

The Effect of the Innovation Resistance Factors on the Digital Fishery Platform Acceptance in Developing Country

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Abstract

Digital fishery platform will be essential to cut the supply chain of seafood products in Indonesia, but the resistance of the innovation using still be a problem in a developing country, for example, in Indonesia. This study investigates the determinant factors of innovation resistance and the impact of innovation resistance on behavior intention to use the digital fishery platform. The questionnaire is shared online. The 393 samples are collected and used. It consists of 120 samples (31 percent) from DKI Jakarta province, 151 samples (38 percent) from Banten province, and 89 samples (23 percent) from West Java province, and 33 samples from other provinces (8 percent). The results are image, risk, traditional, and value barriers influence innovation resistance significantly, but use barrier does not. The image, risk, traditional, and value barriers are also influencing behavior intention mediated by innovation resistance. This study's original is the descriptive analysis shows that it disagrees with innovation resistance and its factors questionnaire and agrees with the behavior intention questionnaire. The conclusion is people do not resist, and there are no barriers to use the digital fishery platform; otherwise, people have the intention to use it. So the platform can be created, and it is hoped can cut the seafood supply chain and increase fish consumption in Indonesia.

Keywords

fishery, innovation resistance, digital platform, behavior intention

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Introduction

According to the Decree of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia No. 50 of 2017, Indonesia has Maximum Sustainable Yield (MSY) of fish resources is 12,541,438 tons per year. Amid the abundance of Indonesian marine products, fish consumption among the Indonesian people is still deficient, at 50.69 kg per capita per year. Apart from the reason Indonesians prefer to consume meat over fish, the high price of fish to the final consumer is also the reason for the low consumption of fish. The range of the selling price to fishers with the final consumer's purchase price is very far. This is due to the inadequate and extended supply chain of marine products due to many intermediaries who take advantage along the supply chain (Hidayat 2019). Purchases of sea fish or other seafood products are mainly still carried out traditionally in supermarkets for the upper-middle class and in traditional markets, especially for the lower middle class. Although the Ministry of Marine Affairs and Fisheries (KKP) has launched an online application for Jakarta residents who want to buy fish from the Muara Baru Modern Fish Market, most seafood purchases are still made traditionally (Baskhara 2020). Creating a digital fishery platform can: firstly, it is easier for consumers to buy fish; secondly, to increase selling prices to fishers and lower prices to end consumers; thirdly to increase consumption of fish or seafood in Indonesia. However, technology barriers may still be an obstacle, especially for housewives who primarily act as consumers who make purchases in Indonesia. Innovation resistance still occurs in developing countries. Factors such as usage barriers, value barriers, and tradition barriers are still proven to cause innovation resistance in developing countries (Ma and Lee 2019). Based on the above problem statement, the research questions are: (1) What factors cause resistance to digital platforms among consumers? (3) How does resistance affect the acceptance of digital platforms among consumers? So, the purpose of the study is to examine the effect of IRT factors on the digital fishery platform as base on the making-decision to build the platform. Therefore, the marine fish supply chain can be cut, the fishers get higher price and consumer get lower price.

Literature Review

The Innovation resistance theory (IRT) is developed by Ram and Sheth (1989). The determinant factors of this IRT are the usage barrier, value barrier, risk barrier, traditional barrier, and image barrier. Usage barrier is a barrier to use new innovation by a user because the user sees it as new appears and different from the current system that the user uses. A value barrier is when users consider the monetary value that users spend is not commensurate with the performance of the innovations offered. A risk barrier is the level of risk that a user expects or is worried about when a user has to use innovation or a new platform. The traditional barrier is the barrier to use innovative technology when users feel that it is contrary to norms, traditions, habits, and behaviors in their family or society. Then, the image barrier is a negative image of the innovation or technology, so people resist using it (Ram and Sheth 1989). A meta-analysis by Leong et al. (2021) shows that the tradition barrier is the strongest barrier to innovation resistance in many previous studies. It is followed by the value, risk, image, and usage barrier. Laukkanen and Kiviniemi (2010) proved that risk, traditional, and image barriers significantly influence innovation resistance to use mobile banking in Finland. Sivathanu (2019) proved that usage, value, risk, traditional, and image barriers influence innovation resistance significantly in digital payment system adoption in India. Jansukpum and Ketttem (2015) found that the usage, risk, value, traditional, and image barriers significantly influence consumer resistance in online travel using in Thailand. Sadiq, Adil, and Paul (2021) examined the effect of IRT factors on the purchase intention of the eco cosmetics products, and proved all IRT factors a negative and significantly influence purchase intention. Kaur et al. (2020) test the effect determinants of innovation resistance on intention to use food delivery applications and found that the use and traditional barriers are proven to influence intention to use significantly, but value, risk, and image barriers do not influence intention to use significantly. Kaur et al. (2020) found use, value, and risk barriers influence use intention of mobile payment in North India, but traditional and image barriers have not significant effect on use intention of mobile payment. Chung and Liang (2020) examine the impact of complexity, image, and risk barriers on usage intention of mobile payments in Taiwan and found except risk barrier, the other barriers that influence usage intention significant. Chemingui and Lallouna (2013)

examine the effect of the usage, value, and risk barriers on the intention to use mobile financial services among Tunisians, but the hypotheses are rejected. But Chemingui and Lallouna (2013) found that traditional barriers influence the intention to use negatively and significantly. The above previous studies show both examine innovation resistance theory and the impact of the IRT factors on use intention in mobile banking and payment, food delivery applications. As far as the search on reputable international journal databases, IRT has never been tested in the context of a digital fishery platform. Therefore, this study examines the conceptual framework in Figure 1.

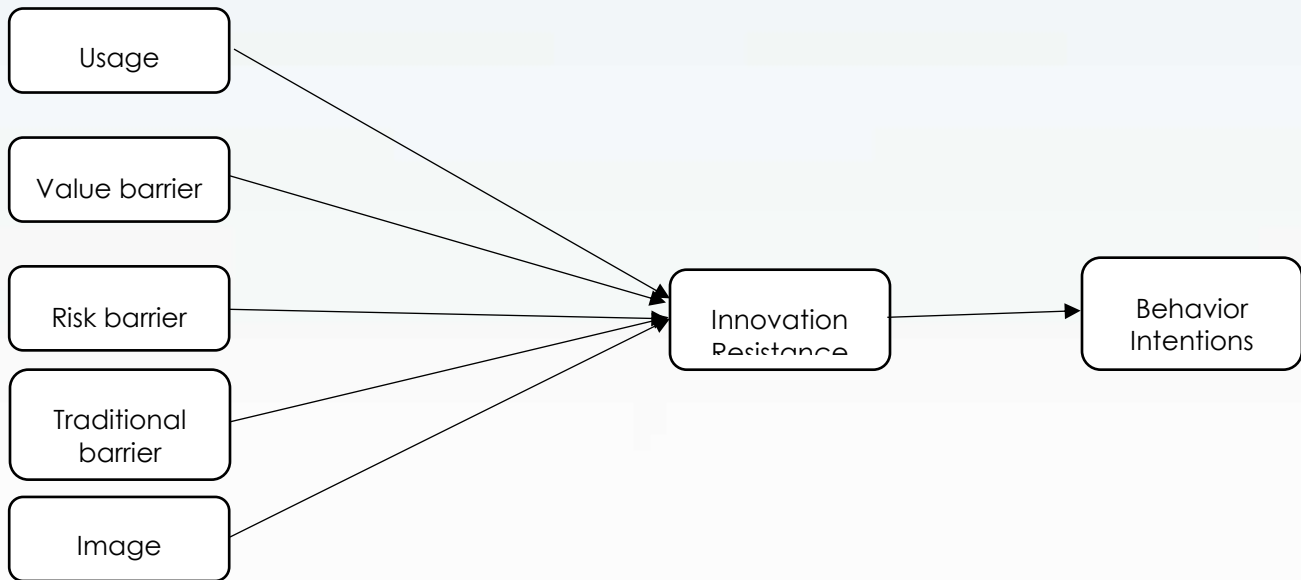


Figure 1. Conceptual Framework

Based on the above conceptual framework, the hypotheses of the study are:

- H1: Usage barrier will influence innovation resistance to use the digital fishery platform in Indonesia.
- H2: Value barrier will influence innovation resistance to use the digital fishery platform in Indonesia.
- H3: Risk barrier will influence innovation resistance to use the digital fishery platform in Indonesia.
- H4: Traditional barrier will influence innovation resistance to use the digital fishery platform in Indonesia.
- H5: Image barrier will influence innovation resistance to use the digital fishery platform in Indonesia.
- H6: Usage barrier will influence behavioral intention to use the digital fishery platform mediated by innovation resistance.
- H7: Value barrier will influence behavioral intention to use the digital fishery platform mediated by innovation resistance.
- H8: Risk barrier will influence behavioral intention to use the digital fishery platform mediated by innovation resistance.
- H9: Traditional barriers will influence behavioral intention to use the digital fishery platform mediated by innovation resistance.
- H10: Image barrier will influence behavioral intention to use the digital fishery platform mediated by innovation resistance.

Method

Population and sample

The population comprises fishery consumers in Indonesia provinces, namely Jakarta, Banten, and West Java, and others. This study uses convenience sampling. The 393 samples are collected and used. And it consists of 120 samples (31 percent) from Jakarta, 151 samples (38 percent) from Banten province, and 89 samples (23 percent) from West Java province, and 33 samples from other provinces (8 percent).

Data collection

Questionnaire shared online to people in three provinces, namely Jakarta, Banten, and West Java. Data collection is conducted from February to May 2021. The collected 393 samples are processed by SmartPLS 3.0.

Instruments Measurement

The research instrument for the Behavioral intention variable was adapted from a questionnaire developed by Venkatesh (2003). The study measures Usage Barrier, Value Barrier, Risk Barrier, Traditional Barrier, and Image Barrier, and Innovation resistance variables by adapting a questionnaire developed by Ram and Sheth (1989).

Analysis technique

The analysis technique of this study PLS-SEM and use SmartPLS 3.0 software, and apply the reflective measurement models. The threshold of the composite reliability is higher than 0.70 (Tjiu and Purwanto 2017), the indicator reliability is higher than 0.70 (Purwanto 2016). The threshold of the convergent validity, as indicated by the AVE value is higher than 0.50 (Karno and Purwanto 2017). The discriminant validity based on Fornell–Larcker criterion and an indicator's loadings should be higher than all of its cross-loadings (Hair, Ringle, and Sarstedt 2011). The criteria of R^2 values for the structural model are 0.75 (substantial), 0.50 (moderate), and 0.25 (weak) (Hair et al. 2011).

Result

Descriptive Analysis

Table 1 shows that most of the respondents' answers on the independent variables questionnaire questions strongly disagreed and disagreed, and several are neutral. It shows that those people do not face image barriers, risk barriers, traditional barriers, usage barriers, and value barriers. It means if the digital fishery platform is launched, those people have no problem using it.

Table 1.
Descriptives of Independent Variables

	Mean	Median	Min	Max	Number of Observations Used
IB1	2.819	3.000	1.000	5.000	393.000
IB2	2.359	2.000	1.000	5.000	393.000
IB3	2.728	3.000	1.000	5.000	393.000
RB1	3.234	3.000	1.000	5.000	393.000
RB2	2.807	3.000	1.000	5.000	393.000
RB3	2.896	3.000	1.000	5.000	393.000
RB4	3.020	3.000	1.000	5.000	393.000
RB5	3.107	3.000	1.000	5.000	393.000
TB1	3.567	3.000	1.000	5.000	393.000
TB2	3.298	3.000	1.000	5.000	393.000
UB1	2.148	2.000	1.000	5.000	393.000
UB2	2.382	2.000	1.000	5.000	393.000
UB3	2.407	2.000	1.000	5.000	393.000
UB4	2.407	2.000	1.000	5.000	393.000
VB1	2.529	2.000	1.000	5.000	393.000

VB2	2.959	3.000	1.000	5.000	393.000
VB3	2.608	3.000	1.000	5.000	393.000

Table 2 shows that respondents' responses to the questionnaire questions on innovation resistance have disagreed. It shows those people do not have resistance to use innovation or technology. If the digital fishery platform is launched, those people do not have resistance to use it.

Table 3 shows that respondents' answer to the questionnaire questions of the intention to use the digital fishery platform, those people agrees.

Table 2.

Descriptives of the Mediation Variable

	Mean	Median	Min	Max	Number of Observations Used
IR2	2.366	2.000	1.000	5.000	393.000
IR3	2.137	2.000	1.000	5.000	393.000

Table 3.

Descriptives of the Dependent Variable

	Mean	Median	Min	Max	Number of Observations Used
BI1	3.807	4.000	1.000	5.000	393.000
BI2	3.361	3.000	1.000	5.000	393.000
BI4	3.870	4.000	1.000	5.000	393.000
BI5	3.794	4.000	1.000	5.000	393.000
BI6	4.120	4.000	1.000	5.000	393.000

Outer Model Evaluation

In the first Smart PLS processing, several items are unreliable. Therefore, it is removed in the next Smart PLS processing. BI3, UB5, and IR1 are removed because the loading factor is <0.70 (Purwanto, Utama, and Wijaya 2018). Figure 2 and Table 4 shows that Indicator Loading of all items of the constructs is reliable. It is after the unreliable items at previous Smart PLS 3.0 running are removed. All items are higher than 0.70. So, all indicator meets indicator reliability (Jauw and Purwanto 2017).

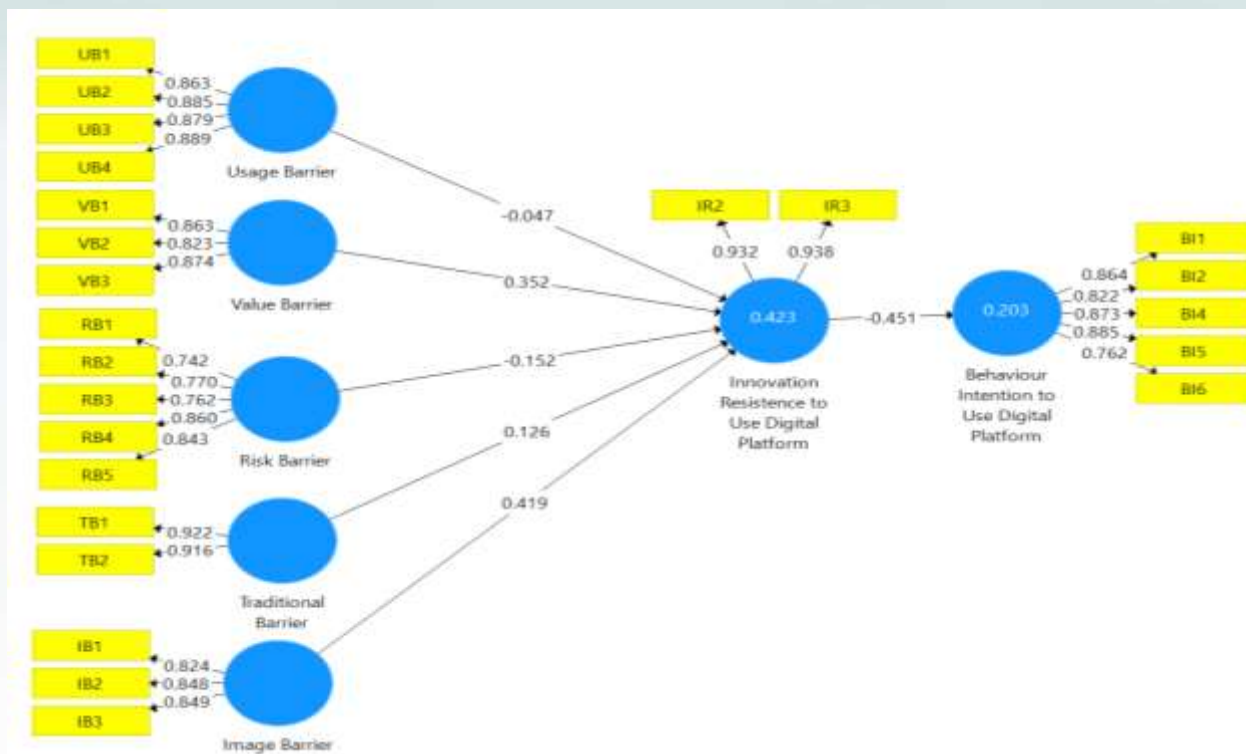


Figure 2. Outer Model

Table 4 shows that Cronbach's Alpha value of all constructs is higher than 0.70, and the Composite Reliability value of all construct is higher than 0.70. So, all constructs meet composite reliability (Purwanto 2016; Purwanto, Deviny, and Mutahar 2020).

Table 4.

Composite and Indicator Reliability

Construct	Items	Indicator Loading*	Cronbach's Alpha*	Composite reliability*	Status
Behaviour Intention	BI1	0.864	0.897	0.924	Reliable
	BI2	0.822			
	BI4	0.873			
	BI5	0.885			
	BI6	0.762			
Image Barrier	IB1	0.824	0.792	0.878	Reliable
	IB2	0.848			
	IB3	0.849			
Innovation Resistance	IR2	0.932	0.856	0.933	Reliable
	IR3	0.938			
Risk Barrier	RB1	0.742	0.860	0.896	Reliable
	RB2	0.770			
	RB3	0.762			

	RB4	0.860			
	RB5	0.843			
Traditional Barrier			0.816	0.916	Reliable
	TB1	0.922			
	TB2	0.916			
Use Barrier			0.902	0.932	Reliable
	UB1	0.863			
	UB2	0.885			
	UB3	0.879			
	UB4	0.889			
Value Barrier			0.814	0.890	Reliable
	VB1	0.863			
	VB2	0.823			
	VB3	0.874			

* Threshold > 0.70 (Karno and Purwanto 2017)

Table 5 show that Average Variance Extracted (AVE) value of all constructs is higher than 0.50. So, all construct meets convergent validity (Tjiu and Purwanto 2017; Purwanto and Purwanto 2020).

Table 5.
Convergent validity

Construct	Average Variance Extracted (AVE)	Threshold	Status
Behaviour Intention to Use Digital Platform	0.710	> 0.50	Valid
Image Barrier	0.706	> 0.50	Valid
Innovation Resistance to Use Digital Platform	0.874	> 0.50	Valid
Risk Barrier	0.634	> 0.50	Valid
Traditional Barrier	0.845	> 0.50	Valid
Usage Barrier	0.773	> 0.50	Valid
Value Barrier	0.729	> 0.50	Valid

Table 6 shows that according to Fornell–Larcker criterion, the AVE of each latent construct is higher than other latent constructs. Therefore, all constructs meet discriminant validity.

Table 6.
Discriminant validity (Fornell-Larcker Criterion)

	BI	IB	IR	RB	TB	UB	VB
BI	0.842						
IB	-0.265	0.840					
IR	-0.451	0.573	0.935				
RB	-0.197	0.548	0.325	0.797			
TB	-0.363	0.489	0.439	0.511	0.919		
UB	-0.087	0.556	0.337	0.490	0.303	0.879	
VB	-0.401	0.573	0.549	0.587	0.567	0.532	0.854

Table 7.
Discriminant validity (Cross Loadings)

	BI	IB	IR	RB	TB	UB	VB
BI1	0.864	-0.229	-0.396	-0.183	-0.308	-0.030	-0.351
BI2	0.822	-0.181	-0.292	-0.159	-0.377	-0.012	-0.303
BI4	0.873	-0.271	-0.425	-0.203	-0.349	-0.135	-0.393
BI5	0.885	-0.240	-0.391	-0.159	-0.332	-0.083	-0.360
BI6	0.762	-0.178	-0.371	-0.120	-0.174	-0.086	-0.268
IB1	-0.280	0.824	0.488	0.438	0.474	0.347	0.510
IB2	-0.093	0.848	0.481	0.467	0.336	0.588	0.408
IB3	-0.294	0.849	0.475	0.476	0.423	0.468	0.527
IR2	-0.422	0.514	0.932	0.300	0.426	0.306	0.489
IR3	-0.421	0.556	0.938	0.308	0.395	0.323	0.537
RB1	-0.332	0.496	0.356	0.742	0.462	0.405	0.595
RB2	-0.014	0.402	0.226	0.770	0.351	0.412	0.382
RB3	-0.013	0.393	0.169	0.762	0.369	0.381	0.365
RB4	-0.152	0.418	0.224	0.860	0.405	0.358	0.452
RB5	-0.133	0.412	0.232	0.843	0.390	0.370	0.428
TB1	-0.419	0.418	0.410	0.453	0.922	0.235	0.560
TB2	-0.246	0.483	0.396	0.486	0.916	0.323	0.481
UB1	-0.050	0.438	0.307	0.378	0.219	0.863	0.406
UB2	-0.109	0.474	0.274	0.422	0.239	0.885	0.478
UB3	-0.092	0.499	0.296	0.452	0.309	0.879	0.508
UB4	-0.059	0.545	0.304	0.469	0.296	0.889	0.481
VB1	-0.313	0.469	0.496	0.510	0.456	0.507	0.863
VB2	-0.413	0.448	0.407	0.482	0.521	0.343	0.823
VB3	-0.315	0.547	0.495	0.510	0.484	0.494	0.874

Table 7 shows that an indicator's loadings are higher than all of its cross-loadings. Therefore, each indicator meets discriminant validity.

Inner Model Evaluation

Table 8 shows that the R² value of the innovation resistance is 0.423, and behavior intention is 0.20. The values indicate that the structural model is moderate.

Table 8.
R Square

	R Square	R Square Adjusted
Behaviour Intention to Use Digital Platform	0.203	0.201
Innovation Resistance to Use Digital Platform	0.423	0.416

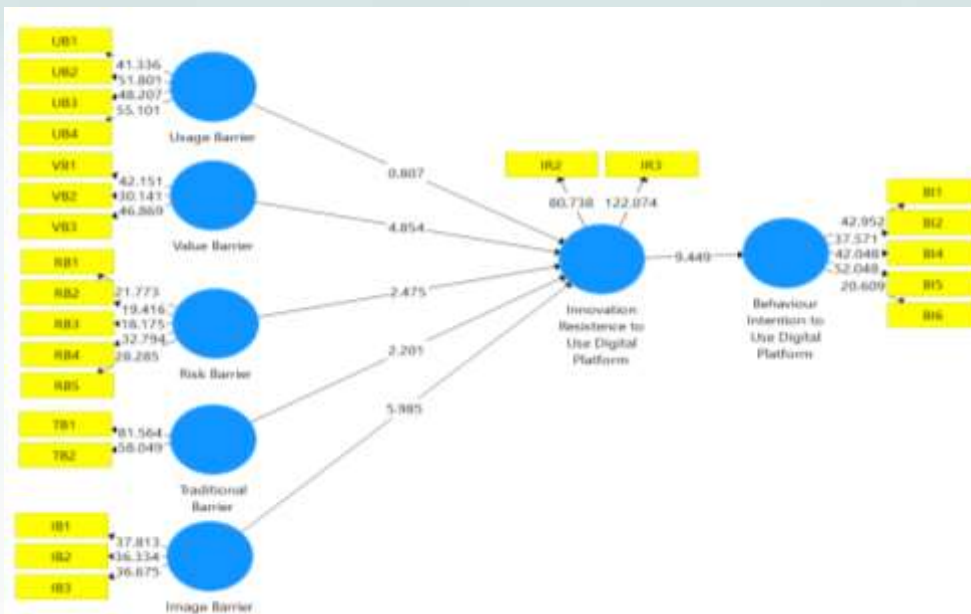


Figure 2. Inner Model

Figure 2 and Table 9 shows that except for the use barrier variable, all determinant factors of innovation resistance at the theoretical framework are proven to be positive and significant.

Table 1 shows that people do not face the barriers to using digital platforms, and Table 2 shows that people do not resist using the digital fishery platform when it comes. Because those people have no value, risk, traditional, and image barriers, people do not resist using digital platforms. The impact of the innovation resistance on the behaviour intention to use digital fishery platform is proven negative and significant. It means when the innovation resistance decrease. Then behaviour intention will increase. The study show because people do not resist using the digital platform. Therefore people have the intention to use the digital fishery platform Table 10 shows the indirect effects of image barrier on behaviour intention to use digital fishery platform is mediated by innovation resistance is negative and significant. It means when the image barrier decrease, then the behaviour intention to use will increase. Table 1 shows that people do not have to image barrier, and Table 3 shows that people have the intention to use a digital fishery platform. Therefore, the absence of an image barrier has been shown to increase the intention to use a digital fishery platform.

Table 9.
Path Coefficients

	Original Sample	T Statistics*	P Values**	Status
Image Barrier -> Innovation Resistance to Use Digital Platform	0.419	5.985	0.000	Accepted
Innovation Resistance to Use Digital Platform -> Behaviour Intention to Use Digital Platform	-0.451	9.449	0.000	Accepted
Risk Barrier -> Innovation Resistance to Use Digital Platform	-0.152	2.475	0.013	Accepted
Traditional Barrier -> Innovation Resistance to Use Digital Platform	0.126	2.201	0.028	Accepted
Usage Barrier -> Innovation Resistance to Use Digital Platform	-0.047	0.807	0.419	Rejected
Value Barrier -> Innovation Resistance to Use Digital Platform	0.352	4.854	0.000	Accepted

* threshold >1.96, ** threshold < 0.05 (Dapas et al. 2019)

Table 10.
Total Indirect Effects

	Original Sample	T Statistics*	P Values**	Status
Image Barrier -> Behaviour Intention to Use Digital Platform	-0.189	5.387	0.000	Accepted
Risk Barrier -> Behaviour Intention to Use Digital Platform	0.069	2.340	0.019	Accepted
Traditional Barrier -> Behaviour Intention to Use Digital Platform	-0.057	2.069	0.039	Accepted
Usage Barrier -> Behaviour Intention to Use Digital Platform	0.021	0.787	0.431	Rejected
Value Barrier -> Behaviour Intention to Use Digital Platform	-0.159	3.952	0.000	Accepted

* threshold >1.96, ** threshold < 0.05 (Handi et al. 2018)

Table 1 shows that people do not have to risk barriers to use technology, and Table 3 shows that people intend to use digital fishery platforms. Table 10 show that risk barrier impact on behaviour intention to use digital platform mediated by innovation resistance. Table 1 shows that people have not a traditional barrier to use technology, and Table 3 shows that people intend to use digital fishery platforms. Table 10 show that the traditional barrier is proven to influence behaviour intention to use the digital fishery platform mediated by innovation resistance. Table 1 shows that people do not have to value barriers to use technology, and Table 3 shows that people intend to use digital fishery platforms. Table 10 show that the value barrier negative and significant effect on behaviour intention to use digital platforms mediated by innovation resistance.

Conclusion

The result of the study is: (1) The value barriers influence innovation resistance directly and behavior intention indirectly. The descriptive analysis shows that the image barriers and innovation resistance are low, but behavior intention is high. It means people do not have to image barrier and innovation resistance, and people have the intention to use digital fishery platform. (2) The risk barrier influences innovation resistance directly and behavior intention indirectly, but the descriptive analysis shows that the risk barrier is low. It means people have no risk barrier and innovation resistance, and people intend to use the digital fishery platform. (3) The traditional barrier influence innovation resistance directly and behavior intention indirectly, but the descriptive analysis shows that the traditional barrier is low. It means people have not the traditional barrier and innovation resistance, and people have the intention to use the digital fishery platform. (4) The image barrier influence innovation resistance directly and behavior

intention indirectly, but the descriptive analysis shows that the image barrier is low. It means people have not the image barrier and innovation resistance, and people have the intention to use the digital fishery platform. (5) The usage barrier does not influence innovation resistance directly and behavior intention indirectly. Therefore, people do not resist, and there are no barriers to using the digital fishery platform. Otherwise, people have the intention to use it. So the platform can be created, and it is hoped can cut the seafood supply chain and increase fish consumption in Indonesia. The study's limitations are: (1) Sample is collected from DKI Jakarta, Banten, and West Java provinces and small amount sample from other provinces. It is because we have limited time, networks, resources, and grants. (2) The questionnaire is shared with consumers only, and it needs to be shared with fishers. Base on the limitations, then the recommendation for future research is: (1) the future research will expand the research area by taking samples from all provinces in Indonesia. (2) The future research will also take a sample from fishers in Indonesia. So when it is found that both consumer and fishers have low resistance and high intention to use digital fishery platform, then the platform can be implemented to cut the seafood supply chain in Indonesia. It will increase fishers' income and increase seafood consumption among people in Indonesia.

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