

Sustainable Design Development for Thai Village-Based Manufacturing Products

Palang Wongtanaporn

Abstract—Rural villagers in Thailand have unique skill for producing craft using local materials. However, the appearance and function of their products are not suited to the demand of international market. The Thai government policy on sustainable economy emphasises the necessity to incorporate a design strategy that will draw out the unique qualities and add value to the products, while raising the satisfaction of international consumer.

As an industrial designer, the author sees opportunities that design can enhance sustainability of Thai local products through the potentials that available in village-based enterprises.

This research attempts to address, how best use design to practically solve the problems in the development of Thai product in. The privilege solution is expressed through the design of design strategy that supports sustain economic development of micro-enterprise in Thailand in the way that aligns with product design development. This consideration integrates together with global business outlook in the development of products from rural communities.

Keywords—Community Development, Sufficiency Economy Philosophy, Product Design, Strategy Management.

I. INTRODUCTION

ACCORDING to the United Nations Environment Program Regional Research Centre (UNEP RRC), for a nation to cope with whatever problems and issues that may arise it must build a sustainable economic base [1]. UNEP RRC reports that many businesses in South-East Asia often work under a model that relies on governments taking an active role in creating, shaping and guiding the markets [1]. Thailand is one such country so businesses must follow governmental social and economic development directions [2]. This research revealed that the convergence of key concepts as represented in this research suggests a close link between sustainability in product development and the practical disciplines of village-based manufacturers in Thailand. Rural manufacturers in Thailand, in regard to craft production, are expected to implement the Thai Government policy called Sufficiency Economy philosophy to achieve the government's objectives of sustainable economic growth [3]. It is not only shown as a first step in development that is linked to the industrialization of the manufacturing process but also strongly favored by the village-based manufacturing.

In this study, the proposed new design strategy encourages sustainable development by providing a way to increase the

product value and marketability while conserving Thai craft heritage and environment. The increased marketability will also benefit to increasing of work, income and enhance quality of life and the economics of Thai rural villagers. Case studies were supervised by Thai local community manufacturers from Samut Songkhram Province. The design strategy was explored and developed as a new product development protocol then tested on designing local community products [4].

II. MATERIALS AND METHODS

This research aimed to identify and describe clusters of key domains and concepts to develop a model for sustainable development uniting important aspects of design that applicable to the context of village-based manufacturers. The design for the research was orientated to micro scale Thai product development. This constituted a key challenge which required translation of design factors and context from the exemplar design project into an effective practical strategy. The conceptual framework is designed to find an optimal match between the competencies and opportunities available to village-based manufacturers, enhancing the design strategy for of Thai local community products.

This research carried out the research strategy as an applied multi-disciplinary approach. It is divided in two missions: Mission 1 Strategy Formulation; and Mission 2 Strategy Implementation. The community-based ethnography discipline was selected to support data collection within a business discipline framework. Then, the industrial design discipline was included to support the design of an exemplar product [5].

III. TOOLS USED IN THE RESEARCH

Ethnography approach was chosen for the data collection phase because it focuses on the link between human behaviors and culture, and attempts to understand the qualities of a specific field of inquiry [6]. The convergent methods of the ethnography approach were employed as they support data collection through observation, and identifying and classifying complex situations in the given environment. Fig. 1 shows three methods available for ethnography. Observation, literature reviews and photo ethnography participant were chosen to support better understanding and explanations of the village-based manufacturers' behavior [7].

Palang Wongtanaporn is with the Faculty of Industrial Technology, Suan Sunandha Rajabhat University 1 U-tong Nok Road, Dusit Bangkok 10300, Thailand (phone:+66 2 160 1346; fax: 66 2 160 1341, e-mail: poundja@hotmail.com).

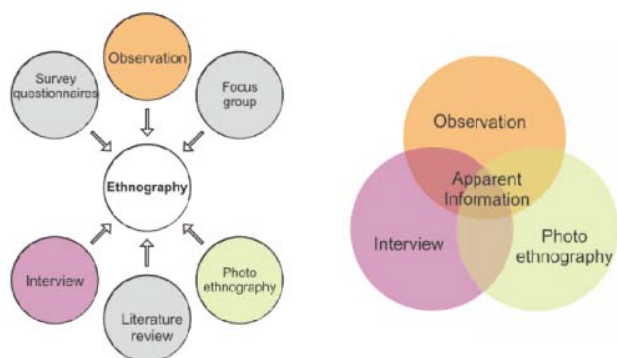


Fig. 1 Selection of practical methods from ethnography for a triangulation design

In this research, data collection started from the emic perspective. Understanding of the information was then sought in terms of the internal view of participants and the external factors relayed by relevant knowledge in the conceptual framework. Observation and photo ethnography were chosen to gather data from the emic perspective. Then a literature review was conducted to explore relevant knowledge within the conceptual framework, with a view to the ethic perspective [8]. From this idea, information from triad methods (observation, photo ethnography and interview) was combined in triangulation format to support research validity and address the research questions [6]. The validity of this research was not only encouraged to draw on triangulation of observations, photo ethnography and interview to reduce potential threats during the data collection phase, but also influenced to the conceptual framework are used in evaluating design potential for success and how well it fits into the goals of the organizational strategy.



Fig. 2 Interview and observation village-based manufacturers in Samut-Songkhram

IV. RESULTS

This research aims to generate a design strategy and practical design process that will enable abstract Sustainable Design Development to be realised at the practical, village-based manufacturing level [9]. In the first stage, results obtained for Environmental Scanning are analyzed, with collaboration of existing knowledge of external and internal environments. The outcome has generated key concepts for design practice suitable for Thai village-based manufactures. The second stage presents Strategy Formulation. The preliminary research question was, “How can the design of products from a local community comply with measures

encouraged by the Sustainable Design Development to sustain increase its economy?”

The Strategy Formulation stage presents the relevant outcomes in terms of development perspective and a strategic plan for the effective strategy. The outcome yields a new way in which abstract Sustainable Design Development could be developed to service design practice in Thai village-based manufacturers. The outcomes of this stage are presented in terms of a practical design vision. Design vision includes an organization’s expectations of what they would like to achieve, factoring in the existing environment and its constraints and influences [10]. The new design vision for village-based manufacturers channels the design direction of example products development project to Stage 3, Strategy Implementation.

The third and final stage, Strategy Implementation, is presented the procedure formulated to take the new, enhanced design strategy with elements from the second stage, Strategy Formulation, and the design process into action. It allows application of the new enhanced design strategy in a real-life situation.

The improved design procedure shifts through a design protocol that integrates the generic model of design process to the model of sustainable enhanced design strategy. The combination of these two models presents a custom-built, practical design process better suited to the specific needs of individual Thai local manufacturers. This practical design protocol is displayed in Fig. 3. It can generally be described as six interactive phases of three design stages 1) Strategy Formulation 2) Task Clarification 3) Concept Design Generation 4) Evaluation & Refinement of Design concept 5) Detail Design and 6) Communication of Results.

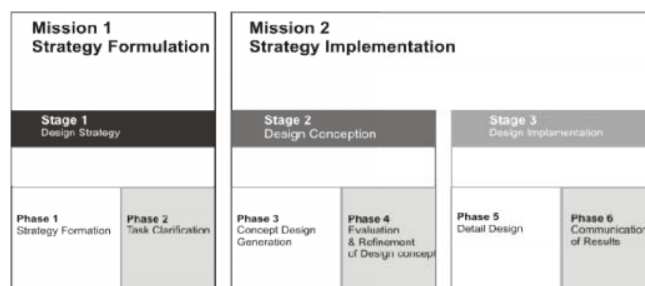


Fig. 3 Six design phases classified by mission and design stage

IV. DISCUSSION

In this study, the design key concepts model was originally developed to assist Thai village-based manufacturers to adapt a design outlook so it was suitable for their working environment. In the corporate key concepts paradigm, competency converges with the opportunity of design conditions facing a firm, determining the firm’s opportunities. The resultant empirically sustainable development concept supports realization of potential with exploitation of higher competitiveness.

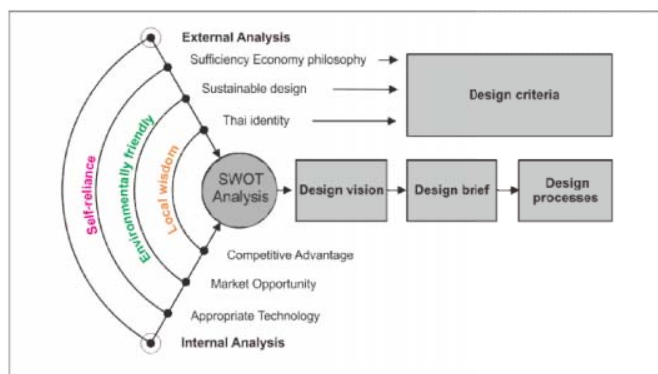


Fig. 4 Sustainable Design Development Strategy and practical design process for Thai village-based manufacturer

This study argues for a fresh, unique outlook, basing achievements on the developed normative set of design strategy key concepts: self-reliant, environmental friendliness and local wisdom [11]. These achievements are exhibited in the outcome of each design stage through the end product. The results of the research reinforce the other Thai product development research. The earlier research highlight two areas of existing knowledge are regarded as critical to sustainability in Thai village-based manufacturing.

First, Sufficiency Economy philosophy constitutes the key driver factor in The National Economic and Social Development Plan. Consequently, most of the product development sector will face opportunities and constraints in accordance with the Sufficiency Economy philosophy. Therefore, the skills and qualities required to succeed within the government's framework add value to existing products, providing greater profits. Advantages are conserved and benefits accrue from following the Thai Government's policy [12].

Second, sustainable design has emerged as a global trend in environmental consumerism [13]. World consumers appreciate linkage between environmental responsibility and more efficient and profitable business practices. The Thai Government realized that, long-term successful product development requires conservation of natural resources especially in rural communities [14]. Thus, official policy on social development has proceeded in accordance with Sufficiency Economy philosophy. Hence, sustainable design considerations fit the characteristic profile of Thai village-based manufacturing and also align with a significant trend of global consumption.

V. SUGGESTIONS

This research has contributed benefits to the field. Further research is able to build upon the theoretical framework, methodology and/or the outcome of the exemplar design project. On a macro scale, the theoretical framework and the methods used in this research can be expanded to serve the study of design practices in other developing countries. This may help policy-makers in other countries compose their own design strategy for divergent conditions and develop proposals that suit their local surroundings. On a micro scale, this study

helps Thai village-based manufacturers to conceptualize products that exploit a firm's unique skills, resources and distinctive competencies. If local people in other communities understand their competency, the prevailing opportunities and competitiveness using local resources, then they can take advantage of this work to develop extraordinary products that earn prestige and income for their community. As this research project involved handicraft manufacturers at local community level, a different scale and different category of industry would need a different exemplar.

ACKNOWLEDGMENT

The successful completion of this research would have not possible without the support from many of village-based manufacturers in Samut Songkhram Province. The author also would like to acknowledge the Research and Development Institute, Suan Sunandha Rajabhat University for providing with a scholarship that enabled to complete the research.

REFERENCES

- [1] UNEP RRCAP, *Sustainable Development Priorities for Southeast Asia*. Bangkok: United Nations Environment Program Regional Research Centre for Asia and Pacific, 2004, pp. 23-24.
- [2] Office of the National Economic and Social Development Board, *Summary the ninth national economic and social development plan (2002-2006)*, National Economic and Social Development Board Office of the Prime Minister Thailand Ed. Bangkok: Krusapa, 2000, p. 56.
- [3] A. Termpittayapaisith, "The 10th national economic and social development plan and creative economy," in *NECTEC Annual Conference & Exhibition 2008*, Office of the National Economic and Social Development Board Ed. Bangkok: Krusapa, 2008, p. 11.
- [4] A. Chick, and P. Micklethwaite, *Design for Sustainable Change*. London, Thames & Hudson, 2011, p.32
- [5] K. Hara, *Designing Design*. Baden: Lars Muller, 2007, p. 19.
- [6] D. McNabb, *Research methods in public administration and nonprofits management*. 2nd ed. New York: M.E. Shape, 2008, p. 63
- [7] D. Fetterman, "Ethnography," in *The Sage handbook of applied social research methods*, L. Bickman and D.J. Rog, Ed. Los Angeles: Sage Publications, 2009, p. 543-544.
- [8] J. Visocky O'Grady, *A designer's research manual: Succeed in design by knowing your clients and what they really need*. Massachusetts: Rockport, 2006, p. 121.
- [9] R. Thompson, *Manufacturing Processes for Design Professionals*. London: Thame & Hudson, 2010, p. 88.
- [10] M. Saaskilahti, and R. Takala, "Vision Concepts," in *Product concept design: A review of the conceptual design of product in industry*, T. Keinonen and R. Takala, Ed. Helsinki: Springer, 2006, p. 177-178.
- [11] J. Fiksel, *Design for Environment: A Guide to Sustainable Product Development*. 2nd ed. New York: McGraw-Hill, 2009, p. 46
- [12] S. Ryalie, *What is design and why was TCDC established?*, Bangkok: Thailand Creative & Design Centre Printing Office, 2007, p. 57.
- [13] D.W. Orr, *The nature of design*. New York: Oxford University Press, 2002, p. 89.
- [14] D. Masera, "Sustainable product development: A strategy for developing countries," in *Sustainable solutions: Developing products and services for the future*, M. Charter and U. Tischner, Ed. Sheffield: Greenleaf. 2001, p. 203-204.