

Willingness to Pay (WTP) for Clesan Public Toilet in Indonesia

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Abstract - Public toilets in several urban areas still do not meet the cleanliness standards, even though users have to pay for these toilets. Therefore, willingness to pay is crucial in connection with new services by JAMBAN that provide clean public toilets in the urban area, Indonesia. This study aims to determine the factors that significantly influence consumer's willingness to pay and determine the price of customers willing to pay for these public toilets. An online survey questionnaire was conducted by analyzing Risk Perception, Perceived Value, Perceived Usefulness, Attitude toward Clean Public Toilet, Subjective Norms, and Perceived Behavioral Control to predict factors that influence consumers' willingness to pay for Clean Public toilets in Indonesia. This study using a quantitative method, with Generation Z and Y as unit analysis. The online survey obtained 609 respondents and was analyzed by the PLS-SEM method. This study indicates that Perceived Usefulness, Perceived Value, and Perceived Behavioral Control significantly influence willingness to pay. With the result obtained by using the Contingent Valuation Method, the mean WTP per customer for improved public toilet services was IDR 4.103,45.

Keywords - Clean Public Toilets, Contingent Valuation Method, Generation Y, Generation Z, Online Survey, PLS-SEM, Quantitative, Sanitation, Willingness to Pay

I. INTRODUCTION

Sanitation issues are not only prevalent in other countries but currently also occur in Indonesia. Several studies in Indonesia showed that public toilets in urban areas still do not meet standards, one of which is the "cleanliness" aspect^[1,2]. The image attached to the public's mind about public toilets has the impression that the place is dirty, cramped, stuffy, and uncomfortable^[3]. As one of the largest populations in Southeast Asia, Indonesia has a more significant percentage of the younger generation. Those people tend to have a lot of mobility and travel. This fact puts Indonesia must have good quality of public toilets. Therefore, a business opportunity arises, and PT Jawa Bersih Nusantara saw this opportunity. PT. Jawa Bersih Nusantara (often known as "JAMBAN") is a new startup company in Indonesia that helps provide clean public toilets with cleanliness standards based on ASEAN public toilet guidelines. The JAMBAN toilet is integrated with the

application (currently available on the Play Store and App Store) that allows people to find the nearest clean public toilet and also has a cashless payment feature.

Based on research conducted by JAMBAN Company in 2020, 99.5% of people consider toilets "cleanliness" to be essential, and 90.4% of people still have difficulty getting access to clean public toilets in Indonesia^[4]. In current conditions, public toilets in several urban areas still do not meet the standards, even though users have to pay for these toilets. Therefore, the issue of willingness to pay is crucial in connection with the services offered by JAMBAN as a new business in Indonesia. Since people consider toilet "cleanliness" to be essential, and people still have difficulty getting access to clean public toilets in Indonesia, what is the maximum price that customers are willing to pay for clean public toilets offered by JAMBAN? Willingness to Pay (WTP) appears to be essential for every company organization since customers' willingness to pay higher prices could result in better profits and a longer-term competitive advantage.

Infectious diseases are a real threat that occurs when using dirty public toilets. When public toilet providers try to serve toilets with the cleanliness expected by customers, some information disseminated through the media regarding the dangers of infectious diseases in dirty toilets has created a perception of risk in society. Therefore, evaluating risk perception is important because previous research found that a high-risk perception will make someone willing to pay more as a preventive action related to that risk^[5]. Furthermore, since people have difficulty accessing the nearest clean public toilet, and JAMBAN through its application, helps provide information about the nearest clean public toilet. Therefore an assessment of Perceived Usefulness is also needed.

The previous research showed that Willingness to Pay and Perceived Usefulness have significant effects, indicating that if customers are unwilling to pay extra, they would not find the technology or system useful and are less likely to use the technology or the system^[6]. In this research, the researcher also added the Perceived Value variable as previous research found that Perceived Value had a

[1] Susetyarini, Oktari, and Jussac Maulana Masjhoer. "Measurement of the level of tourist satisfaction with public facilities, public infrastructure, and tourism facilities in Malioboro after the revitalization of the area." *Tourism: Scientific Journal* 12.01 (2018): 41-54.

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significant effect on Willingness to Pay^[7]. Responses' willingness to pay (WTP) increases as they obtain more values, such as excellent service. When the perceived value of a service is high, customers expect a higher return from a possible exchange; thus, they would be less price-sensitive and more likely to pay a higher price for the service.

Furthermore, it has been demonstrated that people employ intuitive sentiments about public goods in their WTP responses^[8]. People's WTP assessments tend to reflect a propensity for the public good (attitudes), views about whether others think they should pay (subjective norms), and their capacity to pay (perceived behavioral control). In sanitation research, attitudes, subjective norms, and perceived behavioral control have been utilized successfully to study various hygiene and healthy living habits. However, there is a research gap that examines the impact of psychological variables on WTP through the usage of clean public restrooms. There is currently no agreement on the relative impact of any psychological component in sanitation intentions and practices. As a result, the importance of each psychological component varies depending on the context and behavior under investigation. In this research, researchers use Attitude toward Clean Public Toilets, Subjective Norm, and Perceived Behavioral Control to determine the influence of WTP on clean public toilets by JAMBAN. To conclude, the author will test several hypotheses development as follows:

- H₁: Attitude toward clean public toilet (ATT) will have significant effect with WTP
- H₂: Perceived Behavioral Control (PBC) will have significant effect with WTP
- H₃: Perceived Usefulness (PU) will have significant effect with WTP
- H₄: Perceived Value (PV) will have significant effect with WTP
- H₅: Risk Perception (RP) will have significant effect with WTP
- H₆: Subjective Norm (SN) will have significant effect with WTP

In this research, not only determining the factors that influence the WTP of JAMBAN's clean toilets, but also aims to determine the WTP value of respondents through the CVM Method. The results of this study are expected to be an evaluation and recommendation to JAMBAN companies regarding the public's willingness to pay for their toilet services.

II. METHODOLOGY

This quantitative-based research will focus on Generation Y and Generation Z, with ages 15 to 39 years as JAMBAN's target market. The researchers distributed data to respondents in Indonesia, focusing in Jakarta, Bandung, and Medan City through an online questionnaire, where these cities will be JAMBAN's targets in establishing clean public toilets. The number of samples is determined through the Slovin formula with a minimum sample of 400 respondents. This research is a descriptive study using a probability sampling technique, namely the simple random sampling method and the 5-point Likert scale was used in these closed-ended questions since it is more reliable when used on a general population^[9].

The primary data processing using the PLS-SEM method with Smart PLS 3.0 system to determine the relationships between variables. The purpose of using PLS is to predict the relationship between variable constructs. One of the assumptions that stumble researchers is the assumption of normality, therefore by used PLS through the bootstrapping method, the assumption of normality will not be a problem^[10]. To assess the maximum amount of money each person is willing to pay (WTP), the researcher uses Contingent Valuation through the Bidding Game method. The researcher adopted the WTP value from^[11] by offering six options: starting from IDR 3.000, IDR 4.000, IDR 5.000, IDR 6.000, IDR 8000, and others. The calculation of the WTP value was carried out using the help of Microsoft Excel.

III. RESULTS

The online survey obtained 609 respondents and was analyzed by the PLS-SEM method. Outer model analysis on Smart-PLS 3 is carried out to ensure that the measurement used is feasible to be used (valid and reliable). The tests performed on the outer model are Convergent Validity, Discriminant Validity, Composite Reliability, and Average Variance Extracted (AVE). Convergent Validity is determined in the first stage by examining the value of the loading factor^[12]. However, in some situations, especially for newly generated surveys, the loading criteria over 0.7 were not met. As a result, the loading range of 0.40 to 0.70 must be considered steady^[13]. Based on the validity assessment of loading factors in stage one, all loading values above 0.4, indicating that this research have met the loading factor's validity requirements^[13]. The validity test is also performed using the average variance extracted (AVE) value.

TABLE 1
VALIDITY TESTING BASED ON AVE STAGE 1

7[1] Zemke, Dina Marie V., et al. "Hotel cleanliness: will guests pay for enhanced disinfection?" *International*

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	Composite Reliability	Average Variance Extracted (AVE)
ATT	0.745	0.372
PBC	1.000	1.000
PU	0.931	0.694
PV	0.854	0.662
RP	0.887	0.725
SN	0.814	0.525
WTP	0.861	0.756

The recommended Average Variance Extracted (AVE) value is above 0.5 [12]. However, it is known that the Attitude towards Clean variable does not meet the AVE requirements. The AVE value for Attitude Toward Clean Public Toilet variable is 0.372, where the AVE value for this indicator is below 0.5. The solution to increasing the AVE value in the Attitude Toward Clean Public Toilets variable is to eliminate several indicators with the lowest loading factor [13]. Therefore, the ATT2 and ATT3 indicators were eliminated from the analysis process and continued with the factor loading test stage 2.

TABLE 2
 VALIDITY TESTING BASED ON LOADING FACTORS 2

	ATT	PBC	PU	PV	RP	SN	WTP
ATT1	0.777						
ATT4	0.752						
ATT5	0.635						
PBC1		1.000					
PU1			0.812				
PU2			0.827				
PU3			0.824				
PU4			0.835				
PU5			0.858				
PU6			0.841				
PV1				0.843			
PV2				0.825			
PV3				0.771			
RP1					0.836		
RP2					0.878		
RP3					0.840		
SN1						0.636	
SN2						0.697	
SN3						0.763	
SN4						0.792	
WTP1							0.884
WTP2							0.854

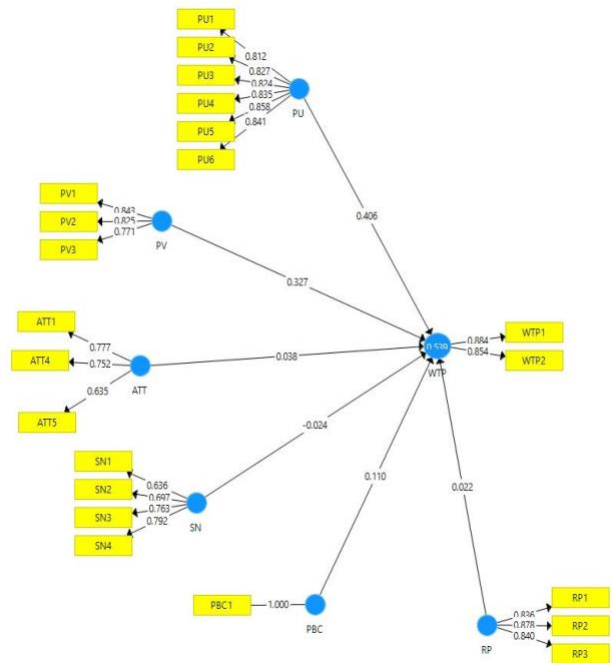


Fig. 1. Path Diagram based on Loading Factor Value
 Based on validity testing of loading factors in Table 3, it is known that all loading values are above 0.4, which means this research have met the validity requirements based on the loading factors [13]. Furthermore, the validity test is carried out based on the Average Variance Extracted (AVE) value. From the Table 4, the author shows the second stage of Validity Testing based on Average Variance Extracted (AVE) and Reliability Testing based on Composite Reliability (CR).

TABLE 3
 VALIDITY TESTING BASED ON AVE STAGE 2

	Composite Reliability	Average Variance Extracted (AVE)
ATT	0.766	0.524
PBC	1.000	1.000
PU	0.931	0.694
PV	0.854	0.662
RP	0.887	0.725
SN	0.814	0.525
WTP	0.861	0.756

Since the AVE values above 0.5, which means has passed the validity test based on the AVE [13]. The Composite Reliability value suggested is above 0.7 [12]. It is known that all Composite Reliability values in Table 3 are above 0.7, therefore this research already met reliability requirements based on Composite Reliability. Furthermore, the discriminant validity test was carried out using the Fornell-Larcker approach.

TABLE 4
 DISCRIMINANT VALIDITY RESULT

	ATT	PBC	PU	PV	RP	SN	WTP
ATT	0.724						
PBC	0.209	1.000					
PU	0.364	0.354	0.833				
PV	0.353	0.302	0.668	0.813			
RP	0.454	0.285	0.414	0.391	0.851		
SN	0.250	0.394	0.355	0.371	0.368	0.724	
WTP	0.328	0.358	0.678	0.645	0.358	0.303	0.869

Since the value of the square root of AVE in Table 4 for each latent variable is greater than the correlation value between these latent variables and other latent variables, it can be concluded that it has met the requirements of discriminant validity ^[13]. After testing the outer model for reflective indicators, different tests for formative indicators was carried out by analyze the multicollinearity. The VIF value above five can be conclude that the indicator occurs multicollinearity ^[12]. From Table 5 shows that the overall VIF value is below five, thus there is no multicollinearity found in this research.

After analyzing the outer model, the researcher evaluates the inner model by looking at the value of the coefficient of determination. From the PLS algorithm result, it is known that the coefficient of determination for the Willingness to Pay variable is 0.539 which means Perceived Usefulness, Attitude Toward Clean Public Toilets, Perceived Value, Subjective Norms, Perceived Behavioral Control and Risk Perception can affect willingness to pay by 53.9 %. Meanwhile, Q2 is the cross-validated redundancy intended to measure the predictive relevance for the inner model. From blindfolding tests in SmartPLS, the score of Q2 is 0.393. Q2 above 0 indicates a predictive relevance in a model ^[13]. Since the Q2 value from all the factors is above zero, the researcher concludes that the model has predictive relevance. From the result obtained by calculating R2 and Q2, the researcher found the Goodness of Fit value is 0.288 and GoF in this research can be classified as medium ^[14]. As a result, it can be concluded that the model is able to explain empirical data.

TABLE 5
MULTICOLLINEARITY RESULT

	VIF
ATT1	1.315
ATT4	1.268
ATT5	1.061
PBC1	1.000
PU1	2.571
PU2	2.797
PU3	2.285
PU4	2.874
PU5	3.553
PU6	2.848
PV1	1.653
PV2	1.537
PV3	1.366
RP1	1.730
RP2	1.935
RP3	1.701
SN1	1.315
SN2	1.442
SN3	1.939
SN4	1.868
WTP1	1.355
WTP2	1.355

The next stage is Hypothesis Testing through bootstrapping. The table 6 shows the results of hypothesis testing.

TABLE 6
HYPOTHESIS RESULT

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistic (IO /STDEV)	P Values
Attitude → WTP	0.038	0.039	0.033	1.155	0.249
Perceived Behavioral Control → WTP	0.110	0.108	0.035	3.135	0.002
Perceived Usefulness → WTP	0.406	0.404	0.050	8.073	0.000
Perceived Value → WTP	0.327	0.328	0.048	6.790	0.000
Risk Perception → WTP	0.022	0.021	0.033	0.655	0.513
Subjective Norms → WTP	-0.024	-0.018	0.030	0.797	0.426

According to the first hypothesis, attitudes toward clean public restrooms will have a significant impact on WTP. However, the P Values are 0.249 and greater than 0.05. Therefore the hypothesis that attitudes about clean toilets have a significant impact on WTP is rejected. In the second hypothesis, the researcher argues that Perceived Behavioral Control has a significant effect on WTP. Since the P-Value is 0.002 and less than 0.05, therefore this hypothesis can be accepted. The third and fourth hypotheses are also supported in this research, where Perceived Usefulness and Perceived Value significantly influence Willingness to Pay towards JAMBAN Public toilets. The P-value of these two hypotheses is 0.000 and is below than 0.05, so that this hypothesis is accepted. However, Risk Perception and Subjective Norm were found to have no significant effect on Willingness to Pay because both P values, 0.513 and 0.426, were greater than 0.05. The calculation of the respondent's CVM value

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through the bidding game adapts the formula from ^[15]. The table below shows the average value of the respondents' WTP.

TABLE 7
AVERAGE WTP FOR JAMBAN TOILETS

Consumer's willingness to pay	Amount	Total
>50% = IDR 3.000	246 People	IDR 738.000
>100% = IDR 4.000	104 People	IDR 416.000
>150% = IDR 5.000	233 People	IDR 1.165.000
>200% = IDR 6.000	14 People	IDR 84.000
>300% = IDR 8.000	12 People	IDR 96.000
Others	-	-
Total		IDR 2.499.000,00
Average willingness to pay		IDR 4.103,45

According to the information in the Table 7, the consumer's willingness to pay for clean public toilets provided by JAMBAN is IDR 4.103.45. This is higher than the current price of public toilets in urban areas, which is IDR 2.000. This findings found that consumers from Generation Z and Generation Y are willing to spend more than 100 percent of their expendable income on JAMBAN's clean public toilets. JAMBAN can utilize this result to analyze or decide on their pricing strategy, allowing the company to increase sales and profits due to their activities.

IV. DISCUSSION

Based on the results of the P-Values, it can be seen that Perceived Usefulness has a significant positive effect on Willingness to Pay. This hypothesis suggests that if customers are unwilling to pay, they will not find the technology/system useful and are less likely to use the technology/system. To overcome this, marketers can promote the perception that the system or technology is useful and demonstrate the advantages of using the technology or system owned by JAMBAN. JAMBAN companies should consider informing the benefits offered in finding the nearest clean public toilet and equipped with payment through a cashless system.

This research also found that, Perceived value had a substantial impact on the Willingness to Pay for JAMBAN's clean toilets. This association implies that the value provided by JAMBAN Toilet appears to influence the respondent's behavior. When respondents receive more values, such as good service, their WTP tends to be higher. Customers expect high returns from a possible exchange

when the perceived value of a service is high; therefore they will be less price-sensitive and willing to pay more because greater prices still yield the same ratio between the outcomes received and the given output. Therefore, JAMBAN in marketing its public toilets must also emphasize the value offered.

On the other hand, it is impossible to confirm the effect of subjective norms on willingness to pay, something that ^[16] was also unable to confirm. The results of this research also prove that the decision to pay more for JAMBAN's clean toilets is ultimately more influenced by Perceived Behavioral Control (respondents' perceptions of their ability to pay) compared to the influence of those closest to them. Regarding the lack of connection between subjective norms and WTP, this may be because, even while we consider the opinions of others while forming our attitudes and beliefs, this does not necessarily result in the final acceptance of the behavior. Of course, we listen to and consider the opinions of others. However, we decide to pay in some activities on a more personal level, particularly when it comes to lowering personal income, as in the case of willingness to pay.

The association between risk perception and willingness to pay, also was found to be non-significant in this investigation. The findings of this study are consistent with those of previous studies conducted by ^[17]. A study conducted by ^[18] found that a person's risk perception would play an important part in the decision-making process. It appears that risk perception is only helpful in assisting customers in being more selective when selecting public toilets and avoiding unclean public restrooms.

V. CONCLUSION

The objectives of this exploratory study were to identify the factors that significantly influence consumers' willingness to pay more for clean public toilets provided by JAMBAN and to determine the price at which customers willing to pay for clean public toilets provided by JAMBAN. According to the findings of this study, perceptions of usefulness, perceived value, and perceived behavioral control all have a substantial impact on willingness to pay. For the WTP Score, according to the results obtained through the use of the Contingent Valuation Method, the mean WTP per customer for better public toilet services in urban areas was IDR 4.103,45. So when JAMBAN established its business in the cities of Jakarta, Bandung, and Medan, the price for clean public toilets that JAMBAN could apply was above IDR 2.000 up to IDR 4.103,45.

ACKNOWLEDGMENT

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