

The Effect of UTAUT and IRT Factors on the Digital Fishery Platforms Acceptance

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Abstract — *The background of this research is the weakness of the marine product supply chain which reduces the interest of the Indonesian people to consume abundant fish. The purpose of this study was to examine the effect of UTAUT and IRT factors on digital fishery platform acceptance. The study was conducted in the provinces of Banten and West Java using a convenience sampling technique. The data collected were 240 samples, consists of 151 samples from Banten province, and 89 samples from West Java province. The results of the study prove that three UTAUT factors, namely performance expectancy, effort expectancy, and social influence significantly affect the intention to use digital platforms. Three IRT factors have a significant effect on resistance to using digital platforms. However, this study also shows low resistance and high acceptance on the digital fishery platform, so that the effect of resistance on the intention to use digital fishery platforms is proven to be negative and significant. The novelty of this research is the combination of UTAUT and IRT theory on digital platform acceptance. The practical benefits of this research can be used as a basis for decision-making to build a digital fishery platform that will benefit marine fish consumers and fishermen.*

Keywords: UTAUT, IRT, Digital Platform, Fishery, technology acceptance.

Abstrak — Latar belakang penelitian ini adalah lemahnya rantai pasok hasil laut yang menurunkan minat masyarakat Indonesia mengkonsumsi ikan yang melimpah ruah. Tujuan penelitian ini adalah untuk menguji pengaruh faktor-faktor UTAUT dan IRT terhadap penerimaan platform digital. Penelitian dilakukan di provinsi Banten dan Jawa Barat menggunakan teknik *convenience sampling*. Data terkumpul sebesar 240 sampel, 151 samples dari provinsi Banten, dan 89 dari provinsi Jawa Barat. Hasil penelitian membuktikan bahwa tiga faktor UTAUT, yaitu harapan kinerja, harapan usaha, dan pengaruh sosial mempengaruhi intensi menggunakan digital platform secara signifikan. Tiga faktor IRT berpengaruh signifikan terhadap resistensi penggunaan platform digital. Namun penelitian ini juga menunjukkan resistensi yang rendah dan penerimaan yang tinggi, sehingga pengaruh resistensi terhadap intensi penggunaan platform digital terbukti negatif dan signifikan. Kebaharuan dari penelitian ini adalah pengkombinasian teori UTAUT dan IRT pada penerimaan platform digital. Manfaat praktis penelitian ini dapat dijadikan basis pengambilan keputusan untuk membangun *digital fishery platform* yang akan menguntungkan konsumen ikan laut dan nelayan.

Kata Kunci: UTAUT, IRT, platform digital, ikan laut, penerimaan teknologi.

INTRODUCTION

The background of this research is the gap between abundant marine products which is inversely proportional to the very low level of consumption of marine fish in Indonesia. The export value of marine fish in 2019 was IDR 73,681,883,000 (Pratama,

2020), and the Estimation of the Sustainable Potential of Indonesian Fish Resources or Maximum Sustainable Yield (MSY) of 12,541,438 tons per year. However, fish consumption in Indonesia is only 50.69 kg per capita per year (Hidayat, 2019). The government's program to promote fish-eating (GEMARIKAN) has not maximally increased fish

consumption among the community. One of the factors that is thought to be an obstacle to increasing fish consumption is because the price of fish is still relatively expensive. One of the reasons for this relatively high price is the poor distribution system and the broker's game (Hidayat, 2019).

Technological advances in this digital era should be able to cut the supply chain by creating a digital fishery platform that can connect directly between fishermen and their consumers. Thus, the price of fish will be relatively higher for fishermen, and relatively cheaper for consumers.

The use of digital platforms will make it easier and increase the intention of those who have technological literacy to use digital platforms. But on the other hand, among people who do not have good technological literacy, there are some barriers or innovation resistance factors that can reduce the intention to use digital platforms. Based on that problem statement, this research will: (1) examine the factors that influence the intention to use the platform, (2) examine the factors that influence innovation resistance, and (3) examine the influence of innovation resistance on intention to use the platforms. Then the following will explain the theoretical study that underlies the development of hypotheses related to the purpose of this research.

LITERATURE REVIEW

Measuring intention to use innovation technology has given birth to many theories to test it. The theories that have been used by researchers to examine the factors that influence people to use innovative technology, are mainly Technology Acceptance Model (TAM), and the more recent ones are the Unified Theory of Acceptance and Use of Technology (UTAUT) and UTAUT2. The UTAUT model was developed by Venkatesh et al. (2003) and the UTAUT2 model was also developed by Venkatesh et al. (2012). In the UTAUT model, Venkatesh et al. (2003) proved that Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Condition are factors of acceptance of innovative technology, and in the UTAUT2 model Venkatesh et al. (2012) added two other factors, namely Hedonic Motivation and Habit.

Many researchers use the UTAUT model to examine factors that influence the intention to use various innovative technologies in various countries. For the example testing the UTAUT model in the context of computer-assisted audit techniques and tools acceptance (CAATs) (Mahzan & Lymer, 2014), online tax filling (Carter et al., 2011), *e-learning* (Lwoga & Komba, 2015; Arif et al., 2018; Thongsri et al., 2018; Gunasinghe et al., 2019; and Buabeng-Andoh & Baah, 2020), mobile library (Chang, 2013; Wu & Wu, 2019), *e-government service* (Ahmed et al., 2018), *m-health service* (Alam et al., 2019), acceptance of digital payment platforms

(Tarhini et al., 2016; Kuciapski, 2017; Sivathanu, 2019; Sobti, 2019; Gupta et al., 2019; Rahi et al., 2019; Giovanis et al., 2019; Odoom & Kosiba, 2020; and Purwanto & Loisa, 2020) and other fields.

As far as searching the database of reputable journal publishers, no research has been found on marketplace acceptance intentions that link fishers and end consumers in a peer-to-peer manner, using either the UTAUT, TAM, or other information technology acceptance measurement models. Thus, it is interesting to study the effect of UTAUT factors on the acceptance of the connecting platform between fishers and consumers.

Performance expectancy is the extent to which individuals believe that using technology will be useful for improving their job performance (Venkatesh et al., 2003; Venkatesh et al., 2012). Effort expectancy is the ease of use that users believe when using technology (Venkatesh et al., 2003; Venkatesh et al., 2012). Social Influence is the consumer's perception of the trust of friends, family members, and other consumers in the use of technology (Venkatesh et al., 2003; Venkatesh et al. 2012). Then Facilitating Condition is the user's perception of the support and resources available when he intends to use technology. This facilitating consists of software resources, hardware, technical support, and information technology knowledge (Venkatesh et al., 2003; Venkatesh et al., 2012).

In addition to previous research on the acceptance of innovative technology, there are also theories and research that pay attention to resistance or resistance. Ram and Sheth (1989) developed the Innovation resistance theory (IRT). The factors that influence the rejection of innovation in the model include usage, value, risk, traditional, and image barriers. When an innovation appears that is different from the current system, habits, and practices, individuals tend to reject the innovation, and it is called a Usage Barrier (Ram & Sheth, 1989).

Innovation values related to monetary value and performance are considered as Value Barriers. This is also related to the opinion of innovation users whether the innovation provides added value to their performance or not (Ram & Sheth, 1989). Risk Barrier is the level of risk associated with the use of innovation that is perceived by users, and this risk is related to the losses that will be suffered by innovation users (Ram & Sheth, 1989). Traditional Barriers in the use of innovative technology are related to barriers to norms, traditions, habits, and behaviors that are considered contrary to family, community, or group norms and society's disapproval leads to resistance to innovation (Ram & Sheth, 1989). Meanwhile, Image Barrier is generally generated by various types of information, rumors, and stereotypes. For example, negative perceptions of the image of innovation can occur because media coverage gives negative attention to a particular innovation which causes

public rejection of that innovation (Ram & Sheth, 1989).

The studies that have tested IRT have mainly been carried out in the context of resistance to mobile banking (Laukkanen & Kiviniemi, 2010; Chemingui & Lallouna, 2013; Thakur & Srivastava, 2013). The IRT testing in the context of a digital fishery platform is not found in the previous studies. Because in general, those who are resistant to the use of the latest technology or innovation are the lower class people who lack technological literacy and some of the X generation and baby boomers, this model also needs to be tested to prove whether these factors affect resistance to digital platforms that connect fishers and consumers. Because if this is proven, the high resistance to innovation will reduce their intention to use digital platforms.

By combining UTAUT and IRT, research hypotheses can be built as follows:

H1: Performance expectancy has a positive and significant effect on consumer intention to use digital fishery platforms.

H2: Effort expectancy has a positive and significant effect on consumer intention to use digital fishery platforms.

H3: Social Influence has a positive and significant influence on consumer intention to use digital fishery platforms.

H4: Facilitating Conditions has a positive and significant influence on consumer intention to use digital fishery platforms.

H5: Usage Barrier has a positive and significant influence on consumer resistance to using digital fishery platforms.

H6: Value Barrier has a positive and significant effect on consumer resistance to using digital fishery platforms.

H7: Risk Barrier has a positive and significant impact on consumer resistance to using digital fishery platforms.

H8: Traditional Barrier has a positive and significant influence on consumer resistance to using digital fishery platforms.

H9: Image Barrier has a positive and significant influence on consumer resistance to using digital fishery platforms.

H10: Resistance has a negative and significant effect on consumer intentions to use digital fishery platforms.

Based on these hypotheses, a conceptual framework can be built as shown in Figure 1.

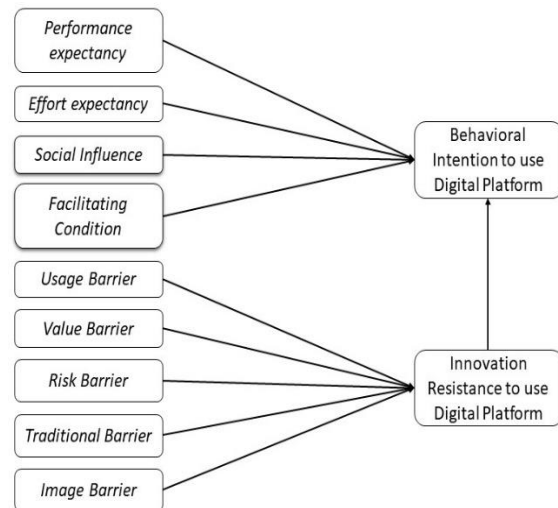


Figure 1. Conceptual Framework

METHOD

Population and Sample

The population is people in two provinces (Banten, and West Java), those who have the potential to intend to shop for marine fish using a digital platform. Through apply *non-probability sampling convenience sampling*, the 240 samples were collected. Data collection through questionnaire online sharing in the period February to April 2021. The sample consists of 89 samples from West Java province, and 151 samples from Banten province.

Measurement scale

The measurement scale of the four UTAUT factors and behavioral intention construct is adapted from Venkatesh et al. (2003). While the five IRT factors and innovation resistance construct are adapted from Ram and Sheth (1989).

Data analysis technique

The analysis technique of the study is Partial Least Squares-Structural Equation Model (PLS-SEM). According to Hair et al. (2011) PLS-SEM is a method that is very suitable for research in the field of marketing and management information systems. This research is closely related to the field of management and information systems studies.

The study uses Smart-PLS software to process the data. The study uses the reflective measurement model. The indicator reliability is measured by indicator loadings with a threshold is higher than 0.70 (Purwanto & Purwanto, 2020). The internal consistency reliability testing uses composite reliability values to measure the construct, and the threshold value of composite reliability is higher than 0.70 (Purwanto et al., 2018). The study measures the convergent validity with the average variance extracted (AVE) value. The AVE value should be

higher than 0.50 (Purwanto & Loisa, 2020). Then the discriminant validity uses the Fornell-Larcker criterion and cross-loadings value (J. F. Hair et al., 2011). The structural model evaluation uses bootstrapping with a critical t-value that should be higher than 1.96 at the significance level = 5 percent (Purwanto et al., 2020).

RESULT AND DISCUSSION

Table 1 shows that the average respondents' answers related to interest and acceptance to use the digital fishery platform are relatively high. In the range between a minimum of 1.00 and a maximum of 5.00, the lowest mean value is 3,338. Therefore, it means that the level of public acceptance of the presence of a digital fishery platform is high.

Table 1. Descriptive Analysis of the Behavior Intention Construct

	Mean	Median	Min	Max	Number
BI1	3,767	4,00	1,00	5,00	240,00
BI2	3,338	3,00	1,00	5,00	240,00
BI4	3,846	4,00	1,00	5,00	240,00
BI5	3,800	4,00	1,00	5,00	240,00
BI6	4,121	4,00	1,00	5,00	240,00

The mean of each UTAUT factor indicator is above 3.00 which indicates that the public's

Table 3. Construct Reliability and Validity

	Outer Loading*	Cronbach's Alpha*	Composite Reliability*	Average Variance Extracted (AVE)**
Behavior Intention to Use Digital Platform		0,913	0,936	0,745
BI1	0,886			
BI2	0,860			
BI4	0,877			
BI5	0,919			
BI6	0,765			
Performance Expectancy		0,757	0,861	0,674
PE1	0,772			
PE2	0,852			
PE3	0,836			
Effort Expectancy		0,765	0,864	0,680
EE1	0,832			
EE2	0,843			
EE4	0,799			
Facilitating Condition		0,783	0,871	0,694
FC2	0,747			
FC3	0,880			
FC4	0,866			
Social Influence		0,786	0,875	0,701
SII	0,849			

perception of the factors that influence the acceptance of the digital fishery platform is also high.

On the other hand, Table 2 shows that the mean value for questions related to innovation resistance is below 3. It means that the level of community resistance to the presence of a digital fishery platform is low. This is a good signal for the development of a digital fishery platform. The mean of IRT factors is below 3.00 which indicates that the public's perception of barriers to using digital platforms is low.

Table 2. Descriptive Analysis of the Innovation Resistance Construct

	Mean	Median	Min	Max	Number
IR2	2,396	2,00	1,00	5,00	240,00
IR3	2,229	2,00	1,00	5,00	240,00

The PLS-SEM analysis begins with an outer evaluation to determine the reliability and validity of each research item and variable. Table 3 shows that all the outer loading values of each item are > 0.90, which means that all the items used to meet the indicator reliability. All Cronbach's Alpha and Composite Reliability values > 0.90, thus all variables proved reliable. Then all values of Average Variance Extracted (AVE) > 0.50, so it is proven that all variables are valid.

SI2	0,851			
SI4	0,810			
Use Barrier		0,916	0,940	0,798
UB1	0,876			
UB2	0,904			
UB3	0,884			
UB4	0,909			
Value Barrier		0,815	0,890	0,730
VB1	0,865			
VB2	0,838			
VB3	0,859			
Risk Barrier		0,867	0,907	0,710
RB2	0,748			
RB3	0,791			
RB4	0,914			
RB5	0,906			
Traditional Barrier		0,832	0,922	0,856
TB1	0,935			
TB2	0,915			
Image Barrier		0,799	0,882	0,713
IB1	0,825			
IB2	0,853			
IB3	0,856			
Innovation Resistance to Use Digital Platform		0,850	0,930	0,870
IR2	0,932			
IR3	0,933			

* *threshold* > 0.90; ** *threshold* > 0.50

Table 4 shows that the R² value of the behavior intention variable is 0.721. It means that, the endogenous variable in the structural mode can be said to be substantial. The R² Adjusted value of the innovation resistance variable is 0.403, and this means that the endogenous variable in the structural mode can be said to be moderate.

Table 4. R Square

	R Square	R Square Adjusted
Behavior Intention to Use	0,721	0,715
Innovation Resistance	0,416	0,403

Table 5. Hypotheses Test

	Hypotheses	Original Sample	Sample Mean	Standard Deviation	T-Statistics	P-Values	Status
H1	Performance Expectancy → Behavior Intention to Use	0,214	0,216	0,054	3,974	0,000	Accepted
H2	Effort Expectancy → Behavior Intention to Use	0,407	0,406	0,063	6,443	0,000	Accepted
H3	Social Influence → Behavior Intention to Use Digital Platform	0,266	0,264	0,051	5,262	0,000	Accepted
H4	Facilitating Condition → Behavior Intention to Use	0,007	0,009	0,045	0,152	0,879	Rejected
H5	Use Barrier → Innovation Resistance to Use	-0,069	-0,065	0,081	0,857	0,391	Rejected
H6	Value Barrier → Innovation Resistance to Use	0,304	0,302	0,085	3,596	0,000	Accepted
H7	Risk Barrier → Innovation Resistance	-0,153	-0,144	0,061	2,506	0,012	Accepted

H8	Traditional Innovation	Barrier Resistance	→	0,120	0,118	0,072	1,675	0,094	Rejected
H9	Image Barrier Resistance	→ Innovation		0,463	0,462	0,086	5,402	0,000	Accepted
H10	Innovation Behavior	Resistance Intention to Use	→	-0,190	-0,190	0,043	4,411	0,000	Accepted

Table 5 shows that three UTAUT factors affect behavior intention to use the platform because it has a t-statistic value > 1.96 and a p-value < 0.05 . Thus H1, H2, and H3 are accepted.

During the COVID-19 pandemic, people began to realize that shopping for marine fish through digital platforms was not only for the sake of maintaining physical distancing but also this method was beneficial for them (Baskhara, 2020). Martínez-Pérez et al. (2013) explain that people are interested in adopting new technology if they realize advantageous of technology in helping them carry out activities in their daily lives. Therefore, in this study performance expectancy is proven to significantly affect behavior intention. Technology that is comfortable to use and can increase productivity will encourage people to use it consistently (Thongsri et al., 2018).

The ease of using technology is another factor that can encourage someone to accept and use technology. Therefore, H2 is accepted. When people have no difficulty using the digital platform, they will accept the presence of the digital fishery platform. That is why effort expectancy has been shown to have a significant effect on behavior intention to use digital fishery platforms. According to Giovanis et al. (2019), the role of platform easiness is even more important for people in countries with lower-tech backgrounds. This statement is evident from the results of this study.

The role of social influence in influencing someone to accept something in a collectivistic cultured society is very dominant. It includes the new technologies adoption. Therefore, this study proves that the H3 is accepted. Social influence impact significantly digital fishery platform acceptance. As Gupta et al. (2019) said that information and encouragement provided by people around, such as friends, family members, colleagues, superiors, can play an important role in contributing to a person's awareness and intention to adopt new technologies.

Facilitating condition variable is not proven to influence behavior intention. Therefore H4 is rejected. Although there are studies that link facilitating conditions with behavior intention (Gupta et al., 2019; Alam et al., 2019; Gunasinghe et al., 2019), in the original UTAUT model (Venkatesh et al., 2003) and several previous studies (Thongsri et al., 2018; Giovanis et al., 2019), facilitating conditions are not associated with behavior intention (Venkatesh et al., 2003). This factor is associated with usage behavior.

Table 5 also shows that three IRT factors, namely the value barrier, risk barrier, and image barrier, are proven to affect innovation resistance. Thus H6, H7, and H9 are proven.

The value is related to how much money someone spends on purchasing using a technology compared to buying in traditional markets. So it is related to monetary value and performance. Users want to take advantage of technology if in their view it will provide benefits, for example, less money will be spent, while performance will increase (Sivathanu, 2019). Because people consider the existence of a digital fishery platform to provide value. They will get cheaper sea fish prices on the one hand, and on the other hand, the buying process does not require going to the market. This will improve their performance. That's why they don't have a value barrier to using a digital fishery platform. This is also evidenced by the respondents' low perception of the value barrier and innovation resistance. Therefore, H6 is accepted. A lower value barrier significantly reduces innovation resistance and increases technology acceptance.

Risk can be related to the losses that users will experience when adopting new technology. It includes the risk of conducting online transactions (Sivathanu, 2019). Because the experience of making purchases online so far is quite safe, people are not worried about security risks if the digital fishery platform is built with a good security system. Therefore, H7 is accepted. Lower risk value significantly reduces innovation resistance and increases technology acceptance.

Image barrier related to hoaxes, negative news, rumors, stereotypes that influence people not to accept new technology (Sivathanu, 2019). The digital fishery platform in this study has not yet been built, but it gives positive hope if the platform is built. That is why, there are no hoaxes, stereotypes, and other negative information related to this platform. Therefore, H9 is accepted. Lower image value significantly reduces innovation resistance and increases technology acceptance.

Table 5 shows that the study also proves that the innovation resistance affects negatively and significantly behavior intention to use the platform. Therefore, H10 is accepted. It means that lower innovation resistance will increase the intention to use the platform. Table 1 and Table 2 show the mean value of innovation resistance indicators less than 3.00. It means the innovation resistance is lower. Then, the mean value of the behavior intention indicator is higher than 3.00. It means the behavior intention is higher.

CONCLUSION

The conclusion of this study is UTAUT factors such as performance expectancy, effort expectancy, and social influence proved to influence people's intention to use digital fishery platforms. The insight obtained from the results of this study is that to build a digital fishery platform must pay attention to the usefulness and ease of use. Promotion by cooperating with influential people also needs to be done because social influence has been proven to affect people's intentions to accept the platform.

This study also finds that value, risk, and image barriers influence innovation resistance significantly. Thus, creating a platform that helps people get cheaper product prices and provides efficiency for the community will reduce resistance and increase the intention to use the platform. The platform must also be built by ensuring its security system. The positive things promised in the launch of the platform must be followed by reality to lower the image barrier. By lowering innovation barriers, it will reduce innovation resistance and increase technology acceptance as evidenced by the results of this study.

Limitations of this study are: First, this study only investigates and tests the model on potential consumers and has not been tested on fishermen. There is a possibility that the innovation barrier will remain among fishermen. Second, the study was only conducted in two provinces, namely Banten and West Java.

Therefore, the recommendations for future research are: First, to test this research model to test the acceptance of the platform among fishermen. Future research will distribute questionnaires to fishermen in Jakarta, Banten, West Java, and Central Java. Second, it is necessary to test this model in future research in a wider area by adding some provinces.

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