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Do Small Fish Farmers Perform Product Innovation?: Some Findings from Kelantan

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Abstract: Stiffer competition in the present marketplace makes product innovation become more critical to business to remain competitive. Aquaculturists have big potential to do product innovation. However, product innovation among small farmers, especially, in the freshwater industry has been hardly studied. This study aims to uncover product innovation practice among the small aquaculture farmers. In this preliminary study, an in-depth interview was conducted on four Tilapia fish farmers in the rural area of Bachok and Kota Bharu, Kelantan. This study found that the farmers sold raw fish in the market. Product innovation was not a common practice among them due to their small-scale tilapia production and small tilapia fish supply in the market. However, some of them had intention to do product innovation. The low-value-added products offered would cause the farmers earn low income and remain trapped in poverty.

INTRODUCTION

Innovation is the process of converting an idea or goods into something new which would create values customers are willing to pay. In an organization, innovation is the key strategy that may attract customers and markets through the development of sustainable competitive advantage. To be called an innovation, an idea has to be replicable at an economical cost and must satisfy the specific unmet needs and expectations of the customers. Assets and competencies of an organization is needed to ensure that innovation could occur along with innovation process for new or different market offering which have the probability to create the value for the firm[1].

According to Schumpeter[2] "product innovation is the creation of a new good which more adequately satisfies existing or previously satisfied needs". In Schumpeter's theory, three types of innovation, namely new good, new quality of a good (opening a new market) and a new industry structure. Product innovation was defined by Utterback and Abernathy[3] as "a new technology or combination of the technologies introduced commercially to meet a user or a market need".

Innovation can and must be done by all economic sectors, including aquaculture to cope with the change in market demand. Aquaculture is a major sector in providing food to human being and animals at present and more importantly in the future[4]. In Malaysia, the Government has acknowledged that the

aquaculture sector could improve the living standard of rural population, especially, those who are trapped in poverty[5]. However, limited availability of fresh water and arable land can cause low caches of fisheries and terrestrial food production, thus, create a ceiling to global food production[6].

With such a limitation and the entry of many competitors in the marketplace, product innovation would become decisive factors for aquaculturist to remain competitive and improve their standard of living. However, product innovation among small fish farmers, especially in the freshwater industry has hardly been studied. This study aims to uncover product innovation practice among small farmers in the aquaculture industry.

Literature review: According to Duarte *et al*.[4], "aquaculture has the potential to play a major role in feeding the human population in the future". For the past two decades, the aquaculture stock was over exploited[7, 8] and the fisheries catches were slump[9]. According to Coll *et al*.[10], "the global fish supply per capita has declined and by some estimates, current harvests remain twofold above the levels considered sustainable".

The contribution of the aquaculture sector to the world production of food fish-based was 47% in 2010. Because of the rapid increase in population, the world might need at least another 23 million tonnes of food fish by 2030[11]. Major aquaculture producers come from many developing countries, particularly in Asia[12].

Fish farming is one of the activities that could help the rural residents to increase their income and standard of living. Even though Malaysia has achieved its subsistence level in fish production, since, 2010, the country is confronting the high price of fish. The Malaysian has to accept the high price level in order to ensure an adequate supply of as a source of protein in diet. The increase in population, incomes and changing consumer options may result in the increased demand in fish and fish-based products. An adequate supply of fish and fish-based output would depend on the continuous efforts of fish farmers to generate their income and the innovation they introduce in their production activities and product they offer to the market.

Stiffer competition in the present marketplace makes product innovation become more critical to farmers to remain competitive as well as to increase their income and standard of living. According to Kambil[13], innovation is the critical aspects required in order to gain competitive advantage. To Leonard and Swap[14], innovation in general "is the embodiment, combination, and/or synthesis of knowledge in novel, relevant, valued new product, processes or services". Innovation in the agro-food industry involves any technological or non-technological knowledge applied to a product, process, organization or marketing of actors involved in the value chain. Schumpeter[2] states that "product innovations stimulate new innovations, constitute clusters of innovations, open new profitable opportunities, obtain profit and growth in the economy and finally result in an enhancement in the standard of life of the public". Product innovation can also be referred to the process of exploration of good ideas into the object or practical use to satisfy specific requirement by the customers[15, 16, 8]. Cooper and Fakley refer product innovation to the "newness of product in two dimensions, namely new to the company and new to the market". Requia[17] summaries product innovation as the new product developmentor the new techniques and means in the current production with the focus on the consumer's needs and the owner's expectations.

This product innovation is determined by product development speed, production cost and performance in delivering the product or service to the customers[18]. Firms (and farmers) are forced to implement product innovation in order to encounter with the changes in preferences, short product lifecycles, diversification of demand patterns, and customer-specific requirements. New knowledge generation through product innovation applies to agro-food value chain activities which in turn, increases firm and country competitiveness at an international level.

MATERIALS AND METHODS

For the purpose of this study, product innovation is defined in a simple term as the introduction of a new product or the qualitative improvement of the existing product[2] by the small aquaculture farmers. Interview was conducted for collecting data from the informants. In the social sciences and health research, interview is a common technique for collecting qualitative data. This method is suitable for social science researchers to explore different ideas, perspectives and to obtain important information on a related topic.

Four small farmers in tilapia production, labelled as P1, P2, P3 and P4 from Bachok and PantaiCahayaBulan in Kelantan were interviewed in the Malay language- the mother tongue of the informants. The informants were involved in aquaculture ranging from 2 years to more than 20 years. The interviews were guided by an interview protocol which was developed earlier. It is essential to form such a protocol as it enables the use of a standard procedure for each of the respondent while maintaining the flow of conversations.

The conversations were jotted in a note book and kept for reference. With the informants' permission, the interviews were also tape recorded with a voice recorder. All of the informants were given sufficient time to share their information. The data were then transcribed for analysis.

RESULTS AND DISCUSSION

The four informants have sufficient experience in the aquaculture industry, especially in the freshwater fish farming. Three informants had 2-4 years of experience in fish production and the other one had been involved in aquaculture for >20 years. These informants were classified as the bottom 40% household income group (B40 household) as their household income was up to RM3,855per month[19]. Their main source of income was fish farming as they were involved full time in aquaculture and their households had no other sources of income.

The informants agreed that they had limited production, even though the demand for freshwater fish and fish-based products increased over the year. All the informants cultivated tilapia fish in man-made ponds. The main products of all of the informants were raw fish. P1 and P2 sold his product direct to customers on the farm. P3 and P4 marketed his product through wholesalers. These types of distribution channels had to be adopted by the informants because they had no alternative to market their products. Product innovation was not a common practice among the four informants. In the words of P3 and P4.

P3: “I've never produced tilapia-based products and intend to do so. All this while, I supplied raw fish to wholesalers only. In fact, supplying raw fish is not enough to meeting growing demand for tilapia from customers.

P4:“I’ve not produced tilapia-based products. I just supplied raw tilapia to wholesalers. Even raw tilapia cannot the meet the demand from customers”.

However, two of the informants had some planning for or intention in product innovation. According to: P1:“I made salted tilapia fish last month but for family meals only.” Salted fish using tilapia isappetising. I planned to produce it for customers in this monsoon season, end of this year.”

P2: “For the time being, I do not make tilapia-based products yet because my raw tilapia production is limited. Certainly, I intend to produce tilapia-based crackers and salted fish.”

All the findings show that product innovation is not a normal practice among the small aquaculture farmers. Limited production by themselves and limited supply of tilapia in the market restrict product innovation among the small farmers. Growing demand for raw tilapia provides little incentive for the farmers to diversify their products into tilapia-based products that are higher in value and price in the market. High price of raw tilapia also encourage them to sell raw tilapia to the market and at the same time discourage them to make tilapia-based products. High tilapia price compared to other fish means higher cost of production for producing tilapia-based products, such as crackers, nuggets, rolls, tocino and fillets. Hence, it is difficult for tilapia-based products to compete with non-tilapia-based products. Grunert and Traill[20] argue that innovation is unrelated to company size. However, the present study proved that size matters. Because of the “smallness” made small farmers to give more attention to their daily survival and to cater for the existing market for raw tilapia. In the present context of the study, Heen, Monahan and Utter[21] was right when they said that aquaculture resources may limit the innovation.

The absence of product innovation practice among the smaller farmers also brings about another impact on their income and living standard. One of the informants was involved in the industry for >20 years, yet his household remained in B40.

CONCLUSION

The purpose of this study was to examine the product innovation practice among small farmers in the tilapia industry. Based on the interviews on four tilapia farmers in the two districts of Kelantan, it was found that the small farmers had done no product innovation in their production activities. Some of them had intention to introduce new products in their product line but this intention may or may not be materialised or successful.

The absence of the product innovation practice may explain why the four small farmers were trapped in poverty (B40), even though some of them were in the industry for years. Future studies should obtain more informants throughout Malaysia but from similar group of farmers, so that, a better picture of product innovation among the small farmers could be seen.

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REFERENCES

01. Kanagal, N.B., 2015. Innovation and product innovation in marketing strategy. J. Manage. Marketing Res., 18: 1-25.
02. Schumpeter, J.A., 1934. The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle. Transaction Publishers, Piscataway, New Jersey, USA., Pages: 180.
03. Utterback, J.M. and W.J. Abernathy, 1975. A dynamic model of process and product innovation. Omega, 3: 639-656.

04. Duarte, C.M., M. Holmer, Y. Olsen, D. Soto and N. Marba *et al*., 2009. Will the oceans help feed humanity? BioScience, 59: 967-976.
05. Kamaruddin, R. and A.H. Baharuddin, 2015. The importance of good aquaculture practices in improving fish farmer's income: A case of Malaysia. Intl. J. Soc. Econ., 42: 1090-1105.
06. Holmer, M., 2009. Environmental issues of fish farming in offshore waters: Perspectives, concerns and research needs. Aquacult. Environ. Interact., 1: 57-70.
07. Myers, R.A. and B. Worm, 2003. Rapid worldwide depletion of predatory fish communities. Nature, 423: 280-283.
08. Naylor, R. and M. Burke, 2005. Aquaculture and ocean resources: Raising tigers of the sea. Ann. Rev. Environ. Resour., 30: 185-218.
09. Pauly, D., A.W. Trites, E. Capuli and V. Christensen, 1998. Diet composition and trophic levels of marine mammals. ICES. J. Marine Sci., 55: 467-481.
10. Coll, M., S. Libralato, S. Tudela, I. Palomera and F. Pranovi, 2008. Ecosystem overfishing in the ocean. PLoS One, 3: e3881-e3890.
11. Mathiesen, A.M., 2012. The state of the world fisheries and aquaculture. Food and Agriculture Organization, Roma, Italy.
12. FAO., 2012. The State of World Fisheries and Aquaculture. FAO., Rome, Italy, Pages: 241.
13. Kambil, A., 2002. Good ideas are not enough: Adding execution muscle to innovation engines. Accenture Institute for Strategic Change, Cambridge, Massachusetts.
14. Leonard, D. and W. Swap, 1999. How managers can spark creativity. Leader, 1999: 43-48.
15. Brown, S.L. and K.M. Eisenhardt, 1995. Product development: Past research, present findings and future directions. Acad. Manage. Rev., 20: 343-378.
16. Tidd, J., K. Pavitt and J. Bessant, 2001. Managing Innovation: Integrating Technological, Market and Organizational Change. 2nd Edn., John Wiley & Sons, Chichester, England, UK., ISBN:9780471496151, Pages: 402.
17. Reguia, C., 2014. Product innovation and the competitive advantage. Eur. Sci. J., 1: 140-157.
18. Alegre, J., R. Lapiedra and R. Chiva, 2006. A measurement scale for product innovation performance. Eur. J. Innov. Manage., 9: 333-346.
19. Anonymous, 2015. Elevating B40 households towards a middle-class society. Economic Planning Unit (EPU), Putrajaya, Malaysia.
20. Grunert, K.G. and B. Traill, 2012. Products and Process Innovation in the Food Industry. Springer, Berlin, Germany, ISBN-13:978-1-4612-8433-8, Pages: 242.
21. Heen, K., R.L. Monahan and F. Utter, 1993. Salmon Aquaculture. Wiley, New York, USA., ISBN: 97804 70221396, Pages: 278.