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The Potential Use of E-Procurement in the Malaysian Palm Oil Industry Supply Chain

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ABSTRACT

E-procurement is electronic methods of conducting business transactions particularly purchasing activities. Many companies around the world have started to apply the technologies though there are still some which refuse to utilize them. The objective of this paper was to investigate the application of e-procurement technologies in managing purchasing activities among the Malaysian Palm Oil Industry (MPOI) supply chain players. Responses from the representative player of each stage of the MPOI supply chain were gathered via in-depth interviews using an open ended questionnaire. A detailed analysis based on content analysis from the responses revealed that e-procurement technologies could be a potential tool to increase the efficiency of purchasing activities, enhance purchasing and searching processes, as well as providing relevant information on materials, and aid in the reduction of human error. Certain products for example fresh fruit bunch (FFB), crude palm oil (CPO), crude palm kernel oil (CPKO) and palm kernel however were found to be impractical to use e-procurement tools due to several reasons. These products were commonly supplied by very established suppliers who are quite conventional in their business. Thus e-procurement tools are not often used in their purchasing activities. This paper concluded that e-procurement technologies were not 'really' available in the MPOI supply chain.

Keywords: E-Procurement, internet, Malaysian Palm Oil Industry, supply chain management

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INTRODUCTION

Companies realize that the application of advanced Internet technologies such as e-procurement would be necessary to operate in a highly competitive market.

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E-procurement is one example of a set of advanced Internet technologies. It uses a web-based technology to support the key procurement processes, including requisition, sourcing, tendering, contracting, ordering, informing, auctioning and payment.

Van Weele (2005) described e-procurement as a collection of web technology-based purchasing solutions aimed at simplifying commercial transactions within and between companies. There are claims from Croom (2000); Croom and Brandon-Jones (2007); de Boer *et al.* (2002); Eadie *et al.* (2010); Gunasekaran and Ngai (2008); Kheng and Al-Hawamdeh (2002); Rai and Tang (2006); Roche (2001); Sander *et al.* (2002) and Puschmann and Alt (2005) that e-procurement technologies offer some benefits. The claimed benefits are that they simplify traditional procurement processes, enhance choices in supplier selections, improve buyer-supplier relationships, increase market transparency, lower purchasing prices and transaction costs, reduce administrative costs, shorten order fulfilment cycle time, lower inventory levels, provide a two-way communication of real-time purchasing information, and establish a close collaboration between companies and their business partners. These claimed benefits have in some ways attracted attention from most companies around the world to start adopting e-procurement technologies.

Recognizing the importance of e-procurement for global transactions, the government of Malaysia has developed marketplace portals to ease the purchasing processes for the companies. The utilization of e-marketplace portals by companies is basically to simplify and increase their external interactions with various parties to obtain the latest information on products or services and to conduct online purchasing transactions. Several government agencies such as the Malaysian Institute of Microelectronics Systems (MIMOS), the Ministry of Plantation Industries and Commodities , the Multimedia Development Corporation (MDC), the Malaysian Palm Oil Association (MPOA) and the Ministry of Science, Technology and Innovation are involved in the establishment of e-marketplace portals. Oilpalmworld is an example of palm oil e-marketplace portal established to enable palm oil-based companies to have a wider business reach and to increase the efficiency of these companies in searching potential customers and suppliers globally. This enhances the transparency of relevant business activities within the palm oil industry players. The palm oil portal enables palm oil industry to encourage business-to-business (B2B) e-commerce functions and bring buyers, sellers, plantation owners, refiners, traders and brokers from around the world into a single platform.

By recognising the potentials of e-marketplace in the palm oil market, many palm oil supply chain players have become involved in online purchasing with the use of e-procurement tools. Although e-procurement offers significant potential for improving efficiency and

effectiveness in purchasing activities, there are some limitations and risks that the use of e-procurement technologies have revealed. The objective of this paper was to investigate the application of e-procurement technologies in managing purchasing activities among the Malaysian Palm Oil Industry (MPOI) supply chain players.

LITERATURE REVIEW

According to Davila *et al.* (2003), companies' concerns about e-procurement technology can be attributed by two main reasons. Firstly, the implicit association that companies have made between e-procurement technologies and the Internet-enabled business models responsible for an Internet 'bubble' particularly regarding the reliability and compatibility of Internet systems. Secondly, technology related issues such as implementation which are complex, time consuming and expensive.

Segev and Gebauer (2001) also described other key factors such as the marketplace structure, functionality and capabilities of e-procurement systems that need to be considered by companies before changing to an e-procurement strategy. There are also key questions concerning whether e-procurement technology is acceptable by suppliers and is the technology able to maintain established relationships with the suppliers (van Weele, 2005).

Details on e-procurement technology are essential to increase companies' understanding about the technology and to help them avoid the possibility of making a wrong solution. Most companies failed to effectively implement e-procurement technology because of poor planning on the technology (Bradley, 2005).

Besides, companies are not thinking about their e-procurement strategies and failed to involve key suppliers at the earliest stage of e-procurement implementation. Presutti Jr. (2003) suggested that before implementing e-procurement solutions, companies must evaluate their purchasing process to determine if it needs to be initially changed in order to deliver its benefits. The company must have at least some history of cross-functional collaboration and early supplier involvement in order to establish a collaborative e-procurement strategy and to integrate e-procurement systems.

Besides , the integration of e-procurement systems between companies and their suppliers is one of key challenges that need to be implicitly understood. As Segev and Gebauer (2001) explained, the connectivity and integration of e-procurement systems are key challenges, and in most cases they have to be compatible in the context of existing enterprise legacy systems. Nevertheless, according to Gilbert (2000) there are problems relating to connectivity of e-procurement technology as some companies have failed to fully understand the inter-organizational collaboration and network effects of e-procurement technology in order to move the right information from suppliers to employees, and the complexities of integrating e-procurement technologies, particularly those which relate to existing systems.

Concerns about e-procurement emphasize more on issues regarding the level of supplier involvement and selections in e-procurement systems. Such concerns as described by van Weele (2005) are about which suppliers are appropriate to make a deal, whether they are ready to be engaged in electronic connection or whether they are willing to follow established form of electronic functions about buying and purchasing, whether the suppliers are willing to change their traditional procurement method to e-procurement and whether close relationships can be maintained once e-procurement is applied.

These questions are crucial in helping companies to increase effectiveness of supplier communication in a more complex, multi-tiered supply chain and to develop a strong partnership with existing supply chain partners while making them more competitive for purchasing contracts. The right type of e-procurement systems can be chosen if companies have a full understanding about their purchasing processes and suppliers' requirements.

METHODOLOGY

Nine managers representing the MPOI supply chain players located in Selangor (Company 1, Company 2, Company 3, Company 4 and Company 5) and Johor (Company 6, Company 7, Company 8 and Company 9) were selected in this study. All companies were manufacturers of finished palm oil products. The managers were selected based on their willingness to participate and were contacted using contact details provided in the MPOB Directory. In-depth interview surveys were conducted to get feedback and responses from the managers. The managers' responses towards the use of appropriate e-procurement tools for different types of material was incorporated into the questionnaire consisting of several open ended questions.

Based on the responses, content analysis was used to analyze the eight types of e-procurement tools that were listed in the questionnaire, namely e-tendering, e-catalogue, e-auction, e-sourcing, e-informing, web-based ERP, web-based EDI and e-MRO. These e-tools were included in the questionnaire to investigate the applicability of the tools among players in the palm oil supply chain industry.

RESULTS AND DISCUSSIONS

Utilization of E-Procurement

Results of the study revealed that none of the respondents used any of the e-procurement tools to purchase materials or other goods (for example FFB, CPO, CPKO, PPO, processing chemicals and other ingredients, planting chemicals and materials, packaging materials, office supplies and equipment for operations). Five managers from Company 3, 4, 6, 7 and 9 indicated that they did not use e-procurement tools in their companies because they prefer traditional purchasing transactions for the reason that the transactions were easy to manage.

Generally , conventional tools such as telephone and facsimile were used for these types of transactions. It could be argued that the benefit of using conventional

tools to purchase companies' materials is not necessary in terms of being easy to manage but the benefit may be in terms of reducing costs or increasing the reliability of suppliers to customers. In this case, the managers did not perceive a problem with traditional methods and it was not clear to them that Internet technologies will provide benefit in terms of ease of managing the purchasing processes. However, if Internet technologies can deliver substantial benefits to the companies, the managers should make use of the technologies to assist their purchasing activities.

Another reason which was described by managers of Company 1, 2, 5 and 8 was that their companies' current system was incompatible with other systems particularly suppliers' systems. Due to this situation, some companies were reluctant to use advanced Internet systems or tools for purchasing materials from the suppliers particularly established suppliers.

In the palm oil market, many established suppliers do not use advanced Internet technologies in their business transactions and based on that, Company 1, 2, 6 and 8 were reluctant to introduce e-procurement tools to their suppliers. The palm oil players, particularly the suppliers, would need to enhance their understanding of Internet technologies before e-procurement tools or systems could be established successfully within the MPOI. However, in order to establish such tools or systems, the palm oil companies would need to invest in the relevant technologies and the technologies should be reliable and compatible to be used by other parties, particularly the suppliers.

Managers from Company 1, 3, 6 and 9 also claimed that e-procurement tools were not suitable for use because their goods are seasonal and perishable. The issue of seasonality and freshness has always been the key factor for producing good quality palm oil products. The quality of palm oil-based products, particularly crude palm oil (CPO), has to be monitored and maintained before they get to the end customers.

Managers' perceptions that e-procurement tools were not suitable for use with perishable and seasonal goods could be questioned. Some producers of perishable products such as flowers and fish use a Dutch auction (known as descending auction because the price decreases during the auction) for selling their products to buyers. An e-procurement tool could implement a Dutch auction method.

In the flower industry in the Netherlands for example, a Dutch auction is commonly used method by flower growers to sell cut flowers to buyers. These buyers normally purchase the flowers for various wholesalers and retailers where the flowers are then repackaged and resold to end-consumers or retail stores. With the application of Internet, buyers can gain access to the products through an online Dutch auction (one type of e-auctions). E-auctions enable retailers, wholesalers and other commercial buyers to purchase extensive varieties of cut flowers from growers worldwide.

Through online auctions, buyers could specify instantly to growers how to package the products and when to ship them. All

requirements and the process of exchanging relevant information can be efficiently managed by the growers. This would reduce product handling costs, reduce packaging costs and increase the quality of end products. This demonstrates that managers' perception that e-procurement tools could not be applied to the palm oil products particularly FFB is possibly not true. The evidence has proved that e-auction tools can be useful for managing purchasing activities of perishable and seasonal products and the tools have been practiced in other industries including the flower industry.

The Potential Use of E-Procurement Tools in Purchasing Activities

All managers were asked questions on the potential use of e-procurement in their companies. Table 1 summarises some conclusions for each of e-procurement tools based on managers' responses. This is followed by detailed descriptions of each of e-procurement tool.

E-Tendering

The managers responded that e-tendering could potentially be used to help their companies receive specific details on materials and fast responses on orders from suppliers. In this case, e-tendering was seen as a tool to speed up the process of purchasing activities between the companies and their suppliers. As manufacturers, the companies required a reliable tool to assist them in receiving prompt information about materials prior to the distribution activities. This also helps the companies to provide reliable export activities. However according to the managers, although e-tendering could help to speed up the process of providing information and responses on tendering, it was incomplete because further negotiations between all parties were required to complete a tender.

According to the managers, the drawback of e-tendering was that all tenders are opened before they are brought to the Tender Board and sent to the discussion table. The managers also responded that unlike the conventional method of sealed envelopes, in e-tendering, one source (a competitive tender) can be asked to re-enter a fresh tender at lower or higher prices in order to secure a deal or for personal gain. This could lead to malpractice at the tender receiving end.

However , it is argued that one of the claimed advantages of using e-tendering is that it provides openness and fairness to all parties involved in the tendering processes. For example, e-tendering enables the automatic rejection of suppliers who fail to meet the tender specification and at the same time allows potential suppliers to place a new tender in the system. This shows that a fair tender process is offered to the suppliers where each of the suppliers has the opportunity to place a tender on the system. The suppliers are also enabled to carry out online access and use e-mail communication to receive updated documentation and tender queries. Fast and accurate evaluation of tendering activities can be performed to help the companies to reduce tender cycle-time.

TABLE 1
Summary of Potential Use of E-Procurement Tools

E-Procurement Tool	Potential Use	Drawback
E-Tendering	▪ To receive specific details on materials and fast responses from suppliers ▪ To speed up the process of tendering activities	▪ Close-up (face-to-face) negotiation with buyers and suppliers could not be carried out
E-Auction	▪ Works in the same way as e-tendering but goods are traded in the reverse action	▪ Close-up (face-to-face) negotiation with buyers and suppliers could not be carried out ▪ Inapplicable for products which are supplied by established suppliers such as CPO, CPKO, palm kernel products
E-Sourcing	▪ One of the fastest ways in identifying supplies from new suppliers	▪ Close-up (face-to-face) negotiation with buyers and suppliers could not be carried out
E-Informing	▪ To increase the efficiency of purchasing activities ▪ Timely information from suppliers could be obtained	▪ Only available for very established supplies ▪ Little information about CPO, CPKO, palm kernel products could be sought from local palm oil millings ▪ Most of conventional suppliers and buyers do not depend on the Internet for purchasing transactions
E-Catalogue	▪ Global access to information on materials ▪ To speed up the process of searching and providing relevant information on materials	▪ Could not be used for products such as FFB, CPKO, CPO, palm kernel products ▪ No personal contact could be made ▪ Only available for very established supplies with very limited information
E-MRO	▪ Purchasing activities could be more efficient ▪ Could reduce human error	▪ Still impractical in the MPOI because the suppliers are still very conventional ▪ The system is not *'really'* available within the MPOI
Web-based ERP	▪ Could be used for limited items only ▪ Could only be applied at certain point in the palm oil supply chain	▪ Could increase the costs of production activities ▪ Inapplicable for purchasing perishable goods
Web-based EDI	▪ Exchanging and sharing online information ▪ Could be used on selected items only ▪ Reports related to production activities could be made available on the Internet	▪ Impractical tool for those players who are still very conventional

Another drawback of e-tendering as stated by the managers is that close-up (face-to-face) negotiation with buyers and suppliers could not be done. Some managers like to discuss business dealings in a closed environment where face-to-face negotiation during a personal visit is common. It is argued that in some cases, this type of negotiation method may not be necessary but for some people it may be a pleasant part of the job which gives them interest and satisfaction.

E-Auction

The managers responded that e-auction works in the same way as e-tendering however materials or goods were traded in the reverse action. Perhaps what the managers meant by their responses is that in the e-auctions, the price of goods continues to decrease until it reaches the lowest price to complete the auctioning processes whereas in the e-tendering, the price does not necessarily reach the lowest price for wining a tender. This explains that the suppliers who offer the lowest price or a combination of the lowest price and other aspects would be chosen by the companies for supplying the materials which are required for their operations.

On the other hand, conducting purchasing activities via e-auction could lead to some drawbacks. The managers claimed that using e-auction, a similar problem to e-tendering could occur which is close-up negotiation with buyers and suppliers could not be carried out. Furthermore, according to the managers, the demand of materials varies based on orders so auctioning activities may be difficult to perform. This is because orders on materials were difficult to predict. Comments made by the managers showed that e-auction was inapplicable for use in their companies because most of the supplies such as CPO, CPKO and palm kernel products are generally supplied by established local palm oil millers and some of the palm oil mills are owned by the companies themselves. Most of the upstream suppliers in the palm oil supply chain often use conventional tools when performing purchasing activities thus e-auction could not be a potential tool at this point of the palm oil supply chain.

E-Sourcing

According to the managers, the application of e-sourcing was considered as one of the fastest ways to identify supplies from new suppliers on the websites. However, according to them, most of the supplies such as machinery parts and inventories, particularly specialized machineries were unavailable on local websites. Most of these items were offered on overseas websites. The disadvantage of purchasing products from overseas suppliers as claimed by the managers was often related to delivery activities. These suppliers usually took a long time to deliver the supplies due to the long-distance involved. This would, in turn, lead to increase production lead time and finished palm oil products may take a longer time before they get to the end customers. In contrast, local suppliers would not take a long time for delivering their supplies;

it sometimes could only take a couple of hours instead.

Another drawback for using e-sourcing according to the managers was that close-up negotiation with buyers and suppliers could not be carried out. This is similar to the responses that they made for the application of e-tendering and e-auction. The managers further argued that when purchasing established goods or materials (such as chemicals) for certain production processes, the transactions could just be carried out through known sales representatives. This helps the companies to easily administer and reduce any impediment to the transactions such as delay in gaining relevant information on goods or information on status of orders.

E-Informing

As responded by the managers , by using e-informing, purchasing activities could be done more efficiently and timely information could be obtained from the suppliers. However, according to the managers, e-informing was only available in the palm oil market for very established supplies and was often used on limited information only. The managers further argued that to get privileged data or information, the companies do not need to rely on e-informing tool, but it needs to contact the sales representative who is responsible for the sales activities. This will increase the chance of getting more transparent business information which could be essential for the company.

The drawbacks of using e-informing in the palm oil companies are described based on the managers' comments where they claimed that most of the suppliers and buyers in the palm oil market were classified as conventional business companies. Most of these palm oil players do not depend on Internet transactions for purchasing activities. The managers further argued that there was little information from local palm oil millings that could be sought via e-informing tool especially information regarding the supplies of CPO, CPKO and palm kernel products.

These palm oil millings often used conventional tools for purchasing and other transactions whereas Internet tools were used for certain activities such as accessing to third party websites for the latest information about palm oil products. Besides, most of local vendors preferred to have direct contact with their customers for the reason that it could assist the vendors for further business dealings for example debt collection. According to the managers, the vendors also found it 'troublesome' to conduct e-informing with their customers because most of them were not yet ready to use the tool.

E-Catalogue

The advantage of using an e-catalogue as claimed by the managers was that the company could have better coverage. This suggests that information on suppliers' products could be accessed by the company globally. The disadvantage of using e-catalogue according to the managers was that no personal contact is involved. The managers commented that e-catalogue was

important because it helps to speed up the process of searching for materials from new suppliers on the websites. However, e-catalogue was only available for very established supplies with very limited information only.

Another disadvantage of an e-catalogue according to the managers was that the tool could not be used for palm oil products such as FFB, CPO CPKO and palm kernel products. Besides, there was no product catalogue needed for these products as their quality were governed by specifications set out by several parties such as Malayan Edible Oil Manufacturers Association (MEOMA), Malaysian Palm Oil Board (MPOB) and Palm Oil Refiners Association of Malaysia (PORAM). The key role of these parties is to monitor activities such as milling, refining and manufacturing in the palm oil industry.

E-MRO

The managers stated that e-MRO could be applied in the companies because purchasing activities could be conducted more efficiently and human error could be reduced. This suggests that certain purchasing activities for materials such as office supplies which are usually managed by the staff could be performed by e-MRO system. The staff would rely on an e-MRO system to do part of their job such as placing an order through the Internet. This helps the companies to reduce the number of staff involved in purchasing activities and also reduce costs associated with production and overhead.

Interestingly, the managers claimed that e-MRO in their companies was still at the development stage, which means that an in-house technician was only available when the systems were not working (downtime). The managers were commented that e-MRO was still impractical in the palm oil market as most of the suppliers were still very conventional. Besides, e-MRO systems were not 'really' available in the MPOI because some palm oil-based companies were reluctant to use advanced Internet technologies because they discovered that the technologies do not receive high attention especially from local suppliers.

Web-based ERP

Web-based ERP according to the managers could be used for limited items only. This suggests that the application of web-based ERP could only be applied at a certain point in the palm oil supply chain activities, for example in manufacturing activities for finished palm oil-based products. The drawback of web-based ERP according to the managers was that it could increase the costs of production activities and also there was 'no liquidity' in the current market. Perhaps 'no liquidity' means that there was not a lot of capital in the companies to invest in new Internet tools.

The managers believed that web-based ERP was relatively expensive. They added that web-based ERP was inapplicable for purchasing the FFB. This is because smallholders supply the majority of FFB produced. These smallholders usually sell the FFB to a middleman and prompt cash

or short term credit could be received by the smallholders. As the FFB are considered as perishable goods, they are to be delivered to the mills within 48 hours after they have been detached from the palm tree. Besides, the selling process of the FFB is done on 'a goodwill basis' between agents (middlemen/ intermediaries) and the millers. This may explain that the agents and the millers have reached an agreement for new business dealings where from the agreement both parties could benefit in terms of increasing business profit.

In the palm oil industry, agents are hired by some of palm oil companies including plantations/smallholders and millers. These agents are responsible for searching new business dealings for the companies and they must have detailed knowledge of the companies' products to help them increase the ease of selling processes to the target customers.

Web-based EDI

The managers responded that using web-based EDI, online information could be exchanged and shared by many parties at different locations on time. However, according to the managers, web-based EDI was used on selected items only. This means that the companies could only purchase items that are available on the suppliers' websites unless the information about the items had already been obtained and they had been used by the company prior to the purchase. The managers further stated that web-based EDI was currently enforced and carried out by the companies.

This allows all information including monthly trade records and daily production figures being reported electronically over the Internet. The managers commented that a web-based EDI tool was impractical in the palm oil market. This is because most of the palm oil buyers are still very conventional where Internet tools are not often used in their operations.

A short remark made by the managers that paperless trading (such as e-tendering, e-auction, e-catalogue) was becoming accepted for the 'coming generation of businesses' and in the palm oil market, which is a bit of a cartel system, hence not many palm oil players understand the concept of dealing and closing deals because a lot of factors are involved.

The managers added that the application of e-procurement tools was very promising however some of the customers and suppliers (local or international) were still not equipped and educated about this form of online transaction. They believed that some levels of procurement for materials such as stationery, chemicals and standard items where the demand is non-fluctuating were applicable for using e-procurement tools.

SUMMARY OF FINDINGS

Managers' lack of knowledge of advanced Internet technologies has contributed to low level application of e-procurement tools in the MPOI. Most of the managers were not clear that the tools could offer substantial cost-benefit to their companies and based on that they failed to effectively

implement the tools in their purchasing activities. T here are key reasons to explain why palm oil companies in this survey did not use e-procurement tools for purchasing activities. Based on the managers' responses, one of the reasons was that most of the palm oil companies prefer to carry out traditional purchasing transactions because the transactions were easy to manage. The managers perhaps do not perceive a problem with traditional methods and it is not clear to them that Internet technologies will provide benefit in terms of simplifying and managing the purchasing processes.

Another reason for not using e-procurement tools was because companies' current systems were incompatible with other palm oil players' systems. Many managers in the survey were concerned about the issue of reliability and compatibility of e-procurement systems particularly suppliers' systems. Managers' concern over this issue confirmed Davila *et al.* (2003) which explained the authors' concern over the issue of reliability and compatibility of e-procurement systems has been a key concern in many companies.

This suggests that the palm oil companies should increase the compatibility of their systems to be able to fully integrate and connect with all players in the palm oil supply chain. As claimed by Segev and Gebauer (2001), e-procurement systems have to be compatible for ease of purchasing transactions among key players in the supply chain.

Another key issue revealed in this study was related to the implementation of e-procurement tools among the established palm oil players. According to the managers, the tools were impractical to be used for purchasing materials with very conventional players. Due to this situation, many palm oil managers in this survey were reluctant to introduce e-procurement tools to the established suppliers (most of the established suppliers are conventional suppliers).

The key question to consider by the companies if they were to introduce the tools is whether the technologies could be potentially used by the established suppliers. According to Van Weele (2005), the decision to introduce e-procurement technologies must be based on whether the technologies are accepted by suppliers and whether the technologies are able to maintain the established relationships.

There was also a distinct perception from the managers that e-procurement tools were unsuitable for use with goods that are seasonal and perishable. However it could be argued that for some producers of perishable products such as flowers and fish, e-auctions have been successfully practiced for selling their products to potential buyers. The managers in this survey also argued that although e-tendering could help to speed up the process of providing information and responses on tendering, it is incomplete due to further negotiations between all parties (who are involved in the tendering process) are required to complete a tender. A face-to-face negotiation during a personal visit was commonly preferred by some managers to discuss follow-up business tenders. There was convincing evidence that

the managers have recognised the potential for using e-tendering in their companies. Nevertheless, in the palm oil market where advanced Internet transactions (such as e-tendering) are not often applied, common methods for example conventional tools and face-to-face negotiations are useful for further business negotiations.

Therefore in this case, the managers have reckoned that to complete and win a business tender, further negotiations would still be needed. It is argued that in some tendering cases particularly when dealing with regular suppliers, face-to-face negotiation may not be necessary. The responses from the managers also revealed that most of the palm oil players were not yet ready to use e-procurement tools. In view of this situation, most of purchasing activities in the MPOI might not be carried out online. This may explain that most of the players in the MPOI have little knowledge of e-procurement tools and they were less equipped with the tools. The palm oil players should therefore increase their knowledge of e-procurement tools to be able to use the tools in their companies more efficiently.

CONCLUSION

The discussions about the potential use of e-procurement technologies in the MPOI have given some important insights into the practical application of these technologies. Although the utilization of e-procurement technologies in the MPOI could be beneficial, the industry needs to become aware that at this stage there are still problems with existing systems integration among the Malaysian palm oil supply chain players. Most of the systems in the MPOI show a lack of common standards. There was also a lack of accessibility to systems by all suppliers and little investment in the systems. The success of utilizing the systems or tools depends greatly on the capability and reliability of the systems. The systems need to be compatible with the suppliers' systems as well as other palm oil players' systems to ensure their usability and effectiveness. More importantly, the palm oil supply chain players need to increase their knowledge of the usefulness of advanced Internet technologies in managing purchasing activities. There is an opportunity for the MPOI to use the new technologies available on the Internet and to diversify the procurement activities and remain competitive in the global palm oil market.

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