ADVANTAGES OF KNOWLEDGE MANAGEMENT AND SUPPLY CHAIN INTEGRATION. A CASE STUDY OF THAI PALM OIL PRODUCTION

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ABSTRACT

The objectives of this research are to study the direct influence on the competitive advantage and pattern development of variables affecting the competitive advantage of the Thai oil palm industry. This research employs a quantitative research method. The population for the study consists of 150 oil palm industrial operators in Thailand. Questionnaires are used in the data collection and the data are analyzed by using SEM. The research results reveal that the Knowledge Management Process and Supply Chain Integration positively influence the competitive advantage in the quality, delivery, and cost. The competitive advantage receives a positive direct impact from the Knowledge Management Process and Supply Chain Integration. The variation of competitive advantage can be explained as 84%. The obtained results can be used for developing the industry to create economic growth and sustainable competitive advantage.

KEYWORDS
knowledge management process, supply chain integration, competitive advantage, palm oil.

Introduction

The oil plam industry in Thailand is an important industry and has the potential to be supported and promoted from the public sector throughout the supply chain. The business operation of oil palm has to encounter conditions of serious competition. Being considered as a plant with great economic potential for Thailand and Asia, the oil palm has its production volume separated by each country, revealing that the biggest producer is Indonesia, followed by Malaysia and Thailand, respectively, in terms of world oil palm yields [1]. Thailand has an average growth rate of 11.5%. However, the production volume of oil palm in Thailand still yields less compared to Indonesia and Malaysia (Food and Agriculture Organization of the United Nations [2]. Currently, the world situation has promoted simple process industry to become a process for creating

added value, especially in the production of biodiesel to replace more costly energy. This results in the continual growth of demand for oil palm.

FAO [3] data showed that the total area under oil palm cultivation in 2013 amounted to around 18 million ha, resulting in annual production of 55 million tons of CPO. Further data from Index Mundi [4] showed a production increase to 62 million tons by 2015, with 27% of this used in industry and the remainder used as food. Production in Malaysia has been growing much more quickly than in Indonesia. From the worldwide data, about 69% of all oil palm production is in Southeast Asia (12.5 million ha), and of this, Indonesia and Malaysia account for 93%. About 25% of the global total can be found in Western and Central Africa (4.4 million ha), while the remaining 1%, or one million ha, comes from South and Central America. Malaysia and Indonesia account for 85% of the total CPO supply, in part

because of the higher yields in addition to the large areas under plantation, as shown in Table 1. By region, Southeast Asia accounts for 89% of total production, while 6% comes from South and Central America and 5% from Africa. The yields generated by Indonesia and Malaysia as the two largest producers of oil palm have risen over time. Meanwhile, the yields in Thailand approach those of Indonesia as the world's greatest producer. These major global producers all have yields which are higher than the global average of 2.4 tons/ha; in contrast, the yields in Africa are much lower, as shown in Fig. 1.

In the development of organizations, products, processes, and machinery used in production, advanced technology is increasingly applied to replace human labor. This includes the cooperation among the stakeholders in the supply chain whether they are customers, competitors, distributors, or material suppliers, in order to plan for the strategies in reducing the production costs, increasing the quality, and expanding the production volume as well as improving the competitiveness and increasing the potential to compete with foreign countries. Correspondence from Mahmoud Jouini and Lenfle [6] suggests that the development to increase competitive advantages in costs and time will be able to meet the market demand for greater competitiveness. In addition, Ipek Kocoglu et al. [7] found that the development and adaptation of technology for welcoming innovation would be essential for creating sustainable competitiveness. This includes the focus on the management of knowledge, learning, technology, and production

Table 1
Production and consumption of palm oil in 2015 (thousand tons).

|	Production	Beginning stocks	Consumption	Exports	Imports	Ending Stocks
Predominantly exporter countries						
Indonesia	33,000	1,626	8,620	24,500	–	1,506
Malaysia	20,500	2,642	3,280	18,150	400	2,112
Thailand	2,200	53	1,990	150	20	133
Colombia	1,130	69	945	310	130	74
Nigeria	970	82	1,540	18	570	64
Papua New Guinea	580	50	13	590	50	77
Ecuador	510	67	290	245	–	42
Ghana	500	5	700	100	300	5
Honduras	490	141	205	320	10	116
Guatemala	470	31	70	400	20	51
Ivory Coast	415	54	265	260	115	59
Brazil	340	90	475	110	225	70
Cameroon	270	41	325	5	50	31
Costa Rica	250	13	100	160	25	28
Democratic Republic of Congo	215	24	295	1	80	23

Source [5]
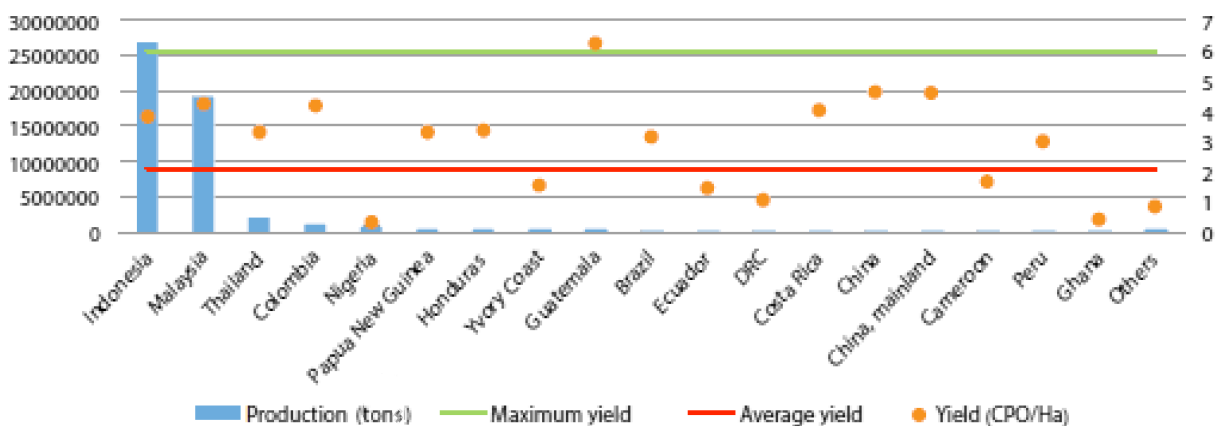
Fig. 1. Production and yields in 2015 [5].

capabilities which is the basis for creating the innovation and the operational performance of the organizations. Nonaka [8] and Drucker [9] state that the knowledge of the organizations is the most important aspect for gaining competitive advantage; if a company can protect its knowledge from being acquired or imitated by its competitors, it will gain an advantage. The knowledge management, information and dissemination of knowledge will be an important part of promoting the development of the oil palm industry, such as the information of knowledge, science, technology and innovation which can be applied in the commercial production by disseminating the knowledge to the oil palm industrial operators through various communication channels in order to promote the application of research in the industry. In addition, the public sector also has strategies to develop the industrial cooperation under the framework of the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT). This is a cooperative arrangement leading to economic growth and promoting sub-regional economic co-operation to increase the competitiveness potential in the global market, reduce transportation costs, and increase employment [10].

Objectives of the study

- To study the direct influence of the variables on the competitive advantage of the Thai oil palm industry.
- To develop the patterns of variables affecting the competitive advantage of the Thai oil palm industry.

Literature review

Knowledge management process

In creating a competitive advantage resulting in an advantage in the Knowledge-Based Economy, it is necessary to learn, study, and apply in order to benefit from the sustainable development. It is an asset which can neither be bought nor sold. It is instead created from the development of thought or knowledge management which is the process using the existing knowledge or learning to benefit the organization [9]. Nonaka and Kano [11] state that the explicit management and sharing of knowledge, and the potential knowledge of each person, affect individual actions and behavior. With regard to the creation of knowledge, personal skills, and technical knowledge, Wiig [12] states that knowledge management is related to knowledge creation, organizational sharing, and the use of knowledge to create value for the organization. Ducker [9] considers knowledge

as an important resource of business with considerable influence, and a key factor influencing competitive advantage. Lee et al. [13] found that knowledge management positively and significantly influenced the knowledge management processes, and that the knowledge management processes had added creativity and efficiency in organizations. Nguyen and Neck [14] found that the knowledge management process has a significant impact on each aspect, and that the protection of knowledge and the application of knowledge have maximal impact on the competition. Miils and Smith [15] found that the capacity of the infrastructure, knowledge, and competences affect the efficiency of organizations positively. Chung [16] found that knowledge management abilities directly affect competitive advantage. Fan-Yun Pai and Hung-Fan Chang [17] reveal that knowledge sharing and absorption must succeed to maintain the competitive advantage, dynamic capabilities, and impact of knowledge sharing and absorption on innovative organizations. Kah-Hin Chai et al. [18] studied knowledge management and social networks by studying the closed networks in organizations to determine competitive advantage. The closed level of networks affects the ability in identifying the knowledge of the organizations. Knowledge transfer, knowledge protection, and knowledge and skill institutes affect the competitive advantage of the organizations.

According to the literature study on related research regarding the empirical variables or noticeable variables of the Knowledge Management Process and its synchronization, 5 empirical variables or noticeable variables can be identified as follows:

1) Knowledge Creation and Acquisition is to find and collect the knowledge from both inside and outside the organizations to be used in the operation resulting in the exchange of learning and creation of new knowledge based on the existing knowledge of the organizations [8, 12, 19–22].
2) Knowledge Sharing is the process of sharing knowledge among the people working together or with relevant agencies via correspondences between persons or via the information technology system [8, 12, 19, 20, 22].
3) Knowledge Storing is the process of storing knowledge systematically or the use of information technology systems in storing the database for the ease and convenience of searching, as well as protecting the knowledge of organizations [19, 20, 22].
4) Knowledge Transformation is the process of disseminating knowledge towards the target persons by giving, transferring, or presenting the efficient knowledge for the recipients to use in their work in

order to develop their skills. Observation and evaluation will be made on the individual learning [12, 20, 21].

5) Knowledge Utilization is the process of applying beneficial knowledge in developing organizations continually in order to generate efficient and effective operations in creating a competitive advantage for those organizations [12, 20, 21].

Supply chain integration

In the context of the supply chain, the frame for measuring efficiency which is widely used in the research on the supply chain is adjusted [23]. Supply chain integration allows companies to approach their resources and competences in terms of knowledge implicit in the other members of the supply chain. After that, the innovation of those companies can be enhanced including integrating the supply chain process with customers. The suppliers of the companies and the efficiency in exchanging the information can be improved, leading to product improvement and upgraded flow of materials throughout the supply chain [24]. Moreover, Uche Okongwu et al. [25] state that supply chain integration is related to internal demand management in the companies, covering the planning and management of all activities involved in the procurement, purchasing, hiring, conversion, and all other logistics management activities. The widely-used concepts that help to measure the supply chain, including the non-monetary indicators, are important in the context of sustainable development [23]. The concepts consist of consumption, flexibility, response, quality of products, and the supply chain itself [26]. Christina W.Y. Wong et al. [27] state that data integration is beneficial for efficient supply chain management. Their study shows that the methods and factors are related to the products, the complexity of the market, and the relationship of supply chain integration, finance, and operational performance. This corresponds with the findings of Daniel Prajogo and Olhager [28] who studied supply chain integration and operational performance. The impact on information technology sharing, integrated logistics, and searching for efficiencies in the supply chain are the key components of the relationship between raw materials and the data. The researcher has integrated the data and raw materials among the trading partners in the supply chain and observed the impact on operations. Chee Yew Wong et al. [29] carried out the observation, and testing of the relationship between suppliers or customer integration and the operational and delivery performance, as well as the flexibility between the internal integration and the product quality and production

cost. This was also addressed by Peirchyi, Lii and Fang-I Kuo [30] who examined the overall impact of focus on innovation and supply chain integration (customer integration, raw material supplier integration, and internal integration), and the overall competitiveness in the operational performance of the organizations. These studies indicate that organizations focus on using innovation to help integrate their supply chains and they realize the potential of supply chain management mechanisms, direction of innovation, and supply chain integration together with competitiveness and operational performance

1) Supplier Integration is the cooperation between the companies and suppliers in the management strategies, mutual data usage, or mutual planning for the development of products [24, 29–32].

2) Customer Integration is the notion that companies come to educate and make the customers understand the marketing data, logistics information, development and improvement of products to meet the market demand efficiently [24, 29–32].

3) Internal Integration is the management inside the organizations such that all parties work together in carry out their operational duties and attending to their responsibilities in a co-operative manner [29–32].

Competitive advantage

The importance of competition is linked to the importance of operations, competitive abilities, and the prioritization of competition to achieve competence and create a competitive advantage for the organization. Michael E. Porter [34] says that building a competitive advantage is an important strategy of organizations and consists of a cost strategy, cost strategy creation, or trying to arrange the activities to reduce the costs and create the competitive advantage. Also necessary is a differentiation strategy which is related to the effective operation that is essential to the competitiveness of the organization in order to achieve competence [35], and the use of knowledge which is the most important resource in stipulating the strategies of organizational development from knowledge resources to be competitively advantageous [36].

However, Leonidou et al. [37] indicates that the creation of long-term differentiation strategy and the use of low costs to make money and profits to achieving the organizational objectives can create customer satisfaction, customer retention, and the pursuit of factors defining the advantage such as the use of basic resources and the implementation of these ideas by product manufacturers. The organizational thinking processes are used as the mechanism for the develop-

ment of new products to provide a competitive advantage in the market. The relationships of resources and capabilities are identified as the driving forces [38]. Facing the global competitive environment and the uncertainty in learning about technology create important challenges for success in competition. For the companies, the competences in innovation, technology, learning, productivity, research and development are the basis for creating the innovative strategies which the organizations require [7]

1) Cost is the notion that organizations must apply the learning management process in developing and improving their operations to be efficient in order that the operational process can be performed at minimum cost for the competitive advantage in price [35, 37, 38, 40, 41].

2) Quality is the notion that organizations must manufacture their products with good quality and reliability in accordance with customer demands [35, 37, 38, 40–42].

3) Delivery is the notion that organizations must deliver the products punctually to the correct place. There must be a high level of reliability in delivery with the quickness in introducing the new products, including the quick response to the complaints of customers [35, 38, 40–42].

After reviewing the relevant literature, the research model can be developed as shown in Fig. 2 and the following hypotheses can be made:

Hypothesis 1: Knowledge Management Process has a direct influence on Competitive Advantage.

Hypothesis 2: Knowledge Management Process has a direct influence on Supply Chain Integration.

Hypothesis 3: Supply Chain Integration has a positive direct influence on Competitive Advantage.
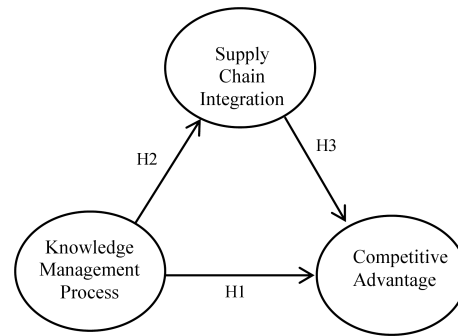

Fig. 2. Conceptual framework.

Methodology

Questionnaire design

The questionnaires are created and developed as measurement tools based on the conceptual framework and practical definitions. In creating the measurement tool or questionnaires, a 7-Point Likert Scale [43] is used as shown in Table 2. Five experts are asked to examine the consistency of the questionnaires and IOC values are calculated. The items with IOC from 0.5 and above are used. After that, the revised questionnaires are used for collecting the sample data initially from 30 sample respondents to measure the internal consistency with Cronbach's alpha coefficients (α-coefficient) to calculate the mean of the obtained correlation coefficients by using the empirical variable questionnaires with confidence values greater than 0.70. This is considered to be highly reliable [44]. This research study measures internal consistency by means of coefficients, reliability, or intrinsic conformance, through a Cronbach's alpha value of 0.879.

Table 2
Measurement creation and development of research questions.

Exogenous Latent Variable	Manifest Variables	Development
Knowledge Management Process	1) Knowledge Creation and Acquisition	42, 45, 46, 47, 48, 49, 50
	2) Knowledge Sharing	
	3) Knowledge Storing	
	4) Knowledge Transfer	
	5) Knowledge Utilization	
Intervening Variable	Manifest Variables	Development
Supply Chain Integration	1) Supplier Integration	29, 30, 33, 51,52, 53
	2) Customer Integration	
	3) Internal Integration	
Endogenous Latent Variables	Manifest Variables	Development
Competitive Advantage	1) Cost	35, 39, 40, 42, 54
	2) Quality	
	3) Delivery	

Data collection

The data analysis approach is used in the analysis of the relationships among variables. The Structural Equation Model (SEM) is applied for the analysis of the causal relationship structure between the variables. Correlational research as the principal form of statistical analysis seeks the pattern of relationships between the variables. The researcher considers the size of the sample group or the population used in this study at the ratio of ten sample respondents per variable as well as finding the size of the sample that is large enough to be used for the data analysis by applying the Structural Equation Model and Normal Curve [44]. It is explained that in this study, the researcher collects the data from 150 plants of Thai oil palm industry operators using simple random sampling. The data is provided by the executives in the Thai oil palm industry.

Results

Results of the analysis of the relationship between observable variables

The analysis of the relationship of the observable variables is performed first in order to consider the problem conditions possibly occurring as a result of multicollinearity, which is the condition whereby the variables have excessive relationships causing problems in the data analysis. This results in the high inexactness of analysis results. Therefore, the researcher analyzes multicollinearity by using Pearson's product moment correlation as well as testing whether all observed variables are identity matrices or not. As shown in Table 3, it is found that for the coefficient correlation of all analyzed variables, the correlation should not be over 0.8 [44]. According

to the data analysis results, it is found that the relationship between the observable variables has the observable variables correlation from 0.411–0.799 with the statistical significance level set at .01 which is the correlation lower than 0.8. It can be concluded that the analyzed observable variables cause no problem of multicollinearity and the mean of the variables lies between 5.38–5.68 (standard deviation is between 0.773–1.016.

Model measurement results

The model measurement by the confirmatory factor analysis (CFA) and the structural equation model (SEM) can be done by combining the factor analysis and the multiple regression together. Such a technique is beneficial for the researcher in investigating the variables in one process [44] by using the estimation of the maximum likelihood (ML). The variables are analyzed in reflective form. The statistics used in examining the consistence and goodness of fit measures will use the acceptable standard criteria as shown in Table 4.

The results of the analysis on examining the harmonization of empirical data and the variables by using the method of CFA and the results of SEM analysis reveal that the measuring model is consistent and harmonious with the empirical data (model fit) (Fig. 3). The KM (knowledge management process) has the standard regression weight between 0.597–0.914 and the R^2 or squared multiple correlation between 0.356–0.835. SCI (supply chain integration) has the standard regression weight between 0.849–0.904 and the R^2 or squared multiple correlation between 0.720–0.817. The CA (competitive advantage) has the standard regression weight between 0.845–0.878 and the R^2 or squared multiple correlation between 0.714–0.771 (as shown in Table 5).

Table 3
Mean, standard deviation, and Pearson's Correlation.

	Create	Sharing	Storing	Transform	Utilization	Supplier	Customer	Internal	Cost	Quality	Delivery
Create	1	.700**	.714**	.658**	.504**	.541**	.439**	.411**	.435**	.524**	.450**
Sharing		1	.682**	.709**	.516**	.544**	.462**	.415**	.424**	.550**	.422**
Storing			1	.715**	.565**	.622**	.591**	.547**	.555**	.594**	.507**
Transform				1	.648**	.633**	.571**	.541**	.513**	.582**	.511**
Utilization					1	.781**	.723**	.714**	.693**	.721**	.719**
Supplier						1	.799**	.735**	.774**	.716**	.716**
Customer							1	.791**	.705**	.657**	.680**
Internal								1	.696**	.667**	.672**
Cost									1	.615**	.738**
Quality										1	.656**
Delivery											1
Mean	5.38	5.68	5.63	5.70	5.46	5.57	5.54	5.56	5.65	5.55	5.62
Std.	1.016	.824	.894	.851	.864	.903	.801	.833	.821	.786	.773

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Table 4
Standard criteria on the consistency.

Relevant statistics	Symbols	Criteria
Chi-square	χ^2	Ns.($p > .05$)
Relative Chi-square	χ^2/df	$\chi^2/\mathrm{df} < 2.00$
Goodness of Fit Index	GFI	$>.90$
Comparative Fit Index	CFI	$>.95$
Normal Fit Index	NFI	$>.90$
Adjusted Goodness of Fit Index	AGFI	$>.90$
Root Mean Square Error of Approximation	RMSEA	$<.05$

Source: [44, 55, 56].

Table 5
Relative influence of items.

Relationship between variables			Standard Regression Weights	S.E.	Squared Multiple Correlations	C.R.	p
SCI	$\leftarrow$	KM	.924	.159	.845	8.240	***
CA	$\leftarrow$	SCI	.429	.197	.834	2.126	.033
CA	$\leftarrow$	KM	.502	.294		2.370	.018
Cost	$\leftarrow$	CA	.845	.085	.714	11.841	***
Quality	$\leftarrow$	CA	.878	–	.771	–	–
Delivery	$\leftarrow$	CA	.866	.074	.749	13.144	***
Customer	$\leftarrow$	SCI	.885	.060	.784	16.617	***
Supplier	$\leftarrow$	SCI	.904	.069	.817	16.690	***
Internal	$\leftarrow$	SCI	.849	–	.720	–	–
Storing	$\leftarrow$	KM	.718	.124	.516	10.383	***
Utilization	$\leftarrow$	KM	.914	.177	.835	8.965	***
Sharing	$\leftarrow$	KM	.604	–	.364	–	–
Create	$\leftarrow$	KM	.597	.122	.356	10.007	***
Transform	$\leftarrow$	KM	.709	.112	.503	10.828	***

Note: *** significant at the 0.01 level.

KM = Knowledge Management Process, SCI = Supply Chain Integration, CA = Competitive Advantage.

According to the analysis on examining the consistency and harmony between the model of empirical data conceptual framework, it is found that the structural equation model is harmonious with the empirical data (model fit) (Fig. 3). The tested values are found to be Chi-square (χ^2) = 40.058, df = 27, $p = .051$, CMIN/DF (χ^2/df) = 1.484, GFI = .964, CFI = .993, AGFI = .912, NFI = .979 and RMSEA = .049

The analysis of the structural equation model is as follows:

$$\mathrm{SCI} = 0.92\mathrm{KM}, \qquad R^2 = 0.85, \qquad (1)$$

$$\mathrm{CA} = 0.50\mathrm{KM} + 0.43\mathrm{SCI}, \qquad R^2 = 0.84. \qquad (2)$$

From the Eq. (1), it is found that the supply chain integration receives a positive impact from the knowledge management process. The variation of supply chain integration can be explained at 85% ($R^2 = 0.85$).

From the Eq. (2), it is found that the competitive advantage receives a positive impact from knowledge management process and supply chain integration. The variation of competitive advantage can be explained at 84% ($R^2 = 0.84$).
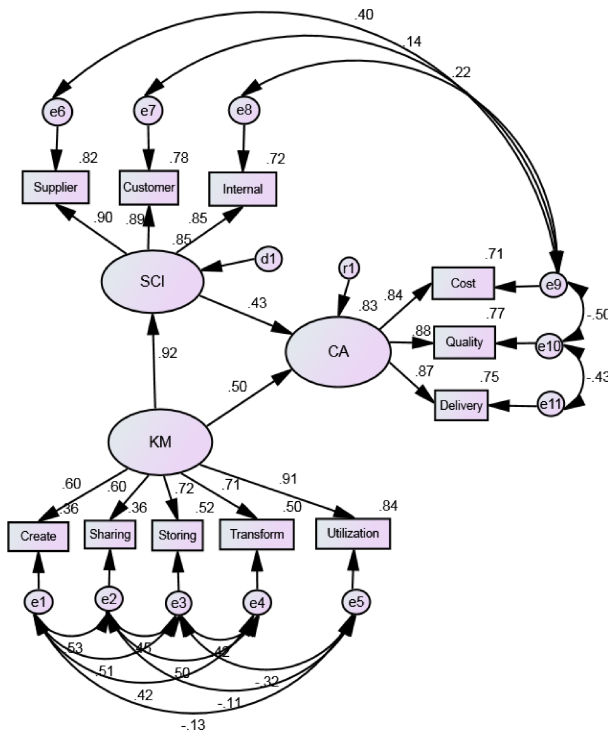
Hypothesis testing results

According to the hypothesis testing with t-value (C.R.), p-value, and the calculation to find the correlation of the variables in each pair of variables along with evaluating the influence between the variables resulting from the standard regressive coefficients, it is found that the standard regressive coefficients (coef.) of each line of correlation following the research hypothesis reveal the C.R. (t-test) at a significant level, having C.R. over 1.96 in all values. Thus, the researcher presents the analysis results which support all hypotheses along with the results of hypothesis testing as well as the influence of variables as shown in Table 6.

Table 6
Results of research hypothesis testing.

Hypothesis	coef.	t-test	p	TE	DE	IE	Results
H1: CA ← KM	0.502	2.370	.018	.899	.502	.397	Supported
H2: SCI ← KM	0.924	8.240	***	.924	.924	–	Supported
H3: CA ← SCI	0.429	2.126	.033	.429	.429	–	Supported

Note: ***significant at the 0.01 level, Coefficient refers to the Beta (β).

TE: Total effects, DE: Direct effects, IE: Indirect effects, Coefficient: coef.

Chi-square (χ^2) = 40.058, df = 27, p = .051,
CMIN/DF(χ^2/df) = 1.484, GFI = .964, CFI = .993,
AGFI = .912, NFI = .979 and RMSEA = .049

Fig. 3. Final model.

Hypothesis 1: Knowledge management process has a direct influence on the competitive advantage. The results of hypothesis testing reveal that the regression coefficient = 0.502. The hypothesis can be accepted at the statistical significance level of .05.

Hypothesis 2: Knowledge management process has a direct influence on the supply chain integration. The results of hypothesis testing reveal that the regression coefficient = 0.924. The hypothesis can be accepted at the statistical significance level of .01.

Hypothesis 3: Supply chain integration has a positive direct influence on the competitive advantage. The results of hypothesis testing reveal that the regression coefficient = 0.429. The hypothesis can be accepted at the statistical significance level of .05.

Discussion and implementation

The study of the relationships between the knowledge management of the organizations and the competitive advantage reveal that the knowledge management processes have a positive direct influence on the competitive advantage in the Thai oil palm industry. It is found that the organizations apply knowledge for the maximum benefits allowing the organizations to have a competitive advantage in quality. This is consistent with the results of the study of Nguyen and Neck [14] finding that the knowledge management process significantly affects knowledge protection and knowledge application with the greatest impact on competition [57]. Fan-Yun Pai and Hung-Fan Chang [17] studied the knowledge sharing and successful knowledge acquisition which can help maintain the competitive advantage for organizations [8, 42]. Moreover, Shu-Hsien Liao and Ta-Chien Hu [58] studied the relationship between environmental uncertainty, knowledge transfer, and competitive advantage. It is found that knowledge transfer can develop the core competencies of the organizations leading to a competitive advantage for the benefit of improving the efficiency and operational performance. The results show that all components of competences in knowledge management have a significant positive influence on the competitive advantage. Therefore, good knowledge management can enhance the performance of organizations in order to create a sustainable competitive advantage [59, 22]. In addition, supply chain integration also has a positive direct influence on the competitive advantage. The results of relationship analysis on the supply chain integration of the Thai palm oil industry focused especially on supplier integration which is the most valuable aspect upstream in the industry. The organizations must prioritize upstream raw materials by selecting good suppliers since this will result in good quality products in order to create sustainable growth opportunities for the [60]. This includes the competence in improving the internal processes to cope with the external pressures that affect the operation of the organizations. This is caused by both internal and external collabora-

tion in improving the sustainably of the processes, leading to the saving of costs and increase in profits from total sales when the skills and knowledge are enhanced [61, 62]. The concepts related to credibility and transparency which are able to develop a traceability system from suppliers through internal processes to customers are important [63] in the operation of organizations in the supply chain. This can create the link among the suppliers, the organizations, and the customers of the oil palm industry with the focus on sustainable competitive advantage [29]. Knowledge sharing, knowledge transfer, utilization, and the search for new concepts in supply chain integration are stated as the core of the upstream and downstream relationships throughout the supply chain.

Conclusion

The oil palm industry in the global market has a high degree of competition. Most manufacturers focus on creating the competitive advantage in terms of quality. Therefore, the development in Thailand through the addition of value to agricultural products affects the industrial sector and the country's revenue generation. Oil palm was previously produced for consumption but now it has become essential for the production of biodiesel as a form of renewable energy. According to the study, it is found that the process of obtaining benefits from the application of knowledge generates a significant positive impact on maximizing the competitive advantage through quality and creates significant indirect impacts through the integration of the supply chain (supplier, internal, customer) of the oil palm industry from upstream, middle stream, and downstream in order to create the added value to the products and the roles of those who are involved in the supply chain, especially the suppliers which are found to be most affected. However, the connection of the knowledge management process to the elevation of quality of people, knowledge creation, scientific development, innovative technology, and creativity form the driving forces in the economic development of the country by formulating strong strategies for the agricultural sector to build stability in the production of food and energy as well as the development for generating added value to the oil palm industry throughout the production chain. Moreover, the strategies are also formulated on the cooperative development to create trade and investment leading to economic growth and increasing competitiveness in the global market.

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