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TAM Model: Evaluation of Village Information Technology Adoption Acceptance in Kotim in the Covid-19 Pandemic Era

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Abstract

Information technology can work with the execution of work to accomplish ideal and most extreme usage. To make government services advanced, the role of the government from the central to the regional levels is vital. The East Kotawaringin Regency Government utilizes the e-government system with the intention that all services to the community become easier and more transparent. This study examines the factors of the ease of use of village service information technology and the benefits obtained from village service information technology in terms of attitudes, desires, and real behavior by adapting the Technology Acceptance Model (TAM). This study will suggest public services, particularly town organizations required by the local area in East Kotawaringin during the Covid 19 pandemic. Information examination was done in this concentrate on utilizing the Partial Least Square (PLS) strategy utilizing WarpPLS programming form 7. The outcomes show client comfort factors, saw helpfulness, perspectives, conduct expectations, and genuine conduct have a positive and huge impact on innovation in the town.

Keywords: E-government, TAM, PLS, WarpPLS

Abstrak

Teknologi informasi dapat bekerja dengan pelaksanaan pekerjaan untuk mencapai penggunaan yang ideal dan paling ekstrim. Untuk memajukan pelayanan pemerintahan, peran pemerintah dari tingkat pusat hingga daerah sangat vital. Pemerintah Kabupaten Kotawaringin Timur memanfaatkan sistem e-government dengan maksud agar segala pelayanan kepada masyarakat menjadi lebih mudah dan transparan. Penelitian ini mengkaji tentang faktor kemudahan penggunaan teknologi informasi pelayanan desa dan manfaat yang diperoleh dari teknologi informasi pelayanan desa ditinjau dari sikap, keinginan, dan perilaku nyata dengan mengadaptasi Technology Acceptance Model (TAM). Kajian ini akan menyarankan pelayanan publik, khususnya organisasi kota yang dibutuhkan oleh daerah di Kotawaringin Timur selama masa pandemi Covid 19. Pengujian informasi dilakukan dalam konsentrasi ini pada penggunaan strategi Partial Least Square (PLS) menggunakan format program WarpPLS 7. Hasil penelitian menunjukkan faktor kenyamanan klien, melihat kegunaan, perspektif, harapan perilaku, dan perilaku nyata memiliki dampak positif dan besar pada inovasi dalam kota.

***Kata-kata kunci**: E-government, TAM, PLS, WarpPLS*

1. Introduction

In our daily exercises during this pandemic, we truly need innovation and the web. Data innovation can work with the execution of work to accomplish ideal and greatest use [1]. In this period of the Covid-19 pandemic, innovation is extremely useful, particularly for public administrations. Individuals are constantly encouraged to remain at home and breakpoint cooperations with others. To make taxpayer-supported organizations further developed, the job of the public authority from the key to provincial levels is particularly required [2], [3]. E-government is a mechanical advancement type that works to turn into a spotless government. E-Government is the place where people, in general, are served serenely openly benefit both as far as time, cost, and straightforwardness with the assistance of data framework innovation and broadcast communications [4], [5].

East Kotawaringin Regency made changes in public services to build community satisfaction. East Kotawaringin Appropriate Technology for Population and Administration of Tehang village that can be accessed by the community [6]. The East Kotawaringin Regency Government utilizes the e-government system with the intention that all services to the community become easier and more transparent.

Based on the description above, a study is essential to determine the community's acceptance level of technology of the village. This study examines factors that ease the use of village service information technology and the benefits derived from village service information technology in terms of attitudes, desires, and real behavior by adapting the Technology Acceptance Model (TAM) [7]. This study will recommend public services, especially village administration, needed by the community in East Kotawaringin in the era of the Covid 19 pandemic.

2. Method

a. Research Approach

A quantitative methodology was utilized in this examination. Quantitative methodology refers to a methodology that utilizes numbers that are scored as the reason for the investigation. The handled information comes from test information taken from the populace, planned to see the discernments, mentalities, and conduct of the local area in utilizing innovation. This information can portray the data of every factor contemplated to decide the impact. The

consequences of the survey were arranged and afterward demonstrated utilizing WarpPLS 7.0 and utilizing the PLS-SEM examination strategy.

b. Respondent

Villages located in the East Kotawaringin Regency with its capital Sampit are the objects of this study. The East Kotawaringin consists of 17 sub-districts, 17 sub-districts, and 165 villages. Respondents in this study are people whose address is in the village. Online, 105 questionnaires were collected from 35 villages in 13 sub-districts.

c. Data Collection

Information was acquired through surveys conveyed on the web and semi-disconnected with the assistance of google structures. The inquiries are shut to get information about town innovation known to the respondents. The Linkert scale, which is evaluated from 1 to 5, is utilized to gauge replies.

d. Research Design

Perceptions of user convenience, perceptions of user benefits, user attitudes, behavioral intentions, and actual use are variables in the model, which adopts the Technology Acceptance Model (TAM) [8], [9], [10]. As seen in **Figure 1**:

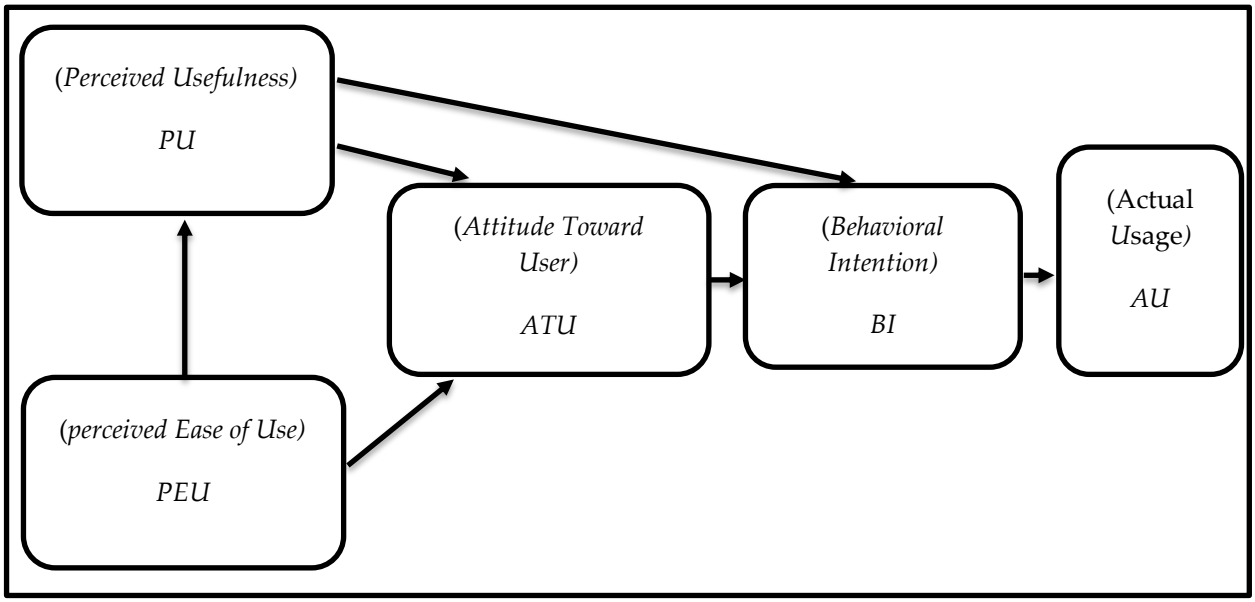

Figure 1. TAM Model

Figure 1 above is a structural model, part of the SEM model (Structure Equation Model), which describes the form of the correlation relationship between latent variables and the research model [11], [12]. The purpose of testing the structural model is to find out what relationships exist in the variables that make up the model [11], [13].

The hypotheses obtained from the above model are:

1. Ease of use (PEU) affects the usefulness (PU)
2. User convenience (PEU) affects user attitudes (ATU)
3. Usefulness (PU) affects user attitudes (ATU)
4. Benefit (PU) affects Behavioral Intentions (BI)
5. User Attitude (ATU) affects Behavioral Intentions (BI)
6. Behavioral Intentions (BI) affect real behavior ((AU)
7. Usefulness (PU) indirectly affects behavioral intentions (BI) through user attitudes (ATU)
8. Ease (PEU) indirectly affects user attitudes (ATU) through usefulness (PU)
9. Ease (PEU) indirectly affects behavioral intentions (BI) through user attitudes (ATU)
10. Benefit (PU) indirectly affects real behavior (AU) through behavioral intentions (BI)
11. User attitudes (ATU) indirectly affect real behavior (AU) through behavioral intentions (BI)
12. Ease (PEU) indirectly affects real behavior (AU) through user attitudes (ATU) and behavioral intentions (BI)
13. Ease (PEU) indirectly affects behavioral intentions (BI) through usefulness (PU) and user attitudes (ATU)
14. Usefulness (PU) indirectly affects real behavior (AU) through user attitudes (ATU) and behavioral intentions (BI)
15. Ease (PEU) indirectly affects real behavior (AU) through usefulness (PU), user attitudes (ATU), and behavioral intentions (BI).

e. Data Analysis

Information investigation was done on utilizing the Partial Least Square (PLS) technique by employing WarpPLS form 7 programming. PLS is a strategy for tackling Structural Equation Modeling (SEM). SEM has a significant level of adaptability in research that interfaces hypothesis and information and can perform way investigation with inert factors. Partial Least Square (PLS) is a fairly strong analytical method because it is not based on many assumptions. The data also does not have to be normally distributed multivariate (indicators with categorical, ordinal, interval to ratio scales can be used in the same model), and the sample does not have to be large [14].

3. Results and Discussion

a. Result

SEM-PLSM measurement model is usually called the outer model, in covariance-based SEM it is called confirmatory factor analysis (CFA). Both are part of convergent validity [15].

The estimation of the model is done to survey the unwavering quality and legitimacy, which is evaluated for the connection between the pointer and its inert factors. The utilization of build unwavering quality is to see Cronbach's Alpha (CA) or Composite Reliability (CR). Latent variables were analyzed with convergent validity (loading factor and AVE) and discriminant validity. Loading Factor (LV), Cronbach's Alpha (CA), Composite Reliability (CR), Average Variance Extracted (AVE) with WarpPLS application obtained results as shown in Table 1.

Table 1. Result Loading Factor (LF), Cronbach's Alpha (CA), Composite Reability (CR), AverageVariance Extracted (AVE)

Latent Variable	Indicator	LF	CA	CR	AVE
Perceived Ease of Use (PEU)	Easy to learn	0,917	0,939	0,954	0,805
	Get information	0,900			
	Easy to understand and understood	0,920			
	Easy to interact				
	Easy to remember	0,852			
		0,897			
Perceived Usefulness (PU)	Be faster	0,876	0,960	0,967	0,832
	Service matters	0,911			
	Service productivity	0,917			
	Service effectiveness	0,904			
	Easy in service	0,928			
	Very helpful	0,937			
Attitude Toward Usage (ATU)	Feeling happy	0,888	0,879	0,917	0,735
	Feel comfortable and enjoy	0,875			
	Don't like to use				
	Feeling awkward	0,848			
		0,817			
Behavioral Intention (BI)	Want to use	0,837	0,895	0,923	0,705
	Always want to use	0,833			
	Intend to continue to use	0,885			
	Want to motivate my friends				
		0,792			
Actual Usage (AU)	Using the service	0,864	0,849	0,908	0,768
	Open service	0,905			
	Always wanted to open a service	0,859			

To see the external model (estimation model) as per the arrangements of united legitimacy as an intelligent build, two standards were utilized, specifically (1) stacking > 0.7 and (2) critical p-esteem (<0.05) [15]. In Table 1, the LF section shows the stacking factor number with the development more prominent than 0.7, and one might say that it meets the prerequisites to be estimated. In Table 1, the AVE section can likewise be seen the focalized legitimacy of the AVE as an incentive for each development> 0.5, implying that the pointers are associated with the build.

To analyze discriminant validity, you can pay attention to the results of the calculation of the correlation between latent variables. Discriminant validity is eligible if the average variance extracted (AVE) from the extracted average variance exceeds the correlation involving these variables [16]. The average variance extracted (AVE) value is shown in Table 2 below:

Table 2. AVE Value

	PEU	PU	ATU	BI	AU
PEU	**0,897**	0,782	0,762	0,679	0,554
PU	0,782	**0,912**	0,841	0,797	0,677
ATU	0,762	0,841	**0,857**	0,766	0,689
BI	0,679	0,797	0,766	**0,840**	0,602
AU	0,554	0,677	0,689	0,602	**0,876**

Table 2 shows that the AVE in the underlined column is larger than the other columns. PEU column = 0.897 higher than PU, ATU, BI, AU. Column PU = 0.912 higher than PEU, ATU, BI, AU. Column ATU = 0.857 is higher than PEU, PU, BI, AU. BI column = 0.840 higher than PEU, PU, ATU, AU. Column AU = 0.876 higher than PEU, PU, ATU, BI.

From the test results where the AVE is greater than the correlation between the latent variables, it shows that discriminant validity is met.

Looking at Cronbach's Alpha or Composite Reliability can be used to measure construct reliability. Usually the Composite Reliability (CR) value tends to be greater than Cronbach's Alpha (CA) (Fornell and Larcker, 1981). It can be seen in Table 1 that the value of Composite Realibility (CR) > from Composite Reliability (CR). In the PEU variable the value of CR = 0.954 while CA = 0.939, the PU variable the value of CR = 0.967 while CA = 0.960, the ATU variable the value of CR = 0.917 while CA = 0.879, BI variable CR = 0.923 while CA = 0.895, AU variable CR = 0.908 while CA = 0.849.

The value of the validity and reliability of the measurement results of the model shows a good value.

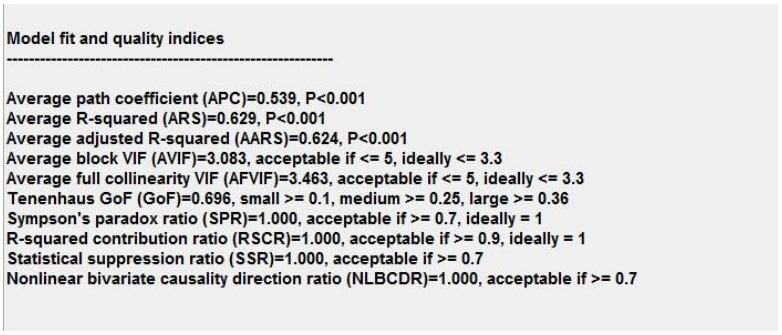

Figure 2. Model Fit Index

Figure 2 shows the results of Average Path Coefficient (APC) = 0.539, Average R-squared (ARS) = 0.629, Average adjusted R-squared (AARS) = 0.624 and all P values are less than 0.001 and Average block VIF (AVIF) = 3.083. Because the P-value is smaller than 0.001 seen in the APC, ARS, AARS indicators, it is eligible. The value of AVIF = 3.083 is worth less than 5, which means it is eligible.

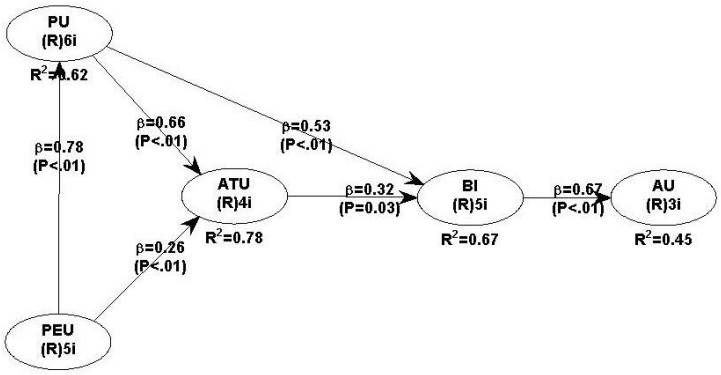

Figure 3. SEM-PLS . Structural model test results

Figure 3 above shows the results of the model test, where all significant variables have a direct effect because the relationship between each variable is less than 0.05. **Table 3** below is the result of the variable model evaluation that has a direct effect.

Table 3. Model Test Results Variables have a direct effect

Relationship between Variables Latent	Model Trial Results			Size Effect Relationship between Latent Variables	
	Path Coefficients	P Value	Significant	Effect Size	Notes
PEU. PU.	0,784	<0,001	Significant	0,615	Big
PEU. ATU.	0,264	<0,001	Significant	0,205	Medium
PU. ATU.	0,662	<0,001	Significant	0,573	Big
PU. BI.	0,525	<0,001	Significant	0,421	Big
ATU. BI.	0,323	0,025	Significant	0,249	Medium
BI. AU.	0,674	<0,001	Significant	0,454	Big

The trial result of using WarpPLS 7.0 software, the variables that have an indirect effect shown in **Table 4** are indirect effects, **Table 5** is the P-value, and **Table 6** is the size of the effect.

Table 4. Indirect Effect

Line with 2 segments					
	PEU	**PU**	**ATU**	**BI**	**AU**
ATU	**0,519**				
BI	**0,498**	**0,214**			
AU		**0,354**	**0,218**		
Line with 3 segments					
	PEU	**PU**	**ATU**	**BI**	**AU**
BI	**0,168**				
AU	**0,335**	**0,144**			
Line with 4 segments					
	PEU	**PU**	**ATU**	**BI**	**AU**
AU	**0,113**				

Table 5. P-Value

Line with 2 segments					
	PEU	**PU**	**ATU**	**BI**	**AU**
ATU	**<0,001**				
BI	**<0,001**	**0,021**			
AU		**0,002**	**0,027**		
Line with 3 segments					
	PEU	**PU**	**ATU**	**BI**	**AU**
BI	**0,024**				
AU	**<0,001**	**0,023**			
Line with 4 segments					
	PEU	**PU**	**ATU**	**BI**	**AU**
AU	**0,026**				

Table 6. Effect Size

Line with 2 segments					
	PEU	**PU**	**ATU**	**BI**	**AU**
ATU	**0,402**				
BI	**0,338**	**0,171**			
AU		**0,240**	**0,150**		
Line with 3 segments					
	PEU	**PU**	**ATU**	**BI**	**AU**
BI	**0,114**				
AU	**0,186**	**0,098**			
Line with 4 segments					
	PEU	**PU**	**ATU**	**BI**	**AU**
AU	**0,063**				

The complete evaluation results of the variable model that have an indirect effect are as shown in **Table 7** below:

Table 7. Model Test Results Variables have an indirect effect

Relationship between Latent Variables	Model Trial Results			Size Effect Relationship between Latent Variables	
	Path Coefficients	P Value	Significant	Size Effect	Notes
PU. BI. ATU.	0,214	0,021	Significant	0,171	Medium
PEU. ATU. PU.	0,519	<0,001	Significant	0,402	Big
PEU. BI. ATU.	0,498	<0,001	Significant	0,338	Medium
PU. AU. BI.	0,354	0,002	Significant	0,240	Medium
ATU. AU. BI.	0,218	0,027	Significant	0,150	Medium
PEU. AU. ATU. BI.	0,335	<0,001	Significant	0,186	Medium
PEU. BI. PU. ATU.	0,168	0,024	Significant	0,114	Low
PU. AU. ATU. BI.	0,144	0,023	Significant	0,098	Low
PUE. AU. PU. ATU. BI.	0,113	0,026	Significant	0,063	Low

The test result with the WarpPLS application also obtained the value of the effect size of the variable that had a direct effect and the variable that had an indirect effect. In the study of Kock and Hair, quoted by **[17]**, **[11]** the effect size is divided into 3 criteria, namely (1) weak = 0.02, (2) medium = 0.15, (3) large = 0.35. The test result with the WarpPLS application also obtained the value of the effect size of the variable that had a direct effect and the variable that had an indirect effect. In the study of Kock and Hair, quoted by [17],[11] the effect size is divided into 3 criteria, namely (1) weak = 0.02, (2) medium = 0.15, (3) large = 0.35.

b. Discussion

Based on the test results with the WarpPLS application, it is divided into 2, namely:

1) The results of the variables that have a direct effect are shown in **Table 3**. The test result of the model of the variable that have a direct effect, and **Figure 4** of the graph of the test result of the model of the variable that has a direct effect, below, the information is obtained:

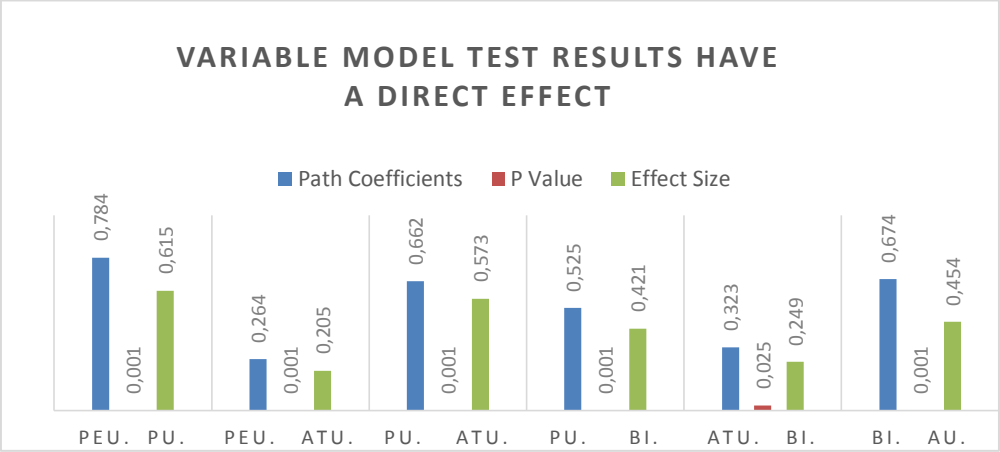

Figure 4. Graph of Model Test Results Variables have a direct effect

a) User convenience (PEU) has a positive effect on usefulness (PU), meaning that the better the user's ease of using technology, the better the usefulness of the technology will be.

b) User convenience (PEU) has a positive effect on user attitudes (ATU), meaning that the easier it is for users to use village service technology, the better the user's attitude towards village service technology.

c) Usefulness (PU) has a positive effect on user attitudes (ATU), meaning that the more useful the village service technology received, the better the user's attitude towards technology.

d) Usefulness (PU) has a positive effect on Behavioral Intentions (BI), meaning that the better the benefits obtained from technology, the better the behavioral intentions in using technology.

e) User Attitude (ATU) has a positive effect on Behavioral Intentions (BI), meaning that the better the user's attitude towards technology, the better the behavioral intention to use technology.

f) Behavioral Intentions (BI) have a positive effect on real behavior (AU), meaning that the better the behavioral intentions in using technology, the more often they will use the technology.

2) The aftereffects of the circuitous powerful factor are displayed in **Table 4**, the consequences of the aberrant impact variable model test and **Figure 5** diagram of the backhanded impact variable model test results underneath, the data acquired:

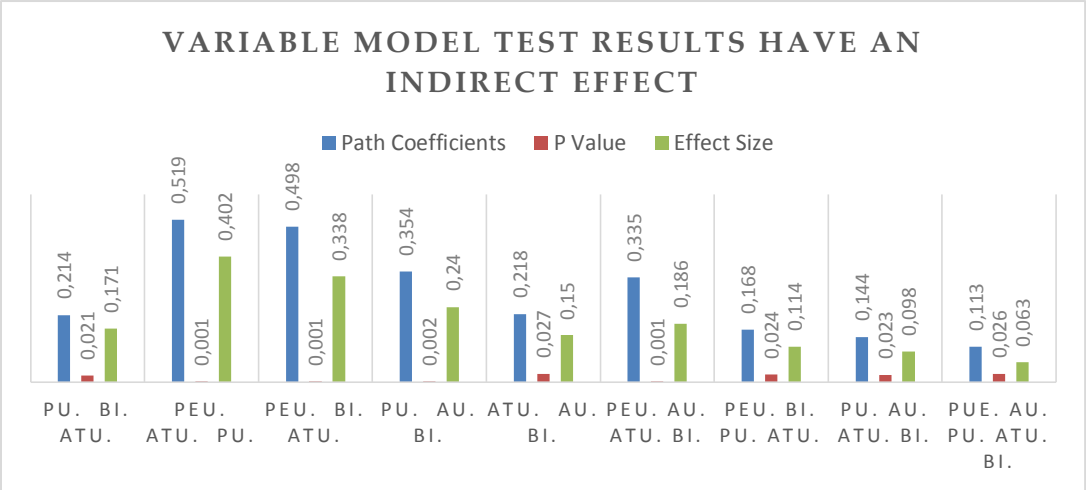

Figure 5. Graph of Model Test Results Variables have an indirect effect

a) Usefulness (PU) indirectly has a positive effect on behavioral intentions (BI) through user attitudes (ATU), meaning that the better the usefulness obtained from technology, the better the behavioral intention to use technology through user attitudes.

b) Ease (PEU) indirectly affects user attitudes (ATU) through usefulness (PU), meaning that the better the ease with which users use village service technology, the better the user's attitude towards village service technology through the use of technology.

c) Ease (PEU) indirectly affects behavioral intentions (BI) through user attitudes (ATU), meaning that the better the ease with which users use village service technology, the better behavioral intentions in using technology through user attitudes.

d) Benefit (PU) indirectly affects real behavior (AU) through behavioral intentions (BI), meaning that the better the usefulness obtained from technology, the more often the technology will be used through behavioral intentions.

e) User attitudes (ATU) indirectly affect real behavior (AU) through behavioral intentions (BI), meaning that the better the user's attitude towards technology, the more often they will use the technology through behavioral intentions.

f) Ease (PEU) indirectly affects real behavior (AU) through user attitudes (ATU) and behavioral intentions (BI), meaning that the better the ease with which users use village service technology, the more often they will use the technology through user attitudes and behavioral intentions.

g) Ease (PEU) indirectly affects behavioral intentions (BI) through usefulness (PU) and user attitudes (ATU), meaning that the better the ease with which users use village service technology, the better behavioral intentions in using technology through user benefits and attitudes.

h) Usefulness (PU) indirectly affects real behavior (AU) through user attitudes (ATU) and behavioral intentions (BI), meaning that the better the benefits obtained from technology, the more often they will use the technology through user attitudes and behavioral intentions.

i) Ease (PEU) indirectly affects real behavior (AU) through usefulness (PU), user attitudes (ATU), and behavioral intentions (BI), meaning that the better the ease with which users use village service technology, the more often they will use the technology through usefulness, user attitudes, and behavioral intentions.

4. Conclusion

This study aimed to see the perceptions, attitudes, and behavior of the community in using village service information technology with the Technology Acceptance Model. Villages located in the East Kotawaringin Regency with its capital Sampit and the people whose addresses are in the village are the objects of the research.

The outcomes showed that the factors of client comfort, seen helpfulness, mentalities, conduct goals, and genuine conduct had a positive and huge impact on innovation in the town. From the review results, 84.8% of respondents realized that administrations in the town can utilize innovation, and 50.5% had utilized innovation administrations at the town office. The exceptionally predominant administrations were those dependent on web-based media like WhatsApp. A town administration data framework should be created and acquainted with the local area and town authorities. The utilization of innovation in the town needs help, everything being equal, both neighborhood, sub-area and town states, and the local area.

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