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INNOVATION IMPLEMENTATION IN SUPPLY CHAIN MANAGEMENT: RESEARCH BASED ON ORGANIC FARMING OPERATION

Wan Nur Zawahir Binti Wan Abd Wahab [1]* and Shariman Bin Mustafa [1]

[1] Department of Technology Management, Faculty of Manufacturing Engineering and Technology Management, Universiti Malaysia Pahang, 26300 UMP, Kuantan, Pahang, Malaysia; Phone: +6017-7822578, Fax: +609-5492167
E-mail: shariman@ump.edu.my

ABSTRACT

Agriculture is one of the key sectors for international trade that supply foods to the world population. It is progressively becoming a profitable business venture. Malaysia has a large potential to develop its organic market as the local organic farming activities is increasing rapidly. Even though the growth is a bit slow, it is noted that most people who purchased organic foods are very committed to the product. However due to some uncertainty among the organic supply chain system, there is a need for common reference and practice implemented among organic actors. Regarding to this matter, this study will explore on organic supply chain to encourage the future incremental growth of organic market and identify the root causes to the problems occurring. This study will also focus on innovation aspects along the supply chain management system. There is an urgent need for innovation in shifting organic sector paradigm to be more suitable to the current organic market consumer requirements. The research is aimed to highlight the innovation that should be implemented in the supply chain system of organic agriculture sector as well as suggesting future innovation initiative to the overall organic operation.

***Key words**:* Innovation, Supply Chain Management, Organic Farming, Organic Product

INTRODUCTION

Organic farming is a form of agriculture that relies on crop rotation, green manure, compost, biological pest control and mechanical cultivation to maintain soil productivity and control pests, excluding or strictly limiting the use of synthetic fertilizers and synthetics pesticides, plant growth regulators, livestock feed additives and genetically modified organisms. Organic agriculture is a production system that sustains the health of soils, ecosystems and people as well as combines tradition, innovation and science to benefit good quality of life whether in health or wealth creation. Organic farming also has a great relationship with supply chain system where it is operated based on the source its get and the customer it needs to supply. Supply chain as we know consists of all parties directly or indirectly. It is not only includes the manufacturers but also transporters, whole sellers, retailers and customers themselves. The objective of supply chain management is to maximize value generated especially in getting profits with lower cost in a greater scale of quality. However, there are several uncertainties in understanding the implementation of supply chain system among local organic farmers. Farming operations differ from one person to the others. This research is conducted to analyze the implementation strategy of innovation in the supply chain system in organic farming. New

development will be identified focusing on innovation aspects as a mean to achieve sustainable and environmentally sound organic farming systems.

RESEARCH OBJECTIVES

(i) Analyze and study the organic farming sector operations focusing on supply chain management and its relationship that links the farmers to the suppliers and finally the consumers.
(ii) Identify the problem occurring among organic farming actors and the requirements of innovation to be implemented in their farming operation.
(iii) Generate an innovation initiative to the existing system based on the identified problems by focusing on the supply chain system and the organic operation management.

LITERATURE REVIEWS

Organic Farming

Organic agriculture is a food production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved (World Board, 2008). Organic farming is the most productive way to low input agriculture. It is competitive in delivering public goods and services and it aims at food quality standards that are in line with the expectations of the majority of the global consumers. Organic farming and organic food processing are innovative systems with regard to efficient and sustainable land use, food production and food marketing (IFOAM, 2005). In comparison to conventional methods, organic farming creates new practices that the entire agro food business benefits from. Unlike other low-input methods of food production and processing, organic food is highly standardized and consequently has become a tradable commodity for future business. Chong (1994) defined organic farming based on the following principles:

(i) Ecological principles - promotion of soil fertility, soil conversation, locally adapted production methods, closed nutrient cycles and an efficient use of local resources, minimized external inputs, and diversity of species, crops and landscapes.
(ii) Ethical and social principles - animal welfare, sustainability, risk prevention, rural development, self-reliance, fair trade and healthy nutrition.

Through these ecological, ethical and social standards, the organic food processing system enhances all over the world capital-extensive but labor-intensive production that contribute to the stabilization of rural societies and allow equitable exchange of commodities and services.

Overview of Organic Farming Market in Malaysia

Malaysia is interested in gaining Italian know-how in organic farming; research and development in crop genes and microbiology, farming automation, vaccines for the livestock industry, and alfalfa planting for the equestrian industry (Malaysia News, 2007).

Since the organic farming concept is quiet new in the local agriculture; the farmers need to understand more about organic farming operation and how to practice it comprehensively.

In term of organic market segment in Malaysia, almost sixty percent to ninety percent of all organic products are being imported mostly from Australia (normally certified by NASAA). Only 600 hectares of lands are organically managed and twenty seven producers are founded with proper organic certification. This situation however are steeply changing where several organic farms such as Zenxin Agri-Organic Food in Johor, Qadhija Natural Farm in Perak and other organic farms are increasingly growing with the help of higher prospect reaped from the market demand factor. Department of Agriculture, Malaysia has taken the initiative in the preparation of the draft for Malaysian Standard – Guidelines for the production, processing, labeling and marketing of organically produced food. Currently, the guidelines are under review by the Department of Standard Malaysia. The proposed Malaysian Standard is based on FAO/WHO Codex Draft Guidelines for the production, processing, labeling and marketing of organically produced food (Quah, 2000). Quah in his paper, "Sustainable food production, income generation and consumer protection in Malaysia", claims that Malaysia has the potential to develop new business through its organic market opportunity. Table 1 is showing organic products being produced in Malaysia. This statement is positively supported by Razak and d Roff (2007) where Malaysia government has allocated US $3.08 billion under the 9th. Malaysian Plan (2006-2010) to transform the agriculture sector into a modern, dynamic and competitive sector. The Government aims to increase agricultural production through measures such as new land development, replanting and land consolidation and rehabilitation. This will be implemented through intensification of land use by introducing integrated agriculture with main emphasis in agro forestry, rehabilitation of marginal land and proper soil and water conservation. Efforts are now also geared toward improving the fertility of the soil by promoting organic and integrated farming. With the growing preference by consumers for organically produced food due to health reasons, the demand for animal waste is expected to increase sharply. Organic farming has a big potential in Malaysia. At present there are several privately owned organic farms. Since chemical fertilizers and pesticides are not used, labor requirement is high in organic farming leading to higher cost of production.

Supply Chain Management

Referring to APICS (The Educational Society for Resource Management) Dictionary, supply chain can be defined as processes from the initial raw materials to the ultimate consumption of the finished product linking across supplier-user companies (Hill, 2001). Supply chain encompasses all activities associated with the flow and transformation of goods from the raw materials stage (extraction), through to the end user, as well as the associated information flows. Materials and information flow both up and down the supply chain (Hill, 2001). In the earlier introduction to supply chain management, Ellram and Gupta (1990) defined supply chain management as an integrative philosophy to manage the total flow of distribution channel from supplier to ultimate user. This definition remarks on the consideration of supply chain management philosophy which tries to bring about integration among various function but not relate it with enhancing competitiveness for the company. However, after several years supply chain management gives to different definition especially in the integration of these business activities through improved supply chain relationships to achieve sustainable competitive business advantage (Chopra and Meindl, 2004). The objective of supply chain management is to satisfy end customer

requirement (Childerhouse and Towill, 2000). Supply chain relationships depend extensively on trust (Keen et al., 2000; Das and Teng, 2001) and developing efficient supply chains system requires good relationships among the business partners. This is the key consideration for any business especially when dealing with its suppliers or customers. As further supported by Desbarats (1999) in his industry insights, in order for effective supply chain management to be fully achieved in practice, customer experiences need to be understood and communicated well. This effort requires full co-operation between marketers, designers, manufacturers, and distributors of the organic product.

Table 1: Organic Products in Malaysia

No.	PRODUCT CLUSTER	SPECIFIC PRODUCT
1	Fruits / Juice	Organic lemons, organic apples
2	Clothes	Air purifiers, bags, bedclothes, furniture, clothes, composters, gifts, health, wellness, jewelry, mattresses, etc.
3	Pets foods	Mostly vegetarian pet food for dogs and cats, protecting homeless cats and dogs
4	Dried Products / Cans, Tins, Jars / Juice / Tea	Pasta, rice, tomato, condiments, breakfast products, honey, cocoa, fruit juice, cane sugar, tea, olive oil, jam, biscuits
5	Baby	Organic essential oils, skin, body and body care, health products, oral care, baby care,
6	Beauty	Soaps, lotions, creams, hair care, house hold products, organic and environmental fasting, body detoxify treatment, aromatherapy, perfume.
7	Bread	Bread and organic oat
8	Vegan / Some Gluten	Soups, desserts, pasta sauce, salsa, whole meals, some gluten free meals, some vegan, spicy chili,
9	Supplements / Spices / Tea	Dried herbs and spices, certified organic herbal teas
10	Cosmetics	Cosmetics, lip balm, face balm, foot balm, hand balm, bath oils, body oil
11	Baby Clothes	Organic baby cotton clothes, diapers, baby food
12	Chicken	Free range organic chicken from Terengganu
13	Milk / Some Gluten Free / Dried Products	Flours, meals, oats, cereals, entrees, bread mixes, grains, beans, seeds, some gluten-free, baking aids, milk powder, muesli,
14	Coffee	
15	Vegetables / Books, Magazines	Organic farm in Brinchang, Cameron Highlands that distributes vegetables mainly to Just Life and Woods.
16	Eggs	Eggs
17	Fertilizers	Organic Eco Grow, mighty mulch, super palm oil seedling fertilizers, organic fertilizers, organic pest control.
18	Washing Powder	
19	Fish	
20	Dark Chocolate	

(Source: Department of Agriculture Malaysia, 2007)

Innovation in Supply Chain Management

Innovation can be defined as a new idea that normally uses technology which can be classified in three types: products, process and services. Innovation comprises of an idea in how to generate improvement in existing product, process and service. Successful supply chain management requires many decisions relating to the flow of information, products and funds. These decisions fall into three categories or phases, depending on the frequency of each decision and the time frame over which a decision phase has an impact. These three phases are categorized as design, planning or operational depending on what industry and the time frame given. With the collaboration between these three phases in the supply chain and innovation thinking among the producers, supply chain decision in organic farming, operation should become more successful with lower operation cost and producing better product quality. This ultimately will generate more revenue to the producers. However, the reliability of this approach has not yet been critically examined. People tend to believe that organic farming is more sustainable within the overall product supply chain system.

There are a number of ways firms can bring value to customers beyond low prices and good quality for a given service or product. In term of operation strategy, strategy developments go beyond specifying the variety, design, innovation and services thrust (Krajewski and Ritzman, 2005). Focusing on innovative aspect, firms that compete with innovative offerings must have capability to develop new technologies and translate them to new products, services or processes. Innovation requires significant research and development activities by technology engineers and the ability to get new offerings to the market fast. With innovative products, services and processes, the firm that is 'first mover' often obtains a strong competitive advantage for a long time to come. In term of organic supply chain management being stressed on by this research, voice of customers (VOC) will be used as the indicator for determining customer requirements in the supply chain and then later will be used for mapping the innovation strategies. One of the methods for enhancing supply chain system is by assessing customer requirement using Quality Function Deployment (QFD) method. QFD can be used to define new product, service and process or refine the existing one. It is also a mean for translating customer requirements into appropriate technical requirements for each stage of product or service development and production (Krajewski and Ritzman, 2005). The result compiled from this method will be extracted and formulated to be the innovation initiative suitable for the organic supply chain system and business management. The method is deemed to be able to devise new approach for the organic businesses for achieving higher profit margin in the organic farming operation and sustaining themselves better in the global natural and organic market sector.

As this research will further progress, some innovation initiatives will be carefully studied and analyzed to strengthen the sustainability of organic agriculture so that it will remain competitive in this highly innovative field of agriculture and food production. This hopefully will contribute to achieving our common goals that is to recommend and give solution in helping businesses facing the looming economic meltdown that recently occurring in the nation.

PROBLEM STATEMENT

Supply Chain and Its Barriers in Organic Farming

Supply chain architectures overlap with a broad range of considerations from all domains: business process, information and knowledge, infrastructure and organization (Archer, 2006). Research that addresses any related issues can help to develop an understanding of how to evaluate and improve supply chain strategies and operations. Some good examples are showing that organic food can be a very successful and economically interesting marketing strategy. Thus, obstacles to a more widespread integration of organic food by conventional food retailers should be analyzed in an integral way by carefully addressing its economic, sociological and psychological facts and attitudes. Experimental preference tests and qualitative survey techniques on the consumer side and surveys based on the principal-agent-theory' on the market actor side, can be adequate research methods in developing stringent recommendations for successful market initiatives.

Aguirre (2007) in his survey on organic consumer market of Costa Rica stated that barriers to purchasing organic food is availability of the product in market and stability of supply as well as consumer awareness about the product. Several other consumer studies done by McEachen (2004), Barnes et al. (2009), Harper and Makatouni (2002), and Hustvedt (2009) confirmed that there exist a positive attitude among consumers and traders towards buying organic foods. However, the real consumption is much lower than could be expected from these surveys. Recent market tests indicated that consumers when they have a choice between identical products at the same price; with one labeled organic and the other are not, significantly preferred the one that are not labeled organic may be because of their prejudice against the one labeled as being very expensive. Barriers to the success of organic strategies can also be found within processing companies and big retailers. Contradictory opinions among decision makers in marketing, sales and purchase departments or in the matrix organizational structure of companies (category managers versus organic products managers) can lead to suboptimal or even unsuccessful marketing initiatives (Haddad, 2008). Organic agriculture is an integrated system of farming and production. Changing one part of the market will most likely affect every other part of the market. The situation is also evolving, so it is hard to say exactly what the effects will be in the future. Venemen (2008) stated some theories of the potential effects in the U.S. dairy product as shown in Figure 1. In the short term, uncertainty in the marketplace will slow or stop new investment. Reduced visibility and reduced availability mean reduced overall growth. Less growth means less opportunity for businesses in producing or selling organic agricultural products or that provides services to those businesses. Ultimately, less land converted to organic agriculture means less sustainable environment for everyone.

RESEARCH METHODOLOGY

Population

Respondents elected will be organic farmers, suppliers in organic products, distributors, retailers and the customers as well.

Data Collection/Instrumentation

Data will be collected using survey/questionnaires and interview as the primary data. Secondary data will be source from published report, internet and other written information.

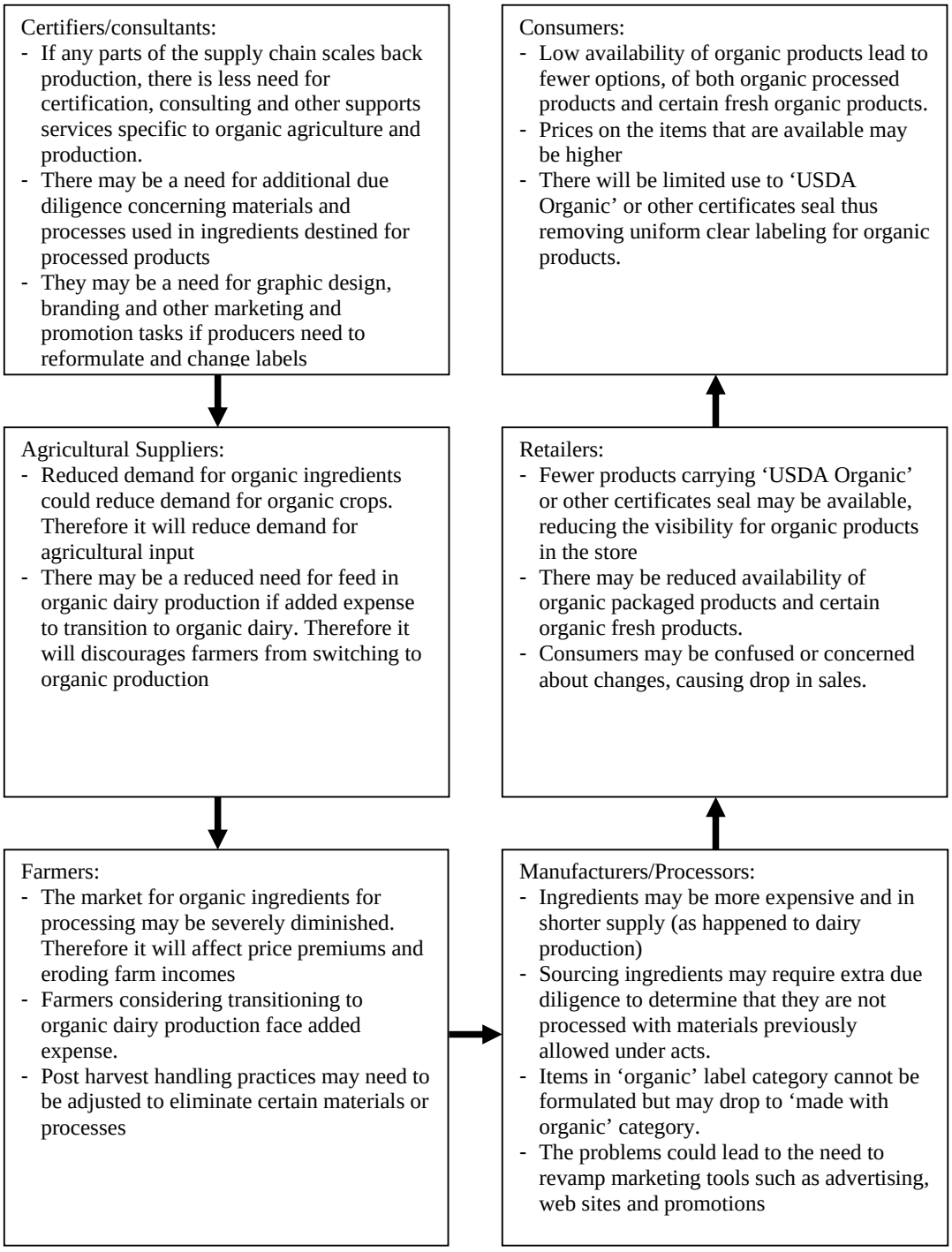

Figure 1: Theories of Potential Effects by Industry Sector

Research Design

This research will be executed in qualitative and quantitative manner. Quality Function Deployment (QFD) methodology will be used to map the organic supply chain innovation initiatives since the method was originally developed to bring the personal interface (voice of customer) to modern manufacturing and businesses. In today's industrial society; where the growing distance between producers and users is a mutual concern, QFD links the needs of the customer (end user) with design, development, engineering, manufacturing, and service functions. To achieve these business goals, the actors need to raise their game to focus on managing better customer experiences by involving in every link of the innovation supply chain system (Desbarats, 1999). Mazur (2008) introduced QFD method as a tool for food processing industry in finding the most appropriate way for formulating and prioritizing business goals with customer satisfaction, associate satisfaction and profit improvement to the overall business result. The application of QFD method in agriculture sector is rarely implemented and is quite different relative to the other sectors. With the key aspect of voice of customer (VOC) included in the supply chain as mentioned by Desbarats (1999), it is desired that this research will achieve some positive result in enhancing the quality of supply chain management and innovation implementation in our organic farming operation system.

CONCLUSION

Almost everyone knows that agriculture seems to have a certain element of organic farming. Accordingly, the ways in which people understand the concept of organic farming operation are not entirely consistent. Some will say that it is important to have strategies, but some are saying that is not as important. There seems; however, to be a loose agreement that organic farming emphasizes on the use of some kind of system especially in the product supply chain network. This research is expected to identify the factors causing various problems occurring in organic farming throughout its supply chain systems. The information gathered from farm operation management and supply chain system as compiled during this study hopefully will give us some indicator and suggestions on how to improve the existing system. The suggestion generated hopefully will become a new innovation initiative to be further germinated and deliberated among the organic players suited according to the requirement of local and global organic market customer product requirements.

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