Perbedaan antara Pengetahuan dan Kompetensi Petani Sawit Swadaya untuk Kelapa Sawit yang Berkelanjutan

Discrepancy between Knowledge and Competency of Independent Smallholder Farmers of Sustainable Palm Oil

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Abstract

Currently, independent smallholders are facing the crucial challenge of certification requirements, namely, a lack of farmers' organization, cost barrier; not possessing mandatory legal documents; lack of best practices or well-recorded activities; and limited skill and knowledge. Therefore, it is urgently necessary to understand the discrepancy between knowledge and competence to overcome the critical issues in the certification to achieve the sustainable development of palm oil production. The data was analyzed through in-depth interviews of 150 respondents based on the Indonesian sustainable palm oil (ISPO) with a non-hierarchical clustering method. The result showed that the largest gap between knowledge and competence level was in the sustainable business improvement aspect, while farmers' organization and farm management aspect were in the smallest gap in all clusters. Thus, an intervention, extension and accessible information groups by motivation are highly required for self-improvement and evaluation of the information pattern to minimize the gaps.

Keywords: *certification, competence, independent smallholders, knowledge, sustainability, palm oil*

Abstrak

Saat ini, petani sawit mandiri menghadap tantangan penting dalam memenuhi persyaratan sertifikasi, yaitu keterbatasan organisasi petani, hambatan biaya; dokumen legalitas; keterbatasan dalam penerapan teknik budidaya yang baik atau pencatatan kegiatan budidaya; dan kurangnya keterampilan dan pengetahuan. Oleh karena itu, pemahaman tentang perbedaan antara pengetahuan dan kompetensi perlu segera dilakukan untuk mengatasi masalah kritis dalam sertifikasi untuk mencapai pembangunan produksi minyak kelapa sawit yang berkelanjutan. Analisis data menggunakan wawancara mendalam terhadap 150 responden secara terstruktur berdasarkan aspek minyak sawit lestari Indonesia (ISPO) dengan metode klaster non-hirarkis. Hasilnya membuktikan bahwa kesenjangan terbesar antara tingkat pengetahuan dan kompetensi adalah aspek peningkatan bisnis yang berkelanjutan, sedangkan aspek organisasi petani dan pengelolaan kebun memiliki kesenjangan terkecil dalam keseluruhan klaster. Dengan demikian, intervensi, perluasan, dan kelompok informasi yang terjangkau melalui motivasi sangat diperlukan untuk memperbaiki diri dan mengevaluasi pola informasi sehingga dapat meminimalkan kesenjangan.

Kata kunci: sertifikasi, kompetensi, petani mandiri, pengetahuan, keberlanjutan, sawit

Introduction

Palm oil rose in world importance with total capability raised 128% over the last decade to 58 million tons annually, with demand expected to double to 100 million tons by 2050 due to industry demand and food demand. Industrial demand raised considerably as a result of the efficiency of its harvested all year rounds much more than other crops (soya, sunflower, and rapeseed, etc); extensively utilized in the energy and animal feed sector as an ingredient within the personal care market; numerous advantages with totally different melting points, consistencies and characteristics, together with food, cosmetics, detergents, plastics, industrial chemicals, bread, body lotion and lipstick and biofuels (Chelsea et al., 2016). While, boosted in palm oil due to food demand is as follows, feeding the growing range of people as an inexpensive and offered cooking medium; providing the livelihoods; and income growth, economic growth, inflation and cultural dietary concerns (Kruse, 2010).

As the world's largest palm oil producer, smallholders in Indonesia represents an enormous share of the world's palm oil production; they already manage over 40% (4.2 million hectares) of all plantations and independent

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smallholders own over 3.1 million hectares of palm oil land (World-Growth, 2011). The report aforementioned that these independent smallholders cultivate palm oil without outside facilitate, however, their productivity is estimated to be 40% less than the common large farm between 35%-40% of total volumes of crude palm oil, that's one thing that has to amend. That the reasons for the Indonesian Sustainable Palm Oil (ISPO) standard was formally launched by the Indonesian government within the Ministry of Agriculture's decree No. 19/ Permentan/OT.140/3/2011 to form a sustainable palm oil production and complies with Indonesian laws and regulations.

The potential advantages and the proof for independent smallholdersare addressed within the science-for-policy paper costs and benefits of certification (Rietberg & Slingerland, 2016) which will be divided into economic, ecological and social (Teoh, 2010; Brandi et al., 2013; Milder & Newsom, 2015; Rival et al., 2016). Still, as the empirical findings show, usually not all advantages are accomplished on the bottom. The economic advantages (World-Growth, 2011; Dykman, 2012; ISO, 2014; Ibanez & Blackman, 2015) for higher financial gain and improve their livelihood through a rising in yields (WWF et al., 2012) and quality that was achieved by applying good agricultural practices (GAPs) as an integral a part of its principles and criteria (Dallinger, 2011), and depends on whether or not an integrated into a trading structure. The ecological benefits of forests and biodiversity that reducing the risk of land conversion (Azhar et al., 2015) using small-scale effects, i.e. Reduced chemical usage via the appliance of an integrated pest management system, soil quality improvements, erosion control, improved waste management and buffer zones close to rivers (Brandi et al., 2013). The social benefits of the reduction of negative health and safety impacts, furthermore on providing mechanisms for dissolving land conflicts (Teoh, 2010). Yet, social advantages didn't play an outstanding part within the expectations and the awareness of smallholders interest.

However, there some challenges for independent smallholders in certification requirements, still as structural issues underlying these principles and criteria. Those most significant barriers to the certification are outlined as lack of farmers' organization, the cost barrier; don't possess the mandatory legal documents; don't use appropriate best practices or keep records; and lack of skills and knowledge (Rietberg et al., 2016). Moreover, there's a distinction between the content of a certification standard and the context during which it's enforced (Loconto & Dankers, 2014; Brandi et al., 2015). The content includes of the strictness of the technical requirements of the standards; the structural demands of the verification system; and auxiliary services of the standards scheme that is the knowledge ought to be noted by independent smallholder farmer's. Besides, the context consists of the setting in this content should be enforced, which mean that the competency had to be enforced by independent smallholder farmer's.

Empirical evidence of certification reports from independent smallholder groups (2012-2014) marked some major indicators that don't seem to be nonconformity, but might become one if left unattended due to incomplete effort, incorrect or absent monitoring, with improper implementation and with blemished documentation (Lord & Durman, 2013; Rietberg & Slingerland, 2016). These problems associated with completely different criteria and most problems with non-compliance are according in regard to three principles, i.e. The use of accepted best practices, compliance with applicable laws and regulations, and accountable thought of employees and of people and affected communities. These findings are in line with a previous study for six groups of independent smallholders that ninety one of the detected compliance issues connected to the principle laws and regulations (i.e. The compliance with laws and regulations); best practices (i.e. The pests, disease and weeds and agrochemicals), environment and conservation; and new planting (Lord & Durman, 2013).

Therefore, this research tends to assume a basic information about the content of the ISPO standard and focus on the issues that arise through the discrepancy between knowledge as the understandings of an entity possesses to take effective action and competence as a set of behaviors which provide a structured guide enabling the identification, evaluation and development in individual within the specific contexts of independent smallholder farmers' of palm oil production to overcome the critical issues in certification for achieving the sustainable development of palm oil production and enhance the competitiveness in future.

Methods

The research was conducted with purposive sampling in the three districts that was being the most important population of palm oil in West Kalimantan. In-depth interview was selected with semi-structured set of questions to explore and uncover deep emotions, motivations and attitudes because it was faster, productive, deeper insights, more versatile and quicker adaptation (Turner, 2010; Mack et al., 2011; Alshenqeeti, 2014) from 150 independent smallholder farmers to fulfill minimum sample in multivariate analysis (Hair et al., 1992; Fraenkel & Wallen, 1993; Sugiyono, 2003).

The findings are structured base for Indonesian sustainable palm oil (ISPO) that is taken into account as government policy to boost the competitiveness within the world market and to scale back of the negative environmental issues by Ministry of Agriculture. The sustainability aspects were formulated with the environment, legality, and farmers' organization aspects, to answer the following question: what's the discrepancy between knowledge and competence to overcome the crucial issues of certification for achieving the sustainable development of palm oil production? Additionally, a review of an existing literature from previous studies contributed to the findings that allowed the chain of proof to be established and to keep up clear linkages by permitting conclusion to be formulated through the analytical queries, relevant literature and information assortment tools.

The analysis of the discrepancy between knowledge and competence using non-hierarchical clustering methods due to visualize the behavior quickly and easily read and discussed among the clusters as well. A cluster analysis was conducted in three different areas of observed due to three focus areas of research as the most relevance and high homogeneities with the essential problems as a result of the actual fact that allowed the researcher to examine the behavior quickly, simply read and mentioned (Everitt et al., 2011), and to interpret using common traits that form those groups in their answers (Paola et al., 2016).

The data were collected using a rating scale of five levels because it is very flexible and easily prepared or answered with SPSS software within three steps. First, the data were collected from the perceptions to assess the knowledge and competence as follows: very high/ very important (5); highly/important (4); average (3); low/below average (2); and very low/not important (1). The level of these knowledge and competence were based on criterias: 0.00-1.49 indicates that the level of knowledge and competence don't seem to be important (very low) or incompetent; 1.50-2.49 indicates that the level of knowledge and competence are below the average (low); 2.50-3.49 indicates that the level of knowledge and competence are average importance (medium) or average competent; 3.50-4.49 indicates that the level of knowledge and competence are highly importance (highly) or above average; and 4.50-5.00 indicates that the level of knowledge and competence are very high important or very competent (Villarreal, 2003). Second, calculate the average and standard deviation of the rating scale of knowledge and competence for each of the clusters, then calculate gaps of each cluster and followed by the overall average gaps between the knowledge and the competence. Third, differences-test of knowledge and competence for each cluster using a non-hierarchical clustering method. The difference-test is significant for each cluster if α-value is less or equal to 0.05 and therefore the F-value has bigger value. Conversely, there's no distinction of knowledge and competence for each cluster if α-value is higher than 0.05 and therefore the F-value has smaller value (Santoso, 2015).

Results and Discussions

The answer of what are the discrepancy between knowledge and competency to get certification for achieving the sustainable development of palm oil production would be urgently required, likewise as a strategy to address these challenges and strengthening palm oil industry for achieving sustainable way and enhance the competitiveness of independent smallholder farmers' in the future ~~through~~ by identifying the gaps in ISPO aspect as given presented in Table 1.

In Table 1, the level of knowledge of independent smallholder farmers in ISPO aspect, i.e. The legality; farmers' organization and farm management; management and environmental monitoring; and sustainable business improvement are highly/important in all clusters, but the level of competences is low/

Table 1. The Assessment of Knowledge and Competence Cluster

ISPO Aspects	Knowledge level								Competence level							
	Mean pop.	St. dev. pop.	Cluster						Mean pop.	St. dev. pop.	Cluster					
			1		2		3				1		2		3	
			Value	Mean	Value	Mean	Value	Mean			Value	Mean	Value	Mean	Value	Mean
Legality:																
• Legality & farm management	3.37	0.72	3.22	5.68	3.45	5.85	3.12	5.61	1.97	0.67	2.29	3.50	2.38	3.56	1.74	3.13
• Plantation sites	3.38	0.49	1.24	3.99	3.56	5.14	2.99	4.86	2.03	0.32	2.71	2.89	1.98	2.66	2.01	2.67
Average	3.38			4.84		5.50		5.24	2.00			3.00		3.00		3.00
Farmers organization & farm management:																
• Join in farmer groups and cooperatives	3.59	0.44	1.78	4.38	3.65	5.20	3.57	5.17	1.04	0.23	1.71	1.43	1.00	1.27	1.01	1.27
• Land disputes & compensation and other disputes	3.79	0.49	4.33	5.91	3.95	5.73	3.24	5.38	1.99	0.12	2.00	2.22	1.96	2.21	2.00	2.22
• Relevant information for stakeholders	3.38	0.72	1.00	4.10	3.68	6.02	2.64	5.28	1.17	0.47	1.86	2.04	1.30	1.78	1.05	1.66
• Land clearings	3.70	0.59	1.43	4.55	3.88	5.99	3.35	5.68	1.77	0.50	2.00	2.76	2.11	2.82	1.58	2.55
• Seed to support the productivity	3.60	0.37	4.38	5.22	3.56	4.92	3.67	4.96	2.57	0.64	4.00	5.13	2.06	3.89	2.72	4.31
• Planting on mineral soils	3.58	0.45	3.60	5.20	3.65	5.22	3.33	5.08	2.55	0.62	4.00	5.02	2.64	4.18	2.40	4.03
• Peat land	3.60	0.30	3.29	4.59	3.66	4.70	3.44	4.64	2.74	0.44	2.43	3.81	2.77	3.96	2.75	3.95
• Plant maintenance	3.64	0.36	2.67	4.60	3.68	4.96	3.60	4.93	2.73	0.73	3.86	5.55	3.40	5.21	2.31	4.42
• Control of pest plant organism	3.19	0.48	1.85	4.07	3.39	4.81	2.67	4.47	1.49	0.66	2.86	3.39	2.17	2.93	1.06	2.20
• Harvesting	3.58	0.51	2.67	4.95	3.80	5.53	2.96	5.10	2.21	0.73	3.00	4.40	2.89	4.32	1.82	3.54
• FFB Transports	3.57	0.35	2.83	4.55	3.51	4.79	3.81	4.89	2.11	0.67	3.00	4.13	2.68	3.91	1.77	3.30
• Sales and price agreement of FFB	3.48	0.43	2.46	4.54	3.49	4.98	3.54	5.00	1.56	0.73	2.00	3.02	2.11	3.10	1.26	2.48
Average	3.56			4.72		5.24		5.05	1.99			3..74		3.298		2.994
Management and environmental monitoring:																
• Environmental permit requirements	2.79	0.91	1.00	3.69	3.20	5.69	1.62	4.26	1.06	0.24	1.86	2.05	1.06	1.31	1.00	1.30
• Prevention and suppression of fire	3.81	0.49	3.50	5.54	3.89	5.73	3.57	5.57	2.03	1.04	1.86	2.05	3.13	5.29	1.50	3.59
• Preservation of biodiversity	2.87	0.90	1.44	4.17	3.33	5.86	1.54	4.26	1.68	0.51	1.86	2.05	1.62	2.50	1.70	2.55
Average	3.16			4.60		5.32		4.93	1.59			3.00		3.04		2.84
Sustainable business improvement:																
• Documentation of improved results	3.60	0.64	1.33	4.45	3.75	6.00	3.33	5.73	1.25	0.43	1.86	2.05	1.15	1.74	1.25	1.79
Average	3.60			4.45		6.00		5.73	1.25			2.05		1.74		1.79
Total Average	3.60			4.65		6.00		5.24	1.89			2.13		1.72		2.83

below average. The knowledge role as information could use in numerous situations and some grasp of its relationship to information needs for an understanding of knowledge. Gentner & Collins (1981) proved that the lack-of-knowledge is an inference supported knowledge concerning one's own knowledge, during which no proof of information the statement. The lack-of-knowledge is additionally associated with one thing is recalled that should be important, or at least more important that don't seem to be as promptly recalled (Esgate & Groome, 2005). While, a competence is over simply knowledge and skills that people got to meet their goals and requiring over the mastery of certain narrowly outlined skills (OECD, 2005). Therefore, the competence and knowledge deficits are extremely related that contributes most to accomplishment and general cognitive competence (Hirsch, 2006).

The competence and knowledge deficits or gaps also proved that independent smallholder farmers did not distinguish between the "what" and "how" aspects of knowledge mentioned within the questionnaire or gaps exist when they aren't doing everything they might, don't seem to be doing things properly and will improve

what they're doing. In this case, farmers tend to not notice their own mistakes and skill deficits and failed to build efforts to learn. They're going to tend to link between lower financial gain and lower productivity to the other factors, like lack of government support, restricted access funds, or bad luck (Biermann et al., 2016). And, the majority of knowledge areas a reverse relationship was usually determined or the lower demand for knowledge was related to the lower output as mentioned and strengthened by Murphy (2010) due to marginal characterized, in terms of accessibility, resources, information, technology, capital and assets, while, there's great variation within the degree to that every of those applied.

Furthermore, those discrepancies between the knowledge and competence are often influenced and interplay of some aspects as follows. First, the relationship and dynamics between communities and the services that change over time and might have an effect on the stability and resilience of them (Bandura, 1999). Second, the synergistic effects on services, or trade off contribution between the yields and quality (IFAD, 2013; Qin, Li, & Yang, 2015). Third, the role of the information used to influence the distribution, abundance and community composition for successful management of services and meeting growing demands for agricultural products (Bommarco et al., 2013). Fourth, economic advantages and costs related to agroecology and ecological intensification to become an integral a part of farming (de Molina & Guzmán Casado, 2017;). Fifth, cost identified for farming investment to make sure food security, transformation and environmental sustainability, and also the resultant advantages (HLPE, 2013; IFAD, 2013; WEF, 2016).

Hence, those gaps, according to Paustian et al. (2015) came with some externalities. First, they form an important a part of the world agricultural community, nonetheless they're typically neglected (Dethier & Effenberger, 2012), also vulnerable due to reduced investment support and marginalization in economics and government policy (Leavy & Hossain, 2014). Second, they rely upon well-functioning ecosystems, in turn, have an effect on the condition of ecosystems pressure due to the impact of poverty and immediate needs (IFAD, 2013; Vignola et al., 2015). Third, a transformation by using sustainable farming practices to fulfill rising global (FAO, 2009; DESA, 2013; UN, 2016) due to volatile markets, growing administrative burdens, increasing in operation costs and growing competition for land. While, the discrepancy between knowledge and competence for each and overall cluster presented in Table 2.

In table 2, the largest discrepancy between knowledge and competence level in the second cluster (49.09%) was the sustainable business improvement aspect (71%) due to achieving these dual economic such as an increasing productivity and profitability that align this growth with environmental and development, also growing pressure for sustainable palm oil

Table 2. The Discrepancy Between Knowledge and Competence for Each and Overall Cluster

ISPO aspects	Knowledge level			Competence level			The discrepancy (%)			Mean of discrepancy
	Cluster			Cluster			Cluster			
	1	2	3	1	2	3	1	2	3	
1. Legality	4,84	5,50	5,24	3,00	3,00	3,00	38,02	45,45	42,75	42,07
2. Farmers' organization and farm management	4,72	5,24	5,05	3,57	3,30	2,99	24,28	37,06	40,71	34,02
3. Management and environmental monitoring	4,60	5,32	4,93	3,00	3,04	2,84	34,78	42,86	42,39	40,01
4. Sustainable business improvement	4,45	6,00	5,73	2,05	1,74	1,79	53,93	71,00	68,76	64,56
Average	4,65	5,52	5,24	2,91	2,77	2,66	37,75	49,09	48,65	45,17

production. In business, the sustainability can take into account the long-term consequences of sustained economic that involving development trading system, guaranteeing these systems have a lesser negative impact on the environment (FAO, 1995). The better business practices are sought-after out by investors, so improving sustainability measures will bring them in.

However, there are barriers combating the sustainable business improvement, i.e. The economic and financial barriers; the innovational barriers as a lack of innovation-oriented research (Dearing, 2000; UN, 2013); the social barriers due to the absent of a significant amendment in human behavior due to the marginalization of the poor and inequities, limited awareness of sustainable development; the political barriers as inadequate economic, social and environmental methods for policies, plans and projects implementation (Jordan, 2013); poor monitoring and evaluation systems as lack of specific targets, mensuration and information to trace progress, leading to a lack of knowledge available to decision-makers (Yuen & Lim, 2016); institutional barriers as a result of lack of institutional expertise to control all the mechanism (Tay et al., 2015); and trade barriers (Vorley, Roe, & Bass, 2002; EC, 2011).

While, the smallest one was farmers' organization and farm management aspect of overall cluster. This finding inexplicit that the effective functioning of an agricultural research and extension system requires not a linear, but a triangular arrangement between research institutions, extension and coaching agencies and farmers' organizations (Pertev, 1991). The presence of robust and representative farmers' organizations and their formal recognition as partners in research and extension for all areas is thus an essential basis for agricultural and rural development. For several decades, farmers' organizations have created persistent calls to underline the importance of their participation within the process of development, i.e. Empowering and promoting the leadership (Penunia, 2011), and currently that this principle is wide accepted and applied. Therefore, the farmers' organization with transparency and accountability are the key goals prerequisites for to be effective, including developing operating procedures, reporting mechanisms, which is perceived as a key success factor by participating farmers (CPI, 2013).

This findings was in line with the first cluster for farmers' organization (37.75%) and farm management aspect (24.28%) and supported by Awang et.al. (2016) that the guidance and advisory service program of transferring technology with practicing sustainable agriculture and the impact on productivity of smallholders' was urged through private and government institution could increase awareness on high yield and sustainable oil palm production among independent smallholders' as well as the discrepancy between knowledge and competence level of overall clusters, that proved the largest one was sustainable business improvement aspect as 64.56% and the smallest one was farmers' organization and farm management as 34.02%.

Surveys repeatedly show that while not coaching, farmers are unable to create sensible farm decisions; knowledge of farm selection, application rates and timing is poor; and while not knowledge of alternatives, farmers can usually assume that the sole solution to the issues is used the inputs more frequently (Dinham, 2003). Thus, the responses for these gaps to extend the competence as follows. First, an affordable "information" intervention, benchmarking to every alternative for weak farmer motivation and the best practice for leaders motivation with respect to the standards in certification systems through the extension programs (Hornidge et al., 2016). Second, extension measures seeking to encourage greater specialization and commercialization are thus additionally seeming to extend farmers' appetence for knowledge. Third, extension measures for target groups that are conscious of their own knowledge and skill limitations (Biermann et al., 2016).

There are two mutually non-exclusive ways that to interpret such gaps. First, there's demand for knowledge if it deems important contribute to their financial gain, livelihoods and protraction of poverty (IFAD, 2003). Independent smallholder farmer's who indicated low knowledge can typically be those within which they're not very productive (Robinson-Pant, 2016; Bakhtiar et.al., 2017). Second, self-assessments of competence and knowledge, is that individuals who grasp little about a subject also are unaware of their ignorance. This phenomenon would additionally result in a positive correlation between knowledge and competence gaps in line with Mozumdar (2012) that the worse farmers are in their non-conventional production factors like human capital development,

agricultural research and proper technology transfer, public and private investment in education, research, extension and infrastructure development, policy reform, political stability, and sustainable natural resources management etc., the less interest they need in upgrading relevant skills, and vice versa (Shaun et al., 2014). Furthermore, the difference-test for clusters as presented in Table 3.

In table 3, the level of knowledge regarding the legality and farm management wasn't different in all clusters, however, their level of competence was different in all clusters with the gap was 40.58% (in Table 1). The similarity of independent smallholder farmers' knowledge revealed that there's a recognition of legality aspect was required to make sure that the assessments are carried out with perspicacity and consistency, along with the required levels of technical rigor and stakeholder credibility. Thus, the indicators and guidance should be developed; so as to keep overall control of the quality of any set of indicators and guidance claiming to be official interpretations, particularly within the recognition of ISPO. However, the approval mechanism that guaranteeing the competent, credible and consistent results of the certification, leaving several smallholders tough to realize it due to lack in capability, knowledge and resources to adopt sustainable production practices.
On the contrary, the level of knowledge regarding land disputes & compensation and other disputes; peatlands; and the preservation of biodiversity were different in all clusters, but their level of competence wasn't different in all clusters with the every gap as followed by 60.87%; 15.87%; and 49.44%. While, the others of knowledge and competence level were different in all clusters with the gap was 45.17% (in Table 2).

The level of knowledge regarding land disputes & compensation and other disputes proved that had extensive negative effects on economic, social, spatial and ecological development, where land market institutions are weak, and opportunities for economic gain by illegal action are widespread (Wehrmann, 2008). The level of knowledge of land disputes & compensation and other disputes was different in all clusters due to being clashes between different perceived cultures. Thus, culture based approaches is needed for conflict management that are actually conflicts over land and related natural resources because it can have disastrous effects on individuals as

Table 3. Difference-Test for Overall Clusters

ISPO Aspects	F-value$_{knowledge}$	F-value$_{competence}$
Legality:		
Legality and farm management	2,99*	19,141***
Plantation site	124,63***	22,162***
Farmers organization & farm management:		
Join in farmer groups and cooperatives	39,81***	55,595***
Land disputes & compensation and other disputes	47,21***	2,243
Relevant information for stakeholders	110,52***	14,490***
Land clearings	60,36***	23,878***
Seed to support the productivity	8,81***	64,976***
Planting on mineral soils	7,70***	32,059***
Peat land	10,26***	1,881
Plant maintenance	13,80***	105,298***
Control of pest plant organism	96,01***	293,390***
Harvesting	90,19***	77,815***
FFB Transports	20,94***	66,669***
Sales and price agreement of FFB	9,87***	32,101***
Management and environmental monitoring:		
Environmental permits requirements	120,83***	96,131***
Prevention and suppression of fire	6,73**	78,875***
Preservation of biodiversity	231,25***	0,841
Sustainable business improvement:		
Documentation of improved results	36,91***	9,060***

***, ** are significance sign for α=1%, 5%

well as on groups and even entire nations.

While, the distinction of knowledge regarding peatlands revealed that it's essential for the future land use of peatlands incorporates the principles and practices of wise use so as to promote sustainable management, particularly with regard to hydrology, water and carbon. Inevitably, however, every type of human intervention on peatlands ends up in impairment or perhaps loss of natural resource functions (ecology, hydrology, biodiversity, carbon storage) (IPS, 2008). It looks that there's a necessity to seek out solutions for the management of peatlands within the best approach from a climate, however, at the same, from a human needs point of view. Thus, the knowledge regarding effective peatlands management additionally requires engagement between scientists, policy makers and stakeholders.

Furthermore, the highest F-value of knowledge level was the preservation of biodiversity compared to other aspects of ISPO in all clusters. And, the preservation of biodiversity was the most important distinction between the knowledge and competence level compared to other aspects of ISPO in all clusters. This finding was supported by biodiversity necessities in certification schemes usually will not to influence the environmental performance (EC, 2010; UNEP-WCMC, 2011). While, measure to safeguard and protect biodiversity designed are needed to manage the impact of sector-specific and also the significant standard gap criteria of biodiversity in and all sectors (OECD, 2014). There's some underlying that followed this issue. First, the differences are evident within the depth of what issues are coated that caused by disparities within the language used and also the use of internationally recognized definitions. Second, all standards mention within the preservation of diverseness aren't explicitly ask for to prevent habitat loss, but include lesser requirements to limit and mitigate loss. Third, most of the reviewed standards recognized protected areas and many offer detailed guidance on the way to operate close to or in protected areas; and also the concept of priority conservation areas are incorporated in fewer than half of the standards (UNEP-WCMC, 2011).

Conversely, the smallest distinction between the knowledge and competence level compared to other aspects of ISPO in all clusters was prevention and suppression of fire. Fire could be a vastly complex issue and it involves the rights of local communities, illegal activity by small enterprises, political links and fundamental complexities over unclear land tenure, a tradition of fire-based agriculture, the politics of land management, lack of accurate maps and technical capability maps, ownership and protection (SIIA, 2016).

The ground evident proved that the basic cause within the concession area and also the surrounding landscape is burning to clear land. Several stakeholders highlighted other steps that require to be taken to deal with fire and haze within the long-term, together with increased collaboration with civil society and authorities, regulatory reform to support more sustainable practices, improved outreach to local communities, and even ecosystem restoration (Qadri, 2001; UNDP, 2015).

Landscape level conservation and ecosystem restoration programs should be incorporated during this answer for the requirements balance and integrated of the various stakeholders and also the communities. Yet, the policies start with effective spatial planning, the need to encourage the development of the integrated map to provide a single, comprehensive map of land-use. The urgency at this time is to have a coordinated, collaborative response that involves all relevant stakeholders. Thus, integrated map might use for determining future development priorities and establishes the planning and development goal.

While, the highest F-value of competence level was control of the pest plant organism compared to other aspects of ISPO in all clusters. This is understandable, pests are organisms that might compete with or damage crop species due to reducing plant density, cause plant stunted growth and their death, cause lower production capacity, damage berries and in many other ways reduce the yield or quality of agricultural products (Haferkamp, 1988; Bita & Gerats, 2013). Thus, all farmers have to worry not only about preventing the spread of quarantine, but also to spread of many other pests due to the threats to plant biosecurity have increased with the globalization of trade and travel. And, predicted climate change effects might influence the impact of damaging pests and associated management practices. Therefore, the level of involvement and influence will

range from local, regional, national, to international and short term to long-term with increasing responsibility and competency level from associate, to register for a senior plant health professional from stakeholders.

Otherwise, documentation of improved results was the smallest competence level compared to other aspects of ISPO in all clusters. Smallholders need targeted and practical support, helping to access expanded markets, financial services and quality and management consultancy services face the highest demands of the palm oil sector. Individual farming practices have to be documented transparently and in full. For the smallholder farmers, this initially means extra work and it presupposes a relevant level of knowledge, which they often do not possess ~~because~~ due to the sustainable and certified production of palm oil pays off for them perceptibly in the long term (Seegräf et.al., 2010). However, improved methods of cultivation and harvesting could ~~help to~~ increase the yields, as the quality of the fresh fruit bunches improves, the oil palm farmers can negotiate higher prices that off course can fulfill using good farming documentation.

Conclusions

The level of knowledge of independent smallholder farmers in ISPO aspect, i.e. The legality; farmers' organization and farm management; management and environmental monitoring; and sustainable business improvement are highly/important in all clusters, but the level of competences is low/below average. The largest discrepancy between knowledge and competence level was the sustainable business improvement aspect. And, the smallest one was farmers' organization and farm management aspect. The level of knowledge regarding the legality and farm management wasn't different in all clusters, however, their level of competence was different in all clusters. On the contrary, the level of knowledge regarding land disputes & compensation and other disputes; peatlands; and the preservation of biodiversity were different in all clusters, but their level of competence wasn't different in all clusters. While, the others of knowledge and competence level were different in all clusters. Furthermore, the highest F-value of knowledge level was the preservation of biodiversity compared to other aspects of ISPO in all clusters. And, the preservation of biodiversity was the most important distinction between the knowledge and competence level compared to other aspects of ISPO in all clusters. Conversely, the smallest distinction between the knowledge and competence level compared to other aspects of ISPO in all clusters was prevention and suppression of fire. While, the highest F-value of competence level was control of the pest plant organism compared to other aspects of ISPO in all clusters. Otherwise, documentation of improved results was the smallest competence level compared to other aspects of ISPO in all clusters.

Recommendations

The effective functioning of an agricultural research and extension system is needed between research institutions, extension and coaching agencies and farmers' organizations with transparency and accountability, including developing operating procedures, reporting mechanisms. So, it is crucial for serving the farmers with the guidance and advisory service program of transferring the technology of practicing sustainable agriculture and the impact on productivity with some responses as follows. First, an affordable "information" intervention, benchmarking to every alternative for weak farmer motivation and the best practice for leaders motivation with respect to the standards in certification systems through the extension programs. Second, extension measures seeking to encourage greater specialization and commercialization are thus additionally seeming to extend farmers' appetence for knowledge. Third, extension measures for target groups that are conscious of their own knowledge and skill limitations. The indicators and guidance should be developed regarding the legality and farm management competence. The culture based approaches for managing the conflict of land disputes & compensation and other disputes, and also the principles and practices of land use within the best approach from a climate, however, at the same, from a human needs point of view for managing the peatlands issues.

Furthermore, the measure to safeguard and protect biodiversity designed with the collaboration with civil society and authorities through the landscape level conservation and ecosystem restoration programs and the integrated map to provide a single, comprehensive

map of land-use. And, the regulatory reform to support more sustainable practices, improved outreach to local communities, and even ecosystem restoration were taken by stakeholders regarding prevention and suppression of fire. The level of involvement and influence will range from local, regional, national, to international and short term to long-term with increasing responsibility and competency level from associate to control of the pest plant organism. Moreover, the smallholders need targeted and practical support, helping to access expanded markets, financial services and quality and management consultancy services face the highest demands of the palm oil sector through documented individual farming practices with transparently and in full to get improved results.

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