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The Motivation Behind Open Innovation Access in the Support of New Product Development: the Case of Thai Dessert SMEs

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Abstract

Quantitative studies of relationship between open innovation (OI) and new product development (NPD) performance have been provided by various authors. Nevertheless, there has been little evidence of qualitative research to explore SMEs' motivation behind OI access, in support of NPD, and which pattern of OI practice SMEs operate for access. This is one of qualitative studies to fill this knowledge gap. The study provides significant evidence for elucidation of why OI is useful for NPD within context of SMEs. In this study, Thai dessert SMEs are employed as the case.

Keywords: Open innovation practice; new product development; motivation

Introduction

New product development is important for the survival of firms. Open innovation is the paradigm that propose that firms can use external ideas as well as internal ideas, including to internal and external paths to market, in order to make an advance their technology (Chesbrough, 2003; Bamford et al., 2011). Interestingly, little is known about why some firms use external knowledge sources for new product development in an extensive way, while others hardly ever use them (Cleven and Brettel, 2011). This study investigates SMEs' motives in order to understand the phenomenon of their open innovation access to support new product development.

Thai dessert SMEs are employed as the case in this study; this is appropriate for the three following reasons :

- 1) It is in the sector of the food processing industry, which is typically described as a relatively mature and slow-growing business that displays a low level of R&D investment and is conservative in the type of innovations (Costa and Jongen, 2006).

Based on the nature of this industry type, the case of Thai dessert SMEs is challenged because it is expected that they might need to rely on the usage of external knowledge source. The usage of this case is to prove in this demand.

2) It relies on indigenous knowledge (IK) based industry, which is a rare case in the open innovation literature.

3) Based on previous literature of Yokakul and Zawdie (2010,2011);they investigated Thai dessert SMEs and provided significant evidence of the social capital embedded in Thai dessert SMEs. They found that social capital based on three elements of trust, norm and network is a significant factor in technological capability development and innovation in Thai dessert SMEs, through the way of sustaining the triple helix network, which is the interaction between government, university and industry. As a result, it is expected that this study will prove further knowledge in contributing this same case towards the open innovation research.

Literature

Motivation

Motivation refers to intention, while amotivation is a lack of intention (Deci, 2005). According to Self-Determination Theory (SDT), it distinguishes between two types of motivation between 'intrinsic motivation' and 'extrinsic' motivation (Deci and Ryan, 1985). Intrinsic motivation refers to doing something because it is natively interesting, or doing an activity due to the enjoyment of the activity itself, rather than its instrumental value. In contrast, extrinsic motivation refers to doing something because it can lead to a detachable outcome, or doing an activity due to its instrumental value.

Open innovation

Open innovation is broadly defined as the use of purposive inflows and outflows of knowledge to accelerate innovation and to expand the markets for external use of innovation (Chesbrough et al.,2006). Relied on open innovation, Lichtenthaler (2011) suggested that internal activity is also critical because it helps to support to open innovation, in particular with open innovation based inflow of knowledge. This leads to the Lichtenthaler's (2011) definition of open innovation as 'systematically performing knowledge exploration, retention, and exploitation inside and outside an organization's boundaries throughout the innovation process'.

Enkel et al. (2009) categorised open innovation into three types of process: the outside-in process, the inside-out process and the coupled process. The outside-in process, or inbound open innovation, refers to the adoption of external knowledge from external knowledge source. The inside-out process, or outbound open innovation, refers to transferring ideas from inside the firm to the outside environment. The coupled process is the combination of the outside-in and the inside-out process and it is in the form of co-creation with complementary partners through alliances, cooperation, and joint ventures.

Moving the open innovation process into open innovation practice, Ebersberger et al. (2012) suggested four patterns of open innovation practice: 1) searching; 2) sourcing; 3) collaboration; and 4) protection of intellectual property (IP). Searching is the systematic scanning of external environments to grasp external knowledge. Sourcing refers to the acquisition of knowledge based on the approach of solutions of market perspective. Collaboration is the development of knowledge through relationships with

specific partner organizations through the form of alliances, or joint ventures with other industrial firms holding complementary knowledge. With protection of IP, it is a practice to secure positive economic returns from outbound open innovation (Ebersberger et al., 2012)

Theoretical lens

Absorptive capacity refers to the ability to recognize the value of new external information, assimilate it and apply it to commercial ends (Cohen & Levinthal, 1990). Lichtenthaler and Lichtenthaler (2009) viewed absorptive capacity in terms of capability and put it into the capability-based framework of the open innovation process. In this framework, six knowledge capacities are identified: inventive; transformative; innovative; absorptive; connective; and desorptive capacity, to use for explain a firm's capabilities of managing both internal and external knowledge in open innovation processes.

In this framework, with boundary of intrafirm, inventive capacity refers to a firm's ability to internally explore knowledge. Transformative capacity refers to a firm's capability of internally retaining knowledge over time. Innovative capacity is relevant with matching inventions relied on the final market context. With boundary of extrafirm, absorptive capacity relates to exploring external knowledge, while connective capacity refers to a firm's ability to retain knowledge in interfirm relationships. Desorptive capacity refers to a firm's capability of external knowledge exploitation, which is complementary to internal knowledge application (Lichtenthaler and Lichtenthaler, 2009).

Based on the literature review in this study, the term open innovation (Lichtenthaler, 2011) and the concept of knowledge capacity (Lichtenthaler, 2011) are adopted as the theoretical framework for the study. The objective of the study is to investigate Thai dessert SMEs' motives to open innovation access, in support of new product development. It is important to be clear that we are not concerned with the type of motivation or to know which types of motivation (intrinsic or extrinsic motivation) driving Thai dessert SMEs to open innovation access. In this study we emphasise that we focus on the perspective to know what are the causes or motives for Thai dessert SME's behaviour in open innovation access.

To help structure the dissemination of our research, two research questions were formulated: 1) what are Thai dessert SMEs' driving causes or motives for open innovation access, in support of new product development? and 2) which pattern of open innovation practice do Thai dessert SMEs operate for access?

Methodology

Semi-structured interviews were employed for data collection. These interviews took place face-to-face and were completed between September – October 2013. All interviews were tape recorded verbatim. The representation of data in the findings was anonymised for ethical reasons.

Data analysis was conducted through thematic analysis (as per Braun and Clarke, 2006). This is composed of 6 stages: 1) familiarisation with the data 2) generating initial codes 3) searching for themes 4) reviewing themes 5) defining and naming themes and 6) producing the report (Braun and Clarke, 2006). Thematic analysis is used to identify, analyse and report patterns, so-called themes, within data, as well as to organise the data set in rich details (Braun and Clarke, 2006). Themes should

capture something important about the data in relation to the research questions, and represent patterned responses or meanings in the data set (Braun and Clarke, 2006).

Approach

The interview data is based on 14 sets of data. These were gained from 15 interviewees from three organisations: 1) Thai dessert SMEs, 2) government agencies responsible for the promotion of technology and innovation in Thai SMEs and 3) a large company, whose one production line relies on an innovative Thai dessert product. The government agencies participating in this study were composed of the National Innovation Agency (NIA) and Technology Management Center (TMC). Our approach, with using the data from these two organisations other than the Thai dessert SMEs, was intended as a crosscheck and to cover a range of sources related to Thai dessert SMEs. Table 1, below, presents the participants in the interviews.

Table 1 - Participants in the interviews

Organisation	Number	Number of interviewees	Positions of interviewees	Numbers of sets of interview data
Thai dessert SMEs	10	10	Business owners	10
Thai government agencies	2	3	Project manager	3
Large company	1	2	R&D and QC manager, marketing manager	1
Total	13	15		14

Findings

Thematic analysis led to six main emerging themes: 1) brand building 2) product quality 3) improvement 4) openness 5) employees and 6) technology management. These are categorised into the related three topics, namely: motives for open innovation access, type of open innovation practice and internal factors. Table 2 presents the emerging main themes and sub-themes within the interviews.

Table 2 - Emerging themes within the interviews of Thai dessert SME, Thai government agencies and a large company

Topic	Theme and definition
Motives for OI access	1 - Brand building: Demand for brand image-building through products and the organisation
	2 - Product quality: Demand for access to a production process standard, leading to hygiene and cleanliness of products Sub-theme 1: Quality management system Sub-theme 2: Supplier management
	3 - Improvement: Demand for improvement for business survival and for said improvement to rely upon customer requirements Sub-theme 1: Business survival

Topic	Theme and definition
	Sub-theme 2: Customer satisfaction
Type of OI practice	4 - Openness: Access for external sources to gain new ideas and knowledge for the improvement of production processes and new products. Sub-theme 1: Openness to customer Sub-theme 2: Openness to supplier Sub-theme 3: Openness to knowledge/ ideas / technology Sub-theme 4: Openness to business alliance
Internal factor	5 - Employee: Employees are an internal resource of support in improvement and innovation. The characteristics defining their support in product development are skills, knowledge, experience and a willingness to participate. Sub-theme 1: Participation Sub-theme 2: Skills and knowledge Sub-theme 3: Trust
	6 - Technology management: Technology and machines are tools to support production processes and to improve efficiency of production processes and new products.

Findings - Theme by theme

Brand building

This theme refers to the demand for brand image-building through products and the organisation. Respondents of Thai dessert SMEs talked about 'brand' from three perspectives: 1) to employ for distinguishing among their focused customer groups 2) customers' impression and satisfaction and 3) brand image, which covers two issues, well-designed features of the product, as well as the organisation's image. For instance :

'I build my own brand of Thai dessert for being sold on shelves in the department stores' (int.1)

'I have to make impression to the gift receivers in sense that they would like to eat these Thai desserts under my brand' (int.6)

'Thai desserts under my production line will be packed in ready with well-designed packages and labelled with my brand' (int.1)

'Nowadays,I don't think to sell only Thai dessert products, but I also sell image too. For example, there are some groups of tourist visit my shop in order to do some activities together, such as workshop, rally, site visiting' (int. 2)

Product quality

This theme refers to the demand for access to a production process standard that can lead to hygiene and cleanliness of products. Mostly respondents of Thai dessert SMEs referred to this theme to be the first priority issue for them.

With the theme of product quality, two sub-themes are included 1) the quality management system and 2) supplier management. The quality management system referred to the standard of production process, which might rely on the measuring and recording system, Good Manufacturing Practice (GMP), hygiene and cleanliness. Supplier management is referred to as the Thai dessert SMEs' controlling of the supplier in delivering raw materials meeting their requirement. For instance :

'All procedures within my factory must be recorded and ingredients must be measured...These procedures of standardization is important...' (int. 2)

'I have achieved the standard of international GMP to practice in my factory because I would like to produce the products with good quality' (int. 6)

'I would control and manage suppliers since starting from their process of feeding duck and hens. When I start to order raw material, I will tell my requirement to suppliers what characteristics of raw materials that I required... I will identify specification of each raw material that I want' (Int. 2)

Improvement

The theme refers to the demand for improvement for business survival and for said improvement to rely upon customer requirements.

Based on the theme of improvement, two sub-themes are encompassed: 1) business survival and 2) customer satisfaction. For instance :

'If my Thai dessert products are sold in the same style and there is no any change on the improvement, I think that my product might be extinct from the market soon' (int. 2)

'I also view that healthy current is more concerned in the present situation. Thai dessert should be improved with the reduction of sweetness'(int. 1)

Openness

The theme refers to access to external sources to gain new ideas and knowledge for improvement to the production process and new products. Some respondents of Thai dessert SMEs talked about their openness to get feedback from customers for improvement, while some talked about the knowledge obtained in terms of new raw materials introduced from suppliers. Several respondents of Thai dessert SMEs talked about the public channel for knowledge and service access. Moreover, there were some respondents who talked about their business alliance.

In the theme of openness, four sub-themes are included 1) openness to customer 2) openness to supplier 3) openness to knowledge/ideas/ technology and 4) openness to business alliance. For instance:

'If customers do not have any comments or suggestions, it indicates that Thai desserts produced are acceptable in the customers' sight. However, if the customers comment why we do not produce in other styles, it meant that we need to improve' (int. 5)

'I learn from supplier and internet. Sometimes, I learn from visiting at the exhibition' (int 2.)

'I attend the exhibition shows of technology in every year. I sometimes buy some technologies from these exhibition shows.I accept that I sometimes cannot think out if I do not see' (int. 1)

'My business alliance is based on the same business of Thai dessert ...our distinct lines of Thai dessert products are different. However, we share information in terms of technology and knowledge each other. We share the method of cooking to create deliciousness of some Thai desserts which each one has expertise in' (int. 6)

Employee

The theme refers to employees being an internal resource of support in improvement and innovation. Furthermore, the theme covers employees' characteristics that support product development. These characteristics are skills, knowledge, experience, as well as the willingness to participate.

Within the theme of employee, three sub-themes are included 1) participation 2) skills and knowledge and 3) trust. For instance:

'Assuming that I think to improve products in new line, I will ask the view of employees whether they think that it will work or not' (int. 2)

'We have the meeting on Mondays. If they have new idea to offer, they talk to me to consider. I take part to brainstorm with them on that day to consider whether it work' (int. 6)

'I view that employees' skill is more significant than education. However, the education is still relevant. Someone whose a good skill of working cannot improve anything more than be able to work well with what being in their routine work if their education level is not high' (int. 2)

'I will consider and look which employee has potent to help me for improvement' (int. 2)

'I view that these employees do not have knowledge about this issue. They just only think that they can do the work in the routine... It may be possible but it is very little in case that employees will help to think about innovation' (int.1)

Technology management

The theme refers to technology and machines as tools for supporting production processes and improving the efficiency of production processes and new products.

Within this theme there are various aspects of technology management that respondents of Thai dessert SMEs mentioned. Several respondents talked about the use of technology for management in their firms. Beyond this, several respondents talked about the worthiness evaluation of investment in technology, while some respondents talked about the usage of technology, that it should be relied on the aspect related to customer. In this same issue, a few respondents talked about their prompt to buy the technology which would be employed, without concern in the facet of management. For instance:

'I use the computer and online system to use for management. Customers can order Thai dessert products and make a payment through online system' (int.1)

'For examples, the cost of new machine is approximately 25 million baht. I think that this is not worthiness for me to invest when compared with gained profit... It is needed to turn to look at the market size too. I view that market of Thai dessert business still grows, but not leaps and bounds. It seems likely to be walking' (int.6)

'I consider in terms of economical benefits. Furthermore, customer's requirement is in my consideration as well. If customers want to buy Thai desserts for themselves to eat, not as gifts for other people, I think that fresh Thai dessert will be more fit. Consequently, no need to put oxygen absorber in package... However, if they want Thai desserts being as gifts for other people, oxygen absorber will be put into packaging in order to extend product shelf life' (int 2.)

'I invested in buying technology of machine to employ in my factory. I am not very concerned in view of technology management. I do not care to access experts. However, if they have some good advice, I am glad to listen' (int. 9)

Discussion

Based on the findings, we can categorise six key themes: 1) brand building 2) product quality 3) improvement 4) openness 5) employee and 6) technology management into three categories. These categories are motives for open innovation access; type of open innovation practice; and internal factors. To discuss these findings, the context will be organised according to the categories respectively.

Motives for open innovation access

There are three distinct motives that attract Thai dessert SMEs to open innovation access: brand building; product quality; and improvement.

With brand building, Thai dessert SMEs refer to 'brand image building' through products and the organisation. A brand can distinguish the goods and services of one seller from competitors (Porter and Claycomb, 1997). Brand image covers consumer knowledge and beliefs stored in memory about brand attributes and the results of use (Peter and Olson, 1994). Relying on brand images, it supports to product extensions, which is regarded as a type of a new product development as Booz et al' (1982) typology of new product development, by making a fit between the brand and the new product (Porter and Claycomb, 1997).

Based on product quality, this represents the sense of requirement of a production process standard access. In addition, Thai dessert SMEs view that the production process standard can lead to hygiene and the cleanliness of products. Based on the findings, Thai dessert SMEs identified that product quality should be originated from the quality management system and supplier management, which is well managed. In terms of quality, it is defined broadly as superiority or excellence (Zeithaml, 1988).

Relying on improvement, it is done because of two distinct reasons: business survival and customer satisfaction. According to Booz et al. (1982), they suggested a typology of new products in 6 categories : 1) new-to-the-world, which are products new to both the firm and the market 2) new product lines, which are new to the firm but not to the market 3) additions to existing product lines, which is supplement established product lines 4) improvements/revisions to existing products, which provide improved performance or greater perceived value to customers and replace an existing product 5) repositionings, which is existing products targeted to new markets and 6) cost reductions, which are products providing similar performance as that of existing products but at a lower cost. Based on the findings, the examples that are identified in terms of 'improvement' of a new product in Thai dessert SMEs were such as the use of new fillers type of same dessert type, the change of packaging to increase the shelf life of dessert products, etc. These might be categorised into the typology of the additions to existing product lines and improvements/revisions. A few of the Thai dessert SMEs improved products in the form of ready-to-mix Thai dessert flour.

Type of open innovation practice

It is found that most of Thai dessert SMEs have access to external knowledge to get ideas and knowledge for new product development. Thai dessert SMEs talked

about the ‘openness’ of knowledge and ideas in the sense that they recognise the value of this new external information. However, they also talked that they need to consider the use of these ideas and knowledge again. According to Cohen and Levinthal (1990), they proposed the term of ‘absorptive capacity’ and identified it as the ability of a firm to recognise the value of new external information, to assimilate it, and apply it to commercial ends.

With the pattern of open innovation practice, it is found that the pattern of open innovation practice that most Thai dessert SMEs access is likely to be ‘searching’. Searching refers to the systematic scanning of external environments to tap into external knowledge (Ebersberger et al., 2012). Beyond this, the open innovation practice of ‘collaboration’ can be also found in Thai dessert SMEs. With collaboration, it refers to the development of knowledge through relationships with specific partner organizations in the form of alliances, or joint ventures with other industrial firms holding complementary knowledge (Ebersberger et al., 2012).

Internal factor

Emerging themes that are regarded as internal factors of the organisation appeared in the context of Thai dessert SMEs. These were in terms of employee and technology management.

Thai dessert SMEs mentioned employees as staff who support new product development in the firm. However, these employees need to have skills, knowledge, experience and willingness to participate. An employee is an element in the construct of innovation capability as identified in Saunila and Ukko’s (2014) concept: external knowledge; work climate and well-being; ideation and organising structures; regeneration; participatory leadership culture; individual activity (employee); and know-how development.

With technology management, it is found that technology and machines are used as tools to support production processes and to improve efficiency of production processes and new products, in the context of Thai dessert SMEs. Technology management is related to aspects of both innovation management and knowledge management (Cetindamar et al., 2009). Furthermore, it is also regarded as a construct of innovation capability (Lawson and Samson, 2001).

Conclusion

It can be here concluded that the significant motives of Thai dessert SMEs to open innovation access, in support of their new product development, are mainly based on the demand to access the three following perspectives: brand building, product quality, and improvement. Brand building is related to the perspective of marketing, which is relevant to the customer particularly. Product quality covers two issues, that are, manufacturing process required to the production process standard access, and supplier management. Improvement is motivated by business survival and customer satisfaction. However, the internal factors of organisation, i.e., employee and technology management are also concerned as significant elements in support of new product development. Relying on open innovation practice, Thai dessert SMEs seem likely to apply the pattern of searching. However, the pattern of collaboration can also be found.

This study contributes to the conceptual framework of open innovation in the context of SMEs, in particular with indigenous knowledge based SMEs. It requires to

the integrative perspectives of internal factor, including the issue of motives based on the market orientation and quality management system based manufacturing process into this framework.

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