ENTREPRENEURSHIP AND SUSTAINABILITY ISSUES
ISSN 2345-0282 (online) http://jssidoi.org/jesi/
2019 Volume 7 Number 2 (December)
http://doi.org/10.9770/jesi.2019.7.2(13)

Publisher
http://jssidoi.org/esc/home

KNOWLEDGE INTEGRATION CAPABILITY AND ENTREPRENEURIAL ORIENTATION: CASE OF PAKTHONGCHAI SILK GROUPS RESIDING*

Sareeya Wichitsathian[1], Dussadee Nakruang[2]

[1,2] Institute of Social Technology, Suranaree University of Technology, Nakhon Ratchasima 30000, Thailand

E-mails:[1] sareeya@sut.ac.th ; [2] dussadee.n@yru.ac.th

Received 15 March 2019; accepted 20 September 2019; published 15 December 2019

Abstract. This qualitative research aimed to study 1) knowledge integration capability and 2) knowledge integration capability that demonstrated the entrepreneurial orientation within the silk groups in Pakthonghai District, Nakhon Ratchasima Province. Supporting research data was collected from in-depth interviews of six silk group leaders and members (out of eleven identified groups). A content analysis method was used for data evaluation in order to find evidence-based inferences, identify causal relationships, and investigate the correlations. According to the result, the silk groups' knowledge integration capability was built upon the following three perspectives: learning culture, knowledge management capability and information technology skill. 1) Learning Culture derived from the groups' determination to produce and maintain high quality standards in their silk products while making use of knowledge learned from customers, competitors, governments, and previously experienced business problems. 2) Knowledge management capability described the ability to retain knowledge inherited from previous generations and exchange information among group members during training and practice. Once the new set of knowledge was created by a member, it was then relayed to other group members and used to develop their silk products according to the market demand. 3) Information technology had been used by Pakthongchai silk groups to manage their silk production knowledge. These established elements had assisted them in obtaining an outstanding entrepreneurial skills.

Keywords: knowledge integration capability; entrepreneurial orientation; silk group; Pakthongchai District

Reference to this paper should be made as follows: Wichitsathian, S., Nakruang, D. 2019. Knowledge integration capability and entrepreneurial orientation: case of Pakthongchai Silk Groups Residing. *Entrepreneurship and Sustainability Issues*, 7(2), 977-989. http://doi.org/10.9770/jesi.2019.7.2(13)

JEL Classifications: D83, L26

* *The research was supported by School of Management Technology, Institute of Social Technology, Suranaree Uinversity of Technology, Thailand*

ISSN 2345-0282 (online) http://jssidoi.org/jesi/
2019 Volume 7 Number 2 (December)
http://doi.org/10.9770/jesi.2019.7.2(13)

1. Introduction

Textiles are one of the highest revenue generating industries in Thailand with the value of export accounted for 3.4% of national GDP. According to the report from the Queen Sirikit Department of Sericulture, Thailand silk market's trading value in 2014 increased 76.26% from 2013, equivalent to approximately 6 billion Thai Baht (the Queen Sirikit Department of Sericulture, 2013). "Nakhonchaiburin" is a silk group consisting of four high-potential silk producers and sellers in the lower north-eastern regions, including Nakhon Ratchasima province, Chaiyaphum province, Burriram province, and Surin Province. Among the four provinces, Nakhon Ratchasima owns the largest market share (Lower North-eastern Region Group, 2011).

Nakhon Ratchasima is known as the producer of "Hang Karok silk" (tail of a squirrel), one of the most exquisite silk fabrics. It is a type of plain silk made by special weaving techniques in which two different colors of threads are twisted in to one. This requires skilled weavers to control the shade of the overlay color to achieve the small intrinsic pattern that glistens like the fluffy tail of a squirrel. Hang Karok silk was once regarded as the silk of Nakhon Ratchasima. As the old province motto says "lace neck dove, Kan Rom sugar cane, green mandarin orange, Hang Karok silk, Sai Thong flower, and Si Sawat cat. Although the motto has been changed to "land of brave women, fine silk material, Korat rice noodle, Phimai historical park, and Dan Kwian ceramics", silk remains the renowned product of Korat City. The weaving culture has existed in Nakhon Ratchasima for over 100 hundred years (Information Technology and Communication Center, the Queen Sirikit Department of Sericulture, 2018). More than 200 small producers from upstream, midstream and downstream industries generated over 4.1 billion Thai Baht in 2012. With the government's promotion campaign that encourages the use of Thai fabric and the increasing purchase volume from ASEAN customers, the industry is expected to grow an additional 50%.

However, silk production in Korat is struggling to maintain its artisanal tradition as weavers nowadays prefer using pre-manufactured, ready-made threads instead of those twisted by hand. Increasingly, alternative types of fabric and western- style clothing has also become more popular. Additionally, the textile industry has become more competitive due to the increase of producers from ASEAN countries. Myanmar has recently started to export its good to the ASEAN market. The silk production groups, therefore, have to find additional ways to expand their business if they hope to survive. Some of the contributing factors assisting their continued survival include the ability to promote learning among group members and the ability to integrate knowledge and to operationalize group knowledge dispersed among scattered individuals and documents. Combined with the ability to apply appropriate technological skill, the ability to gather and organize knowledge has enhanced the weavers' ability to produce high quality silk and run their businesses efficiently (Davenport & Klahr, 1998). Entrepreneurial orientation is also an essential skill used for solving business problems. It has allowed the silk groups to employ strategic decision-making capabilities across their industry (Kim, Song, Sambamurthy, & Lee, 2012). Without the continued democratization and exchange of silk making wisdom, the traditional industry will increasingly face aggressive competitive challenges, decreasing market demand for their product. The group must also remain unique by continuing to produce innovative patterns, using silk diversely and contemporarily while still preserving traditional Thai identity. These are the methods used to strengthen the group members' learning ability and allow them to increase the value of their products.

The policy of the Queen Sirikit Department of Sericulture, Ministry of Agriculture and Cooperatives emphasizes the importance of wisdom integration and silk weaving knowledge distribution. The wisdom exchange process and knowledge passing from handicraft experts serves as the foundation for creating unique patterns during production process. This uplifts the silk group's competitive skills in both domestic and international markets. This research's objectives were to study knowledge integration capability and knowledge integration capability which indicates an entrepreneurial orientation. The selected case study included silk groups from the Pakthongchai District, Nakhon Ratchasima province. These groups had maintained their silk weaving tradition for over 50 years and were renowned for their high quality and artistic silk products. The study aimed to review and further understood the silk groups'

ISSN 2345-0282 (online) http://jssidoi.org/jesi/
2019 Volume 7 Number 2 (December)
http://doi.org/10.9770/jesi.2019.7.2(13)

knowledge integration and entrepreneurial orientation. Expectedly, the government can make use of the study result as a guideline to improve the Thai silk industry regarding this particular topic in the future.

2. Literature Review

The relevant concepts, theories and research to this study can be summarized into two sections as follows.

2.1 Knowledge management capability

Knowledge management is the capability to obtain, apply, transform and aggregate organizations' internal and external sources of expertise in order to increase competitive positioning. It consists of knowledge analysis, knowledge synthesis, experience application, and a knowledge selection process (Xiao-di, Song-zheng, Juanru & Heng, 2008).

Grant (1996) developed knowledge integration theory in order to explain how the process of integration leads to the construction of new knowledge and is dictated by two mechanisms; (1) the instructions and routines of an organization as well as (2) an effective ability of employees to segregate, apply, and enhance various knowledge gained internally and externally.

Knowledge within the organization is constructed during the knowledge integration capability and knowledge management processes. The knowledge management process includes knowledge building, exchange, relay, and dissemination. On the other hand, knowledge integration capability consists of the three alternative dimensions of (a)a learning culture, (b) the knowledge management process capability, and (c) an information technology capability (Kim, Chaudhury, & Rao, 2002; Ray, Barney, & Muhanna, 2004). The details are as follows:

1. *Learning Culture (LC)*

Culture is described by knowledge values, the interaction of people within a society, the types of knowledge embedded an organization, and knowledge activities accepted within those organizations (Gold, Malhotra, & Segars, 2001; Lee & Choi, 2003). Whereas, LC is comprised of values and beliefs demonstrated through the behaviours of both groups and individuals during the new knowledge development process. This process consists of mind opening, trusting, coordination, and assisting each other to improve an organization's efficiency and effectiveness (Škerlavaj, Štemberger, Škrinjar & Dimovski, 2007) by encouraging or supporting the team effort to create organizational innovations.

2. *Knowledge Management Process Capability (KMPC)*

Knowledge integration can be achieved through two different mechanisms: routines and instructions. 1) Routines are used to determine relationships among employees. Successful integration occurs when employees are able respond to the situations without requiring prior instruction. 2) Instructions are the integration mechanism created by each individual expert. They are used to determine rules, criteria, and instruction sets for an organization that lacks clear work processes or structures. Both mechanisms refer to knowledge resident within individuals or organizations in the form of social or organizational behaviours (Xiao-di, Song-zheng, Juanru & Heng, 2008). Additionally, knowledge management processes are the ability to create and share the knowledge of organizations as well as individuals. These processes allow for each employee to access knowledge through communication with others (Brown & Duguid, 2001; Gold, Malhotra, & Segars, 2001; Lee & Choi, 2003). However, the knowledge management process has to be established along with an organizational culture in order to increase integration. This allows the knowledge management process to help select the most valuable knowledge within an organization. An organization's LC and knowledge management are the primary factors that promote knowledge integration and information technology capabilities, which are essential for constructing rules and instructions (Kim, Chaudhury & Rao, 2002; Ray, Barney & Muhanna, 2004).

3. *Information Technology Capability (ITC)*

ITC describes the capability to effectively manage hardware and software in order to enable user access to different levels of knowledge. Information technology skills facilitate transformation of knowledge, from both

ISSN 2345-0282 (online) http://jssidoi.org/jesi/
2019 Volume 7 Number 2 (December)
http://doi.org/10.9770/jesi.2019.7.2(13)

routine work and instructions, into the effective actions (Kim, Kang, Lawrence & Tom, 2008; Armour, 2000, 2001). The knowledge management process is a part of knowledge integration capability. Together with LC, it enables profound knowledge construction in an organization. An organization, therefore, has to conglomerate its knowledge integration in order to effectively promote the knowledge management process (Kim, Song, Sambamurthy, & Lee, 2012). Moreover, an organization's performance is clearly linked to the relationship between information technology and knowledge management capabilities. This includes product knowledge management, customer knowledge management, and knowledge capability management (Tanriverdi, 2005).

2.2 Entrepreneurial orientation

Li, Huang, & Tsai (2009) and Lee & Peterson (2000) study entrepreneurial orientation in five broad perspectives, namely innovation capability, risk taking, proactiveness, competitive aggressiveness and autonomy. 1) Innovation capability is new concept describing the utilization new technologies or processes to create new products and services. 2) Risk taking describes leveraging resources into opportunities when encountering new and unique challenges. 3) Proactiveness is the pre-emptive response process used to outperform market competitors. 4) Competitive assertiveness is a business strategy that aims to take risks with the aim of creating the opportunities while problem solving. 5) Autonomy is the freedom of action provided to an individual or team to introduce new ideas responsive to market opportunities.

In order to promote risk management ability and organization's high performance, new entrepreneurs or businesses should be identified with good entrepreneurial orientation capability, namely freedom to think and work, reasonable risk taking, proactiveness, the determination to outperform competitors, and innovation. The innovation ability should be emphasized as a driving force of the organization to invent new ideas and to create a difference in the products according to the market demand (Jiraphanumes, Aujirapongpan, & Chamchang, 2011; Peng, Michael & Xiaofeng, 2016). Hult, Snow and Kandemir (2003) mention that new entrepreneurs who are heavily featured with entrepreneurial orientation skills, particularly innovative capability, tend to perform better than the entrepreneurs who are not.

In the contemporary workplace, organizations are incentivized to systematically search, build, gather and refine knowledge accessible to all employees. Personnel, including both staff and executives must learn and apply work knowledge consistently and continuously. This does not only promote sustainable growth but also encourage organisational survival through constantly evolving completion. As a result, it can be concluded that knowledge integration capability is one of the indications of entrepreneurial orientation which has a consequential effect on the organization's performance.

3. Research Methods

This research was conducted qualitatively based on the ground theory research. Data collection was conducted through in-depth interviews with leaders and members from the silk groups which had been established 5 years or more. Some of the groups had an official commerce registration, while others did not. Based on a purposive sampling method, non-probability sampling techniques were used to select six out of eleven silk groups for the interview. Collected data was examined by content analysis method in order to create the evidence-based inference, to identify causal relationships, and to demonstrate the correlations.

4. Results

According to the interviews with silk group leaders and members in Pakthongchai District, Nakhon Ratchasima province, silk production knowledge essentially derived from tacit knowledge. Knowledge management and accumulation occurred in the form of inheritance from ancestors. The learning process took place from one

ISSN 2345-0282 (online) http://jssidoi.org/jesi/
2019 Volume 7 Number 2 (December)
http://doi.org/10.9770/jesi.2019.7.2(13)

generation and was passed onto the next generation, from parents to children and from children to grandchildren. People absorbed the knowledge by watching their parents, practicing weaving since a very young age, and eventually developing expertise as adults. They started from practicing with small looms, flying shuttle looms and large looms consecutively. Without notetaking or written evidence, explicit knowledge was continuously transferred through talking, knowledge exchange and knowledge immersion. This type of knowledge was relayed to other people only through verbal interaction. If a group member showed interest in learning how to weave silk, he/she were required to teach themselves. At present, the later generations have become disinterested in the silk weaving profession as a result of changing cultural attitudes. The perception exists that silk weaving is anti-social and no longer as economically viable. The opportunity cost of pursing silk weaving over other professions is perceived as too high, making practicing weavers lose better job opportunities. However, Psakthongchai district has maintained registration reports and built a museum for documenting the 100 years old trade with the goal of retaining the wisdom for future generations.

The results of the analysis of knowledge integration capability of silk group in Pakthongchai District, Na khon Ratchsima province can be explained in three dimensions: learning culture, knowledge management capability, and information technology skills. Each are described below.

1. *Learning Culture of silk groups in Pakthongchai District, Nakhon Ratchasima province***.**

Learning knowledge including values and beliefs expressed as individuals and as a group. Within the silk weaving trade, learning knowledge was derived from the desire to produce silk with good quality and standards to meet the market demand. The knowledge development process of the groups, as a result, were focused on organizational innovation. This encouraged group members to collectively improve efficiency and effectiveness in business management. Apart from being inspired to use good quality materials and improve dyeing method to achieve a uniquely beautiful silk texture, the group members were also encouraged to promptly and collectively solve the problems even if the problems were minor.

The group's knowledge development processes can be described from various sources:

1) Knowledge learned from customers

Participation in trade fairs gave the groups the opportunity to learn about customers' demands. Interacting with customers directly enhanced their understanding of current customers' needs and desires, including products' texture, color, design and pattern.

2) Knowledge learned from competitors

The silk groups' business strategy was to study their competitors' products and then develop their own products to be more diverse and unique.

3) Knowledge learned from government

Silk production and business operations training, arranged by the government, helped the groups to gain new knowledge that they used to increase business value. Silk products were introduced to new groups of customers by word of mouth. Additionally, the knowledge exchange and cooperation activities had turned rivalry silk groups in Pakthongchai District into business allies.

4) Knowledge learned through problem solving

In the past, selling silk products through middlemen caused the group several problems. This included under-priced products, payment issues, and the failure to control the quality when delivering products in quantity. Instead of being dependent on the middlemen, the silk groups changed their business strategy by turning themselves into one of the competent competitors in the market. The groups worked collectively to handle price negotiation, manage sale activity in the retail stores, participate in trade fairs, and continuously adopted innovation to their silk product development.

The learning culture demonstrated by the silk groups from Pakthongchai District, Nakhon Ratchasima province can be summarized as follows (Diagram 1).

ISSN 2345-0282 (online) http://jssidoi.org/jesi/
2019 Volume 7 Number 2 (December)
http://doi.org/10.9770/jesi.2019.7.2(13)

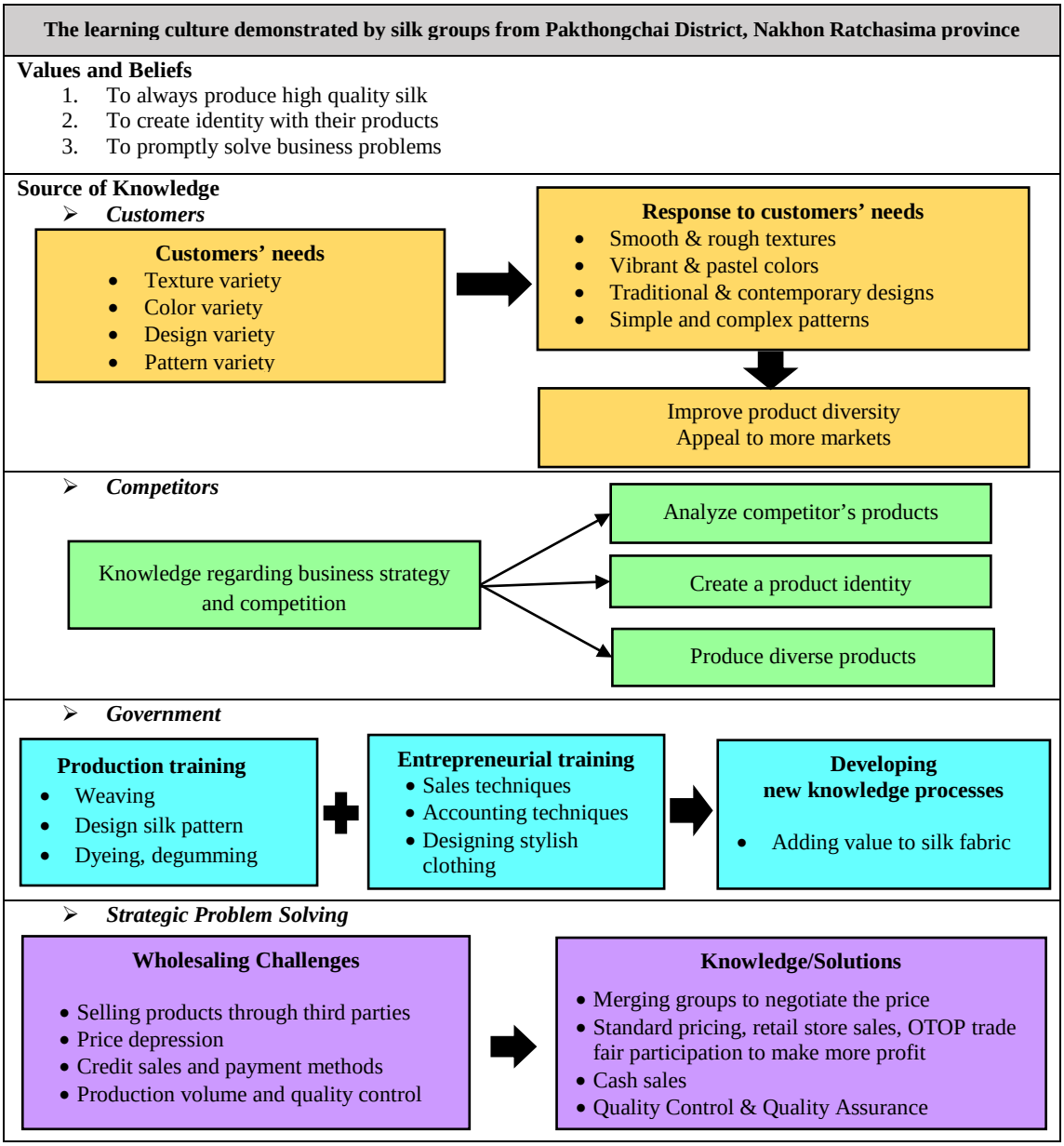

Diagram 1. Learning culture of silk groups in Pakthongchai District, Nakhon Ratchasima province

*2. Knowledge management capability of silk groups in Pakthongchai Districts, Nakhon Ratchasima province***.**

The knowledge management capability of the silk groups was initiated and developed around the same time as their LC. The management process was conformed to knowledge management's concept and theory, starting from building, exchanging, relaying, and applying knowledge to the silk production in order to create high quality products and meet the market demand. The outcome of this process had assisted the group to be able to create more unique products. Their fabric was more firm, polished and properly dyed, and was certified as a high quality product by many organizations such as Queen Sirikit's Thai Silk Brand, the Queen Sirikit Department of Sericulture, 5 Star OTOP, Thai Community Product Standard, and well-known products from the Provincial Industry Office (Diagram 2).

ISSN 2345-0282 (online) http://jssidoi.org/jesi/
2019 Volume 7 Number 2 (December)
http://doi.org/10.9770/jesi.2019.7.2(13)

Her Majesty Queen Sirikit graciously granted permission for the 'peacock' to be used as the brand or logo of quality assurance for four types of Thai silk, which are gold peacock (Royal Thai Silk), silver peacock (Classic Thai Silk, blue peacock (Thai Silk), and green peacock (Thai Silk Blend). The logo is designed to promote domestic and international recognition. The logo has been certified by 35 countries, including 27 European countries, China, Norway, the Philippines, Malaysia, United States of America, Singapore, India, and Hong Kong.

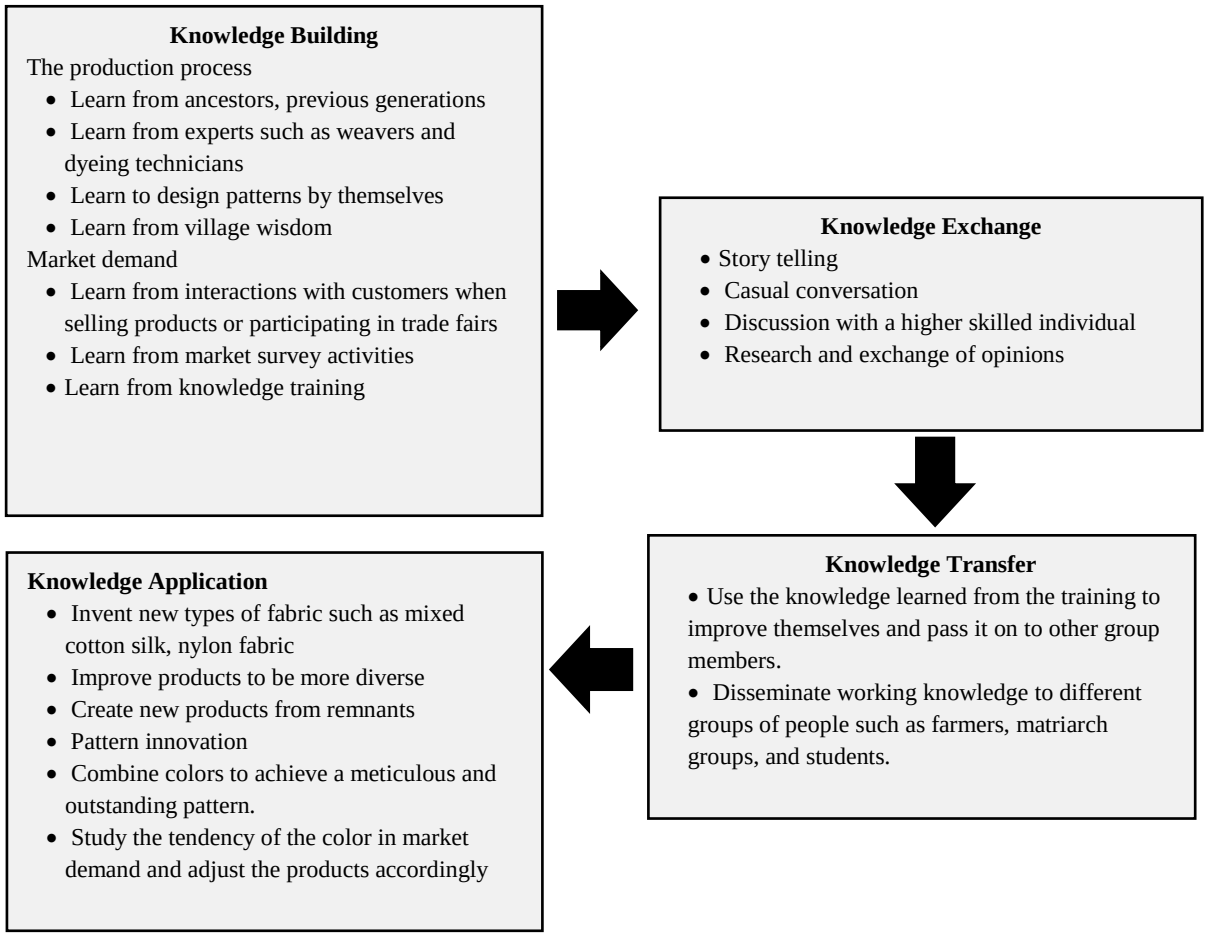

Diagram 2. The knowledge management process within the silk groups from Pakthongchai District, Nakhon Ratchasima province.

3. *Information technology management capability within the silk groups in Pakthongchai Districts, Nakhon Ratchasima province*

The groups applied information technology management skill to facilitate and promote the infrastructure management and information technology management capabilities of their businesses.

The groups applied basic information technology skills to facilitate and promote their business in two aspects: production and marketing. Technology was applied to some silk production processes. However, mechanical interventions, such as motors, did not play an important part in hand woven silk production process, particularly

ISSN 2345-0282 (online) http://jssidoi.org/jesi/
2019 Volume 7 Number 2 (December)
http://doi.org/10.9770/jesi.2019.7.2(13)

Mud-Mee silk which requires tying a single silk thread by hand to create a pattern. The groups used motor for basic tasks such as reeling and the spinning yarn process as it made the process faster and easier. Regarding marketing activities, the groups brought in young people with computer skills to help them update their product information or sell products through websites and online platforms such as Facebook and Line. The summary of information technology management capability within silk groups in Pakthongchai District, Nakhon Ratchasima province is shown in Table 1.

Table 1. The information technology management capability within silk groups in Pakthongchai District, Nakhon Ratchasima province

Infrastructure management	1. Using technology to facilitate production processes. 2. Using computer skills to promote marketing activities.
Information technology management capability	1. Selling products through the websites: 3/6 interviewed groups. 2. Selling products through Facebook, 3/6 interviewed groups. 3. Selling products through Line, 6/6 interviewed groups.

4. Knowledge integration capability, which indicates entrepreneurial orientation

Knowledge integration capability which indicates entrepreneurial orientation of silk groups in Pakthongchai District, Nakhon Ratchasima province is essentially the result of the group's collective LC and knowledge management process as explained below:

1) Innovation capability

Innovation capability described the outcome of LC and knowledge management among the silk groups. The desire to produce unique, high quality silk fabric drove the groups to learn and acquired new skills to improve their products. Knowledge was exchanged and utilized among the members and became a driving force for innovation. Innovations include the method of changing raw silk into soft silk, blending Mud-Mee silk with Hang Karok silk weaving technique, scented silk, water and fire resistant silk, remnant design, and using Khit technique to put Dok Mee pattern on Mud-Mee pattern and blending them with Hangkarok silk. (This weaving type is used to lift the line in each row up from one side to the other side of the fabric. The word "Khit" is Isaan dialect which means" to lift up". The characteristics of Khit-patterned cloth can be repeated with the high contrasting of two colors and same pattern throughout the fabric. For example, Black or dark blue with white, gold with green, red with white, etc. (the Queen Sirikit Department of Sericulture). Additionally, the groups also invented organizational processes derived from their problem solving experience during the wholesale activities. The groups used this innovation to increase efficiencies in business operations and enhance their management capabilities.

2) Risk-taking capability

Reasonable risk-taking ability is one of the most important qualities of high potential entrepreneurs. Silk belongs to the sensitive list product, which means that demand is not driven by consumer necessity. The fact that the silk groups decided to take risk by shifting their business strategy and changing the product design was a key factor that equipped them to be a more capable competitor in the market.

Pakthongchai District silk groups were reasonable risk-taking entrepreneurs. They had the courage to change silk patterns and business methods. They improved the uniqueness of their products, experimented to acquire new set of knowledge, and exchanged knowledge with other groups.

As a result, they successfully developed the model of business that can compete in the market. They were able to produce outstanding products that meet market demands. This was borne of LC and knowledge management capabilities developed through the groups' valiant, fearless, and flexible personalities. Including the belief that every business problem requires prompt resolution, no matter how small. The continuous learning custom

ISSN 2345-0282 (online) http://jssidoi.org/jesi/
2019 Volume 7 Number 2 (December)
http://doi.org/10.9770/jesi.2019.7.2(13)

combined with knowledge accumulated over 20 years led to the groups' decision to take a risk and differentiate themselves from their competitors.

3) Competitive Aggressiveness

Pakthongchai District silk groups were characterized as competitive and aggressive entrepreneurs. They strived to improve their business strategies in order to outperform and keep their competitors out of the same market. This was clearly demonstrated when the groups shifted their business model from wholesale to retail. Instead of focusing on high volume sales, they took small orders which allowed them to be able to control the product quality, provide different patterns and colors of products, and maintain their signature in every piece of their work. The competitive aggressiveness was the result of the silk groups' determination to maintain standardized and quality production, create uniqueness in their products, and be problem-solving oriented. The knowledge integrated from various sources transformed into the innovation which enabled the groups to produce outstanding silk fabric which was firm, polished and diversely designed. This allowed them to stay ahead of competitors and receive repeat business their customers.

4) Proactiveness

The silk groups proved proactive while attempting to turn business obstacles into business opportunities. They were deliberate, made a plan to improve the business strategy, focused on high quality silk production by using a quality source yarn, and maintained the pricing standards. The progression of the silk industry was also taken into consideration. Garments had to be stylish, wearable, soft and easy to take care of. The proactiveness was the result of the groups' capability to manage the knowledge learned from competitors' strategies and customers' demands. Therefore, the groups were able to provide customers with better products.

5) Autonomy

The silk groups provided freedom at workplace to all employees. Because each individual had different skills and experiences in designing silk patterns, he or she was able to creatively problem solve individually, as they occurred. Silk groups work as families, where business partners are treated with empathy as if they are brothers and sisters. The autonomy demonstrated by the groups developed from LC and knowledge management processes. As the groups' business concept was to differentiate themselves from their competitors and produce distinctive silk products, freedom had to be provided at the workplace to allow staff to adapt to the current changing market situation.

The entrepreneurial characters of the silk groups from the Pakthongchai District, Nakhon Ratchasima province can be summarized as competent, well-informed, able to create a clear identity of the products, capable of developing diverse patterns of products, and constantly improving themselves as shown in Table 2.

Table 2. Knowledge integration capability which indicates entrepreneurial orientation of the silk groups residing in Pakthongchai District, Nakhon Ratchasima province.

Innovation Capability	1. Changing raw silk into soft silk 2. Blending Mud-Mee silk with Hang Karok silk 3. Scented fabrics 4. Fire- and water-resistant fabrics 5. Remnant designs 6. Using Khit technique to put Dok Mee pattern on Mud Mee pattern and blend it with Hang Karok silk
Risk Taking	1. Strategic changes to both the business model and operations, enforcing the groups' product identity. 2. Courage to change through experimentation, learning and develop the products that are responsive to the market.
Competitive aggressiveness	The determination to develop business strategies within a competitive market 1. Improve the business operation to enhance competitiveness

ISSN 2345-0282 (online) http://jssidoi.org/jesi/
2019 Volume 7 Number 2 (December)
http://doi.org/10.9770/jesi.2019.7.2(13)

	2. Integrate and managed knowledge, apply new sets of knowledge to design firm and polished fabric with new patterns, add variety to products with the uniqueness that challenges competitors.
Proactiveness	1. Anticipate problems and opportunities that might arise in the future based on the information at hand. 2. Make a plan to handle potential problems and prepare to take advantage from the potential opportunities. 3. Promptly respond to changing demand 4. Manage carefully and critically
Autonomy	1. Learn, collectively solve problems, and provide autonomy to employees 2. Empathize and value employees, treat each other like family members 3. Provide freedom as they are long-term valuable employees 4. Allow for artistic freedom
Characteristics of Pakthongchai silk entrepreneurial groups • Have a sound understanding of the trade • Create a clear identity for products • Develop diverse patterns • Continuous improvement	

5. Summary and Discussion

Fostering market innovation and knowledge acquisition and retention were crucial factors in maintaining a competitive edge. An organization incapable of learning and managing knowledge according to changing situations would have been unable to survive (Preecha, Jirawan, & Chalermchai, 2017; Sokół, & Figurska, 2017 2017). This drove the silk groups to transform their business strategy by integrating old knowledge with the current consumer demand, so they could stay competitive with changing markets. The integration between inherited knowledge, the expertise gained from learning and experimenting, and the knowledge exchanged internally and externally allowed the groups to continuously improve their silk production methods and processes. The ability of applying the concept of knowledge management to business strategies creation increased the efficiency and effectiveness in business operations. With this ability, organizations gain a competitive advantage (Preecha, Jirawan, & Chalermchai, 2017; Raudeliūnienė, Davidavičienė, & Jakubavičius, 2018).

By integrating a new set of knowledge with their working methods and business operations, the silk groups matured their organizational culture. The members of the groups were determined to increase the value of their products, so they thoroughly checked the silk quality in every single production process. Moreover, they also exchanged knowledge among themselves in order to strengthen their problem-solving skill and improve the efficiency of their business operation. Organizational culture played an important role in building intellectual capital and the organization's performance. Intellectual capital was directly related to entrepreneurship which was directly influenced the organization's performance.

Today, the market has become very competitive. There are more choices provided to consumers and more distribution channels, including domestic and international markets. Moreover, the market environment is also changing. All of the entrepreneurs, including the silk groups, have had to keep continuously improve their business in order to survive log-term. If the silks groups did not have basic knowledge, they would not be able to improve their goods and services to meet the current consumers' demand. They saw the importance of knowledge, knowledge management, and knowledge integration and leveraged it to gain a competitive advantage. Based on their determination to produce high-quality and unique silk products, the groups learned to identify consumers' demand and market situation by participating in trade fairs and sharing knowledge acquired between the groups. As a result, they were able to produce exactly what the customers needed. Similarly, Leekpai (2014) mentioned that market orientation, learning orientation, and entrepreneurial orientation were the factors that had direct and positive effects on their ability to innovate.

ISSN 2345-0282 (online) http://jssidoi.org/jesi/
2019 Volume 7 Number 2 (December)
http://doi.org/10.9770/jesi.2019.7.2(13)

By attending training sessions funded by the government, the silk groups enhanced their understanding of how to create opportunity and compete in a market by adding value in products and services. Additionally, understanding their competitors' business strategies allowed them to focus on creating their signature silk products (Siriporn & Sreedara, 2014).

The entrepreneurial orientation of silk groups has been fundamentally influenced by the geographical conditions of north-eastern region. The area is a plateau, and as a result, people rarely migrate to other places. Isan people are sincere, kind hearted, peaceful and persevering. These personality traits have allowed people in Nakhon Ratchasima province to maintain over 100 years of silk weaving tradition from their ancestors. They constantly improve the quality of their silk products by adjusted product pattern, color and design to be more modern and suitable to daily life (Škerlavaj, Štemberge, Škrinjar, & Dimovski, 2007). Additionally, research has shown that silk group entrepreneurs have outstanding entrepreneurial orientation skills. They have been able to move organizational innovation forward, apply the knowledge they have to meet the market demand, develop internet marketing and manage risks in order to increase organizational efficiency and performance (Jiraphanumes, Aujirapongpan, & Chamchang, 2011; Hult, Snow & Kandemir, 2003).

References

Armour, P. G. 2000. The business of software: the case for a new business model, *Communications of the ACM*, 43(8): 19–22. http://www.corvusintl.com/CaseforaNewBusinessModel.pdf

Armour, P. G. 2001. The business of software, *Communications of the ACM*, 44(3): 13–14. https://dl.acm.org/citation.cfm?id=365912

Brown, J. S.; & Duguid, P. 2001. Knowledge and organization: a social-practice perspective, *Organization Science*, 12(2): 198–213. http://dx.doi.org/10.1287/orsc.12.2.198.10116

Davenport, T. H.; & Klahr, P. 1998. Managing customer support knowledge, *California Management Review***,** 40(3): 195–208. https://doi.org.10.2307/41165950

Gold, A. H., Malhotra, A.; & Segars, A. H. 2001. Knowledge management: an organizational capabilities perspective, *Journal of Management Information Systems*, 18(1): 185–214. https://doi.org/10.1080/07421222.2001.1.11045669

Grant, R. M. 1996. Prospering in dynamically competitive environment: organizational capability as knowledge integration**,** *Organization Science, 7*(4): 375–387. https://doi.org2/10.1287/orsc.7.4.375

Hult, G. T. M., Snow, C. C.; & Kandemir, D. 2003. The role of entrepreneurship in building cultural competitiveness in different organizational types, *Journal of Management, 29*(3): 401–426. https://doi.org/10.1016/S0149-2063_03_00017-5

Information Technology and Communication Center, The Queen Sirikit Department of Sericulture. 2018. *Hang Karok silk.* Retrieved from https://www.qsds.go.th/silkcotton/k_2.php [in Thai]

Jiraphanumes, K., Aujirapongpan, S.; & Chamchang. P. 2011. The Effect of Entrepreneurial and Strategic Orientation on Innovativeness and Performance: The Empirical Study of the Listed Companies in the Market for Alternative Investment (MAI), *Journal of management Sciences*, 28(1): 1-15. [in Thai]

Kim, Y. J., Chaudhury, A. & Rao, H. R. 2002. A knowledge management perspective to evaluation of enterprise information portals, *Knowledge and Process Management*, 9(2): 57–71. https://doi.org/10.1002/kpm.137

Kim, Y. J., Kang, H., Lawrence Sanders, G.; & Tom Lee, S.-Y. 2008. Differential effects of it investments: complementarity and effect of GDP level, *International Journal of Information Management, 28*(6): 508–516. https://doi.org/10.1016/j.joat.2015.08.002

Kim, Y. J., Song, S., Sambamurthy, V., & Lee. Y. L. 2012. Entrepreneurship, knowledge integration capability, and firm performance: An empirical study, *Information System Frontiers*, 14: 1047–1060. https://doi.org/10.1007/s10796-011-9331-z

Lee, H.; & Choi, B. 2003. Knowledge management enablers, processes, and organizational performance: an integrative view and empirical examination, *Journal of Management Information Systems*, 20(1): 179–228. https://doi.org/10.1080/07421222.2003.11045756

Lee, S. M.; & Peterson, S. J. 2000. Culture, entrepreneurial orientation, and global competitiveness, *Journal of world business*, 35(4): 401-416.

Leekpai, P. 2014. Factors Affecting the Innovativeness of Hotel Business in Southern Border Provinces of Thailand, *Modern Management Journal*, 12(1): 11-21. http://dx.doi.org/10.1016/S1090-9516(00)00045-6

Li, Y.H., Huang, J.W.; & Tsai, M.T. 2009. Entrepreneurial orientation and firm performance: the role of knowledge creation process, *Industrial Marketing Management*, 38(4): 440–449. https://doi.org/10.1016/j.indmarman.2008.02.004

Lower Northeastern Provinces. 2011. *The Study of identities and brand creation of silk products in Lower Northeastern Provinces (NakronChaiburin Provinces).* Research paper: Sisaket Rajabhat University.

Marketing Economics Group, Sericulture Technology Transfer and Development Bureau, The Queen Sirikit Department of Sericulture. 2018. *Summary Report of Sericulture Market Economic Situation 2014*. Retrieved from [http://www.qsds.go.th/newqsds/Index_web.php [in Thai]

Peng, S., Michael S.; & Xiaofeng J. 2016. Entrepreneurial orientation and performance: Is innovation speed a missing link?, *Journal of Business Research*, 69: 683–690. https://doi.org/10.1016/j.jbusres.2015.08.032

Preecha, K., Jirawan, K.; & Chalermchai, K. 2017. Strategic Human Resources (SHRPs): Organizational Innovation and Knowledge Management Capacity, *Valaya Alongkorn Rajabhat University under the royal patronage*, 11(2), 216-225. [in Thai]

Raudeliūnienė, J.; Davidavičienė, V.; Jakubavičius, A. 2018. Knowledge management process model, *Entrepreneurship and Sustainability Issues* 5(3), 542-554. https://doi.org/10.9770/jesi.2018.5.3(10)

Ray, G., Barney, J. B.; & Muhanna, W. A. 2004. Capabilities, business processes, and competitive advantage: choosing the dependent variable in empirical tests of the resource-based view**,** *Strategic Management Journal, 25*(1): 23–37. https://doi.org/10.1002/smj.3

Siriporn, B.; & Sreedara, S. 2014. *Marketing of Silk Garment Business in Thailand*. Bangkok: The Queen Sirikit Department of Sericulture. [in Thai]

Škerlavaj, M., Štemberger, M. I., Škrinjar, R.; & Dimovski, V. 2007. Organizational learning culture—the missing link between business process change and organizational performance, *International Journal of Production Economics*, 106(2): 346–367. https://doi.org/10.1016/j.ijpe.2006.07.009

Sokół, A.; & Figurska, I. 2017. Creativity as one of the core competencies of studying knowledge workers. *Entrepreneurship and Sustainability Issues*, *5*(1): 23-35. http://doi.org/10.9770/jesi.2017.5.1(2)

Tanriverdi, H. 2005. Information technology relatedness, knowledge management capability, and performance of multibusiness firms, *MIS Quarterly 29*(2): 311–334.

Organizational Culture to Performance of Bus Body Industrial. *Doctor of Philosophy of Social Business Association RamKhamhaeng University*, 6(1), 78-93. [in Thai]

Xiao-di, Z., Song-zheng, Z., Juanru, W.; & Heng, X. 2008. *The Key Factors Affecting Knowledge Integration Capability*. National Humanities and Social Science Foundation. China: Humanities and Management Science Foundation of Northwestern Polytechnical University.

ENTREPRENEURSHIP AND SUSTAINABILITY ISSUES
ISSN 2345-0282 (online) http://jssidoi.org/jesi/
2019 Volume 7 Number 2 (December)
http://doi.org/10.9770/jesi.2019.7.2(13)

Sareeya WICHITSATHIAN is an Assistant Professor at the School of Management Technology, Institute of Social Technology, Suranaree University of Technology. She holds the DBA degree from Deakin University, Melbourne, Australia. At present she takes a position of Associate Dean and also a head of research program supported by the Thailand Research Fund (TRF). Her current research interests include working capital management, business model and entrepreneurship.
ORCID ID: orcid.org/0000-0002-9544-7109

Dussadee NAKRUANG is an Assistant Professor at Faculty of Management Sciences**,** Yala Rajabhat University. She is also a Ph**.**D**.** Candidate in Management at Suranaree University of Technology. Her thesis is focused on Corporate Sustainability Performance of Community Enterprises.
ORCID ID: orcid.org/0000-0002-1812-6299