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Food Value Chain, Sustainable Intensification and Food Security in Malaysia

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Abstract
Malaysian seed industry is at an early phase of development due to a lack of participation and an undeveloped seed industry, hence, previous research on this area is very limited. This research adopts Yin's case study approach which have been applied in a wide range of scholarly studies to the context of agribusiness research project. The findings of this study pertain to the components in the food value chain that influence food security which reveal that the respondents perceive food security is built on four important dimensions; namely, accessibility, availability, stability and utilization. Based on the respondents' view, Malaysia's food security status is not at the healthiest level since respondents noted the import bill remains at an all-time high causing an urgent need to address this problem. Most feel an increase in agriculture productivity is the most likely recommended option. Agriculture productivity depends on agriculture input of which, the seed is the fundamental component of the food value chain, hence, respondents suggested intensifying the seed industry to increase productivity.

Keywords: Food security, food value chain, sustainable intensification, agriculture, seed industry

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INTRODUCTION

Seed plays an important role for starting point of any agricultural project whether it is in a small farm or on a large scale farm and true for any scale of production. Devising strategies and action plan to increase the supply of quality seed and farm materials which are still insufficient in Malaysia, have been the major focus by the Ministry of Agriculture and Food Industry (MAFI). Government efforts to spearhead agriculture in the countries due to current economic conditions would increase the demand for seeds due to implementation of various agriculture projects by the government and its related agencies and the private sectors as well as individual farmers.

A value chain on the other hand is defined as the activities in the whole value chain that are required to bring a product or service from farm to the end-consumer (Kaplinsky and Morris, 2002). Agricultural products buyers and producers that collaborate as strategic partners with other stakeholders such as aggregators, processors, distributors, retailers, and consumers are part of the total value chains (food) which represent a model of the business to reap financial gains through product differentiation that bring the impact towards social or environmental values. Initiating supreme products depends on cooperation and relationship need to be recognized by various partners in the business alliances. The food value chain model is becoming popular among scholars and practitioners since it put intense market pressure on various level of farmers, small or big sized farmers to ensure the farm productions are saleable and marketable.

In addition, Godfray, Beddington, Crute, Haddad, Lawrence, Muir, Pretty, Robinson, Thomas and Toulmin (2010) mutually agreed that sustainable intensification has been widely used in the discussions about the future of agriculture and food security. However, the term "sustainable intensification" was mentioned in the context of agriculture in Africa since 1990, where a major concern was a low yields and environmental deprivation (Foresight, 2011). In this context, the term refers to how to achieve targeted yields, rather than a details of current production systems; small- or large-scale farming methods. Even though the intensification related issues in agriculture have long been debates (Boserup 1965), sustainable intensification becomes a recent fear due to increase in global population and uncertain economic conditions. Although what sustainable intensification has been defined is, it offers a framework to identify what are the best practices based on the existing social, cultural and economic context and what should be the best practices to be adopted (McDermott, Staal, Freeman, Herrero and Van de Steeg, 2010).

A sustainable intensification can be categorized as an innovation as an agricultural development concept and as a component of achieving food security. Sustainable intensification concept like other innovations, has to adapt some conciliations that comes with advantages and disadvantages of implementing it. The implementation of the concept, demand high flexibility which means adhering to specific conditions of regions and countries that includes the combination of agriculture conservation and fostering best practices in agriculture for yields maximizing.

In spite of being an element for agriculture policy and strategy development that open for arguments and debates, sustainable intensification should be the way forward in order to enhance sustainable development and food security at national and global level. A bold action is indispensable in modernizing agriculture through innovation (Bertini, Glickman, 2013). Based on the above issues and debates this study is an attempt to answer this research question; **What are the components of the food value chain that influence food security in regard to the seed industry in Malaysia?**

METHODOLOGY

The objective, epistemology, methodology and methods that have been used in this study adopts Yin's (2003) definition of a case study. The Yin's case study protocol was used to guide implementation of the study. The field research undertaken in this study involved data collection by 12 semi-structured face-to-face interviews of seed experts. Collected data went through a transcription process before analysis. This process was to ensure consistency and accuracy; it began with transcription, follow by thematic coding and content analysis. Coding was necessary for efficient analysis and through it several replies may have been shortened.

Members of the National Seeds Association Malaysia (NSAM) has become the population and sample in this study. Despite the fact that the sample size in qualitative research is relatively small, the comments of the respondents contributes towards the richness of information and data (Maxwell, 1996). Furthermore, it shares same characteristics across all cases via multiple case study design (Farquhar, 2012) as well as providing details of the context and meaning of events and situations under study (Geertz, 1983). Thus, the 12 selected experts (sample) in this study was classified into three clusters; plant breeders, traders or managers and seed production experts. Each cluster was represented by 4 members. The NSAM was chosen as a sample for this study because its members' composition includes the breeders, traders and seed production experts. Participants were selected based on their profession and only plant breeders, production experts and traders or managers who were identified as working in the seed industry were selected in the survey frame.

RESULTS AND DISCUSSIONS

In this study, verbatim was used in order to produce the original of data transcription from the interviews. Atlas.ti version 7 has been used to analyze the qualitative data collected from the interview. Three themes have been generated in the analysis that include perception of food security, status of food security in Malaysia associated with sustainable intensification and components of the food value chain.

Perception of Food Security

The challenge of food security must be addressed immediately due to complex sustainable development issue faced by developing countries hindered them to achieve a sufficient food supply. Accordingly, of all the twelve respondents, four of them claimed that food security has been defined as existing food, to all people, at all times, as listed below:

P 1: Verbatim 1.docx – 1:3 (29:30)

…personally, I see food security as an adequacy of food by all people at all times to get healthy, balance and active life…

P 2: Verbatim 2.docx – 2:2 (29:29)

... food security referred to when people, got access to physical, economic, sufficient, safe, and nutritious food for a healthy and active life, at all times…

P 10: Verbatim 10.docx – 10:2 (59:59)

...food security achieved when all people meets their dietary needs and food preferences for an active and healthy life (sufficient, safe and nutritious food)

P 11: Verbatim 11.docx – 11:1 (47:47)

... to ensure sustainability of foods supply and demand where people can get adequate food supplies and basic foodstuffs

The remaining five respondents perceived that the most important item was to have economic access to sufficient, safe and nutritious food for a healthy and active lifestyle. The following quotations show their perception of food security:

P 6: Verbatim 6.docx – 6:2 (42:42)

So all nation has to make sure food supply are in order and enough, this is part of the social economic…

P 7: Verbatim 7.docx – 7:1 (41:41)

To me food security means there are enough food for everyone at any time, any place at affordable price.

P 8: Verbatim 8.docx – 8:1 (41:41)

As for my understanding, food security means we have enough for the nation whenever that is need.

P 9: Verbatim 9.docx – 9:1 (40:40)

Food security to my layman interpretation mean there are enough food for everyone at any time, any place at an affordable price.

P 12: Verbatim 12.docx – 12:13 (43:43)

…you know hungry people are angry people, it might lead to riot if that is not enough food. To me food security means, we have enough food for everyone any time any place.

Even so, two of them said that food security was when all people get enough food:

P 3: Verbatim 3.docx – 3:8 (30:30)

Production, supply, processing, distribution and market access are part of food security that contributes to poverty eradication

P 5: Verbatim 5.docx – 5:10 (30:30)

…is important to make sure that the country is in stable condition for the economy and also for their citizen.

Status of Food Security in Malaysia

In these responses, respondents perceive that there are many factors that affect food security to ensure sufficient levels of food in Malaysia. Good agricultural practices with good agricultural input will help to improve productivity and harmonize supply and demand. Currently, the food bill in Malaysia is causing a deficit. We have to produce more food locally to ensure self-sufficiency. The following shows that the status of food security in Malaysia is:

P 1: Verbatim 1.docx – 1:14 (35:35)

... in Malaysia will face a dangerous situation where the supply of the country is insufficient to meet the needs all residents.

All parties need to ensure the food security and future generations' nutrition are taken seriously. Thus, development of sustainable agricultural contributes to food security and

nutrition where food system plays crucial roles that ensures food security and nutrition for all.

In relation to sustainable intensification, its association with the status of food security in Malaysia was stated:

P 4: Verbatim 4.docx – 4:2 (30:30)

... in order to ensure the resilience of food security and nutrition for all, we need to strengthen and securing social responsibility of agriculture and food systems; sustainable agricultural development contributes to improving resource efficiency.

P 5: Verbatim 5.docx – 5:3 (40:41)

Households that possess enough financial resources can generate substantial economic demand that triggers the food supply. Hence, the sustainable food value chain development will prevent poverty among society.

Components of the Food Value Chain

With regard to food security being a widely debated issue, this topic encompasses issues built mainly on four dimension; food availability, food stability, food accessibility and food utilization. Food availability focus on the food security supply side which includes production, stock levels, trade and other factors. Food stability refers to the existence of the other three elements over time, how stable they are in any economic conditions. The person's ability to make use of food nutrients can be referred as an access to food includes household incomes and expenditures, markets, food prices and food utilization. Lastly, food utilization includes nutrients and sufficient energy requirements, good feeding practices, safe food preparation, dietary diversity, food distribution and health status. Some respondents remarked:

P 2: Verbatim 2.docx – 2:11 (34:35)

The components of food value chain that influences the food security including. Food availability, food utilization and also food stability…

P 3: Verbatim 3.docx – 3:12 (35:36)

Three major components of food security are first, availability of food that being determined by food production, stock and net trade. Second, food utilization can be referred to how body utilized the nutrients. Followed by food accessibility and food stability.

P 4: Verbatim 4.docx – 4:13 (34:35)

Key to food security lies in agricultural development where its contributes to food availability, stability and food utilization.

From the quotations above, it can be summarized that each of the participants perceived food security exists "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary need and food preferences for an active and healthy lifestyle". The challenge of food security must be addressed immediately. With regard to food security in Malaysia, the participants were asked about the status of food security in Malaysia in association with sustainable intensification. They believed that for our nation to have a peaceful and stable life, we need to provide people with enough food at all times.

As for the supply, we cannot depend solely on imports. Currently, the food bill in Malaysia is causing a deficit. We have to produce more food locally and ensure self-sufficiency. As such, respondents suggested that we address the problem immediately. The population has increased to 32 million and will continue to increase; so too, the demand for food will naturally increase. In term of components of the food value chain, all respondents looked at four factors; accessibility, availability, stability and utilization. To increase productivity by increasing the cultivation area is not practical as land is decreasing due to an increase in population. The other alternative is to look at good production methods with the help of technology and good agricultural input. Agricultural input includes fertilizers, chemicals, knowledgeable workers and productive seed. Seed is fundamental for the entire chain. The detailed breakdown of the interview responses shown in Table 1 below.

Table 1: Summary of Results

Themes	Sub-themes	Codes	Respondent (Verbatim)	Industry/ Background
Perception of Food Security	• Existing Food • Enough Food • Most Important Item	PoFS	1, 2, 10 & 11 6, 7, 8, 9 & 12 3, 4 & 5	Plant Breeder (4), Production Expert (4) & Trader (4)
Status of Food Security in Malaysia	• Sustainable Intensification	Status	1, 4 & 5	Plant Breeder (2), Production Expert (1)
Components of Food Value Chain	• Availability • Stability • Accessibility • Utilization	CoFVC	2, 3 & 4	Plant Breeder (1), Production Expert (2)

CONCLUSIONS

Food security being a widely debated issue, encompasses many issues, but consisted by four main pillars or dimensions; food availability, food stability, food accessibility and food utilization. The world summit of 1996 held in Rome, Italy (Royal Society, 2009), defined food security as: "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary need and food preferences for an active and healthy lifestyle". According to this study, all of the respondents understood the definition of food security and also shared the view that food security in Malaysia is rather weak. To achieve the goal of food security, the entire group of respondents suggested the issues of food security must be addressed immediately. These issues demand changes in agricultural practices and there is urgency for sustainable agriculture. Sustainable agricultural development is one of the most powerful tools for higher productivity.

According to the study, all of the respondents shared the same view. Fundamentally, good seed will lead to higher productivity in agriculture. It is the most crucial input component for any agriculture projects (Singh, Asokan and Asopa, 1990). Singh (1990) estimated that productivity can be increased by twenty per cent by having high quality seed alone. Furthermore, seeds are considered the fundamental sources of productivity of the total supply chain, though it contributed the least in total production costs, compared to other inputs such as labour, land, chemicals or fertilizer. Since there is very limited supply of good quality seeds and almost 90% of them are imported, Malaysia should put more efforts in developing seeds industry to increase overall agriculture performance in the country (Melon, 2003). As highlighted by Chin, Uma Rani Sinniah and Izham Ahmad (2006) the seed industry in Malaysia was lack behind in

comparative with other countries such as Europe, American, China or India.

The development of seed industry will determine the future of agriculture for any nation. Howe ever, its development and sustained growth require assets, that include both tangible assets and intangible assets. In today's highly competitive market, customers' preferences are constantly changing which requires firms to have a well-planned strategy to remain competitive and sustain growth (Porter, 1991; 1996). Industry conditions alone cannot ensure the sustained growth of overall agriculture sector, a bold direction from the companies and industry framework are required.

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