CHAPTER 4
RESULTS AND ANALYSIS

4.1 Introduction

This chapter presents the results and analysis of the data collected from literature reviews, document analysis and case studies of UBI projects at CAMT. The analysis in this chapter focuses on the investigation of SMEs in Northern Thailand, and in the context of the creative industry. Explicitly, the results and analysis aim to reflect the research objectives set out in chapter 1. The first objective, which is to identify the critical process that affect UBI project outcome, was investigated through literature reviews, document analysis and a case study, including associated observation and interview. The literature reviews focused on the areas of creative industries, UBI and knowledge creation. Document analysis took place within three case studies (2E project, OSMEP project 2010 and 2011), each related to development of the creative industries and with a particular focus on SMEs in Northern Thailand. The observation and interviews focused on two case studies (OSMEP project 2010 and 2011) conducted during 2010 and 2011, which directly related to development of creative industries.

The second and third objectives which are to develop a model of sustainable UBI from a knowledge management approach and suggest an effective strategy for UBI project management will be discussed in chapter five.

4.2 Report on Data Collection

In this section the information and data collected from the Chiang Mai Hotel and Tourism Association meeting, the E-tourism and E-handicraft (2E) projects, and the Office of Small and Medium Enterprise Promotion projects in 2010 and 2011 will be discussed and presented. This discussion includes background details and related issues in knowledge management. More specifically, such background and related issues include:

1) The background and objectives of each activity
2) The general data for participants involved in each activity
3) The limitations and/or problems of development
4) The knowledge creation process observed from each activity

The knowledge creation process employs the theory of organizational knowledge creation from Nonaka (1994, 2000, 2004) as the primary theory to frame further discussion in later sections. In addition, other important information from the literature, as well as observation and document analysis will be presented in order to provide sufficient and holistic information that will be useful for further analysis in this study and other future research/studies.

4.2.1 SME requirements and limitations in Northern Thailand

To investigate Northern Thailand's SME requirements and limitations in terms of development toward the creative industries, initial data was gathered from a workshop meeting with the Chiang Mai Hotel and Tourism Association in 2008. Secondly, a case study of the e-tourism and e-handicraft project (2E Project) was reviewed to indicate the requirements for SMEs. Thirdly, findings were discussed and summarized according to a participant review.

Chiang Mai Tourism Business Association (CTBA)

The Chiang Mai Tourism Business Association (CTBA) was established in 1986, with a vision to be an organization capable of bringing benefits to its members and become the leading private organization which collaborates with the government sector in pushing forward the internationalization of tourism in Chiang Mai and the northern region. Furthermore, its vision aims to accelerate competing capacity in the world market in order to raise market capitalization, with an emphasis on glorifying the arts, culture and customs of Lanna, as well as preserving natural resources. The CTBA objectives are to support the management of local tourism and to represent the private sector in working

cooperatively with the government sector for overseeing the benefits of its members. CTBA is comprised of 8 groups of entrepreneur members as shown in Table 4.1.

Table 4.1 CTBA Member classification

	Classification
1	Tourism and ticketing enterprise
2	Hotel enterprise
3	Souvenir enterprise
4	Transportation enterprise
5	Restaurant enterprise
6	Sports and recreation enterprise
7	Health enterprise
8	Other enterprises

Following participation in a workshop meeting with CTBA in 2008 at LeMeridian Hotel (Chiang Mai, Thailand), it was found that participants (see Table 4.2) represent a range of businesses involved in tourism industries and the overall ambiance was semi-formal, thus allowing members and participants to freely suggest and express their point of view. A variety of suggestions and opinions were discussed from different perspectives according to each business interest. The data gathered from this workshop meeting was then summarized and explored.

Table 4.2 Type of Member in CTBA workshop meeting

	Type of CTBA member
1	Small business owners (guest house, gift shop etc.)
2	Hotels
3	Car rentals
4	Tour agents
5	Restaurants
6	Central Government Official Participants
7	Tourism Authority of Thailand
8	Chiang Mai Provincial Offices
9	Sport and Tourism Offices
10	Education Institutions

According to the meeting, participants revealed that the tourism industry accounted for 32.15% of the GPP (growth provincial product) of Chiang Mai province. In the past, the total number of tourists was 5,356,867 per year, of which 67% were domestic tourists and 33% were international tourists. In 2007, the average annual hotel occupancy rate in Chiang Mai was 42%, with 70% occupancy during high season and 28% in the low season. Therefore, it is important that CTBA initiate activities to support tourism and related business operators to develop the tourism industry in Chiang Mai and

Northern Thailand. In summary, participants also pointed out some problems and limitations to their business development. These were as follows:

- Limited support from local government
- Limited knowledge about e-marketing
- Limited knowledge about tourism related products, markets, competitors, and customer information.

Regarding new tourism products and services, development toward electronic channels was one of the major concerns. According to the CTBA workshop meeting, the following represents a summary of suggestions from members and participants in moving toward e-tourism:

- There is an urgent need to develop a new and proactive strategy for the northern Thai tourism industry and other related tourism businesses.
- A common (single) e-business sales and promotion channel requires strengthening and assistance from tourism related businesses.
- To set-up an e-business channel, access to an economic start-up procedure is the most critical issue for businesses. Other than a common e-business channel, there should be an online tourism business community for businesses to assist one another and share related knowledge with the tourism industry
- Educational institutions (local) should develop a package (standardized process) to support when starting up e-businesses and educating both owner and staff

E-tourism and E-handicraft Project (2E):

The e-tourism and e-handicraft (2E) project was operated by CAMT, Chiang Mai University in 2005. As reviewed in Chapter 2, the project's main objectives were to develop electronic marketing channels and human resources for tourism related businesses in the northern region of Thailand. Local tourism operators recognized the

need to develop new e-tourism products and/or services to support e-tourism channels. They realized the importance of developing new marketing channels and business activities to survive and advance their business in a rapidly changing and globalized economy. The bodies of knowledge focused on in the 2E project such as the 3Cs (corporation, customers, competitors), STP (segmentation, targeting, positioning) and 4Ps (product, price, place and promotion) are crucial and critical to develop a competitive e-tourism business strategy. Therefore, the 2E project indicated the importance of marketing-related knowledge for new product development in a creative industry. Industry experts commonly hold such knowledge.

From the CTBA workshop meeting and 2E project observation and document analysis, the key findings can be presented as follows:

- It is critical to enhance e-tourism industry competitiveness in the northern region of Thailand to directly support tourism and related businesses
- Important objectives must include forming an effective tourism association and providing economic assistance to new business start-ups
- Networking and partnership support schemes are essential to develop industry competitiveness
- Industry experts are essential to provide specific knowledge related to the tourism industry, including information regarding outbound and inbound tourists and appropriate technical e-business know-how. The tourism association must initiate proper activities to attract its members and clearly indicate the potential benefits of joining the association.

In revisiting the problems and limitations noted earlier, it is clear that tourism and related businesses require assistance to develop. Knowledge resources and the cost in acquiring such knowledge (from experts) were their main concerns when developing their business. Educational institutions and/or other government organizations were perceived as providing economic assistance.

4.2.2 SME Development Toward the Creative Industries: OSMEP Case Study 2010

The Creative Building for North SMEs project was conducted in 2010 with agreement and support from the Office of Small and Medium Enterprise Promotion and operated by CAMT, Chiang Mai University. The aims of this project were to develop a new source of national income from the concept of the creative economy, to develop new products and services, to strengthen entrepreneurs' capabilities through the creative economy concept, and to enhance the new product development process and prototypes for SMEs.

The project operations were split into the following three main phases:

- Selection phase
- Training and development phase
- Commercialization phase.

Data was gathered from project documents, operation reports and five semi-structured interviews conducted with experts, who contributed to assist incubatees in developing new products and services. Like many new product development operations, both the practitioner's, and the academic perspective were included, which helped to provide valuable insights in developing new products and services. The results are presented in following section.

Selection phase:

This project focused primarily on the upper northern region of Thailand. Following promoting on local and national radio, in local newspapers and via various posters in public areas, there were a total of 96 applicants apply for this project. After document screen (application form, business portfolio and business plan), 39 applicants were called for interview based on their business and product potential with regard to the creative economy. As a result of budgetary limitations, these applicants were further

shortlisted to reach a final selection of 25 applicants who were selected to enroll in this project based on their enthusiasm and openness for development. Accepted applicants were perceived to have potential for developing new products and services in line with the creative economy policy of the Thai government in 2009.

Five businesses were related to new media and 15 were in the functional creation category. Accepted businesses display capability from committee evaluation (see Appendix A). According to selection criteria, accepted applicants received the highest scores on their entrepreneurial capability, followed by business and organizational readiness, and then creativity and market possibility. The majority of SMEs in Northern Thailand are funded by personal savings and family investments, with most also managed by owner-managers. Each aspect of the selection criteria is indicated as follows:

- Entrepreneurial capability focused on business experience, business network and business vision.
- Business and organizational readiness focused on organizational vision and strategy, human resources, production and operations support.
- Creativity focused on organizational knowledge and intellectual base, creativity and innovation levels, opportunity to create added value, sustainability of business concept, and impact on culture and sociality.
- Market possibility focused on unique product selling point, clear target customer and commercialization possibility.

The entrepreneurs who were accepted in the project were mainly related to the functional creation category with most products being demand-driven and requiring creative design support from this project.

Training and development Phase:

About 85% of businesses were small firms according to the Office of Small and Medium Enterprise Promotion (OSMEP) description. It was clear that most participants' prior educational background did not directly support their existing business. They also had limited contact to expert support due to a variety of reasons including, limited budget, network access and geographical location. The university new product development (NPD) process is showed in Figure 4.1. It is suggested that participants who attend training and workshops often come from different backgrounds, and thus it takes time to initiate a long-term and constructive relationship (Heiskanen, 2004.) Interviews after each activity showed that participants felt training sessions and workshops were very useful and useful to their businesses. According to the participants, examples given by the expert (especially those relating to market and trend issues) were among the most valuable to participants.

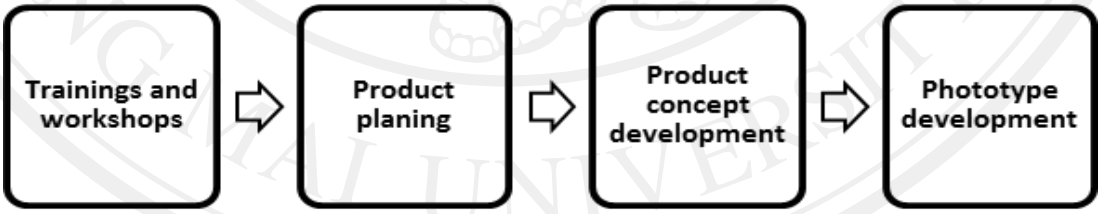


Figure 4.1 The business incubation process in the Northern Region of Thailand

At the beginning of the project, it was clear that ‘creativity’ would become a major barrier in the new product development (NPD) process. In short, it was difficult for participants to create new ideas and combine existing ideas to create new products or services.

After several training sessions and individual coaching from an expert, some participants were able to set off ideas for new product development. Expert knowledge about consumer demand, trends and market conditions acted as a major factor stimulus to drive participants to generate new product ideas. Although all participants attended workshops and received similar training, there were both successes and failures in creating new product ideas for their business.

Commercialization phase

There were two processs in the commercialization phase. First, buyers from large businesses were invited to comment and suggest the final prototype for each participant. Second, each participant was given opportunities to market (sell) their newly developed product by attending a trade fair in Bangkok. The results are summarized and presented in Table 4.3 which shows nine products (60%) could be commercialized immediately after the development process, six products (40%) needed minor adjustment and no product was unable to be commercialized after the development process.

Table 4.3 Results of Product Commercialization in the OSMEP 2010 Project

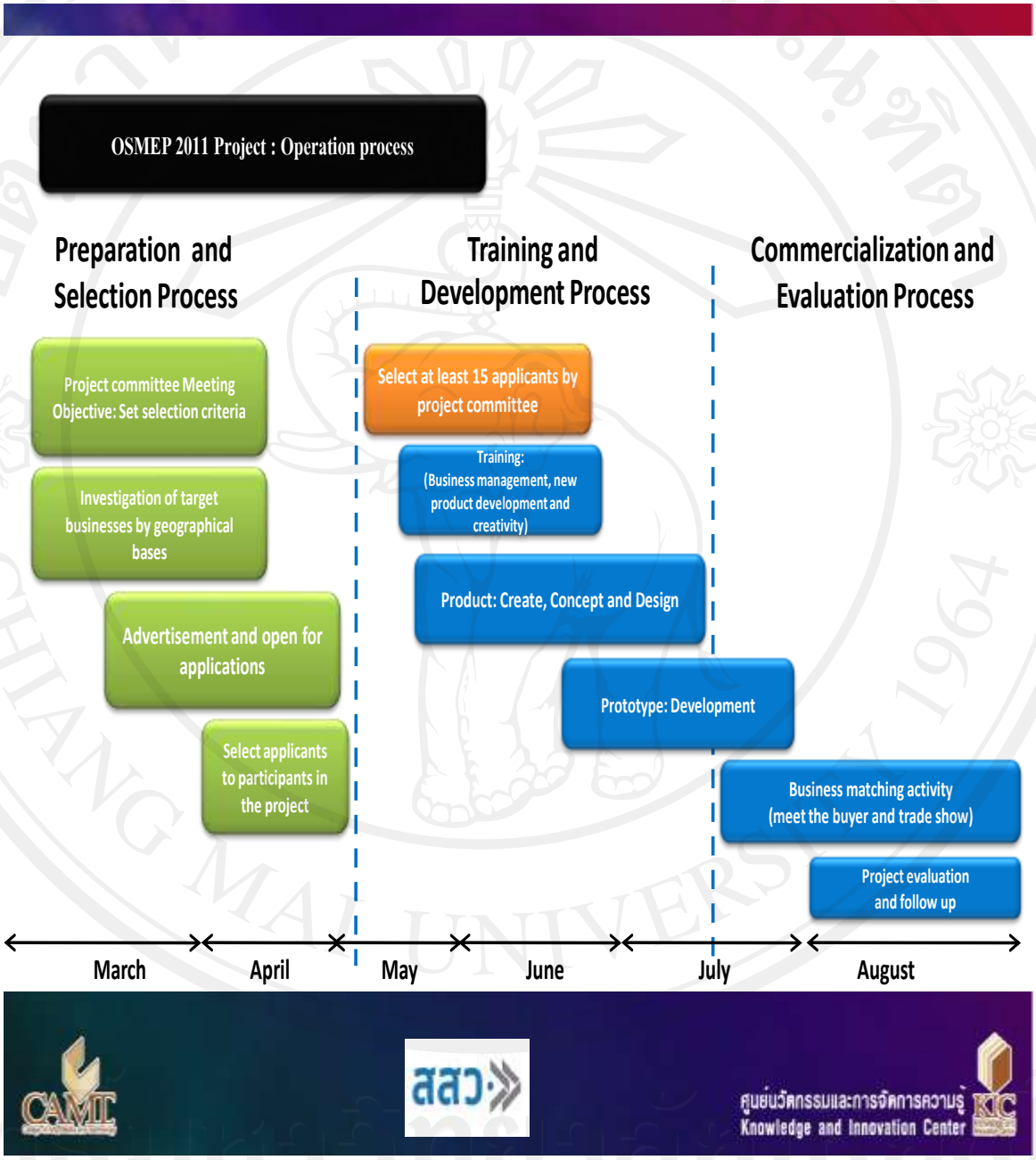
Commercial Company Name	Product description	Unable to commercialize	adjustment before commercialize	Able to Commercialize
1. PP1	Handmade bags from local material		x	
2. PP2	Children's coloring kits (Natural color)		x	
3. PP3	Ladies Accessories			x
4. PP4	Display board decorative border			x
5. PP5	Modern men's shoes			x
6. PP6	Scary mug collection			x
7. PP7	Ladies cotton ware			x
8. PP8	Ruber mug			x
9. PP9	Lucky wooden boat (decorative item)		x	
10. PP10	Aromatic air freshener bag			x
11. PP11	Ladies silver jewelry set			x
12. PP12	Baby picnic bag and blanket		x	
13. PP13	Bamboo Zodiac souvenir		x	
14. PP14	Luxury natural ladies accessories		x	
15. PP15	Modern ladies wear			x

Following the commercialization activities, incubatees, experts and project staff were interviewed about the benefits from participating in this project. Aside from the obvious new product design and additional business networks, each party also acquired new knowledge and skills. Following the project completion, individual debriefing sessions were conducted with all experts who were directly involved in creating new products. They considered their interest and in some cases were willing to continue working with participants for additional development.

4.2.3 SMEs' Development Toward The Creative Industries: OSMEP Case Study 2011

This research focuses on critical processes that affect new product development in the creative sector for small and medium enterprises (SMEs). Given the nature of the objective of analysis, a case study was most appropriate to emphasize detailed contextual analysis on stories, characters and cultural aspects occurring in the case study. A case study also allows the development of an inductive approach and design. The qualitative approaches were used to extract useful information from events and relationships. Thus, data can be filtered based on importance and groups in order to identify meaningful patterns and relationships form gathered data and information.

Figure 4.2 The OSMEP 2011 Operation Process



This empirical work was undertaken over a nine-month period, reflecting the duration of the incubation project at CAMT, Chiang Mai University. A university business incubator was responsible for organizing and managing this project. At CAMT, the business incubation concept has continuously been a part of the development strategy and is in line with Thai government policy. The first project was undertaken during 2005, when an e-tourism and e-handicraft project was one of many continuous efforts to incubate both students and entrepreneurs in developing their businesses in the Northern Region of Thailand. CAMT has undertaken the Creative Building for Northern SMEs project, which was conducted between March and September 2010 and January to September 2011. Both projects received financial support from the Office of Small and Medium Enterprise Promotion with a set of key success indicator (see Appendix F) and were operated by CAMT. The project operation process is shown in Figure 4.2, developed and agreed from project committee (see Appendix B). The process of product development required cooperation among university staff, experts and entrepreneurs.

4.2.3.1 Selection Criteria

Applicants were required to fill out an application form which focused on four different perspectives, as described below (see Appendix C):

- Entrepreneurial capability focused on business experience, business network and business vision.
- Business and organization readinesselling point, clear target customer and commercialization possibils focused on organizational vision and strategy, human resources, production and operations support.
- Creativity focused on organizational knowledge and intellectual base, creativity and innovation levels, opportunity to create added value, sustainability of business concept, and impact on culture and sociality.
- Market possibility focused on unique product ity.

On average, accepted applicants received the highest scores on their entrepreneurial capability followed by business and organization readiness, creativity and market possibility. Entrepreneurs accepted and enrolled in the project were mainly in the functional creation and heritage categories, with most products being demand-driven and requiring support in areas of creative design and marketing.

4.2.3.2 Project Participants

A total of 119 businesses applied to the business incubation project. After document review (application form, business portfolio and business plan), 58 applicants were called for interview based on their business and product potential with regards to the creative economy. As a result of budgetary constraints, these applicants were further shortlisted to reach a final selection of 17 applicants who were selected to enroll in this project based on their enthusiasm and openness for development. The accepted participants' profiles are provided in Tables 4.4 and 4.5. Most participants have more than 5 years of business experience and 10 participants had more than 10 years of business experience. In terms of the creative economy, among the accepted participants, 6 were categorized as heritage, 2 were media and 9 were functional creation (see Appendix D). Table 4.4 designates the project participants' industries and nature of their organization. The data gathered from this incubation project generated useful information (see Appendix G) and lessons learned which could then be further analyzed to improve the effectiveness of business incubators' operation.

Table 4.4 Participants' Profiles in the OSMEP 2011 Project

Participant	Age	Gender (M/F)	Business Experience	Education	Objective for participant
P1	34	F	9	Bachelors Degree	New Product Development
P2	31	F	5	Bachelors Degree	Marketing Knowledge and New Product Development
P3	44	F	20	High School	New Product Development
P4	31	F	7	Bachelors Degree	New Product Development
P5	39	M	7	6th Grade	New Product Development
P6	46	M	10	Masters Degree	New Product Development
P7	42	M	14	High School	Marketing Knowledge and New Product Development
P8	54	M	20	Bachelors Degree	New Product Development and New Marketing Channel
P9	32	M	18	Bachelors Degree	New Product from Thai Culture Character

Table 4.4 Participants' Profiles in the OSMEP 2011 Project (continued)

Participant	**Age**	**Gender (M/F)**	**Business Experience**	**Education**	**Objective for participant**
P10	49	F	11	Certificate	Business Development
P11	Na	M	13	Bachelors Degree	New Product Development
P12	Na	M	12	N/a	New Product Development
P13	31	M	1	Masters Degree	Souvenir Development
P14	52	F	14	Bachelors Degree	New Product Development, Seek Value Added Product
P15	Na	F	35	N/a	New Product Development
P16	24	F	2	Bachelors Degree	New Product Development and Marketing channel
P17	57	M	6	Doctoral Degree	New Product Development

Table 4.5 OSMEP 2011 Project Participant Classification

Categories of participant	**Industry (creative economy classification)**	**Type of product**	**Organization**
P1	Heritage	Herbal Cosmetic	SME
P2	Heritage	Herbal Tea	SME
P3	Heritage	Local Heritage Doll	SME
P4	Heritage	Wall Paper	SME
P5	Media	City Mobile Software	SME
P6	Media	Touch Screen Display	SME
P7	Functional Creation	Modern Design Bags Holder	SME
P8	Functional Creation	Cotton Case for Mobile Accessories	SME
P9	Functional Creation	Home Decorative Item	SME
P10	Functional Creation	Candle Set	SME
P11	Functional Creation	Ceramic Tableware	SME
P12	Functional Creation	Electronic Comic Book	SME
P13	Functional Creation	Game (Boxing)	SME
P14	Functional Creation	Modern Design Lamp	SME

Table 4.5 OSMEP 2011 Project Participant Classification (continued)

Categories of participant	**Industry (creative economy classification)**	**Type of product**	**Organization**
P15	Functional Creation	Outdoor Silk Accessories	SME
P16	Heritage	Tourist Attraction	SME
P17	Heritage	Local Rice Vinegar	SME

A total number of 17 businesses enrolled in this project. According to the OSMEP definition, most of the participants selected were small enterprises. It was clear that most participants' previous educational background did not directly affect their existing products. Participants also revealed limited experience and access to expert support due to a variety of reasons including, limited budget, network access and geographical location.

In this study, investigation of incubation project data was collected via three approaches:

- Observation of project activities and administration.
- Interviews with all main participants, incubatees, industry experts, project managers and staff.
- Secondary data from incubation processes in terms of new product development documents.

After data was gathered, it was then organized according to similarity and meaning in order to differentiate between general and specific information for further analysis. By focusing on the incubation process, three groups of participants were

interviewed. The following section presents the data gathered from the case study of the UBI project in 2011. These processes highlight the importance of each stage and specifically focus on experts' motivation and contribution toward the success of the incubation project. Summary details from the observation and document analysis , are provided below in Tables 4.6- 4.9 and relate to experts, project managers and project staff.

Table 4.6 OSMEP 2011 Project: Expert Participants

Industry Experts	**Area of Expertise**	**Experience (years)**
E1	Home Decorative Items	7
E2	Product and Fashion Designer	10
E3	Ceramic and Home Decorative Items	6
E4	Home Decorative Items	7
E5	Product and Packaging Design	7

Table 4.7 OSMEP 2011 Project: Industry Expert Activities

Expert Activities	**Description**
Site Visit	• Expert visits incubatee business • Investigates existing products • Investigates available skills • Investigates available raw material • Observes the production line • Discusses previous experience with incubatee • Discusses future ideas and aims with incubatee
Submit Product Plan	• Indicates market opportunity • Performs market analysis (STP, 4Ps and others) • Suggests target market and provides detail on target market behavior and test • Gathers necessary information to formulate product plan from market point of view • Discusses and gathers information from incubatee • Submits product plan for mutual agreement and approval
Submit Product Concept	• Gathers market trends and consumer preferences • Creates new product concept according to agreed product plan • Identifies opportunities for different product concepts • Suggests the most promising product concept for

Table 4.7 OSMEP 2011 Project: Industry Expert Activities (continued)

Expert Activities	**Description**
Submit Product Concept	incubatee • Indicates possible problems and difficulties in developing prototype • Submits product concept for mutual agreement and approval
Design Selection (for prototype)	• Reviews design created by students and lecturers • Discusses pros and cons according to business capability and commercialization • Selects design for prototype
Support Prototype Development	• Suggests means to develop prototype • Identifies external resources to support prototype development • Suggests alternative solution for necessary adjustment
Analysis and Conclusion of Development process	• Evaluates prototype quality and consistency according to product plan and concept selected • Analyzes and concludes potential opportunities for commercialization • Summarizes development process and submits report to project manager

Table 4.8 OSMEP 2011 Project: Project Manager Activities

Expert Activities	**Description**
Selection phase	• Develops selection criteria for OSMEP approval • Evaluates submitted applications (with committee) • Interviews selected applicants (with committee) • Debates potential for selected applicant toward creative industry (with committee) • Finalizes the selected applicants
Training and development phase	• Identifies incubatee knowledge gap in development toward creative industries • Identifies and initiates required training and workshops • Monitors training and workshop environment • Motivates and encourages interaction between experts and incubatees • Evaluates results and outcomes of each training and workshop
Commercialization phase	• Identifies suitable trade fairs and other business matching opportunities for each product developed • Monitors the activities during trade fairs and business matching opportunities • Evaluates results for each trade fair and other business matching opportunities • Suggests further marketing channels or business network

Table 4.9 OSMEP 2011 Project: Project Staff Activities

Project staff	**Description**
Selection phase	• Evaluates summited applications (with committee) • Assists in finalizing the selected applicants
Training and development phase	• Assists in identifying and initiating required training and workshops • Monitors and reports on training and workshop environment • Assists in stimulating interaction between experts and incubatees • Assists in evaluating results and outcome of each training and workshop session
Commercialization phase	• Assists and coordinates on trade fairs and other business matching opportunities • Monitors and reports on activities during trade fairs and business matching opportunities • Gathers information for evaluating results for each trade fair and other business matching opportunities • Suggests and coordinates on any issues between experts, incubatees and project staff

4.2.3.3 Summary of OSMEP 2011 Project: Incubation Process

The incubation process in this UBI project follows four main processes (indicated in the OSMEP 2010 project) including training and workshops, production planning, product concept development, and prototype development. According to the interviews with participants regarding the training and workshop processes, all participants (17 participants, one per business) revealed that it was very informative and useful to their businesses. Many participants indicated that examples given by the expert (especially those relating to market and trend issues) were among the most useful for creating and developing new products. Incubates indicated useful knowledge provided by the experts, examples of which are shown in Table 4.10.

Table 4.10 Examples of useful knowledge from experts, as indicated by incubates

Classification of knowledge	**Detail of Knowledge**
3Cs: Customer Company Competition	**Customer:** • International consumer perceptions on Thai handicraft • Target customer preference (difference between domestic and international preference) • Purchase behavior (souvenir, home decoration item or gift) • Usage and function (difference in lifestyle and characteristics) • Buyer and consumer preferences/differences • Market segmentation and sub-segments (usage behavior or objectives) • Changing trends (who and where/color trends and seasonal trends) • Seasonal affects (spring/summer and Autumn/winter) • Price competition (exporter and importer price structure) • Differentiation in relation to different markets (by culture and local material) • Choice of substitutes (in terms of function)

Table 4.10 Examples of useful knowledge from experts, as indicated by incubates (continued)

Classification of knowledge	**Detail of Knowledge**
3Cs: Customer Company Competition	**Company:** • Costs competitiveness (compared to other exporters) • Core competencies (identify and develop product) • Mass product Vs craft product (identify opportunities) • Break-even analysis (identify new product development, incremental adjustment and product life cycle planning) • Channels (identify and create new channel) • Strategy and vision • Strengths/weaknesses • Cultural advantage • Resources and material (enhance advantage and local source) • Brand equity **Competition:** • Competitors (direct and indirect) • Company goal vs. possibility and opportunities • Economies of scope not scale • Cost structure analysis • Relative product and substitutes positioning

Table 4.10 Examples of useful knowledge from experts, as indicated by incubates (continued)

Classification of knowledge	**Detail of Knowledge**
STP: • Market segmentation • Customer Target • Product Positioning	**Market Segmentation:** • Industry segmentation (i.e. furniture segmentation – motion sofas, futon, infant furniture, outdoor furniture, formal dining, casual dining etc.) • Geographical demand (European market, United State market and Chinese market) • Mass market, niche market, direct market • SWOT and five force analysis • Market size (spending power and country GDP) evaluation • Market and buyer criteria • Geographical and environmental differences (country and region) **Customer Target:** • Generation X and Y (younger boomers and older boomers) • Design preference • Lifestyle preference • Target market analysis • Product selection • Testing (sample and plot project) Distribution channel preference (boutique

Table 4.10 Examples of useful knowledge from experts, as indicated by incubates (continued)

Classification of knowledge	**Detail of Knowledge**
STP: • Market segmentation • Customer Target • Product Positioning	• stores, antique shop, kiosks, direct channel (internet and catalogs), discount store (off-price retailers) and etc.) **Product Positioning:** • Mass market (IKEA), upper market (Pier1 Import, Pottery Barn) and luxury market (most fashion product directly link to brand) • Pricing and product positioning • Pricing strategy • Positioning strategy • Brand image • Functional design • Emotional and experience design • Distributional channel – referencing (department store, boutique-store, traditional Store, designer / project and corporate) • Product and sub-product branding • Collective branding • Packaging, display, and shelving design • Brand story

Table 4.10 Examples of useful knowledge from experts, as indicated by incubates (continued)

Classification of knowledge	**Detail of Knowledge**
4Ps: • Product • Price • Place • Promotion	**Product:** • Tangible and intangible product • Craftsmanship, refinement, skills and innovation • Creative, design (fashion trends, color trends, seasonal trends, product function) • Trendsetter (modern/contemporary, classic, coastal, celebrity, safari, tropical, traditional, retro, spiritual, americana) **Price:** • Trade condition and term (Letter of credit (LC) term, LC guarantor, bill of landing (B/L), airway bill and etc.) • Competitor price, substitute product price, production pricing, whole sale pricing, retail pricing • Substitute product (function and price) • Target FOB price, estimate landed cost • Retail price calculation

Table 4.10 Examples of useful knowledge from experts, as indicated by incubates (continued)

Classification of knowledge	**Detail of Knowledge**
4Ps: • Product • Price • Place • Promotion	**Place:** • Sales channel (department stores, warehouse club, home improvement center, discount store, direct to consumers etc.) • Character of different type of store (buying volume, seasonal store program, all year store program, Holiday season etc.) • Store segmentation, store characters, country regulation • Supplier and buyer power (ability to negotiate) • Building distribution channel • Business engagement (assess buyer capability and business matching) • Plano gram set up (shelving and visual merchandising) **Promotion:** • Main importers and retailers (top importers and retailers) • Peak and off-peak buying season • Product communication and advertisement, branding, exhibition fair, business matching, e-marketing,

The main barrier at the project outset was ‘creativity’; it was difficult for participants to generate new ideas and combine existing ideas to create new products or services. After several training sessions and individual coaching from an expert, some participants were able to create new ideas for their product. Experts’ knowledge about consumer demand, trends and market conditions acted as a key stimulus to drive participants to generate new product ideas for specific target markets. For example, a local silk clothing producer was able to select and integrate local flowers, modern consumer preferences and new textile technology to create new outdoor accessories targeted at boutique hotels in southern Thailand. Although all participants attended workshops and received similar training, there were both successes and failures in creating new product ideas. Following present the initial findings which analyze information and data from study cases present earlier.

4.3 Initial Findings

In this section, the initial observations and document analysis from case studies (2E project and OSMEP 2010 project) aim to describe the project participants’ actions and function in implementing the projects.

4.3.1 Initial Case Study Observations

In this section the observation from the OSMEP 2010 case study projects will be discussed and presented according to participants involved in the project. The participants are classified as: 1) experts 2) entrepreneurs 3) project manager 4) project staff 5) students and 6) lecturers.

- Experts were expecting to deliver new knowledge (about new target customer, new market trends, different products and business strategies etc.) and a new direction and solution for each business in this project.

- Entrepreneurs demonstrated enthusiasm in joining the project. However, some seemed to be unclear about project objectives and sometimes exhibited doubt about the experts participating in the project. While most entrepreneurs had time limitations, for the majority of the time, they were willing to join all activities.
- The project manager often took the role of a coordinator in linking between experts and entrepreneurs. The role frequently required decision making in order to resolve conflict and ensure constructive project operation.
- Project staff mainly took a general coordinating role. More importantly, they often received feedback and complaints from both entrepreneurs and experts.
- Students were willing to participate in creating new designs, but most were unclear and imprecise on who their customers are and how to sell the newly designed product.
- were less enthusiastic at the beginning of the project, but they provided effective encouragement and sometimes offered useful tips for students to create new designs.

4.3.2 Knowledge Management Strategy

Table 4.11 indicates the business strategy for SMEs in northern Thailand. It is important to identify the strategic objective, source of competitive advantage and expected results in order to align limited resources and identify the necessary knowledge management strategy, which will build future strength and minimize weakness. Information employed to analyze the business and knowledge management strategies for northern Thai SMEs was derived from responsible government and non-government organizations (OSMEP, K.I.Asia and UNTCAD). Following document analysis, the result was also reviewed and revised by 1 OSMEP official, 1 Chiang Mai Chamber of Commerce official and 3 creative economy related project managers to ensure the validity of the findings. The information from these initial findings will be useful for further analysis of critical knowledge creation processes that affect the project outcome and

support formulation and development of a knowledge management model for UBI operation.

Given that Thailand is abundant with culture and social wisdom, these resources offer advantages for development of creative industries. To promote the concept of the creative economy, the government strategy should focus on creation of local enterprises with high potential towards international markets. In other words, SMEs need to become more competitive (by developing new products, expanding to new markets and advancing their design and manufacturing) rather than attempting to sustain or secure existing markets with old and obsolete products.

Therefore, it is necessary that Northern Thai SMEs engage in advancing strategy with a focus on new product development which results in future profitability and higher than average profit. Table 4.11 presents the strategic framework and development project for Northern Thai SMEs.

Table 4.11 Strategic Framework for Northern Thai SMEs

Scope	Strategy	Competitive advantage	Source of competitive advantage	Expect Result
Northern Thai SMEs (Business strategy)	Advancement	New product development	Potential economies of scope Product and services differentiation	Future profitability Higher than average profit
Project (university business incubation	Business Advancement – Creative Products	• Value Added • Difficult to Imitate	• Differentiation • Focus on niche market with high spending power	• Higher than average profit • Future profitability

To succeed in a competitive business environment, especially in the creative industries, SMEs' success is determined by their intellectual capabilities. Although many SMEs realize the importance of knowledge-based advancement, not all knowledge has strategic value to their business. Therefore, it is essential to initiate an appropriate knowledge management strategy to productively support the strategic goals of SMEs. The strategic alignment between project development strategy (competitive advantage) and project knowledge management strategy is presented in Table 4.12.

Table 4.12 A Knowledge Management Strategy for SMEs' Development

Competitive advantage	Role of Knowledge	Knowledge Process	Results
• Value Added • Difficult to Imitate	• New knowledge on product and service • Transferable knowledge	• Knowledge Creation	• Hilegher than average profit • Future profitability

It is vital that project managers employ the strategy presented in Table 4.12 to enhance the role of knowledge to support SMEs' development in the creative industries.

4.4 Results

In the previous sections, data collected and analyzed from meetings and document reviews indicated the necessary business and knowledge management strategies for Northern Thai SME development. Prior to identifying the critical knowledge creation process and developing a model for UBI, issues of critical knowledge and the knowledge creation process need to be understood. In this section, the results from additional information and data gathered from two UBI case studies at CAMT in 2010 and 2011 will be analyzed into themes and pattern by adopting an interpretive approach. The objective is to gain valuable understandings and insights which are fruitful for subsequent analysis in qualitative inquiry.

4.4.1 Critical Knowledge Required for Development

In this section, the objective is to identify critical knowledge required for SMEs development in businesses related to the creative economy. Observation and semi-structured interview methods were used to capture the required data and information for analytical purposes.

To identify the critical knowledge required for SMEs' development toward the creative industries, data and information from the UBI projects at CAMT during 2010 was used for analysis. It is important to identify the critical knowledge necessary for SME development, and to identify such critical knowledge, a methodology was employed which modified the critical knowledge factor grid. The critical knowledge factor grid is related to a knowledge engineering method and suitable for managing experts' knowledge.

4.4.1.1 Domain Knowledge

The domain knowledge of new product development was initially gathered from related documents and academic papers. Adjustment and validation were then completed by 3 experts, 2 project staff (directly responsible for training), and 10 businesses (out of 15). All were participating in the UBI projects at CAMT during 2010. The domain knowledge presented below is specifically referenced by the Creative Building for North SMEs project conducted in 2010

Domain Knowledge for SMEs Creative Product Development:

- Market assessment:
  - The market assessment knowledge domain provides a constructive and broad view of business and organization assessment through an emphasis on the 3Cs model (corporate, customer and competition) suggested by Kenichi Ohmae.

- Corporate assessment aims to capitalize on SMEs' strength to develop new products and services. Related issues are SMEs' core competencies, appropriate development strategy, resources and materials, uniqueness and cultural advantage.
- The customer assessment focuses on the customer, and then business interest will follow. In the creative industries, an assessment of customer preferences, behavior, segmentation and preferred distribution channel helps businesses to better understand customers.
- For competition assessment, the idea is to identify competitive advantage compared to competitors through differentiability. Sources of SMEs' differentiation include economies of scale, economies of scope, cost structure advantage, and brand and image positioning.

- Product Development:
  - The product development knowledge domain offers SMEs the ability to analyze market situation (market size, market condition, consumer need and consumer requirement) prior to concept development, product design and prototype development stage. In addition, this knowledge domain can provide marketing direction for any new product developed. The STP (Segmentation, Targeting and Positioning) method was applied to classify knowledge in this domain.
  - Segmentation focuses on varied issues depending on a particular SMEs' product and service. However, generally issues of customer demographics, behavior, and objective provide sufficient information for SMEs to classify and decide on a market to participate.
  - Targeting offer tips to SMEs in selecting a primary market or customer for a new product or service. Important issues requiring attention are market potential (growth and level of competition) and appropriateness to SMEs' strength.

- Positioning provides SMEs with a marketing strategy or how the product or service should appeal to the target customer. The issues that require concentration after deciding on marketing strategy are product pricing, channel for distribution and product appeal).

- Customer Engagement:
  - The customer engagement knowledge domain provides SMEs with constructive and practical understanding of the factors that affect marketability (ability to commercialize) of new product and services. Because SMEs require simplicity, the marketing mix, or the 4Ps of marketing by E J McCarthy were used to construct this knowledge domain.
  - SMEs need to make choices regarding product, price, place and promotion to develop a proper marketing mix to bring a new product or service to market. The success of SMEs' new products or services will be largely dependent on their ability to understand the market and customer, and develop right marketing mix for the selected market.

The domain knowledge presented above forms the basis for later processes in this research.

4.4.1.2 Critical Knowledge Analysis

Given that the required domain knowledge for SMEs' development has been identified, it is important to further identify valuable knowledge for better productivity in knowledge transfer (knowledge that is worthwhile to transfer). It is also an essential process to perform prior to further knowledge management operations. Table 4.13 presents the evaluation criteria used to identify the critical knowledge required for SMEs' new product development in the creative economy.

Table 4.13 Critical Knowledge Analysis Criteria

Evaluation Criteria	**Description**
Need of external (specialization) expertise	• Specialization highly required • High degree of knowledge stickiness to expert • Subject to originality
Value of domain knowledge	• High value/usefulness and correlation with business objectives. • High impact on value creation and application for other potential products.
Difficulty in capturing	• Level of tacit knowledge is high. • Difficult to identify source of knowledge
Need to develop domain knowledge	• Level of need for improvement is high • Require training or workshop

Table 4.14 Critical Knowledge Analysis for SMEs

Domain Knowledge	Need of external (specialization) expertise	Value of domain knowledge	Difficulty in capturing	Need to develop domain knowledge
Market assessment	86.67%	80%	73.33%	93.33%
Product development	53.33%	60%	86.67%	86.67%
Customer Engagement	80%	86.67%	73.33%	100%

Table 4.14 presents the results identifying the critical knowledge analysis for SMEs from participants in the OSMEP project 2010. The detailed interpretation of critical knowledge analysis for SMEs is described as follows:

- Generally, all domain knowledge is important (all three types of domain knowledge average above 70%. This is especially in the need for development where all rate above 85%. However, when considering the need of external (specialization) expertise, market assessment was less important when compared to product development and customer engagement knowledge. This result is in alignment with earlier observations that generally indicate, incubatees (business owners) were well aware of their general position in the industry, but uncertain on how to expand to a new target market.

- In contrast, results from the sample indicated that product development domain knowledge (average of 71.67%) was least important when compared to the market assessment knowledge domain (average of 83.33%) and customer engagement knowledge (average of 85%).
- Market assessment knowledge was the second most important domain followed by customer engagement knowledge, but required more external (specialization) expertise (86.67% compared to 80%).
- Among the three knowledge domains, project participants rate customer engagement domain knowledge as the most important. In fact, customer engagement domain knowledge affects the SMEs market penetration ability or their ability to commercialize, which is the expected outcome of this project.

4.4.2 Knowledge Creation Process

The creative industry is one of the most dynamic sectors (UN, 2010), which offers new and high-growth opportunities for today's businesses. In such knowledge-based industries, entrepreneurial business competence and the ability to learn and develop new knowledge become increasingly important success factors. The SECI model is a specifically useful framework for analysis of the knowledge creation process in an organization.

This section, information and data from operation of the OSMEP project 2011 were analyzed by employing the SECI model, which provides a constructive framework for future development. The critical domain knowledge identified from the OSMEP project in 2010 was applied to the OSMEP project in 2011.

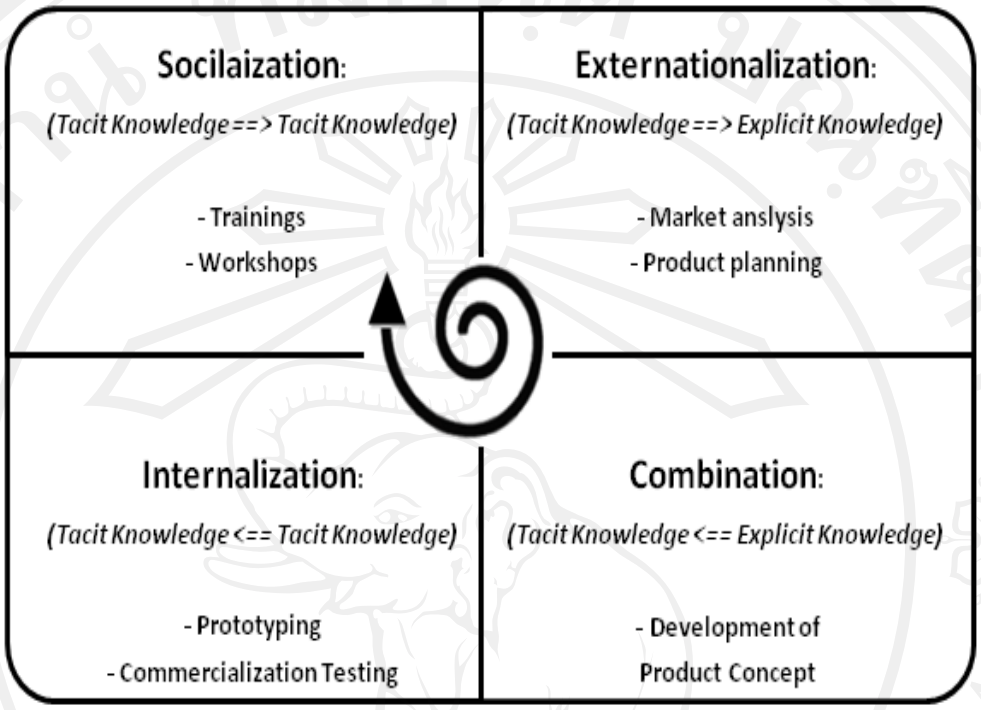


Figure 4.3 Application of the SECI model in the University NPD process Creation (adopted from Nonaka and Takeuchi, 1995)

The university NPD process presented can be explained by the SECI model as follows: the socialization process is analogous to the training and workshop process; the externalization process is analogous to the new product planning process; the combination process is analogous to the new product concept development process; and the internationalization process is analogous to the prototyping and commercialization testing process (see Figure. 4.3.)

Socialization (training and workshop process)

The socialization process evident at the early stage of the project stimulates exchange of information among project participants (incubatees, experts and facilitators). As participants interacted creatively with one another, friendship was formed (Russam, 1996). Training and workshops on color and trends were designed for incubatees and experts to discuss and share tacit knowledge and skills. Each incubatee brought their existing product to discuss with an expert and other incubates (Thebtaranonth, 2007). Tacit knowledge about market, production processes and material were shared and the collaboration with experts and other incubatees led to chances for new market segments and different designs.

From the interviews, incubatee P10 suggested, "*this is something that I want but do not know how to develop and where to market this type of design*."

The dilemma extracted from the data has to do with the incubatee's viewpoint of doubt on expert capability and project seriousness. The doubt is perceived as an concern of trust. This dilemma becomes less important as they start in-depth discussions on the existing product and develop a better relationship. However, acceptability and openness arises with a facilitator involved in discussions. As socialization is often informal and takes diverse forms of activity, incubatee and expert discussions were kept nonspecific as issues of confidentiality may raise doubt from previous participants in a similar project. Ultimately, incubatees and experts shared their ideas and collaborated to discuss and argue about the direction of new product development. As a result, the socialization process stimulated and created new tacit knowledge concerning customer tests and preferences, market channels and product design which can then be concerned upon and formalized in the externalization process.

Externalization (product planning process)

The externalization process involves the product planning process, where tacit knowledge acquired from the socialization process is developed into a formal or explicit form of a product development idea and direction. After the training and workshop (in the socialization processes), the expert and incubatee met again at the production site to

talk about and conclude on development ideas and directions and convert them into a outline plan for new product development.

New product development begins by a number of in-depth dialogues at the production site as well as telephone conversations. Subsequently, the summary plan for new product development is summarized and proposed for review by incubatees and facilitators (project coordinators and manager). Mainly experts guide this activity, where explicit knowledge is created to allow all participants to realize and agree on the direction and draft administration process of new product development. Explicit communication results in a mutual agreement and commitment from each participant working on the project. In addition, the creation of explicit knowledge provides understanding of participants' function, which further benefits the process of knowledge sharing. However, the explicit data also indicated a downside, as some reduce participants only focused on sharing knowledge relating to the agreement, which may lower the effectiveness of knowledge sharing activities.

Combination (product concept development process)

Following achievement and agreement on new product development direction during the product planning process, more complex analysis and detailed work took place in the new product concept development stage. During the interviews, most incubatees reported that at this stage, development was initiated by experts and modified by face-to-face meetings, email and telephone discussion.

Throughout this stage, incubatees and experts exchanged and articulated knowledge to develop and create the final product concept for a face-to-face meeting with facilitators. Meeting focused on reasoning and rationalization of the new product concept, bringing together the creativity and commercialization requirements for new product development. Findings indicate that new product concepts were lead, modified and dominated by experts. However, data also indicated an effort in balancing (consider both experts and incubatees interest) between experts and incubatees throughout this stage.

Internalization (prototype development process)

Internalization involves learning and acquiring new tacit knowledge in practice (Nonaka, 2004), and each participant gained constructive experience and acquired new tacit knowledge from the group interaction and prototype work. The prototype work required a number of adjustments due to limitations of incubatee skill and raw materials. When problems have to be solved, individual strengths and weaknesses will become apparent (Gutmann, 1995). According to observations in this research, skills posed a significants limitation in prototype development. Limitations related to raw materials were simply solved by experts' suggestions. Experts were knowledgeable in identifying suppliers or soruces to complete new prototype development. Trust and relationships are critical factors for commitment and collaborative behavior. For example, four experts that have an existing relationship with incubatees did not receive any complaints, and the prototype adjustment was accomplished with good understanding and supporting from both incubatee and expert.

Experts who identify an accessible supplier are willing to work to adjust the prototype. Ultimately they foresee the opportunity for future advancement or, in other words, experts internalize (convert from explicit to tacit knowledge) the explicit knowledge from the product development process.

Nevertheless, almost all participants reviewed that successful commercialization was not an immediate outcome upon completing the project, but the creation of new knowledge, business networks and relationships were continuing benefits their business. For instance, incubatees and experts admitted that communication and collaborative new product development created the opportunities to fabricate relationships with other participants, eventually leading to a business network for future creative product development.

4.4.3 Commercialization Success and Expert Contribution and Effort

According to interviews with a project manager and three staff that were directly responsible for administering and coordinating between industry experts and incubatees, it is clear that the industry expert responsible for each incubatee plays a vital role in creating ideas, formulating concepts and developing a prototype for the new product development process. The project manager and staff provided valuable remarks as follows:

Project Manager:

"Experts need to contact the incubatee more often to update the idea, and to make sure that they are following along the same lines."

"Experts need to inform and educate the incubatee on new market information, in order to develop the same knowledge base."

"Experts are often less concerned with the marketing perspective, which often results in less chance of commercialization."

Project Admin Staff:

"It is difficult to contact experts."

"Some incubatees question experts ideas and sometimes de-motivate them to participate in the project."

"Some incubatees and experts get along very well, they know each other from before."

"The main problem was that experts do not effectively communicate with the incubatee, which sometimes causes feelings of anger ."

"The timing agreed on for the work process was very difficult to meet, we usually receive work later than expected from the experts."

The creative economy concept focuses on bring together local identity and traditional knowledge with modern technology to create or innovate new products and services. These new products and services should react to the changing needs of their target customers, or be tailored to specific niche markets in order to offer the highest value to their customers.

SMEs are a vital component of Thailand's economy. As most Thai SMEs focused on low labor cost as a key input and advantage to survive; this is no longer viable or sustainable for the country's long-term economic development. In this research, industry experts in charge for each incubatee play a vital role in creating ideas, formulating concepts and developing prototypes which shape the output (new product development) and outcome (commercialization ability) of the project.

The following section illustrates the data summaries from incubatee interviews and project results with regard to commercialization (see Appendix H), new knowledge gained from participating in the project, and problems and suggestions for UBI projects. The data were summarized and verified by the project manager and three staff who were directly responsible for project administration.

New product development requires specific attention including time available for site visits and individual meetings, attention to product plans and concept development, and encourage and suggestions during the prototype development process. In rating industry experts' involvement in new product development and the level of commercialization success, the relationship is indicated in table 4.15. In addition, new knowledge gained from participating in this project (table 4.16.) and the problems and suggestions for UBIs (table 4.17.) were analyzed and employed to develop a knowledge management model suitable for UBIs.

Table 4.15 Expert Involvement and Commercialization Success

Level of Commercialization Success	**Expert Involvement – Product Planning**	**Expert Involvement – Product Concept Development**	**Expert Involvement – Prototype Development**
High Degree of Success:			
Income on Trade Fair 1,200,000 – 150,000	High – 83% Medium – 17% Low – 0%	High – 50% Medium – 50% Low – 0%	High – 67% Medium – 33% Low – 0%
Participants included: P7, P9, P3, P16, P4, P15,			
Fairly Successful:			
Income on Trade Fair 1490,000–100,000	High – 33% Medium – 66% Low – 0%	High –100% Medium – 0% Low – 0%	High – 33% Medium – 66% Low – 0%
Participants included: P14, P10, P17			
Weak Success:			
Income on Trade Fair 90,000–30,000	High – 0% Medium – 50% Low – 50%	High – 75% Medium –25% Low – 0%	High – 0% Medium – 100% Low – 0%
Participants included: P8, P2, P11, P1			

Table 4.16 Previous and New Knowledge/Skills from the Project

	Previous Knowledge and skills	**New knowledge and skills**	**Additional knowledge and skills desire**
Incubatee	-Existing product market -Production skill -Source of material	-Customer requirement -Market trend and fashion	-Marketing channel -Design -Market trend and fashion
Experts	-Market trend and fashion -Industry competition -Customer requirement -Design -Marketing channel	-Production skill -Source of material	-Production skill -Source of material
UBI facilitators	-Production plan development -Business network -Business Plan development	-Existing product market -Market trend and fashion -Industry competition -Customer requirement	

Table 4.17 Problems and suggestions from OSMEP 2011 project operation

Problems from project operation:
• Limited trust of expert (incubatee will not inform 'business secret' • Experts deliver product plan and concept later than expected which limits time available for prototype work. • Incubatees do not understand marketing vocabulary when discussed with experts • Need two way communication, it should allow more mutual (or common) understanding
Suggestions for project operation
• Should pay attention to building business network • Should allow more time to operate the project • Should give more attention and time to discuss and comment with incubatee and inform of problems so they can be solved on time • Should allow more time to develop prototype and adjustment

4.4.4 Effective Interaction Method in Incubation Process

According to the interview with project participants (2 project staff and 10 businessmen) and proof by project manager, the interaction between incubatees and experts is an important issue. There were many means employed to communicate during

the incubation process. Due to project time limitations and participants (incubatees and experts) time limitations, both face-to-face and virtual communication means were utilized in this project. However, after reviewing the interview data, there were positive and negative suggestions regarding communication issues. The means of interaction and participant preferences during the incubation process are shown in Table 4.18 (see Appendix E).

Table 4.18 Effective Interaction during the Incubation Process

Means of Interaction	**Socialization (Training and Workshop)**	**Externalization (Product Plan)**	**Combination (Product Concept Development)**	**Internalization (Prototype Development)**
On Site Visit (Fact to fact)	x	X	x	x
Workshop (Face to face)	x			
Group-Meeting (Face to face)	x			
Individual-Meeting (Face to face)	x	X	x	x
Telephone				x
E-mail				
Report		X		
Other Site Visit (field trip)	x			

4.5 Critical Knowledge Creation Process (KM Framework and Model for UBI)

After identifying limitations and requirements for Northern Thai SME development in the creative industries, the knowledge management strategy and knowledge creation process were carefully analyzed. The analyzed data and information presented in earlier sections were used in combination with literature reviews from Chapter 2 to identify the critical knowledge creation process in a UBI project.

In this section, critical process in knowledge creation will be identified and key knowledge providers (industry experts) will be briefly discussed. It is vital to discuss industry experts' knowledge creation in the UBI process in order to indicate any problems that might limit the utilization of experts' knowledge.

4.5.1 The Critical Knowledge Creation Process in a University Business Incubation Project

Nonaka and Takeuchi (1994) suggest that the knowledge creation process has often been employed as a research framework, which provides a knowledge flow and knowledge conversion process, and as such constitutes an appropriate framework for analysis of a UBI project. Unlike the clear-cut knowledge creation process suggested by Nonaka and Takeuchi (1994), in a UBI project, the new product development processes comprises several parallel processes. Tacit knowledge sharing represents an important process, which affects other processes. The development of mutual understanding and agreement on the new product planning process (externalization) occurred in training and workshops (socialization) where individuals' (incubatees, experts and facilitors) tacit knowledge was shared. The final agreement of new product planning scoped and shaped the creation of the new product concept (combination) where markets, skills and resources were considered. Incubatees, experts and facilitators exchanged and combined new and existing knowledge through face-to-face meetings, telephone conversations and email. This created the concept required for prototype development prior to

commercialization. The prototype development process (internalization) provided hands-on production experience and real production limitations that became a vital process in creating new knowledge and justification of the likelihood for commercialization.

Given the UBI project environments and limitations, product planning and prototype development are the two most critical processes that affected the likelihood for commercialization, as shown in Figure 4.4. According to the knowledge creation process, product planning (externalization) involves the conversion of tacit to explicit knowledge mainly lead by experts; therefore, previous experience, motivation and concentration affects the degree of expert contribution in developing a new product plan. Among the most commercialized products, many incubatees reviewed experts' interests and/or marketing ideas during the socialization process, which may imply further business networking opportunities. For the prototype development process (internalization) where conversion of explicit to tacit knowledge took place, the incubatee offers available skills and knowledge of raw material and the expert recommends alternatives to address unexpected problems. According to a comparison of project documents and the interview of experts, when prototype products were similar to the product concept, experts indicated that their internalization of new knowledge from the new product development process was limited. Interview data also shows that in the group requiring major adjustment during the prototype development process, experts indicated a higher degree of knowledge internalization. In addition, project managers revealed that experts who already had business or marketing ideas tend to offer superior product plans when compared to other experts, and genuinely seek to identify solutions corresponding with the product plan.

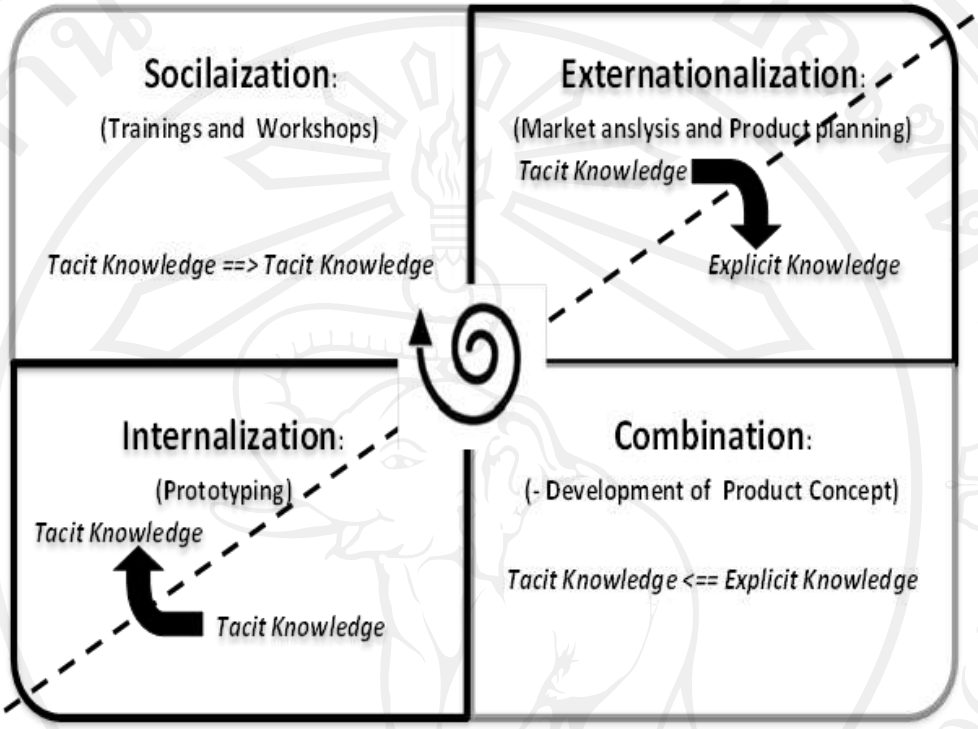


Figure 4.4 Critical Processes for the University NPD Creation
(adopted from Nonaka and Takeuchi, 1995)

4.5.2 Industry Experts' Knowledge Creation

Interview results indicate that experts gain valuable tacit knowledge during prototyping and commercialization testing processes which are associated with the internationalization process. As indicated earlier in this chapter, experts gain additional knowledge regarding production techniques and sources of material. Thus, apart from normal capital gain, experts acquire additional tacit knowledge from the internationalization process, which provides valuable benefits toward their professional career. Consequently, experts are motivated and continue their contribution with the university, which has ultimately upgraded and expanded the knowledge base of individuals, teams and the organization.

4.6 Analysis (KM model)

To support and promote Thailand's creative industries, development should be in line with knowledge-based industries as knowledge and creativity are closely related. As SMEs continue to become an essential part in driving national economic success, the government can assist SME development and provide support through appropriate training programs to enhance SMEs' capabilities through UBIs.

In this section, the knowledge management model for UBIs is presented, followed by discussion of the critical process and expert contribution. The critical incubation processes are important for the incubator. Appropriate incubation procedures and monitoring processes are required to ensure incubation success. In addition, expert contribution is a vital area where incubators must pay attention in order to realize maximum benefit from experts' experience and creativity.

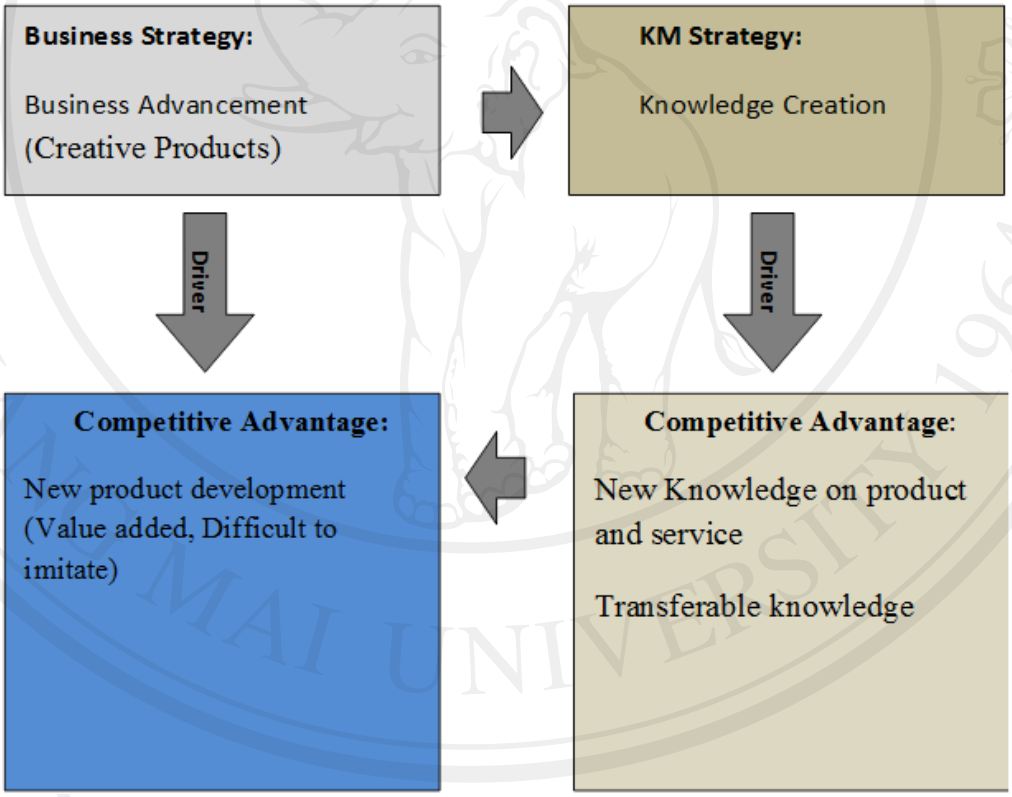
4.6.1 A Knowledge Management Model for UBIs

This knowledge management model is intended to assist knowledge and operational processes for UBI involved in new product development. Components in this knowledge management model include input, process, output and outcome, which guide the incubation process in a UBI environment. In addition, the purpose of the model is to provide a knowledge framework to analyze the incubation processes. This model specifically focuses on project-oriented operation, which is faced with resource constraints such as time and funding. The development of this model employed analysis of information and data including: business strategy, knowledge management strategy, critical knowledge, critical knowledge creation process and the knowledge management implementation framework presented earlier in this chapter.

Business Strategy and Knowledge Management Strategy

In order to represent the goals of UBI and provide implementable incubation processes, an appropriate business strategy (see Appendix I), knowledge management strategy and the required knowledge must be aligned (Figure 4.5).

Figure 4.5 Business Strategy and KM strategy for Creative Economy Development of Thai SMEs



Knowledge Required for Creative Product Development

Although there are many types of domain knowledge required for advancing creative product development, effective knowledge management practice requires specific 'productive' knowledge to achieve business objectives. This specific productive

knowledge is derived from the knowledge management strategy identified in the UBI project, which was analyzed earlier in this chapter (section 4.3.2).

Knowledge Management Model for UBIs

The following section describes both the incubation processes related to the Thai SMEs, and the business incubation processes related to the creative industries. These processes can be described in a model which breaks the processes down into eight components, as shown in Figure 4.6.

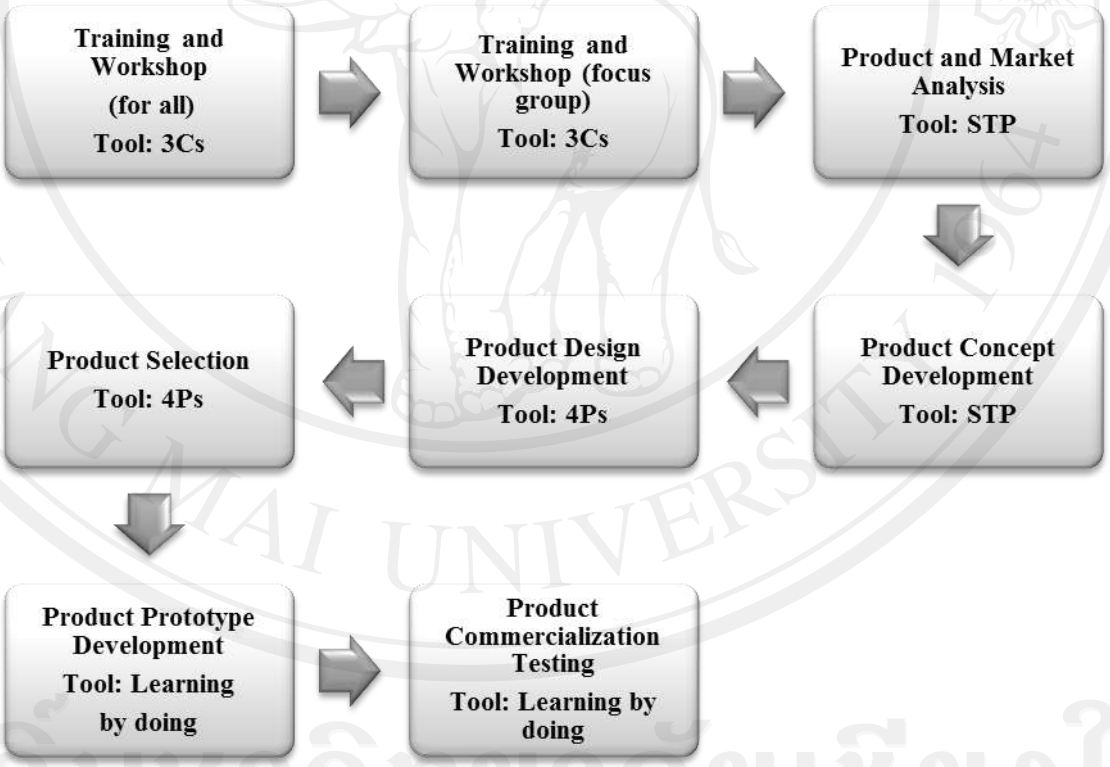


Figure 4.6 UBI Processes Related to Thai SMEs and Creative Economy Development

With regard to Nonaka and Takeuchi's concept (1994), the knowledge creation processes (socialization, externalization, combination and internalization) to develop a knowledge management model for UBIs can be constructed as follows in this research (Figure 4.7).

1) Training and workshops for large groups involving all participants. The key outcome expected in this step is to create trust among participants for further knowledge sharing efficiency.

2) Training and workshop for focus groups focuses on interaction and communication between experts and entrepreneurs. The key outcome expected in this step is sharing of experts' and entrepreneurs' tacit knowledge and to create new knowledge for both.

3) Product and market analysis, is similar to the previous step and focuses on interaction and tacit knowledge sharing between experts and entrepreneurs. However, in this step, the key expected outcome is to develop mutual trust between expert and entrepreneur which then becomes an agreement on any further processes for new product development. Expert contribution (time, tacit knowledge sharing etc.) therefore directly affects the quality of an agreement which can ultimately determine the success of new product development.

4) Product concept development involves additional input from lecturers and students from the university as a key element in this process. The outcome expected from this step is mutual understanding on selected market segment, target market and product positioning by explicitly expressing an agreed product development direction into a list of requirements and ideas.

5) Product design development relies on previous explicit information and students' creativity with support and suggestions from and experts. In this step, the output (collection of creative design) is vital for the next step and

likely to affect an entrepreneur's satisfaction; therefore, and experts positively support and affect the incubation success.

6) The product selection process mainly depends on expert professional experience (tacit knowledge) and insight on market and customer preference to select which design will be processed for prototyping.

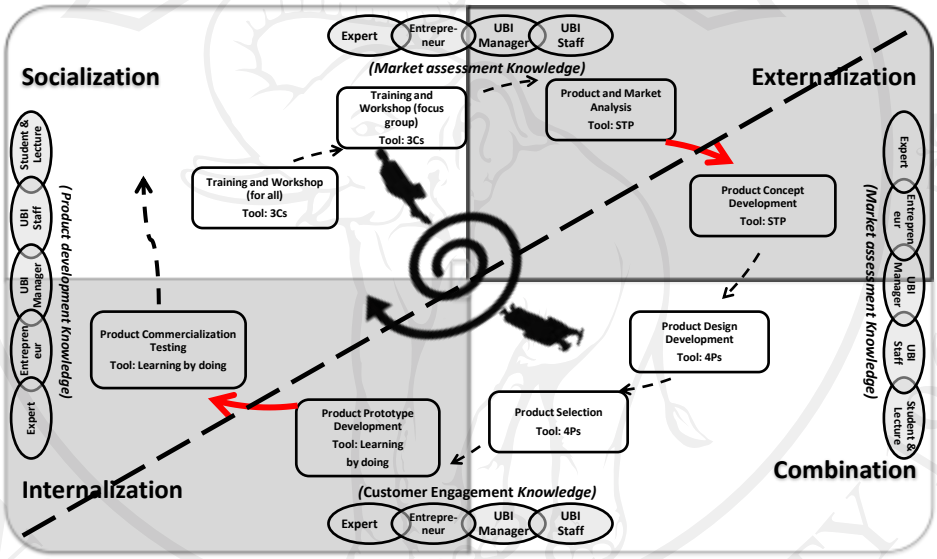


Figure 4.7. UBI Knowledge Management Model for Thai SMEs and Creative Economy Development. (adopted from Nonaka and Takeuchi,1995)

7) Product prototype development requires significant expert attention and contribution (time and ability) to foresee, identify and resolve production problems. This is especially for handicraft products, where the creative designer must first master the fundamental requirements like production skills and material knowledge (Amabile, 1996). To develop a creative product often requires a different set of production skills and/or handling of different

materials. Experts' professional experience is thus essential to assist the 'learning by doing' process in prototype development.

8) Product commercialization primarily intends to gather customer and/or buyer responses and suggestions (becoming tacit knowledge or actual experiences) on new products developed, and draw on these responses and suggestions for further development.

Figure 4.8 UBI Process and Knowledge Conversion Process for Thai SMEs and Creative Economy Development

The incubation process focuses on sharing and creating knowledge participants. In the first to the third (training/workshops and product/market analysis) components, sharing tacit knowledge from experts is useful when it is translated or codified to explicit knowledge. Sharing tacit knowledge among participants (experts, entrepreneurs, and students) by means of training, workshops and product and market analysis can provide an opportunity for entrepreneurs, and students to exchange in-depth knowledge. Consequently this will assist them in acquiring new knowledge in a hands-on (workshop participation) learning environment. Similarly, in product selection, prototyping and commercialization, entrepreneurs, lecturers, students and experts are exposed to chances to learn and create new knowledge through learning-by-doing. From the knowledge management model for UBIs, it is important to point out the two critical processes that require special attention; product and market analysis and product prototype development process (see Figure 4.8).

Both processes are critical because they essentially require experts' knowledge (source of external knowledge) to guide, decide and resolve any unexpected difficulty in reaching business and incubation objectives.

4.6.2 The critical business incubation process

According to the findings above, product and market analysis and prototype development are the most critical processes that affect the likelihood of commercialization in a UBI project. Accordingly, from the proposed model, product and market analysis and prototyping components are two critical processes, involving the conversion of tacit to explicit knowledge (product and market analysis) and explicit to tacit knowledge (prototype development). Both processes are led by experts and therefore the degree of expert contribution and effort significantly affects the new product development and outcome (commercialization) of the project. The detail and information from project operation is captured and analyzed (see Appendix J), following section purpose a knowledge management implementation framework.

4.6.3 Knowledge Management Implementation Framework

A UBI project environment is often faced with time constraints, which in turn limits trust and relationship building among all participants. It is therefore important that the project displays a clear procedure, schedule, expected output and expected outcome. The knowledge management framework requires participants' mutual understanding to effectively build trust and positive relationships. With regard to procedure, schedule and time constraints, the KM implementation framework is described in table 4.12.

Table 4.19 KM Implementation framework

UBI Process:	**UBIs: Implementation Framework**

Socialization

Step 1: Training and workshop (Large group) Participants: Input	**KM Objectives**	**Process**	**Expected Output**	**Expected Outcome**
Expert: Profile, experience, inspiration and ideas **Entrepreneur:** -Business profile, development capability, inspiration and ideas **UBI manager and -staff:** -Project introduction (goals, objectives and schedule) **and Students:** **-**Participant and observation	Knowledge Sharing Key knowledge: 3Cs	Face-to-Fact: - workshop -Group meeting	-Direction of new product idea -better understanding market	-Trust and positive relationship -New knowledge

UBIs Process:	**UBIs: Implementation Framework**

Socialization

Step 2: Training and workshop (Focus group) Participants: Input	**KM Objectives**	**Process**	**Expected output**	**Expected Outcome**
Expert: -Specific industry experience -Market trend -Consumer behavior **Entrepreneur:** - Business goals, unique skills and know-how **UBI manager and -staffs:** -Coordinating (focus on scope on time require for development)	Knowledge sharing and Knowledge transfer Key knowledge: 3Cs	Face to Fact: - workshop - Focus Group meeting - site visit	-Recognition of core competency -List of possible new product idea	-Trust and acceptance relationship -New knowledge

UBI Process:	**UBIs: Implementation Framework**

Externalization

Step 3: Product and Market Analysis Participants: Input	**KM Objectives**	**Process**	**Expected Output**	**Expected Outcome**
Expert: -Creative thought and market trend analysis -Relevant market research -Market, business and new product opportunities **Entrepreneur:** - Business goals -Existing business environment **UBI manager and -staffs:** -Coordinating (focus on scope on time require for development)	Knowledge sharing and Knowledge transfer Key Knowledge: STP	Face to Face and virtual: - Site visit -Individual workshop - Telephone and email - Document (reports and notes)	Business Best practice: New knowledge requirement -Industries and Market analysis (SWOT analysis) -Competitor or key player analysis -Product positioning -Potential market growth -List of target market and new product idea	Mutual trust and agreement on new product plan New Business concept (direction for development)

UBIs Process:	UBIs: Implementation Framework

Externalization

Step 4: Product Concept Development Participants: Input	KM Objectives	Process	Expected Output	Expected Outcome
Expert: -Creative thought and market trend analysis -Relevant Market research **Entrepreneur:** -Information of existing and unique manufacturing or production capability **UBI manager and -staffs:** -Coordinating (focus on scope and time) **Lectures and Students:** -Inspiration -Creative ideas -Target customer preferences (information)	Knowledge sharing Key Knowledge: STP	Face to Face and virtual: -Individual workshop -Telephone and email -Document (reports and notes)	New product concept: -Product function -Product color and theme -Material requirement -Estimate cost -Overview of marketing and sale concept -Concept analysis and justification	Mutual understanding on agreed STP (correlate with new product concept)

UBIs Process:	**UBIs: Implementation Framework**

Combination

Step 5: Product Design Development Participants: Input	**KM Objectives**	**Process**	**Expected Output**	**Expected Outcome**
Expert: -Product function and design experience **Entrepreneur:** -Production or manufacturing skills (information) **UBI manager and -staffs:** -Coordinating (focus on scope on time require for development) -Inspect of concept consistency **Lectures and Students:** -Design skills -Inspiration -Creativity	Key Knowledge: 4Ps	Face to Face and virtual: -Individual meeting -Telephone and email -Document (reports and notes)	New Product Design: - Selection of new product design -List of new material require -Identify additional skills require for production	Mutual agreement on new product design with effective 4Ps combination. Systemic Knowledge (Integration design: Market preference + Design + production)

UBIs Process:	**UBIs: Implementation Framework**

Combination

Step 6: Product Selection Participants: Input	**KM Objectives**	**Process**	**Expected Output**	**Expected Outcome**
Expert: - Market trend -Target market preference -Market supply chain (distribution channel and retailing) -Key players (competitors) knowledge **Entrepreneur:** -Business goals -Business competent -Existing business environment **UBI manager and -staffs:** -Monitor of product plan and project goals, objectives and schedule -Coordinating (focus on scope on time require for development)	Key Knowledge: 4Ps	Face to Face and virtual: -Work group meeting -Telephone and email -Document (reports and notes)	New Product selection: -Reasoning on products selected -Identify possible production risks -Final adjustment and comment (from experts)	Mutual agreement on new product selection Systemic knowledge (Multi criteria decision making)

UBIs Process:	UBIs: Implementation Framework

Internalization

Step 7: Product Prototype development Participants: Input	KM Objectives	Process	Expected Output	Expected Outcome
Expert: - Address unexpected problems - Recommends alternatives -Suggest source of external knowledge, skills and production network **Entrepreneur:** - Address unexpected problems - Recommends alternatives in production -Production skills -Identify and employ external resources and production network **UBI manager and -staffs:** -Identify and minimize risk (on prototype development) -Coordinating (focus on scope on time require for development)	Key Knowledge: from Learning by doing	Face to Face and virtual: - Site visit - Individual meeting - Telephone	New Product Prototype: -Quality inspection -Production adjustment and recommendation	-Source of external knowledge - New production skills and techniques Operational knowledge (product development)

UBIs Process:	UBIs: Implementation Framework				
Internalization	**Step 8:Product Commercializa-tion Participants: Input**	**KM Objectives**	**Process**	**Expected Output**	**Expected Outcome**
	Expert: -Information (consumer and buyer respond) gathering and suggest on future development **Entrepreneur:** - Information (consumer and buyer respond) gathering -Identify components forimprovement **UBI manager and -staff:** -Monitor of product plan and project goals, objectives and schedule. - Information (consumer and buyer respond) gathering and analysis further assistance **Lectures and Students:** -Information gathering and analysis from commercialize result	Key Knowledge: Learning by doing	-Trade fair -Exhibition Fair -After action Review (AAR)	-Respond and feedback from customers and buyers -Requirement for further development	Future business network Source of external knowledge and assistance Operational knowledge (Practical customer engagement)

4.6.4 Expert Contribution and Effort

Based on the case study investigated in this study, the contribution of industry experts was observed in 17 products related to the creative economy.

For the reason that expert contribution and effort significantly affects the new product development and outcome (commercialization) of the project, it is important to understand expert contribution and motivation with regard to NPD in the context of a Thai university's new product development project. The two critical processes that depend on expert contribution are product planning and prototype development. In the product planning process, experts foresee new product business opportunities that benefit from lower risk when compared to developing new products themselves and mitigate risk to the incubatee who is supported by the project. In addition, the expert may receive benefits by supporting existing lines of his/her business.

Expert motivation increases as they foresee the potential benefit from gaining new tacit knowledge from the internationalization process. New tacit knowledge can provide a valuable contribution to his/her professional career. As experts have limited time (since they are often full-time employees), limited production skills, limited sources of raw materials, and limited knowledge of local raw materials, they foresee the internalization opportunity without any additional cost (in term of expenses). This should positively affect their contribution and effort in the prototype development process. By raising experts' motivation and contribution, UBI projects can facilitate continuous contribution from experts and/or expansion of the expert network. Therefore, to understand how experts' incentives enhance their contribution and best efforts in a university incubation project is a vital issue for the management of UBIs. The proposed ideas, important issues and conclusion will be discussed in the Chapter 5.

4.6.5 Summary

The chapter has presented the essential information, analysis and findings from selected case studies. In this chapter, the knowledge management model for a Thai UBI, and the associated implementation framework have been demonstrated. Information obtained from the case studies (2E project, OSMEP projects 2010 and 2011), relevant literature reviews and applicable documents were used to determine and develop a reliable and practical knowledge management model. More importantly, the two critical UBI processes have been highlighted with the intention to provoke awareness and promote discussion among leaders, managers and participants who administer and manage the UBIs.