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Simulation of policy supported by government(PSG) intentions toward organic farming behaviour (IOFB model)

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Abstract

Policies support by government (PSG) is an important factor that affecttoward behaviors agricultural of small-farmers. This researchconcept was testedthe PSG factorinfluencedintentions toward organic farming behavior (IOFB). Applying based on the planned behaviour theory to test four factors that influences farmer's intention with organic farming,includingattitude toward behavior (AtB), the group-norm influencesbehaviour (GiB),the perceived behavioral control (PBC) andpolicies support by government (PSG). The questionnaire was develop from previous research and confirmed on a focus-group. Afterward, the questionnaires were survey from 448 organic rice farmers and 401 conventional rice farmers.In summary, group of organic rice farmers found that the PSGinfluenced the IOFB with effect sizeat 0.298. Likewise,group of conventional rice farmers found that the PSGinfluenced the IOFB with effect sizeat 0.427. In addition, this researchproposes the government policiesare incentiveorganic farmers to continuousorganic farming behavior (OFB) and motivate conventional farmers to switch OFB which advantagefor human health, ecological, and environmental.

Key Word: incentive to organic farming, policy supported by government, IOFB model, ecological and environmental

Introduction

Assistance and support from government is important for the agricultural sector because agriculture processes are sensitive from production, storage, distribution and sales that impact on farmer's income and well-being(Alila andAtieno, 2006). In particular, smallholder farmers are the largest world membersthat lowest capital, knowledge and technology to produce.Accordingly, smallholder farmers need to backing and aid from government sector(European Coordination via Campesina [ECVC], 2015). In the next 50 year of agriculture,focuses on food-safety, non-impact ecosystem, and environmentally-

friendly farming, which government policies to support smallholder farmersis an important factorto achievement (Watson, 2004).

Currently, organic farming is encouraged and promoted with developed country, alsoubiquitous in developing countries. Respectablegovernment policies will make in sustainable with organic farming (Vasileet al., 2015). The organic farming is achievementacceptancebecause conventional farming performsbasis chemical contamination in air, water and soil (Rundgren et al., 2008). Beforehand, using fertilizers, insecticides, and pesticides has long been widely in the farmland that accumulating toxins is hazardous with humanity (Wasim et al., 2009; Serpil, 2012). Accumulating toxins could transmission from consumption and living in environment fulfill toxins (Katherine andHendrik, 2010; Palaniappa, 2010) Hence, effects of toxic substances reason diseases such as asthma disabilities,physical disability, learning disabilities, diabetes, Parkinson's disease, Alzheimer's disease and cause some types of cancer (Owens et al., 2010).

Consumerknowingthreats of toxins, the consumption of organic food is accepting that safety and good-healththat number of health conscious consumers is increasing (Parichard, & Wen-Chi, 2012). For this reason, in 2015demand of organic products is increasing more than 16 percent from previously (TechSci Research, 2015). Likewise, marketing value of organic food in 2014 increased to $ 80 billion and farmland expand to 43 million acres accounted for 0.9% of global farmland (FiBL& IFOAM, 2016).

This research is concerned with the component of factors that influence towardorganic farming behaviors (IOFB).Determining the factors is a challenge toward organic farming behavior (OFB) in smallholderfarmer's context. TheIOFB model was testedwith rice farmers in Thailand.In particular, had simulation the policies support by government (PSG)to test whether farmers requirement. In Thailand, rice is an important economicsproduct for consumption and export. Thailand exports round 11 million tons of rice, accounting 26 percent of total rice export in the world (United States Department of Agriculture [USDA], 2015). One hand, organic rice in Thailand is about 0.2% when compared with conventional rice of26 million-acres (Office Agricultural Economics [OAE], 2014) and graduallyrising 0.61% (Green Net, 2014). On the other hand, demand of organic product has increasingup to 11% (Thai Organic Trade Association [TOTA], 2014).Moreover, enlarge organic rice, enhances competitiveness and rises to premium rice market that could be sold at a high price, as well as responding to health conscious consumers and well-being

with farmers too.In summary, the IOFB model could application to practical which extending an operations framework to other crops, could increase organic farming.

Conceptual framework

Management theories were applied tostudiesthefarmer's behaviours such as;

Theory of Reason Action (TRA)offeredby FishbeinandAjzen(1975) which two factors, attitude toward behaviorand subjective norms concerning behavior effect intentions to performof behavior. Rehman et al.(2007) had been applied theory tostudiedfarmer's application technology in dairy farms; found that farmer's belief with benefits of technology had a positive affectedintention to adopted technology.The subjective norm from research organizations alsopositive affectedintention to adopted technology in dairy farmers.Afterward, the TRAwas developed totheory of plannedbehavior (TPB) by add more factor is perceived behaviour control that TPB widely to application studiesthanTRA.

Theory of planned behavior (TPB)presented by Ajzen(1991)which three factors, attitude toward behavior,subjective norms concerning behavior,and perceived behavior control that effect intentions to perform of behavior. Previously, many research applied TPB such as; Poppenborg andKoellner (2013) foundsfactors influenced farmer's decision-making to participation with ecosystem monitoring field services;Dang et al. (2014) studied factors intention farmers' adaptation behaviour from climate change;Borges et al.(2016)studied withfarmers' intention to use improved natural grassland; Deng et al. (2016) ;studied factors affecting to farm pay for ecosystem management programs; Jones et al. (2016) found factors affecting intentions to improve dairy cattle toward organic farm; Stojcheska et al. (2016) studied factors influencing intentions to join rural development policy; and van Dijk et al. (2016)foundfarmers'intentions to perform unsubsidisedagri-environmental measures.

Innovation diffusion theorypresented by Rogers(2003)which five factors, relative advantage, compatibility, complexity, trialability, and observeabilitythat effect to adoption innovation. Beforehand, the theory is studied with organizations behavior such as; application of UTAUT program to learn English through website (Paul, 2013) or study factors influencing adoption E- commerce with electronic parts manufacturers (Alam et al., 2008). In addition, be application to studies farmer's behavior, such as adoption environmental measures affecting farmers' acceptance of conservation (Sattler, & Nagel (2010); factors affecting farmer adoption of alternative energy-crops (Warren et al., 2016); factors

influencing acceptance application of PA technology with characteristics of cultivated plants (Aubert et al., 2012).

Social Cognitive Theory is applied in the study of farmer behavior as well, but is not widespreadlikethe planned behavior theory. For example, Yazdanpanah et al. (2015) applied the theory to study four factors; socio structural factors, outcome expectancy, perception of others' behavior, and self-efficacy to expected water conservation behavior of farmers.

Theory of Perceived Risk is another theory that has been applied to studies risk perception in various contexts, such as perception technology risk, which affects intentionsto improve technology (Sumeet andHeng, 2010). The farmers risk perception of water crisis had implications tointention water conservation (Yazdanpanah et al., 2014).

Based on literature review the researcher found that the theory planned behavioral (TPB) is appropriate for application with context of smallholder farmers. Beforehand, the researcher conducted by focus group withorganic rice farmers and conventional rice farmers. In summary, farmers concerned support from government that important forswitchingbehavior.Finally, the conceptual framework is illustrated in Figure1, creation a construction model with four factors affect toward intention farmer's behaviour; attitude toward behavior (AtB), group-norm influences behaviour (GiB), perceived behavioral control (PBC) and policies support by government (PSG).

Attitude toward behavior (AtB)is concept of planned behavioral theory (Ajzen, 1991).Application,farmer estimating organic behavior that is positive, will have a greater intention toward organic behaviour.Previously, Sok et al. (2016) found that farmers' attitude to participate vaccination strategiesprogram with dairy farm had an effect size 0.61.Likewise, Jones et al. (2016)positive attitude showed the highest effect size at 0.497 that dairy farmer'intentions to improve herd health. Moreover, many studies have confirmed the attitudes of farmers influencing intentions behavioral, such as Borges et al.(2016); Lalani et al. (2016); Van Dijk et al. (2016); Deng et al. (2016); Chin et al. (2016); Läpple and Kelley (2013).

Group-norm influences behaviour (GiB)individual norm or group norm that regarding behavior is virtuous;influence they intentions to behavior (Ajzen, 1991). Application, GiB with group-norm of organic rice is influencing farmers to join organic group. Beforehand, Läpple and Kelley (2013) , found that the subjective normimpactintents farmers' towards organic farming, with an effect size of 0.34 . Likewise, Chin et al.

(2016) ,found that the subjective normintention to supply oil palm residues with smallholder planters.In addition, many educationshave confirmedthat reference of subjective normimpactto farmers behavior, such as Deng et al. (2016) ; Jones et al. (2016) ; van Dijk et al. (2016); Sok et al. (2016); Borges et al.(2016); Rehman et al. (2007).

Perceived behavioral control (PBC)is conceptwhich person evaluation ability and could control they willingness to behavior (Ajzen, 1991).Presentation, farmer believes ability and could control productfrom organic farming thatinfluence intent to organic behaviioural.Before, Deng et al. (2016) found that the perceived ability control influenced farmers' payments for ecosystem service programswith an effect size of 0.496.Furthermore, van Dijk et al. (2016) found that the PBCintentions to achievementagri-environmental measures environmental have an effect sizeof 0.12. In addition, there are many researches have confirmed the PBC influence intention to farmer'sbehaviour such as Jones et al. (2016; Borges et al. (2016); Poppenborg andKoellner (2013). In contrast, Sok et al. (2016) found thatthe PBCdid not influence farmers to intents bluetongue vaccination.

Policies support by government (PSG)based on focus groupwith smallholder farmers found that the PSG be challenge and concern form farmers.Presentation, simulation PSG which farmer's requirement, add PSG with a new onein planned behavioral theory. Previously, Chang et al. (2016) found that perception of policy enforcement effected tofarmer's implications water-saving behavior has effect size of0.49. Tate et al. (2012) found that the government and local council support farmers provided assistance use of renewable energy at effect size 0.014. On the other hand, Dang et al. (2014) found that policy supports to purchase of risk insurance and agency alarm material did not significance because the policy impact to status of farmer's financial.In addition, Giannoccaro andBerbel (2013) found that CAP policy did not affect intention to reduce fertilizers and reduce water in agricultural activities.In summary, literature review showed that incentive policies intent to famer's behavior is challenge because had an especially large impact on smallholder farmers.Moreover, smallholder farmers are still underprivileged (little money, less knowledge, and not as much of technology)to switch behaviour. For this reason, confidentialthe intention toward OFB (IOFB model), the PSGshould be tested causal - relationship toward the farmers' intentions.
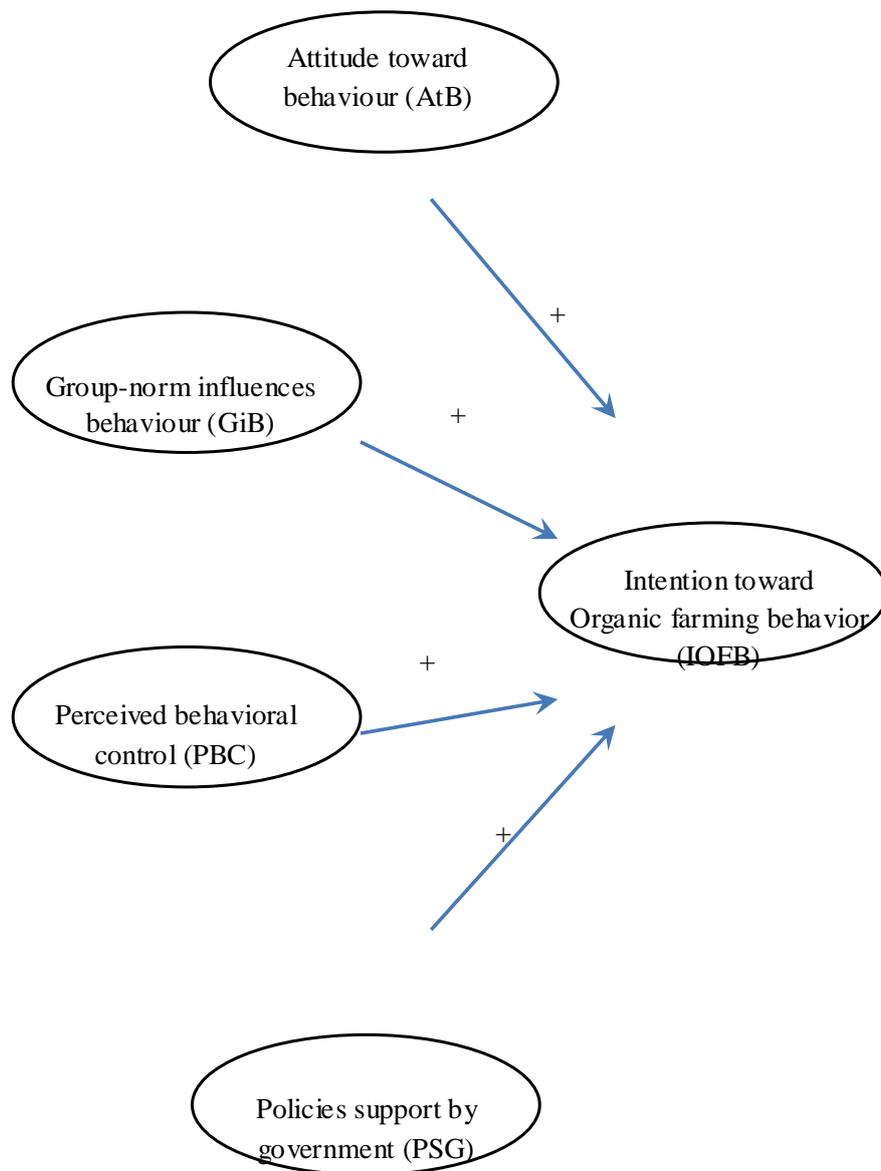
Figure 1 Component of intention toward the organic farming behavior (IOFB model)

(Applied from theory of planned behavior (Ajzen, 1991))

Methodology

Method to analyze was the structural equation model (SEM), developed a questionnaire based on the application of Tate et al. (2012); Läpple and Kelley (2013); Dang et al. (2014);Yazdanpanah et al. (2014); Borges et al. (2016); Chang et al. (2016); Chin et al. (2016);Deng et al. (2016); and van Dijk et al. (2016). Moreover, the questionnaire was confirmed and additionfrom focus group that involving of 8 organic rice farmers and 7 conventional rice farmers. In summary,the questionnaire consisted of 27items whichscales questions divided into five levels: (1) very low, (2) low, (3)moderate, (4) high, and (5) very high (see Appendix). Then, randomly distributed into 2 groups: 448organic rice farmers and401 conventionalrice farmers.

Results

The average of the questionnaires used to measure intention toward organic rice farming as follows: Organic rice farmers (group 1) almost had high average score,first the policies support by government(4.576), followed by the group-norm influences behaviour (4.506), the attitude toward behaviour (4.468), and the perceived behavioral control (4.428) respectively. Conventional rice farmers (group 2) had lower average score compare with group 1, first the group-norm influences behaviour (3.813), followed by the policies support by government(3.700), the attitude toward behaviour (3.320) and the perceived behavioral control (2.984)correspondingly.

In addition, the variance inflation factor (VIF)found that correlation between independent variables, the VIF of group 1 had a value between1.468 and2.170 and group 2 had a value between1.423 and2.535 .As a result, value of VIF less than 10 showed that neither multi-collinearity problem(Hair et al., 2010). Moreover, Cronbach's coefficient of Group 1had a valuebetween 0.770 and 0.908, and Group 2 had a valuebetween 0.755 and 0.916. All of the variables in OFB framework were greater than 0.70 indicating that empirical data were consistent (Pallant, 2007), see table 1.Likewise, the Pearson's correlationof Group 1had a valuebetween 0.539 and 0.591, and Group 2 had a valuebetween 0.556and 0.650 which value from both groups was less than 0.80,see table 2.

Table 1. Average and verification validity of the questionnaire

Latent Variables	$\overline{\text{x}}$		VIF		Cronbach's Alpha	
	G_1	G_2	G_1	G_2	G_1	G_2
Attitude toward behaviour (AtB)	4.468	3.320	1.679	2.158	0.858	0.883
Group-norm influences behaviour(GiB)	4.506	3.813	1.957	2.049	0.894	0.851
Perceived behavioral control (PBC)	4.282	2.984	2.170	1.423	0.854	0.905
Policies support by government (PSG)	4.576	3.700	1.468	2.535	0.908	0.916
Intention toward organic farming behaviors (OFB)	4.430	3.320	-	-	0.770	0.755

Table 2. Pearson's correlation coefficients between variables

Variables	Group	ABF	GNF	PBF	PSG	IOFB
AtB	1	1.000				
	2	1.000				
GiB	1	0.460[**]	1.000			
	2	0.661[**]	1.000			
PBC	1	0.525[**]	0.590[**]	1.000		
	2	0.379[**]	0.420[**]	1.000		
PSG	1	0.426[**]	0.395[**]	0.352[**]	1.000	
	2	0.626[**]	0.579[**]	0.454[**]	1.000	
IOFB	1	0.579[**]	0.591[**]	0.545[**]	0.539[**]	1.000
	2	0.556[**]	0.563[**]	0.629[**]	0.650[**]	1.000

** $p < 0.01$

Subsequently, a confirmatory factor analysis (CFA) used thecriteria of Hair et al. (2006) . The calculated values forgroup 1, chi-square= 648.781andgroup 2, chi-square= 661.142differed ata significance levelof .05.Therefore, CFI = 0.934,TLI = 0.927, RMSEA = 0.050, and SRMR = 0.071;these value had pass the requirement that could simulation the structural equation model.

The factor loadings in Table 3, Hair et al.(2010)suggestedfactor loadingsof greater than 0.30 and average variance extracted (AVE) value should be higher than 0.5. Accordingly, the factor loadingfor group 1wereranging 0.503 and 0.839, AVE wereranging 0.509 and 0.590, respectively; the factor loadingfor group 2 wereranging 0.637 and 0.855, AVE wereranging 0.501 and 0.637. As a result,the factorloadings and AVE of both groups were higher than the standard see Table 3.The R-squared values of group 1 were ranging 0.253 and 0.732, andvalues of group 2 were ranging 0.406 and 0.781 that both of groups were significant levelat 0.01 see table 4.

Table 3 Comparison the factorloadings and AVE values

Factor Loading											
AtB	G1	G2	GiB	G1	G2	PBC	G1	G2	PSG	G1	G2
AtB_1	0.684	0.790	GiB_1	0.720	0.704	PBC_1	0.716	0.764	PSG_1	0.725	0.744
AtB_2	0.747	0.812	GiB_2	0.795	0.710	PBC_2	0.714	0.774	PSG_2	0.788	0.736
AtB_3	0.771	0.816	GiB_3	0.729	0.705	PBC_3	0.836	0.884	PDG_3	0.808	0.771
AtB_4	0.743	0.791	GiB_4	0.814	0.730	PBC_4	0.839	0.874	PSG_4	0.637	0.682
AtB_5	0.612	0.691	GiB_5	0.762	0.709	PBC_5	0.503	0.684	PSG_5	0.690	0.801
			GiB_6	0.767	0.684				PSG_6	0.855	0.834
									PSG_7	0.847	0.837
Average variance extracted (AVE)											
	G1	G2		G1	G2		G1	G2		G1	G2
AtB	0.509	0.610	GiB	0.586	0.501	PBC	0.536	0.639	PSG	0.590	0.599

Table 4 Comparison the R-squared value

R-squared											
AtB	G1	G2	GiB	G1	G2	PBC	G1	G2	PSG	G1	G2
AtB_1	0.468	0.624	GiB_1	0.518	0.444	PBC_1	0.512	0.584	PSG_1	0.526	0.554
AtB_2	0.559	0.659	GiB_2	0.632	0.505	PBC_2	0.509	0.599	PSG_2	0.621	0.542
AtB_3	0.595	0.667	GiB_3	0.531	0.497	PBC_3	0.698	0.781	PDG_3	0.653	0.594
AtB_4	0.552	0.625	GiB_4	0.663	0.533	PBC_4	0.704	0.764	PSG_4	0.406	0.465
AtB_5	0.375	0.477	GiB_5	0.581	0.502	PBC_5	0.253	0.467	PSG_5	0.476	0.642
			GiB_6	0.589	0.468				PSG_6	0.732	0.696
									PSG_7	0.718	0.701

Table 5 Comparison factors influencing the IOFB

Factors	IOFB (Group1)			IOFB (Group2)			R-squared	
	Direct	Indirect	Total	Direct	Indirect	Total	G1	G2
AtB	0.284*	-	0.284*	0.097	-	0.097		
GiB	0.299*	-	0.299*	0.181*	-	0.181*	0.753*	0.954*
PBC	0.216*	-	0.216*	0.486*	-	0.486*		
PSG	0.298*	-	0.298*	0.427*	-	0.427*		

* p< 0.05

The statistical analysis found thatthe independent factors intentions towardorganic farming behavior (IOFB);organic rice farmers (group 1) had predictable power on IOFB at 78.3 percent, and conventional rice farmers (group 2) had predictable power on IOFB at 95.4

percent; showed detail of each factors as follows. Therefore, group 1 found that almost factors had significant level at .05 and highest influential factor is group-norm influences behaviour(β = 0.299), subordinate are policies support by government(β = 0.298), attitude toward behaviour(β = 0.284), and perceived behavioral control(β = 0.216). In contrast, group 2 found that only three factors had significant level at .05 and highest influential factor is perceived behavioral control(β = 0.486), subordinate are policies support by government(β = 0.427), and group-norm influences behaviour(β = 0.181), presentation in table 1 and figure 2.

Conclusion

      Attitude toward behavior (AtB)showed that group1was significant and AtBpositively influenced intentions towards organic farmingbehaviourwith an effect size 0.284.In contrast, group2 was not significant and AtBonly slightly positively influenced intentions towards organic farmingbahaviourwith an effect size 0.097. Accordingly, the results are based on the theory of planned behaviour(Ajzen,1991) with group1 regard AtBhas affectedtoward organic rice farming. In the same way, Borges et al.(2016)found that the attitudes of farmers influenced intention to improve grassland had effect size 0.46.Likewise, Lalaniet al. (2016) found that farmers' attitudes influenced intentions to useconservation agriculture with an effect size0.593. Moreover, attitudeswere influentialwith regard to intention towards farmer'sbehaviour, seeDeng et al. (2016), β = 0.327; Jones et al. (2016), β = 0.497; and van Dijk et al. (2016), β = 0.17. As a result,farmers agree on this issue:organic rice farming is better than that from conventional rice farmingthat is good for the health of farmers, theirfamily members,well-being of families, and consumer's health.Furthermore,organic farming is good for ecological andenvironmental. In summary, organic farmers agree that they have positive attitudes towards organic rice cultivation;they will intend to grow organic rice continuously.

      Group-norm influences behaviour (GiB)showed that group1washighest significant and GiBpositively influenced intentions towards organic farmingbehaviourwith an effect size 0.299. Likewise, group2 was significant and GiBpositively influenced intentions towards organic farmingbahaviourwith an effect size 0.181. According,the results are based on the theory of planned behaviour(Ajzen,1991) with group1 and group2 regard GiB has affected toward organic rice farming.Likewise,Sok et al. (2016), reference group-norm influenced voluntary Bluetongue vaccination strategies has effect size 0.18. Similarly, Jones et al. (2016)

found that group-norm influenced intention to conserve agriculture with an effect size 0.495. Moreover, reference normwith respect to intention towards farmer'sbehaviour, seeBorges et al.(2016),β = 0.237; Dang et al. (2014) β =0.118; Deng et al. (2016), β = 0.418. As a result,farmers agree the members of organic group are a good thing, gives credibility to grain export market, exchange of marketing information. In addition,organic farmer membershipare strengthens cooperation, increased group awareness.In summary, organic farmers agree that organic group norm have positiveinfluence and intents to grow organic rice continuously; conventional farmers agree that organic group norm have positiveinfluence and intents to switch to grow organic rice.

Perceived behavioral control (PBC)showed that group1was significant and PBC positively influenced intentions towards organic farmingbehaviourwith an effect size 0.216. Likewise, group2 washighest significant and PBC positively influenced intentions towards organic farmingbahaviourwith an effect size 0.486. Therefore,the results are based on the theory of planned behaviour(Ajzen,1991) with group1 and group2 regard PBC has affected toward organic rice farming.In the same way,van Dijk et al. (2016), reference perceived behaviour control influenced farmers' to perform agri-environmental measures has effect size 0.12. Similarly, Borges et al.(2016)found that the perceived behavior control of farmers influenced intention to improve grassland had effect size 0.218. Moreover, perceived behavior controlwith respect to intention towards farmer'sbehaviour, seeJones et al.(2016),β = 0.523; Lalani et al. (2016) β =0.314; Deng et al. (2016), β = 0.496. As a result,farmer'sevaluatedability to grow organic rice, could control yield of organic rice, has knowledge and techniques,could catch organic standards certificate.In summary, organic farmers agree that have abilities to control organic rice outcome and intents to grow organic rice continuously; conventional farmers have abilities to control organic rice outcome and intents to switch to grow organic rice.

Policies support by government (PSG)showed that group1was significant and PSG positively influenced intentions towards organic farmingbehaviourwith an effect size 0.298. Likewise, group2 washigh significant and PSG positively influenced intentions towards organic farmingbahaviourwith an effect size 0.427. Therefore,the results are based on the theory of planned behaviour(Ajzen,1991) with group1 and group2 regard PSG has affected toward organic rice farming. In the same way,Tate et al. (2012), the government and local council support provided assistance farmers to use renewable energy with an effect size 0.014. On the other hand, Dang et al. (2014) found that policy did not affect intention to purchase crop insurance due to climate change. Likewise,Giannoccaro andBerbel (2013) found that CAP

program did not affect the intention to reduce fertilizers and reduce water with agricultural activities. As a result,this research the PSG affected to smallholder farmer's intention to OFB. Therefore, the farmers consciousness with government policy shouldsupport water efforts for organic rice farming,support certify the prices of organic rice, supportproduction equipment, supportlow-interest loans for organic rice farmers, support assist farmers to certify organic rice standards, and support cultivation knowledge andtechniques to increase the productivity of organic rice.Finally, organic farmers reach an agreementthePSG, they intent to grow organic rice continuously; conventional farmer's acceptance the PSG,they intents to switch to grow organic rice.

Recommendation to promote policies

Consequently,this research found thatpolicies support by governmenthad rather large impact on smallholder farmers both organic rice farmers and conventional rice farmers. The suggest recommend to promote policiesfor government agencies that more incentives withorganic farmers willhas organic farming behavior continuously and motivate conventional farmers will switch toward organic farming behavior.

Organic farmers,policy base on encouraging farmers to grow organic ricenonstop and encouragefarmersto join the organicgroup members. Government policies in particular should support water efforts for organic group members(e.g., digging ponds, irrigation systems); support to certify the prices of organic product; supportproduction equipment (e.g.,preparation machine, harvesting machinery); and supportlow-interest loans thatincentivize non-participating farmers to join withthe organic group members andmotivateolder-members to be continuing with the group.Particularly, promote the benefits of organic group member'sas well as encourage continuous and expansively numbers of organic farmers group.

Conventional farmers,policiesbase on motivating farmers to switch their behaviours towards organic farming and encouragemembershipin the organic farmers. First, raise awareness of hazards from conventional farming. Afterward, promote the benefits of organic cultivation and take look organic farmers who have achieved both income and good health.Furthermore, policies should encourage farmers to switch to organic farming via support knowledge and techniques to organic farming, support equipment, support water

sources for plants, support low interest capital for switching to organic farming, and support to receive certification in organic farming.

Finally, policies should focus on protection organic farming sustainable. The government should continue to promote the benefits of organic cultivation; good healthy for farmers and family members, well-being which better income.Afterward,make the organic farmers groupbe strong, support themselves via knowledge, technology to creation new productwhichadd valuefromorganic raw materials thatfarmers could sell athigh price. As a result, the expansion of organic farming is sufficient;it's virtuous for ecological and environmental,save the global, and greatest for future children.
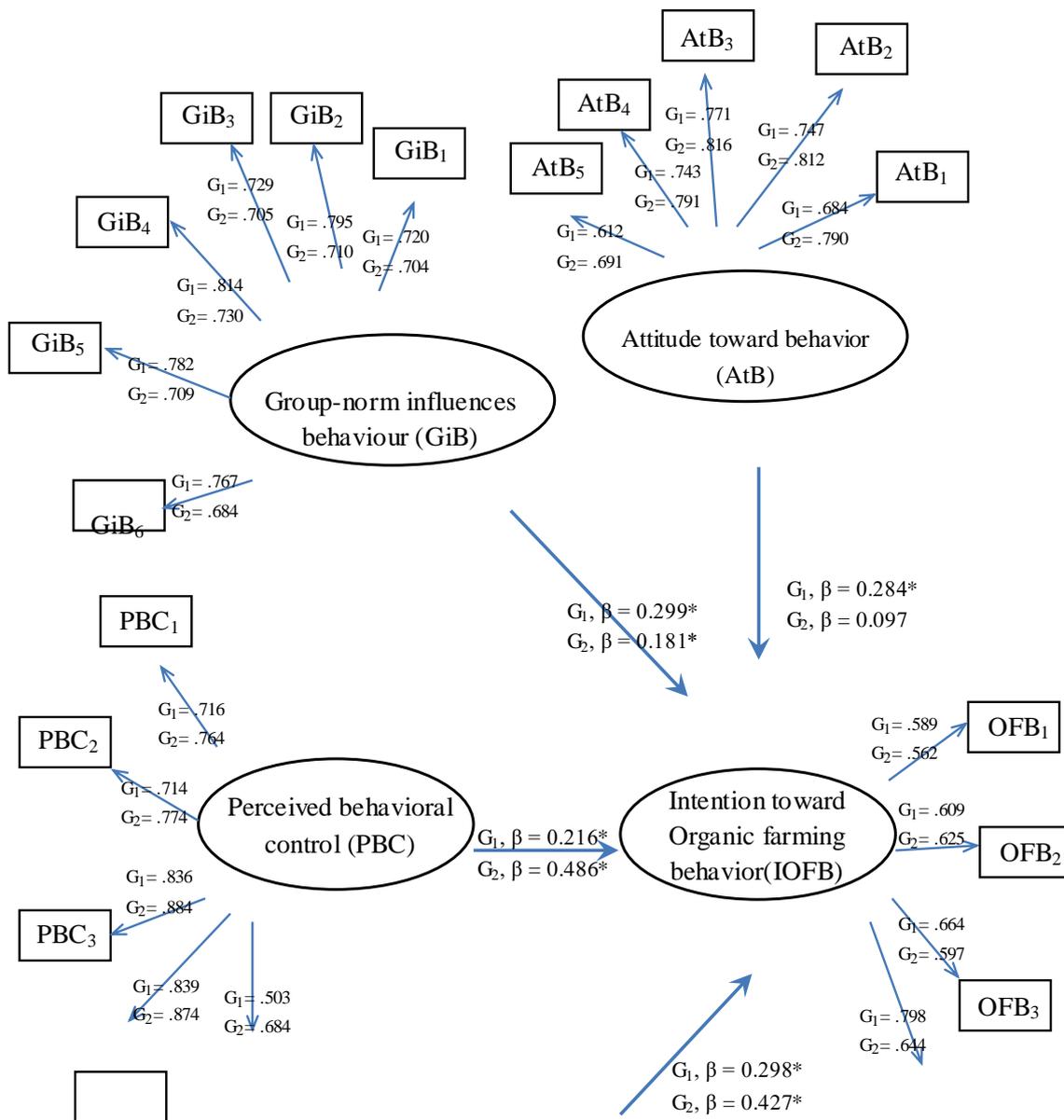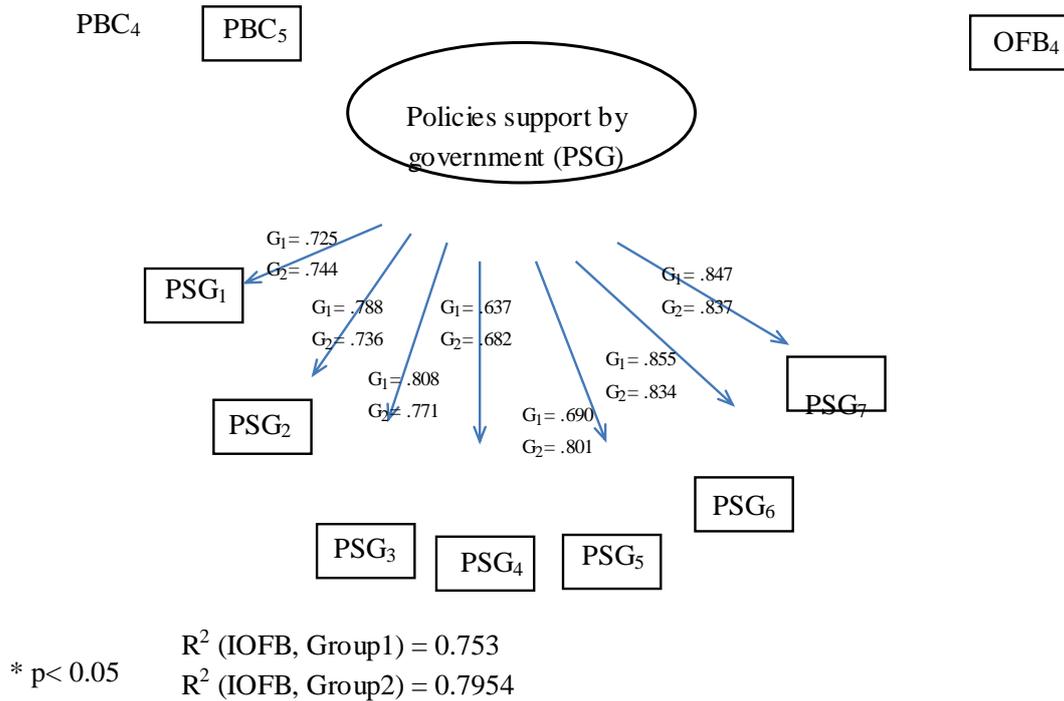
Figure 2 Simulation component of intention toward the organic farming behavior (IOFB)

Appendix A

The application of the questionnaires used to the IOFB model

Latent Variables	Recommendations For Create a questionnaire (Observation Variables)	Adaptation from
Attitude toward Behavior (AtB)	- AtB_1 Organic farming has quality of product better than conventional farming.	Deng et al. (2016)
	- AtB_2 Organic farming is good for health of farmers and family members.	Yazdanpanah et al. (2014)
	- AtB_3 The products from organic farming are good for the consumer's health.	Yazdanpanah, et al. (2014)
	- AoF_4 The products from organic farming are good for the ecosystem and the environment.	Yazdanpanah, et al. (2014)
	- AoF_5 Organic farming will promote the well-being of families.	Läpple and Kelly (2013)
Group-norm influences Behaviour (GiB)	- GiB_1 Organic farmer membership is positive	Chin et al. (2016)
	- GiB_2: Organic farmer membership is positive for	Chang et al.

	organics' certificate	(2016)
	- GiB$_3$Organic farmer membership engenders credibility to the rice-export market	Focus group
	- GiB$_4$Organic farmer membership increases the exchange of information about products and marketing	Deng et al. (2016)
	- GiB$_5$Organic farmer membership strengthens cooperation in the group.	Dang et al. (2014)
	- GiB$_6$Organic farmermembership has increased group awareness	van Dijk et al. (2016)
Perceived Behavioral Control(PBC)	- PBC$_1$ Farmers able to control the expected yield of organic rice.	Borges et al. (2016)
	- PBC$_2$ Farmers might grow rice in accordance with organic standards	Yazdanpanah, et al. (2014)
	- PBC$_3$ Farmers have knowledgeregarding the techniques and methods of planting non-toxic rice.	Läppleand Kelley (2013)
	- PBC$_4$ Farmers have confident that their knowledge regarding organic rice cultivation.	van Dijk et al. (2016)
	- PBC$_5$ Farmers have the self-confidence that they could control productivity with organic farming.	Borges et al. (2016)
Support of Government Policies (SGP)	- SGP$_1$Policy should support water efforts for organic rice farming (e.g., digging ponds, pumping stations).	Chang et al. (2016)
	- SGP$_2$Policy support cultivation knowledge andtechniques to increase the productivity of organic rice	Dang et al. (2014)
	- SGP$_3$ Supportive of policies to manufacture equipment, such as seeds, organic fertilizers, and tillage tools, etc.	Tate et al. (2012)
	- SGP$_4$ Supportive of policies that guarantee the product's price from organic farming.	Focus group
	- SGP$_5$Policy supportlow-interest loans for organic rice farmers.	Dang, et al. (2014)
	- SGP$_6$Policy support assist farmers to certify organic rice standards	Tate et al. (2012)
	- SGP$_7$ Supportive of policies that provide low-interest loans for organic farming.	Dang et al. (2014)
Intention toward OFB	- OFB$_1$ Farmers intend to farm with similar behaviors in the next crop.	Läppleand Kelley (2013)
	- OFB$_2$ Farmers intend to participate with activities to promote organic farming.	Yazdanpanah et al. (2014)
	- OFB$_3$ Farmers are interested in learning and searchingfor knowledge about organic farming.	Chin et al. (2016)

- OFB$_4$Grade level to grow organic rice.	Focus group

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