ICOSET & ICOSEEH

2019

BOOK of ABSTRACTS

The Second International Conference on Science, Engineering and Technology (ICoSET 2019)

&

The Second International Conference on Social, Economy, Education, and Humanity (ICoSEEH 2019)

September 5-7, 2019. Universitas Islam Riau, Pekanbaru, Indonesia.

ICOSET & ICOSEEH 2019

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FOREWORD FROM CHAIR OF ICoSET AND ICoSEEH
UNIVERSITAS ISLAM RIAU

In the name of Allah, Most Gracious, Most Merciful

Assalamu'alaikum Wr. Wb.,

Welcome to the Second International Conference on Science Engineering and Technology (ICoSET 2019) and the Second International Conference on Social, Economy, Education, and Humanity (ICoSEEH 2019).

The advancement of today's computing technology, science, engineering and industrial revolution 4.0 play a big role in the sustainable development of social, economic, education, and humanity in developing countries. Institute of higher education is one of many parties that need to be involved in the process. Academicians and researchers should promote the concept of sustainable development. The Second International Conference on Social, Economy, Education, and Humanity (ICoSEEH 2019) is organized to gather researchers to disseminate their relevant work on Social, Economy, Education, and Humanity. The Second International Conference on Science, Engineering and Technology (ICoSET 2019) is organized to gather researchers to disseminate their relevant work on science, engineering and technology. The two conferences are co-located at SKA Co-EX Pekanbaru Riau.

I would like to express my hearty gratitude to all participants for coming, sharing, and presenting your research in this joint conference. There are a total of 108 manuscripts submitted to ICoSEEH 2019 and 84 manuscripts submitted to ICoSET 2019. However only high-quality selected papers are accepted to be presented in this event, with the acceptance rates of ICoSEEH 2019 and ICoSET 2019 are 72% and 74% respectively. We are very grateful to all steering committees and both international and local reviewers for their valuable work. I would like to give a complement to all co-organizers, publisher, and sponsors for their incredible supports.

Organizing such prestigious conferences was very challenging and it would be impossible to be held without the hard work of the programme committee and organizing committee members. I would like to express my sincere gratitude to all committees and volunteers from Singapore Management University, Kyoto University, Kyushu University, University of Tsukuba, Khon Kaen University, Ho Chi Minh City University of Technology, University of Suffolk, Universiti Teknologi Malaysia, Infrastructure University Kuala Lumpur, Universiti Malaya, Universiti Kebangsaan Malaysia, Universiti Utara Malaysia, Universiti Teknologi Mara, and Universiti Pendidikan Indonesia for providing us with so much support, advice, and assistance on all aspects of the conference. We do hope that this event will encourage the collaboration among us now and in the future.

We wish you all find opportunity to get rewarding technical programs, intellectual inspiration, and extended networking.

Pekanbaru, 27th August 2019

Dr. Arbi Haza Nasution, M.IT

Chair of ICoSET & ICoSEEH 2019

FOREWORD FROM RECTOR
UNIVERSITAS ISLAM RIAU

It is our great pleasure to join and welcome all participants of the International Conference on Science Engineering and Technology (ICoSET) 2019 and International Conference on Social Economic Education and Humaniora (ICoSEEH) 2019 in Pekanbaru. I am happy to see this great work as part of collaborations among Singapore Management University, Kyoto University, Kyushu University, University of Tsukuba, Khon Kaen University, Ho Chi Minh City University of Technology, University of Suffolk, Universiti Teknologi Malaysia, Infrastructure University Kuala Lumpur, Universiti Malaya, Universiti Kebangsaan Malaysia, Universiti Utara Malaysia, Universiti Teknologi Mara, and Universiti Pendidikan Indonesia. In this occasion, I would like to congratulate all participants for their scientific involvement and willingness to share their findings and experiences in this conference.

I believe that this conference can play an important role to encourage and embrace cooperative, collaborative, and interdisciplinary research among the engineers and scientists. I do expect that this kind of similar event will be held in the future as part of activities in education, research and social responsibilities of universities, research institutions and industries internationally.

My heart full gratitude is dedicated to programme committee and organizing committee members and the staff of Universitas Islam Riau for their generous effort and contribution toward the success of the ICoSET & ICoSEEH 2019.

Pekanbaru, 27th August 2019

Prof. Dr. H. Syafrinaldi, SH.,MCL
Rector of Universitas Islam Riau
Pekanbaru, Indonesia

KEYNOTE SPEAKERS

The Second International Conference on Science, Engineering and Technology

(ICoSET 2019)

September 5-7, 2019. Universitas Islam Riau, Pekanbaru, Indonesia.

KEYNOTE SPEAKER 1

Prof. EE-Peng Lim (Singapore Management University, Singapore)

Social Network Mining

KEYNOTE SPEAKER 2

Assoc. Prof. Yuichi Sugai (Kyushu University, Japan)

Resources Production Engineering

KEYNOTE SPEAKER 3

Prof. Ir. Dr Sharul Kamal Abdul Rahim (Universiti Teknologi Malaysia)

Wireless Communication

KEYNOTE SPEAKER 4

Assoc. Prof. Dr. Norma binti Alias (Universiti Teknologi Malaysia)

Mathematical Sciences

KEYNOTE SPEAKERS

The Second International Conference on Social, Economy, Education, and Humanity

(ICoSEEH 2019)

September 5-7, 2019. Universitas Islam Riau, Pekanbaru, Indonesia.

KEYNOTE SPEAKER 1

Prof. Shigeo Sugimoto (University of Tsukuba, Japan)

Cultural Heritage Preservation

KEYNOTE SPEAKER 2

Prof. Dr. Kulthida Tuamsuk (Khon Kaen University, Thailand)

Smart Learning

KEYNOTE SPEAKER 3

Prof. Dr. Faridah Ibrahim (Malaysia Infrastructure University , Kuala Lumpur)

Journalism and Communication

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environment data sensing by a wide variety of sensors and environment factors control with some mechanics driven by smart actuators. This sensors and actuators are used for real-time monitoring, analysis and collection of information about the farm conditions like weather, moisture, temperature, humidity, fertility of soil and level of water. Essential data were gather by means of observation and in-depth interview with Ifugao farmers and employees of Yao Jia Xi Corporation – Alfonso Lista, Ifugao. The developed framework provides holistic foundation in the development of IoT-driven system for high valued crops farming with low cost and easy implementation.

Digital Forensics: Acquisition and Analysis on CCTV Digital Evidence Using Static Forensic Method based on ISO /IEC 27037:2014

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Keywords: Digital, Evidence, Forensic, Law, Acquisition, Multimedia.

Conventional crime has existed since the beginning of human civilization where evidence and artifacts can be used as assumptions to prove crime. Every criminal who is proven to have committed a certain crime will be convicted in accordance with the stipulated law. In this paper, there is a conventional crime case that can be proven to be a crime with digital technology, namely CCTV. Digital evidence obtained from CCTV footage can be used as an assumption of the extent of crimes committed by criminals. Unfortunately, the quality of the recording is not easy to analyze due to the lack of resolution of the video recording and the lack of lighting in certain conditions. The analysis that will be carried out in this case uses visual manipulation tools called Adobe Lightroom and other supporting tools. Digital forensic implementation and digital evidence handling procedures are used to handle this case using the forensic static method.

Testing The Role of Fish Consumption Intention as Mediator

Junaidi[1], Desi Ilona[2], Zaitul[3], and Harfiandri Damanhuri[1]
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Keyword: Theory of Plan Behaviour, Consumption Behaviour

This research investigate the role of an intention to consume fish as mediating variables between six variables (three variables from theory of plan behaviour and others from (Tomic, Matulic, and Jelic 2016). Theory of plan behaviour is applied to understand the phenomena's. The data is analysed using the structural equation model (SEM). The finding show that an intention to consume fish is succeeding in mediating relationship between attitude toward fish consumption and consumption behaviour. However, the effect of other variables (subjective norm, perceived behavioural control, healthy, availability and responsibility) on consumption behaviour is not successfully mediated by an intention to consume fish. This study has theoretical and practical implication and they are discussed in this paper.

Four Types of Moral Holistic Values for Revolutionizing the Big Data Analytics in IoT-based Applications Norma Alias

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The high data speed generated by sensor devices has led to an awareness of the potential impact of big data analytics (BDA) and the Internet of Things (IoT). This paper highlights 4 types of moral holistic values for BDA analyzer, system developer, data provider and user in integrating the BDA and IoT applications. Being ethical is about confronting ethical issues. Wisdom, glory morality, courage, and justice are important holistic values for handling data sharing, data collaboration and data analytics. Four moral holistic values will reduce the gap between IoT, human and practice to improve the performance and revolutionize the performance of BDA and IoT-based applications.

Expert Systemto Detect Early Depressionin Adolescents Using DASS42

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Keywords: Case Based Reasoning, DASS 42, Expert System.

Around 5% adolescents in Indonesia suffer from depression at the certain time. To identify the level of depression, direct consultation with an expert like alienist or psychologist is needed. However, the problem is the number of experts in hospital and culture social environment is limited, also the society is not used to do consultation to alienist or psychologist. There fore,asys temthat can help theme dicalto detectearly depression disorderis needed, before thea do les cents dot he next consultation to them edical. Thesystemcalledasexpert system with web based which built by Case Based Reasoning (CBR) and using Simple Matching Coefficient (SMC) method

Testing the role of fish consumption intention as mediator

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Keyword: theory of plan behaviour, intention to consume, consumption behaviour

Abstract: this research investigate the role of an intention to consume fish as mediating variables between six variables (three variables from theory of plan behaviour and others from (Tomic, Matulic, and Jelic 2016). Theory of plan behaviour is applied to understand the phenomena's. The data is analysed using the structural equation model (SEM). The finding show that an intention to consume fish is succeeding in mediating relationship between attitude toward fish consumption and consumption behaviour. However, the effect of other variables (subjective norm, perceived behavioural control, healthy, availability and responsibility) on consumption behaviour is not successfully mediated by an intention to consume fish. This study has theoretical and practical implication and they are discussed in this paper.

1. BACKGROUND OF STUDY

Consumption of sea food has been varying substantialy across countries, family and individually (Olsen 2004). In country level, European country consume fish 20 kg per capita and 39 kg in Indonesia (Tran et al. 2017). In addition, (Olsen 2003) identified the stream of research regarding to the individual fish consumption behaviour: socio-economics and demographic perspectives, and psychological perspective. From psychological perspective, food consumption behaviour and choice is explained by psychological constructs, such as social norm, belief, attitude, motivation, knowledge and other psychological variables (Shepherd and Raats 1996). Fish consumption has several reasons, such as diet, nutrition, and etc. (Carlucci et al. 2015). In fact, fresh fish consumption at least twice a week have a positively effect on health (Sioen et al. 2008). The research question regarding to the fish consumption behaviour is why the fish consumption behaviour varies. There are several previous researches investigating the fish consumption behaviour among individual (Tomic, Matulic, and Jelic 2016; Badr, Salwa, and Ahmed 2015; Thorsdottir et al. 2012; Murray, Wolff, and Patterson 2017; Khan, Aldosari, and Hussain 2018; Birch and Lawley 2012; Miloševic et al. 2012; Cardoso et al. 2013; Grieger, Miller, and Cobiac 2012). From the previous studies, there is a lack of studies investigating the fish consumption behaviour using the Indonesia's data. further, there is limited studies determining the role of an intention to consume fish as mediating variable between attitude, subjective norm, perceived behavioural control (Ajzen 1991) and other variables are being tested by (Tomic, Matulic, and Jelic 2016): healthy, availability and responsibility. Therefore, this study investigate the mediating role of an intention to consume fish between six variables and consumption behaviour. Therefore, we test six hypotheses:

H1: Intention to consume fish mediate the relationship between attitude and fish consumption behaviour
H2: Intention to consume fish mediate the relationship between subjective norm and fish consumption behaviour
H3: Intention to consume fish mediate the relationship between perceived behaviour control and fish consumption behaviour
H4: Intention to consume fish mediate the relationship between healthy and fish consumption behaviour
H5: Intention to consume fish mediate the relationship between availability and fish consumption behaviour
H6: Intention to consume fish mediate the relationship between responsibility and fish consumption behaviour

This paper is organised into four sessions. First session is discussed about the research background. Method and material is in second session. It is followed finding and discussion as third session. Finally, this paper is closed by conclusion and recommendations.

2. METHOD AND MATERIAL

Academics staffs working in private university in Padang is research object. There are 301 questioners distributed to respondent, 18.27% of respondents returned the questioner. Primary data is applied by using survey method (on-line). There are three type of latent variables used here: latent dependent variable (fish consumption behaviour), latent independent variables (attitude toward fish consumption, availability, fish consumption behaviour, healthy, perceived behavioural control, responsibility, and subjective norm), and latent mediating variable (intention to consume fish). Fish consumption behaviour refers to how often respondent consume fish the last few month (Tomic, Matulic, and Jelic 2016). In addition, intention to consume fish has two items adopted from (Ajzen 1991). Further, attitude toward fish consumption is measured by five items where two items adopted from (Tomic, Matulic, and Jelic 2016) and other three items was taken from (Verbeke and Vackier 2005). Thus, subjective norm has four items suggested by (Verbeke and Vackier 2005). Moreover, perceived behavior control is measured by three items taken from (Verbeke and Vackier 2005). Healthy (involvement in health) has three items taken from (Altintzoglou et al. 2011). Fish availability is measured by three items from (Myrland et al. 2000). Finally, three item is used to measure the responsibility (moral obligation) taken from (Verbeke and Vackier 2005). All constructs are assessed using the 5-point Likert scale (1=strongly disagree, 5=strongly agree). SEM-PLS is applied to analyse the research data (Chin 1998; Vinzi et al. 2010). In this case, smart-pls is used (Joseph F Hair et al. 2017). Two

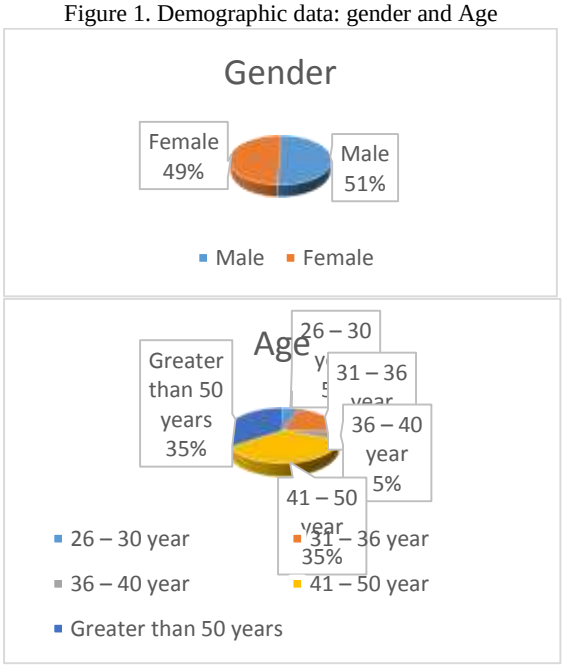
assessment is conducted to gain the confirmed measurement model and rigorous structural model (J. Hair et al. 2014). In measurement model, we have to assess two types of validity: convergent validity and discriminant validity (J. F. Hair et al. 2013). Structural model is aimed for test the relationship (Joseph F Hair et al. 2017). Mediation role is tested using (Zhao, Lynch, and Chen 2010)'s mechanism.

3. RESULT AND DISCUSSION

3.1 Demographic data

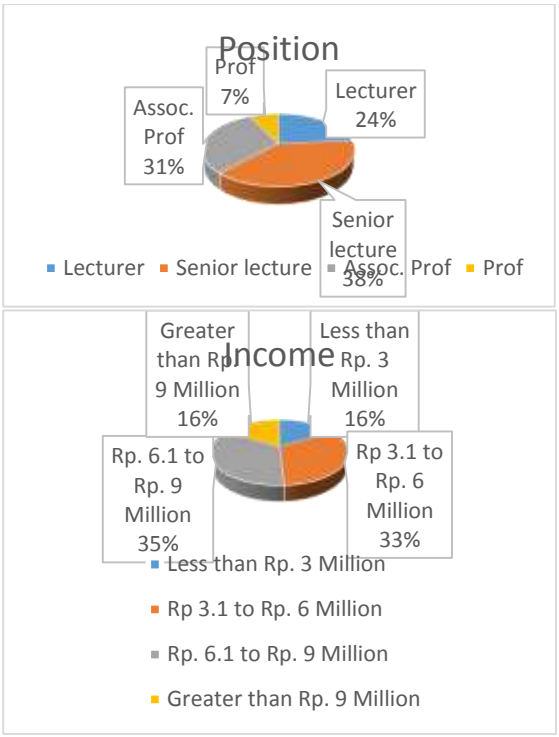
Data demography is classified into four types: gender, age, position and income. figure 1 show respondent gender and age. Regarding to respondent age, 49% of respondent is female and the rest is male (51%). In addition, respondent with age of 26-30-year-old is about 5%. Thus, 20% of respondent is with age of 36-40 years old. Further, respondent with age of 36-40 years old is 5% and followed by 35% of respondent with age of 41-50 years old. Moreover, respondent with age more than 50 years old is 35%.

Figure 1. Demographic data: gender and Age



On other two demographic data is respondent career position and income. Figure 2 provide us with the percentage of position and income of respondents. There are four type of lecture position: lecturer (24%), senior lecturer (38%), associate professor (31%) and professor (7%). In addition, respondent with income of less than Rp. 3 million is 16% and followed by 33% respondent with income of Rp. 3.1- Rp. 6 million. Thus, respondent with Rp. 6.1 –Rp. 9 million of income is 35% and finally 16% respondent is with income of more than Rp. 6 million.

Figure 2. demographic data: position and income



3.2 Measurement model assessment

as mention in the previous session, there are two assessments while using smart-pls: measurement model assessment and structural model assessment (Joseph F Hair et al. 2017). Table 1 demonstrate the result of measurement model assessment for convergent validity. There are four smart-pls properties used here: outer loading, Cronbach's alpha, composite reliability and average variance extracted (AVE). All items have an outer loading greater than 0.700 for first algorism, except for item of perceived behavioural control (pbc2, and pbc3). Having deleted these two items, the second algorism has been run and thereafter, all items have an outer loading greater than 0.700. therefore, it reached the convergent validity requirement (Hulland 1999). Second convergent validity assessment is Cronbach's Alpha (CA) and Composite reliability (CR) and their value must exceed 0.700 (Bagozzi and Yi 1988). As indicated by value of CA and CR (5th and 6th Colum), their values are above the smart-pls requirement: above 0.70. Finally, average variance extracted (AVE)'s value should be greater than 0.500. the result show that all constructs have AVE's value above 0.500 and therefore, it can be concluded that it achieves the cut off value.

Table 1
Measurement Model Assessment
Convergent validity

construct	Item	OL	CA	CR	AVE
attitude toward fish	atf1	0.94	0.94	0.96	0.81
	atf2	0.91			
	atf3	0.83			
	atf4	0.93			
	atf5	0.90			
availability	ava1	0.87	0.89	0.91	0.79
	ava2	0.81			
	ava3	0.96			

fish con beh	fcb	1.00	1.00	1.00	1.00
healthy	h1	0.88	0.79	0.87	0.70
	h2	0.76			
	h3	0.87			
intention to consume fish	icf1	0.99	0.98	0.99	0.97
	icf2	0.98			
	icf3	0.98			
subjective norm	nor1	0.90	0.86	0.90	0.71
	nor2	0.73			
	nor3	0.90			
	nor4	0.81			
perceived behaviour control	pbc1	1.00	1.00	1.00	1.00
responsibility	res1	0.95	0.94	0.96	0.90
	res2	0.97			
	res3	0.92			

Discriminant validity is the second assessment for measurement model. There are three type of assessment for discriminant validity: Fornell-Lacker criterion (Fornell and Larcker 1981), cross loading (Jorg Henseler, Ringle, and Sinkovics 2009) and Heterotrait-Monotrait ratio (Jörg Henseler, Ringle, and Sarstedt 2015). Table 2 demonstrate the result of discriminant validity using Fornell-Lacker criterion. Square root AVE of a construct should be higher than the correlation between that construct with other construct. For example, square root AVE of ICF (0.984) is greater than its correlation with other construct (0.517 with ATF, 0.032 with AVA and etc). Therefore, it can be concluded that discriminant validity requirement using Fornell-Lacker criterion is achieved(Fornell and Larcker 1981).

Table 2
Measurement Model Assessment
Discriminant validity-Fornel-Lacker Criterion

cons	ICF	ATF	AVA	FCB	H	PBC	RES	NOR
ICF	**0.98**							
ATF	0.52	**0.90**						
AVA	0.03	0.12	**0.88**					
FCB	0.43	0.72	-0.07	**1.00**				
H	0.25	0.63	0.09	0.38	**0.84**			
PBC	0.17	0.00	0.31	-0.05	-0.17	**1.00**		
RES	0.28	0.63	0.09	0.50	0.52	-0.05	**0.95**	
NOR	0.23	0.57	0.21	0.41	0.54	-0.13	0.76	**0.84**

Note: ICF (intention to consume fish), ATF (attitude toward fish consumption), AVA (avalaibality), (FCB) fish consumption behaviour, H (healthy), PBC (perceived behavioural control), RES (responsibility), and NOR (subejctive norm).

Second assesment for discriminant validity is cross loading (Wong 2013). The result of cross-loading can be seen in Table 3 below. The cross-loading refers to loading an indicator should be higher to its assigned construct (Jorg Henseler, Ringle, and Sinkovics 2009). For example, items for ICF construct is higher loading to ICF (bold) compared to other construct (non-bold). It also happens to other items. Therefore, the discriminant validity using cross-loading is reached.

Table 3
Measurement Model Assessment
Discriminant validity-Cross Loading

Items	ICF	AVA	FCB	H	ICF	PBC	RES	NOR
atf1	**0.94**	0.08	0.72	0.61	0.54	-0.03	0.54	0.50
atf2	**0.91**	0.02	0.70	0.52	0.49	-0.00	0.51	0.41
atf3	**0.83**	0.20	0.56	0.60	0.36	0.10	0.57	0.48
atf4	**0.93**	0.17	0.62	0.58	0.45	0.01	0.65	0.61
atf5	**0.90**	0.19	0.63	0.53	0.43	-0.05	0.59	0.57
ava1	0.10	**0.87**	0.01	0.16	0.02	0.20	0.11	0.21
ava2	0.17	**0.82**	-0.02	0.21	0.01	0.32	0.17	0.23
ava3	0.11	**0.96**	-0.10	0.03	0.04	0.33	0.06	0.19
fcb	0.72	-0.07	**1.00**	0.38	0.43	-0.05	0.50	0.41
h1	0.56	0.10	0.30	**0.88**	0.23	0.02	0.52	0.45
h2	0.41	-0.07	0.29	**0.76**	0.18	-0.30	0.24	0.40
h3	0.58	0.16	0.38	**0.87**	0.23	-0.17	0.51	0.50
icf1	0.52	0.03	0.41	0.29	**0.99**	0.14	0.29	0.24
icf2	0.49	0.02	0.42	0.22	**0.98**	0.19	0.27	0.21
icf3	0.51	0.04	0.44	0.24	**0.98**	0.17	0.27	0.23
nor1	0.53	0.21	0.34	0.48	0.21	-0.18	0.71	**0.90**
nor2	0.45	0.29	0.38	0.47	0.17	-0.04	0.55	**0.73**
nor3	0.51	0.13	0.40	0.38	0.18	-0.16	0.72	**0.90**
nor4	0.41	0.10	0.28	0.51	0.20	-0.04	0.56	**0.81**
pbc1	0.00	0.31	-0.05	-0.16	0.17	**1.00**	-0.05	-0.13
res1	0.59	0.03	0.46	0.50	0.27	-0.03	**0.95**	0.71
res2	0.62	0.08	0.51	0.53	0.32	-0.11	**0.97**	0.74
res3	0.58	0.16	0.45	0.45	0.19	0.04	**0.92**	0.71

Note: ICF (intention to consume fish), ATF (attitude toward fish consumption), AVA (availability), (FCB) fish consumption behaviour, H (healthy), PBC (perceived behavioural control), RES (responsibility), and NOR (subjective norm).

Third assessment for discriminant validity is Heterotrait-Monotrait ratio (HTMT). The ratio is resulted from average heterotrait-heteromethod correlations relative to the average monotrait-heteromethod correlation (Jörg Henseler, Ringle, and Sarstedt 2015; Joseph F Hair et al. 2017). (Kline 2011) argue that HTMT ratio below 0.85 indicate that discriminant validity is achieved. Table 4 provide us with the result of Heterotrait-Monotrait ratio and all values are below 0.85 and it can be concluded that discriminant validity is achieved.

Table 4
Measurement Model Assessment
Discriminant validity- Heterotrait-Monotrait ratio (HTMT)

cons	ICF	ATF	AVA	FCB	H	PBC	RES	NOR

ATF							
AVA	0.16						
FCB	0.74	0.05					
H	0.72	0.21	0.43				
ICF	0.53	0.03	0.44	0.29			
PBC	0.04	0.33	0.05	0.22	0.17		
RES	0.67	0.14	0.52	0.58	0.28	0.06	
NOR	0.64	0.27	0.45	0.65	0.25	0.13	0.84

Note: ICF (intention to consume fish), ATF (attitude toward fish consumption), AVA (availability), (FCB) fish consumption behaviour, H (healthy), PBC (perceived behavioural control), RES (responsibility), and NOR (subjective norm).

3.3 structural model assessment

Having assessed the measurement model, assessment for structural model is conducted. Structural model assessment is for hypothesis testing and deals with relationship between latent variables (Joseph F Hair et al. 2017). before testing for hypothesis, it first looks for predictive relevant and predictive power of model. Q square is used to see the predictive relevance of model and its value should be higher than 0.000. both endogenous constructs have Q square above 0.000. in fact, FCB and ICF have Q square 0.113 and 0.254 respectively. Therefore, they are classified as medium predictive relevance (Jorg Henseler, Ringle, and Sinkovics 2009). Second, R square is used to see the predictive power of structural model. The value of R square is 0.174 and 0.222 for FCB and ICF respectively. Thus, predictive power is below 0.33 and it is categorised as weak predicative power (Chin 1998).

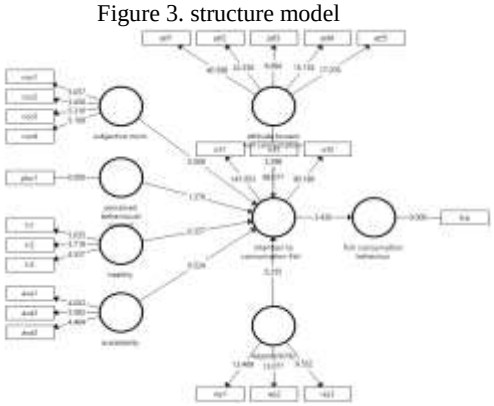
Table 5
Assessment of Structural Model

endogenous construct	Q square	decision	R square	decision
FCB	0.11	Medium	0.17	Weak
ICF	0.25	Medium	0.22	Weak
relationship	**Coef.**	**t stat**	**p value**	**decision**
ATF -> ICF	0.59	3.30	0.00***	supported
AVA -> ICF	-0.09	0.52	0.60	not supported
H -> ICF	-0.05	0.36	0.722	not supported
ICF -> FCB	0.43	3.44	0.00***	supported
PBC -> ICF	0.19	1.38	0.17	not supported
RES -> ICF	-0.04	0.26	0.80	not supported
NOR -> ICF	0.00	0.01	0.99	not supported

Note: ICF (intention to consume fish), ATF (attitude toward fish consumption), AVA (availability), (FCB) fish consumption behaviour, H (healthy), PBC (perceived behavioural control), RES (responsibility), and NOR (subjective norm).

the significant determinants of fish consumption intention are attitude toward fish consumption (β=0.587, p-value=0.001). other variables (AVA, H, PBC, RES, and NOR) do not have a significant effect on fish consumption intention due to their p value above 0.05. In addition, fish consumption intention has a significant relationship with fish consumption behaviour (β=0.434, p-value=0.001). therefore, the higher the fish consumption intention, the greater fish consumption behaviour. Figure 4 show the structural model.

Figure 3. structure model



To answer whether fish consumption intention mediating relationship between determinants and fish consumption behaviour, the assessment of direct effect and indirect effect are conducted. Table 6 demonstrate the result of direct effect and out of six determinants, only attitude toward fish consumption has a significant relationship with fish consumption behaviour (β=0.702, p-value=0.000). thus, it means that the higher the attitude toward fish consumption, the higher fish consumption behaviour. Other variables do not have a significant effect due to their p value above 0.05.

Table 6
Assessment of direct effect

direct effect	coef.	t stat	p value	decision
ATF -> FCB	0.70	3.63	0.00***	supported
AVA -> FCB	-0.19	1.55	0.12	not supported
H -> FCB	-0.13	0.93	0.36	not supported
PBC -> FCB	-0.02	0.15	0.88	not supported
RES -> FCB	0.09	0.50	0.62	not supported
NOR -> FCB	0.04	0.26	0.80	not supported

Note: ICF (intention to consume fish), ATF (attitude toward fish consumption), AVA (availability), (FCB) fish consumption behaviour, H (healthy), PBC (perceived behavioural control), RES (responsibility), and NOR (subjective norm).

Next analysis is indirect effect assessment. There are six indirect effect are assessed and only indirect effect (ATF->ICF-> FCB) has a positive effect (β=0.255, p-value=0.058) at α=10% (see table 7). Other variables have p value above 0.05. (Zhao, Lynch, and Chen 2010) argue that there should be only one requirement to establish (i.e. indirect effect (axb) is significant) and it does not need for significant effect to be mediated (path c). However, if its indirect effect and direct effect are significant and they have same direction, the mediation is fallen into complementary mediation (Zhao, Lynch, and Chen 2010). In this case, direct and indirect effect are significant and they have the same direction (positive) and we can conclude that there is a complementary mediation role of fish consumption intention (ICF) between attitude toward

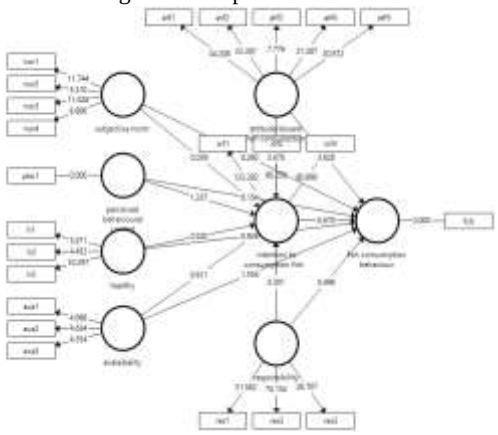
fish consumption (ATF) and fish consumption behaviour (FCB). Figure 4 provide us with complex structural model of research.

Table 7
Assessment of indirect effect

indirect effect	Coef.	t stat	p value	decision
ATF -> ICF -> FCB	0.26	1.90	0.06*	supported
AVA -> ICF -> FCB	-0.04	0.52	0.60	not supported
H -> ICF -> FCB	-0.02	0.34	0.73	not supported
PBC -> ICF -> FCB	0.08	1.49	0.3	not supported
RES -> ICF -> FCB	-0.02	0.24	0.81	not supported
NOR -> ICF -> FCB	0.00	0.01	0.99	not supported

Note: ICF (intention to consume fish), ATF (attitude toward fish consumption), AVA (availability), (FCB) fish consumption behaviour, H (healthy), PBC (perceived behavioural control), RES (responsibility), and NOR (subjective norm).

Figure 4. complex model



4. CONCLUSION AND RECOMENDATION

The important of fish has been documented by several experts. Due to benefit of fish, studies investigating factor effected fish consumption behaviour has been largely done. However, there is a limited study investigating using Indonesia's data. In fact, there is also lack of studies determine the role of an intention to consume as mediating variables between antecendents of intention to consume fish (attitude, norm, perceived behavioural control, healthy, availability, and responsibility) and consuming behaviour. The finding show that intention to consume fish is succesfully mediated the relationship between attitude toward fish consumption and fish consumption behaviour.

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