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Epic model: Effectiveness of waste bank website-based deposit applications

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ABSTRACT

Waste banks are an alternative way of handling waste that can be converted into something of economic value. The process of managing Waste Bank deposits with a computerized system is expected to improve the performance of Waste Bank managers. Sutojayan District has been using a website-based waste bank management application since 2021 and has recorded 660 transactions with a total of 1529 users. However, until now these transactions have only been carried out by 2 villages, namely Pandanarum and Jingglong, out of 11 villages in Sutojayan District. The sample used was 100 respondents from application users who came from managers and customers, this study aims to determine the effectiveness of the web-based Waste Bank Savings Application using the EPIC Model, with four indicators namely empathy, persuasion, impact, and communication. From the results of the study it can be concluded that empathy, persuasion, impact, and individual benefits have a positive and significant effect on user satisfaction of 0.292; 0.390; 0.326; 0.885. This shows that the higher the empathy, persuasion, impact, and individual benefits, the higher the user satisfaction. Meanwhile, communication has a negative and insignificant effect on user satisfaction of -0.042, due to the manager's own internal management problems.

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1. INTRODUCTION

Currently, waste banks are seen as an alternative in dealing with excess waste from daily life to be converted into something of economic value (PERATURAN MENTERI NEGARA LINGKUNGAN HIDUP REPUBLIK INDONESIA NOMOR 13 TAHUN 2012, 2012). The presence of waste banks is one way of managing waste at the household, office, and market levels, but this role is still considered insignificant so it is necessary to assess the level of public perception (Widayat et al., 2023). This activity is recognized by the government to increase efforts to empower citizens through counseling, education, training with emancipatory participation methods (interaction and communication), and dialogue with citizens in managing waste banks, and is regulated through various laws and regulations (Wirawan & Yandri, 2023). The waste bank management model is not only beneficial in realizing a clean environment and reducing the volume of waste, but also has an impact on the community's economy (Purwendah & Wahyono, 2020; Wulandari et al., 2017).

The process of managing Waste Bank deposits with a computerized system is expected to improve the performance of Waste Bank managers. The emergence of various kinds of technology in the era of globalization will help humans get information, and access to data or information can take place quickly, efficiently, and accurately. Digital-based application programs with the PLC method provide better services, especially data security, and a simple feature display can make it easier to make deposit transactions, withdraw money and sell garbage (Fikri et al., 2023). (Tiawan et al., 2023) stated that the application contains the balance of waste that residents have exchanged to the waste bank and can be exchanged for groceries and compost every 6 months. Waste Bank Information System (SIBS) using PHP and MySQL is one of them (Afuan et al., 2021).

The web-based deposit application designed is one form of effort to achieve effectiveness in the management of the Waste Bank in Sutojayan District. This application has been operating since 2021 and has recorded 660 transactions with a total of 1529 users. The use of the savings application can help managers and customers to get convenience in completing administrative matters by using a smartphone anywhere and anytime. However, of the 11 villages in Sutojayan Sub-district, only 2 villages or 18% have accessed savings information, namely Pandanarum Village and Jingglong Village. The number of transactions that have been made is 660 transactions from 1529 customers. (https://banksampahsutojayan.com/).

Effectiveness is the relationship between outputs and goals or objectives that must be achieved. Operational activities are said to be effective if the activities carried out achieve the ultimate goals and objectives of the policy (spending wisely)(Sjafii et al., 2023). Based on the background above, it is necessary to know the extent to which the effectiveness of using a web-based savings application that has been designed using the EPIC Model. This model was developed by AC Nielsen (Wahyuni et al., 2023), proving that advertising on foodgrams is effective using the following four dimensions.

Empathy involves user affection and cognition. Affection involves feelings while cognition involves thinking. Affective responses indicate positive or negative, pleasant or unpleasant judgments. Feelings show the intensity and improvisation of the heart that affects the decision to buy or use the product (Kusumadewi et al., 2022), (N. Q. Putri, 2020). Second dimension is Persuasion.

Persuasion is a methods of social communication and in its application uses certain techniques or methods so that it can cause someone to be willing to do something happily, voluntarily and without any pressure or coercion by anyone. According to (Durianto, 2013), promotional messages cause changes in ideas, attitudes, behavior, and intentions so that consumers are willing to buy and brand appeal. Persuasion implies that respondents get an understanding of the advertisement and increase their feelings of wanting to know more about the product (Martono & Budiarjo, 2021).

The third dimension, consumers have different levels of knowledge in using applications, to interpret new information and make choices according to information needs. Impact makes consumers make purchases of products because of the advertising media displayed on social media and can spend time repeating these advertisements so that it will provide new things or knowledge to consumers (Abdullah et al., 2022), (Tertiasusman & Setyawan, 2022). The Communication dimension according to (Yet, 2013), providing communicative and creative information makes it easy to remember messages, provides consumer understanding, and the strength of the impression left by the message (Daulay & Aisha, 2022), (Winda et al., 2022).

Based on this, it is necessary to conduct research on "Effectiveness of waste bank website-based deposit applications". It is hoped that this research will be an assessment of the use of the application by displaying features as needed and language that is easily understood by users and provide input for application development.

2. RESEARCH METHOD

The research approach used is descriptive quantitative, where the variables (empathy, persuasion, impact and communication) will be frequency and interpreted to get the effectiveness value of the web-based savings application. The population used is the manager and customers of the Garbage

Bank of Sutojayan District, Blitar Regency by taking a sample using the Slovin formula (Sugiyono, 2015).

$$n = \frac{N}{N.d^2 + 1} \quad (1)$$

Information:
n =Number of samples
N = Total Population

d2=Desired critical value or accuracy limit or tolerable error rate (1%,5% and 10%).

The total population used is the number of customers and managers of the Waste Bank, which is 1529 + 23 = 1552 people, so a confidence level of 90% is set with 10% precision. Based on the above formula, the number of samples is obtained as follows:

$$n = \frac{(1529 + 23)}{(1529 + 23).(0,1)\ (0,1)^2 + 1}$$

$$n = \frac{(1552)}{(1552).(0,01)\ + 1}$$

$$n = \frac{(1552)}{(16,52)}$$

$$n = 94 \quad (2)$$

The number of samples used in this study were 94 samples. To prevent the questionnaire from being damaged, not returned, and invalid, 100 samples of questionnaire data will be collected. Data analysis in this study uses inferential statistics, this method is used to collect, process, analyze and interpret quantitative data by drawing conclusions about population characteristics based on disputed sample data (Prasetyo & Sutopo, 2018). Inferential statistical analysis in this study was carried out using the SmartPLS application. The SEM-PLS specification model in this study consists of two types of relationships, namely the measurement model (outer model) and the structural model (inner model).

3. RESULTS AND DISCUSSIONS

Based on the results of a sample calculation of 100 people, the most application users are women at 87%, this is because most managers and customers are women and housewives.

Table 1. Description of respondents by gender

No	Gender	Amount	Percentage (%)
1	Men	13	0,13
2	Women	87	0,87
	Total	100	100

Source: Processed data (2022)

While the age of the most respondents was 36-45 years as many as 39 people (9%) and the lowest was over 55 years as many as 8%. This shows that managers and customers are of productive age.

Table 2. Description of respondents by age

No	Age	Amount	Percentage (%)
1	15-25 years	9	0,09
2	26-35 years	27	0,27

3	36-45 years	39	0,39
4	46-55 years	17	0,17
5	Above 55 years	8	0,08
	Total	100	100

Respondent data based on recent education shows that most of the education level is junior high school, with 47 people (47%) being the majority customers of the Garbage Bank, while managers are at the high school level and above.

Table 3. Description of respondents by recent education

No	Education Level	Amount	Percentage (%)
1	SD	29	0,29
2	SMP	47	0,47
3	SMA/SMK/MA	22	0,22
4	S1/S2/S3	2	0,02
	Total	100	100

Source: Processed data (2022)

Discussion

Inferential statistical analysis in this study was carried out using the SmartPLS application.

Validity and Reliability Test

Convergent Validity is intended to determine whether the dimensions are valid in measuring variables indicated by the loading factor value> 0.7, can be declared valid and correlated with the construct being measured. The calculation results show that all constructs have a Loading Factor value above 0.70, so they are declared valid.

Table 4. Outer Loading

I	Item	Loading Factor	SE	T Statistic
Emphaty	EM1	0,777	0,075	10,355
	EM2	0,845	0,095	8,852
	EM3	0,859	0,049	17,622
	EM4	0,903	0,025	36,734
Persuation	PI1	0,800	0,059	14,139
	PI2	0,831	0,060	13,378
	PI3	0,839	0,051	16,566
	PI4	0,738	0,063	11,647
	PI5	0,863	0,035	24,746
Impact	IM1	0,915	0,033	27,382
	IM2	0,877	0,050	17,610
	IM3	0,797	0,068	11,647
	IM4	0,885	0,036	24,301
	IM5	0,889	0,038	23,201
Communacation	CM1	0,871	0,028	30,819
	CM2	0,870	0,035	24,801
	CM3	0,913	0,030	30,863
Kepuasan Pengguna	KP1	0,763	0,097	7,892
	KP2	0,896	0,024	36,996
	KP3	0,866	0,052	16,585
Manfaat Individu	MI1	0,796	0,049	16,152
	MI2	0,902	0,036	25,141
	MI3	0,900	0,026	34,359
	MI4	0,848	0,053	15,895
	MI5	0,894	0,035	25,472
	MI6	0,820	0,064	12,840

Source: PLS data analysis results, 2022

The result of the convergent validity calculation of the SEM PLS output shows that all constructs have a Loading Factor value of more than 0.70. Thus, based on the calculation of all such indicators are declared valid. Meanwhile, the calculation of composite reliability and Cronbach's Alpha can be seen through the summary presented in table 4.

Table 5. Test Results Composite Reliability dan Cronbach's Alpha

Variabel	Cronbach's Alpha	rho_A	*Reliabilitas Komposit*
Emphaty	0,868	0,881	0,910
Persuasion	0,873	0,883	0,908
Impact	0,922	0,928	0,941
Communication	0,862	0,866	0,916
Individual Satisfaction	0,797	0,824	0,881
Individual Benefits	0,930	0,935	0,945

Source: PLS data analysis results, 2022

From the output in table 4 all constructs have composite reliability values and Cronbach's alpha is more than 0.70. Thus, based on the calculation of all such indicators are declared reliable.

Evaluation of SEM Model

This inner model evaluation is used to measure and explain the relationship between variables using R2 and the predictive relevance value of Q2. The R-Square (R2) value serves to test the structural model by looking at the R-Square (R2) value which is a goodness-of-fit test of the model. The predictive power can be seen using the R-Square criteria of 0.67 strong; 0.33; 0.19 weak. The following is the R-Square (R2) value:

Table 6. R-Square value (R2) dan Predictive Relevance (Q2)

Variabel	R Square
Individual Satisfaction	0,887
Individual Benefits	0,784
Q Square = 1 - [(1-R_1^2) (1-R_2^2)]	
= 1 - [(1-0.887) (1-0.784)]	
= 1-((0,113)(0,216)	
= 1-0,024408	
= 0,975592	
Q Square = 0.976	

Source: PLS data analysis results, 2022

In table 6 it is known that the R-Square value for the variable User satisfaction (Y) is 0.887 (88.7%) which indicates a strong model strength. Meanwhile, the Individual Benefit variable (Z) also shows a strong model power of 0.784 (78.4%). This can indicate that the diversity of the Effectiveness variables explained by the Empathy, Persuasion, Impact and Communication variables while the Individual Benefit Variables for Applications can be explained by the user satisfaction variable of 78%, while the remaining 21.6% is the contribution of other variables not discussed in this section. this research.

Hypothesis Testing

Direct effect hypothesis testing is used to test whether there is a direct effect of exogenous variables on endogenous variables using the path coefficient value and p-value. The test criteria state that the path coefficient value is between -1 and 1. If the path coefficient value is negative, it means that the variable influence relationship is negative, and vice versa. If the p-value ≤ the significance level (alpha = 5%), it is stated that there is a significant effect of exogenous variables on endogenous variables. The results of hypothesis testing can be seen through the following table 7:

Table 7. Hypothesis Testing Results

Exogenous	Endogenous	Path Coefficien	SE	T Statistics	P Values	Result
CM	*KP*	-0,042	0,099	0,427	0,669	Rejected
CM	*MI*	-0.037	0,087	0,428	0,669	Rejected
EM	*KP*	0,292	0,114	2,553	0,011	Accepted
EM	*MI*	0,259	0,101	2,556	0,011	Accepted
IM	*KP*	0,326	0,148	2,204	0,028	Accepted
IM	*MI*	0,288	0,130	2,213	0,027	Accepted

Exogenous	Endogenous	Path Coefficien	SE	T Statistics	P Values	Result
KP	*MI*	0,885	0,025	35,759	0,000	Accepted
PI	*KP*	0,390	0,126	3,103	0,002	Accepted
PI	*MI*	0,345	0,113	3,057	0,002	Accepted

Source: PLS data analysis results, 2022

Equation: Y = 0,292 X1 + 0,390 X2+ 0,326 X3 - 0,042 X4

Z = 0,885 Y

From equation 1 it can be informed that:

The effect of Emphaty on User Satisfaction results in a probability of 0.011. The test results show that the probability < level of significance (Alpha (α) = 5%). This means that Emphaty has a significant effect on User Satisfaction. The path coefficient of Emphaty's effect on User Satisfaction of 0.292 states that Emphaty has a positive and significant effect on User Satisfaction. This means that the higher Emphaty, the more likely it is to increase User Satisfaction. These results are in line with the research of (Dewi & Pardosi, 2022; Kusumadewi et al., 2022) that the empathy dimension is effective enough to attract interest because it leaves a good impression and conveys messages clearly, well and correctly.

The effect of Persuasion on User Satisfaction results in a probability of 0.002. The test results show that the probability < the significance level (Alpha (α) = 5%). This means that Persuasion has a significant effect on User Satisfaction. The path coefficient of Persuasion's influence on User Satisfaction of 0.390 states that Persuasion has a positive and significant effect on User Satisfaction. This is in accordance with (Anwar et al., 2022) that the persuasion variable has the greatest influence so that it is effective to influence users to manage savings with the application.

The effect of Impact on User Satisfaction results in a probability of 0.028 < the significance level (Alpha (α) = 5%) with a coefficient of 0.326 so that impact has a positive and significant effect on user satisfaction. In line with research by (Martono & Budiarjo, 2021; L. T. Putri et al., 2022) that the higher the Impact, the higher the User Satisfaction.

The effect of Communication on User Satisfaction results in a probability of 0.669> the significance level (Alpha (α) = 5%), the path coefficient of -0.042 states that Communication has a negative and insignificant effect on User Satisfaction due to the lack of motivation from managers to use the application even though the features and language of the application have been arranged simply. This is not in line (Martono & Budiarjo, 2021), that Communication is the most effective variable for delivering messages or information.

The effect of User Satisfaction on Individual Benefits produces a probability> significance level (Alpha (α) = 5%). This means that User Satisfaction has a significant effect on Individual Benefits with a coefficient of 0.885. This is in accordance with (Nihriroh et al., 2023) that User Satisfaction tends to be strong because users can feel the benefits when using the application as needed so that development is necessary.

4. CONCLUSION

Based on the explanation that the author has conveyed above, it can be concluded that empathy, persuasion, impact, and individual benefits have a positive and significant effect on user satisfaction of 0.292; 0.390; 0.326; 0.885. This shows that the higher the empathy, persuasion, impact, and individual benefits, the more likely it is to increase user satisfaction. Meanwhile, communication has a negative and insignificant effect on user satisfaction of -0.042. This shows that communication tends to be weak or has no effect on increasing user satisfaction. So in the management of the Waste Bank which involves the role of the community / community both as customers, waste bank managers, there needs to be support and motivation from the Local Government, in this case Sutojayan District so that it can create a better local economy and

become a pilot project for waste bank management in other villages. Waste Bank deposit management is expected to help waste bank operations and optimize waste absorption in Sutojayan District so that the community benefits more from the information generated by improving familiar features so that users are easier to use, providing convenience in transactions anywhere using their smartphones to check deposits and balances, there needs to be a security system in the application and a more attractive appearance. For further research, it can be carried out on the preparation of resources and management of Waste Bank managers by utilizing digital technology so that community understanding and skills increase.

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