of internet facility. Accordingly, users' assessments for service quality are mainly influenced by tangible features, reliability, responsiveness, assurance and empathy features of online transportation.

Table 1 depicts the KMO and overall significance of correlation matrices with the help of Bartlett's test of sphericity, which supported the application of factor analysis. Table 2 shows the factors underlying the consumers' perceived service quality with factor loadings and Cronbach ά (reliability). Reliability of the constructs demonstrates high-internal consistency of the constructs. Value of Cronbach's ά exceeded 0.7 in each case which indicates that factor analysis is appropriate for the data set (Schumacker and Lomax, 1996).

These items were consequently subjected to confirmatory factor analysis (CFA) to examine the proposed hypothesis and relationships amongst the constructs taken. A completely standardised solution produced by Amos 18.0 using maximum likelihood method was taken.

This confirmed the unidimensionality of the constructs and provided strong empirical verification of their validity.

Table 1 KMO and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy		0.810
Bartlett's test of sphericity	Approx. chi-square	533.843
	df	172

Table 2 Constructs and Factor Loading

Constructs	Indicator	Factor loading	Cronbach's ά
Tangible	Tang1	0.792	0,786
	Tang2	0.812	
	Tang3	0.789	
	Tang4	0.832	
Responsiveness	Res1	0.732	0.764
	Res2	0.805	
	Res3	0.819	
	Res4	0.759	
	Res5	0.672	
Reliability	Rel1	0.898	0.792
	Rel2	0.839	
	Rel3	0.754	
	Rel4	0.690	
	Rel5	0.748	
Accuracy	Acc1	0.835	0.813
	Acc2	0.703	
Empathy	Emp1	0.692	0.794
	Emp2	0.721	
	Sig.		0.000

As value of CR is more than 0.6 which is desirable (Boeselie et al.: 2002), thus this requirement is met for all four factors. Average variance extracted (AVE) was also calculated for each construct, and is more than 0.5 for each factor (Yang and Jun: 2002). Discriminant validity verifies if a determined construct is significantly distinct from another construct that are not theoretically related to it. On the basis of the criteria mentioned above, it can be concluded that the measures in the study provided sufficient evidence of reliability, convergent and discriminant validity.

To examine the goodness-fit of the measurement model for service quality factors, CFA was carried out. Amos version 19 was used for the structural modelling analysis. As proposed by Mittal and Gera (2012) the non-normed fit index (NNFI); the comparative fit index (CFI) and the root mean squared approximation of error (RMSEA) are calculated. The normally applied fit indices are NNFI and CFI (> 0.90 indicates good fit), RMSEA (< 0.05 indicates acceptable fit) and commonly used χ^2 statistic (χ^2/df ratio of 3 or less). Table 3 indicates the measurements of various parameters for Goodness of fit.

The model provides the good fit to the data with a Chi-square (χ^2) = 147.5, df = 182, P = 0.000 (P < 0.05). χ^2/df = 4.758 is satisfactory, as the value of χ^2/df is < 5, it is believed to be satisfactory to accept the model (Yee et al., 2010). In addition to χ^2 and χ^2/df, six other indices, goodness of fit index (GFI), incremental fit index (IFI), comparative fit index (CFI), normed fit index (NFI), Tucker-Lewis index (TLI) and root mean square error of approximation (RMSEA) were used to examine the model fit of the measurement model for service quality factors. Perusal of values of these six indexes (as shown is Table 4) calculated in the current study indicates: CFI = 0.912, TLI = 0.929, NFI = 0.916, GFI = 0.939, IFI = 0.904 and RMSEA = 0.046. Thus, the study meets typical cut-off criteria; the values of CFI, TLI, NFI, GFI, IFI should be ≥0.90 and more specifically, the value of RMSEA should be below 0.05.

Table 3 Factor validity test results

	CR	AVE	MSV	ASV	Convergent validity CR > AVE AVE > 0.5	Discriminant validity MSV < AVE ASV < AVE
Tangible	0.827	0.627	0.132	0.102	Yes	Yes
Responsiveness	0.853	0.593	0.127	0.104	Yes	Yes
Convenience	0.752	0.613	0.127	0.105	Yes	Yes
Reliability	0.816	0.624	0.134	0.096	Yes	Yes
Accuracy	0.851	0.659	0.084	0.082	Yes	Yes

Structural model analysis

With the objective of testing the proposed hypotheses, a structural equation model was developed. The results are shown in Table 5 and in Figure 1, respectively.

The results shown in Table 5 indicate that tangible, responsiveness and reliability have a positive and significant effect on service quality in case of online transportation while empathy and assurance have positive effect on service quality but not significant. Service quality has positive and significant effect on satisfaction as well as satisfaction is significantly and positively associated with loyalty. Thus, H1, H2 and H3 were supported.

Table 4 Model fit summary for path model

Key goodness of fit parameters	Criteria	Value
Comparative fit index (CFI)	> 0.9	0.912
Tucker-Lewis index (TLI)	> 0.9	0.929
Normed fit index (NFI)	> 0.9	0.916
Goodness of fit index (GFI)	> 0.9	0.939
Incremental fit index (IFI)	> 0.9	0.904

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Figure 1 Structural equation model of service quality, satisfaction and loyalty

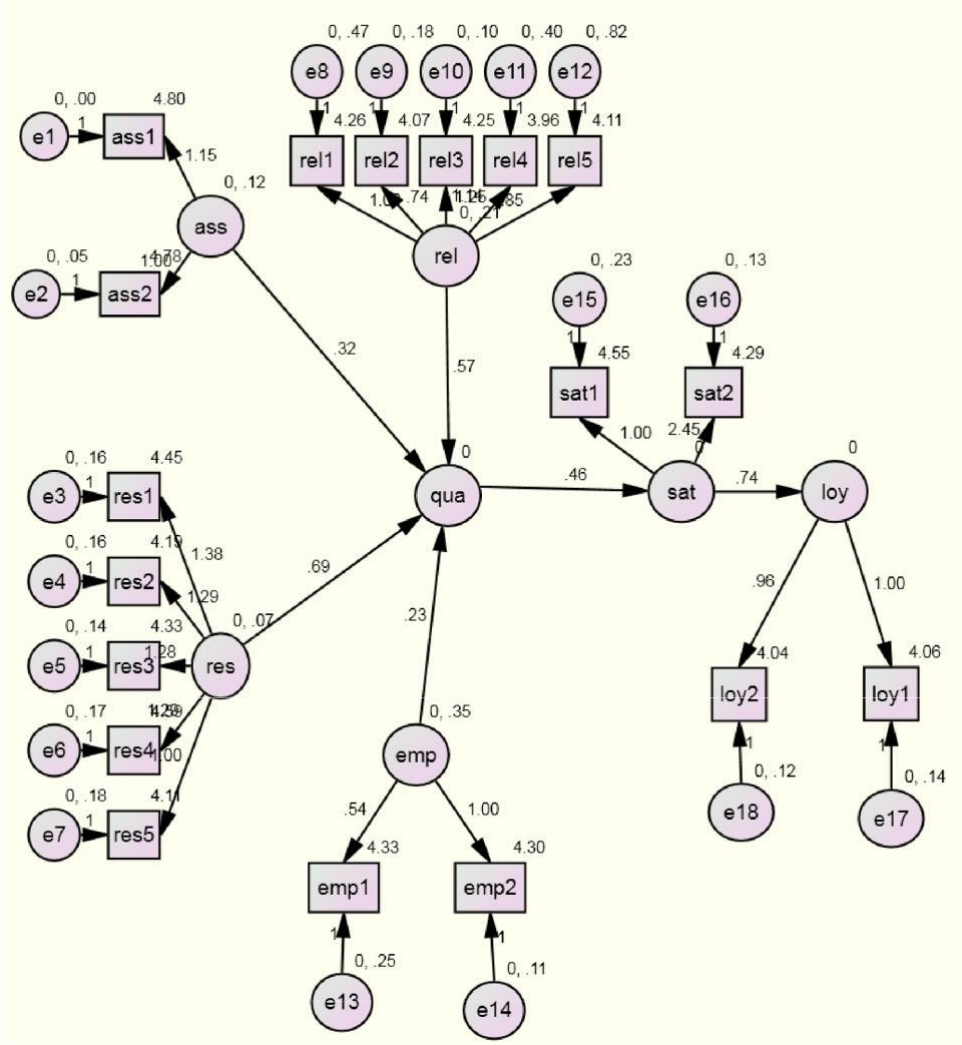

Table 5 **Regression Weights**

			Estimate	S.E.	C.R.	P	Label
qua	←	ass	0.317	0.213	5.924	0.025	par_13
qua	←	res	0.690	0.111	6.702	***	par_14
qua	←	emp	0.231	0.153	3.556	0.432	par_15
qua	←	rel	0.573	0.559	4.390	***	par_16
sat	←	qua	0.462	0.179	4.784	***	par_17
loy	←	sat	0.739	0.119	5.804	***	par_18
ass2	←	ass	1.000				
ass1	←	ass	1.149	0.165	6.984	***	par_1
res5	←	res	1.000				
res4	←	res	1.295	0.219	5.924	***	par_2
res3	←	res	1.277	0.211	6.057	***	par_3
res2	←	res	1.292	0.216	5.977	***	par_4
res1	←	res	1.385	0.227	6.099	***	par_5

rel1	←	rel	1.000				
rel2	←	rel	0.743	0.111	6.702	***	par_6
rel3	←	rel	1.144	0.147	7.784	***	par_7
rel4	←	rel	1.247	0.178	7.004	***	par_8
rel5	←	rel	0.854	0.179	4.784	***	par_9
emp2	←	Emp	1.000				
emp1	←	Emp	0.545	0.153	3.556	***	par_10
sat1	←	sat	1.000				
sat2	←	sat	2.454	0.559	4.390	***	par_11
loy1	←	loy	1.000				
loy2	←	loy	0.961	0.304	3.162	0.002	par_12

Standardised regression weights (as depicted in Table 6) were used to evaluate the relative contributions of each predictor variable to each outcome variable. As shown in Figure 1, the factors having influence on service quality were tangibles, reliability, responsiveness, empathy and assurance (having value 0.727, 0.528, 0.488, 0.377 and 0.303, respectively). Consequently, online transportation management should place more importance on offering tangibles, reliable, responsible, assured and empathic customer service. Reliability is found to be strongest predictor of service quality of online transportation in Madiun followed by tangibles and responsiveness. These three factors were significantly and positively related with service quality. As a result, in Madiun, online transportation need to emphasise utmost on these three factors. Impact of service quality on satisfaction was 0.891 and impact of satisfaction on loyalty was 0.901. This is in line with other studies (Ribbink et al., 2004; Olorunniwo, 2006 Yee,et.al., 2010), which emphasise positive relationship between online customer satisfactions and repurchase intention.

Table 6 Standardised regression weights: (group number 1 – default model)

			Estimate
qua	←	ass	0.303
qua	←	res	0.488
qua	←	Emp	0.377
qua	←	rel	0.727
sat	←	qua	0.891
loy	←	sat	0.991
ass2	←	ass	0.835
ass1	←	ass	0.992
res5	←	res	0.520
res4	←	res	0.629
res3	←	res	0.658
res2	←	res	0.640
res1	←	res	0.667
rel1	←	rel	0.560
rel2	←	rel	0.629
rel3	←	rel	0.853
rel4	<---	rel	0.674
rel5	←	rel	0.400

emp2	←	emp	0.872
emp1	←	emp	0.541
sat1	←	sat	0.328
sat2	←	sat	0.759
loy1	←	loy	0.318
loy2	←	loy	0.323

CONCLUSION

The current study makes a contribution to understand the key dimensions of online transportation service quality in Madiun. Factor analysis is used to arrive at SERVQUAL dimensions relevant to Madiun consumers. The respondents perceived tangible, reliability, responsiveness, empathy and assurance as important dimensions affecting service quality in online transportation. Despite five factors of SERVQUAL are highly correlated and significant with service quality in most of the studies, findings of this study show that tangibles are important in case of online transportation in Madiun. Tangibles, which involves the physical facilities, equipment, personnel and communication materials is regarded as important factor for online transportation services.

Furthermore, the focus of this study is to analyze a link between service quality, customer satisfaction and loyalty for online transportation services in Madiun. Measuring and modelling the strong predictors suggested in this study may be sufficient. The current study demonstrates service quality to be significantly related with satisfaction and satisfaction is highly associated with loyalty. Thus, improvement in service quality will lead to high satisfaction which may result into developing loyalty among consumers.

The research findings suggest a number of implications to online transportation service providers in Madiun. Online transportation does face to face interactions albeit importance of tangible, responsiveness, reliability, empathy and assurance is still realised by customers. These dimensions directly make impact on consumers' perception of overall service quality in online transportation. Thus, online transportation service providers should not consider general measures of online service quality, but should ensure to evaluate various dimensions of online service specific to their business.

Reliability is found to be the most vital dimension affecting Madiun consumers' perception of online transportation service quality. Consequently, service providers need to pay utmost importance to preserve and enhance the reliability of online transportation services. As online transportation with direct human interaction, Madiun consumers were considering reliability (i.e., freedom from risks pertaining to security, efficient and technical security) to be most important issue. Thus, if the reliability dimension of online transportation is taken care, definitely it can upsurge service quality and customers' satisfaction with online transportation.

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