# MANAGING EFFECTIVE LOGISTICS AND SUPPLY CHAIN MANAGEMENT FOR THAILAND'S ONE TAMBON, ONE PRODUCT (OTOP) - A WAY TO CREATING SUSTAINABLE BUSINESS

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**Abstract**

Under intense competition among small and medium enterprises (SMEs), "One Tambon, One Product" (OTOP product) need to adapt and respond to dynamic changes. Thai government has promoted the OTOP project to continuously boost Thailand's economic growth, and seek competitive advantages. However, there are evidences that OTOP firms lack knowledge and understand how to apply logistics concepts and strategy to their business operations.

The literature in OTOP businesses led to the conclusion that OTOP's logistics adoption has been overlooked. Further, studies on logistics in OTOP products are very few. The objective of the research is to examine issues how to apply logistics in functions for example purchase, production, warehouse and distribution. It also extends a knowledge body related to the status for adopting logistics strategies to OTOP entrepreneurs in Thailand.

A total of 240 questionnaires were distributed and 225 completed questionnaires were returned, generating a response rate of 94 percent. The hypothesis is statistically tested using SPSS version 11.0.5. The results indicated that there are strong relationships between OTOP adoption in functions and enhancing their competitive advantage in term of cost reduction and service level improvement. The implications reflect that encouraging and motivation adopting an effective logistics strategy in functions would offer opportunities, including creating sustainable competitive advantage.

**Keywords:** Logistics, OTOP, strategy, purchasing, operations, Thailand.

## Introduction

Under intense competition among small and medium enterprises (SMEs), "One Tambon, One Product" (OTOP product) need to adapt and respond to dynamic changes. Thai government has promoted the OTOP project to continuously boost Thailand's economic growth, and seek competitive advantages. The programme was designed to upgrade the standard of living of the poor, mainly rural farmers which were a majority of Thai population. In 2004, sales volumes were estimated up to US$1.63 billion. In 2005, the government set a growth target for OTOP exports of 25-30%. However, there are evidences that OTOP firms lack knowledge and understand how to apply logistics concepts and strategy to their business operations.

After launching the project, there are problems and barriers associated with the OTOP growth, especially, in the area of marketing, production, and logistics. Even though Thai government put full efforts to use marketing and production strategies for developing and promoting OTOP products in international market. However, the role of logistics has been still ignored or at least seen as cost-generated activities. Therefore, the objective of this paper is to survey the current status of logistics adoption in Thailand's OTOP entrepreneurs. It also examines factors affecting the implementation, including using logistics strategies for building competitive advantage. Finally, the effectiveness and efficiency of OTOP firms' logistics implementation will be examined.

## Literature Review

The literature from four leading logistics journals between 2005 and 2012 (International Journal of Logistics Management, International Journal of Physical Distribution & Logistics Management, Journal of Business Logistics, Logistics, and Transports and Transportation Review) were reviewed to address issues related to implementation of logistics strategies in SMEs. The relationship between logistics implementation and its organizational effectiveness, especially focusing on the SMEs was also examined.

Logistics management refers to the art of managing the flow of physical material and information from source to user (1). It encompasses all of the information and material flows throughout an organization

and interorganisations (2). It includes everything from movement of a product or from a service that needs to be rendered, through to management of incoming raw materials, production, storing of finished goods, its delivery to the customer and after sales service (3). The role of logistics function is a key determinant of business performance to ensure that there is smooth flow of material and information throughout a company's supply chains (4). Logistics has also become more prominent as a critical success factor in competitive advantage (5, 6) through reducing costs and improving service level or responsiveness to customers.

Problems arising in SME firms include delayed and inaccurate information, incomplete services, slow and inefficient operation, and a high product damage rate (5). While the western small firms are developing and implementing quick response systems, efficient consumer response, cross docking and other areas of logistics management (3, 4, 5), these concept are not yet well recognized by Thailand's SME and OTOP entrepreneurs in making a strategic difference in competitiveness. The SMEs effectively lack strategic logistics formulation and implementation. The consequences are an inability to provide interlinked services, high operating costs and lack of flexibility in responding to changing demand.

Authors (4, 5, 6) identified the critical success factors in effective logistics management including not only good planning, close relationship with partners, effective purchasing, warehouse and distribution management, and effective order processing, but logistics concept and mindset would be pervasive to all levels of an organisation.

The literature review led to conclusion that SMEs are increasingly recognizing the role and importance of logistics management in purchasing and operations as a strategic tool for enhancing competitive advantage. It revealed that effective logistics adoption would be carefully considered associated with factors affecting physical and information flows. It also needs to consider internal and external environmental factors. Further, it found that studies on Thailand's OTOP products were few and very limited, especially in logistics management. The research reveals that OTOP entrepreneurs have not given importance or priority to logistics management. Logistics activities (e.g. warehouse transport and purchasing) are overlooked as potential areas for building competitive advantage.

**Research Methodology**

First, the study initially conducted exploratory interviews to generate broad views of OTOP operations. It collected data in *two* major sources. Second, secondary sources were conducted through *literature review* and *data analysis*. Thirdly, primary data were collected by using *survey method*, *in-depth interviews* and *observation methods* for examining a relationship between variables and answering research questions.

The questionnaire was used for eliciting attitudes and perceptions of OTOP entrepreneurs in Chonburi province, Thailand. First, pre-testing was carried out to thirty five respondents, which found Cronbach's Alpha equaled 0.92. There were some minor changes in items of questionnaires. Three weeks later, the second pre-testing was conducted on the same group of respondents, with Cronbach's Alpha equaling 0.94. The result showed that the research instrument had a highly acceptable degree of reliability.

The key measures were based on assessing their perceptions related to roles and the importance of logistics, including implementation of logistics functions. Further, they also examined factors affecting implementation and effectiveness and efficiency after implementing logistics strategies in their operations. The questionnaires were randomly distributed to sampling targets by applying a five-point Likert-type scale. The 240 questionnaires were distributed in three major channels: postal mail, face-to-face and electronic mail (e-mail). The total response rate generated was very good with 225 respondents or 94 percent. The span of time took two months. The data was processed with SPSS 11.0.5. Verifying dimensionality and reliability of each construct that included factor analysis, and item-to-total correlation and regression analysis were conducted.

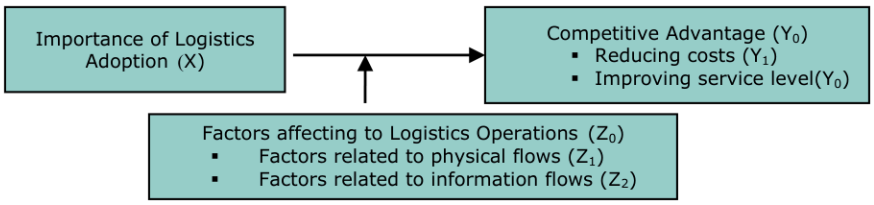


Figure 1 Theoretical framework of the study

Based on the theoretical framework, variable **X** represents OTOP firms' adoption and implementation of logistics activities. Variable $\mathbf{Y_0}$ represents effectiveness and efficiency in term of cost reduction and service level improvement after adopting logistics management in business operations. After having conducted factor analysis, the variable was grouped in 2 parts: $\mathbf{Y_1}$ **and** $\mathbf{Y_2}$ which were building competitive advantage through cost reduction and improving service level to customers respectively. Variable $\mathbf{Z_0}$ included factors affecting logistics implementation and using logistics to build competitive advantage. The variable **(**$\mathbf{Z_0}$) was divided in 2 parts: $\mathbf{Z_1}$ and $\mathbf{Z_{2\ were}}$ factors related to physical flows and information flows respectively

The model was based on two hypotheses of small enterprise behavior to logistics implementation and using logistics strategies for building competitive advantage:

1. OTOP entrepreneurs' perception of logistics need and implementation were positively associated with building the firms' competitive advantage.
2. There was a relationship between factors affecting logistics operations and effective logistics implementation. Identifying the factors would facilitate OTOP firms to develop carefully more integrated logistics strategies.

**Finding Results**

The results show that samplings are normal distribution. It is significantly used as representative of the population. The variable $\mathbf{Y_0}$,which means adoption of logistics in OTOP firms to build competitive advantage can be divided in two groups: $\mathbf{Y_1}$ **and** $\mathbf{Y_2}$ which are building competitive advantage through cost reduction (e.g. operating costs, logistics costs), and improving service level to customers (e.g. responsiveness, flexibility) respectively. Variable $\mathbf{Z_0}$ includes factors affecting logistics implementation for creating value added in OTOP products. The variable is also divided in two groups: $\mathbf{Z_1}$ and $\mathbf{Z_2}$, which are factors related to physical flows (e.g. effective warehouse, transport), and information flows (order processing, IT for logistics) respectively.

Table 1 Summary relationship between variables

| Variable | | Sig. | P-Value |
|---|---|---|---|
| **Independent** | **Dependent** | | |
| X | $Y_1$ | 0.000 | 0.784 |
| | $Y_2$ | 0.001 | 0.842 |
| $Z_1$ | X | 0.001 | 0.702 |
| $Z_2$ | X | 0.001 | 0.760 |

The factors affect to OTOP firms' operations and business. The results show that most firms identify the following factors: lack of raw materials (85%), lack of skilled labors (75%), problems related to product quality (74%), intense competition (67%), economic conditions (64%), fuel prices (64%), customer demand (61%), funds for investment (53%), and support from government sectors (47%).

It also identifies factors influencing logistics implementation, as the result reveals as follows: warehouse management system (91%), after sale services (86%), fuel prices (83%), information technology (IT) for logistics (83%), order processing (80%), material management (78%), transport system (75%), logistics knowledge and management (75%), physical distribution management (64%).

| Variable | | R Square | Adjusted R Square | Regression Result | | Regression Equation |
|---|---|---|---|---|---|---|
| Independent | Dependent | | | Sig. | Beta | |
| X1 | Y1 | 0.068 | 0.054 | 0.032 | 0.166 | Y = 2.866+0.17X1+0.136X2 |
| | Y2 | 0.07 | 0.058 | 0.013 | 0.225 | |
| X2 | Y1 | 0.068 | 0.054 | 0.007 | 0.136 | Y = 3.345+0.225X1+0.11X2 |
| | Y2 | 0.07 | 0.058 | 0.005 | 0.011 | |
| Z1 | Y1 | 0.16 | 0.06 | 0.002 | 0.085 | Y = 4.18+0.17X1 - 0.198X2 - 0.198X3 |
| | Y2 | 0.05 | 0.036 | 0.049 | 0.110 | |
| Z2 | Y1 | 0.02 | -0.02 | 0.002 | 0.047 | Y = 4.12-0.047X1 - 0.025X2 - 0.02X3 |
| | Y2 | 0.021 | 0.001 | 0.041 | 0.084 | |

Table 2 Summary of Regression Results

After testing the hypotheses, the results show a significant relationship between tested variables in some degrees. It found that there is a moderate relationship between the adoption of logistics management **(X**) and building competitive advantage through reducing costs **($Y_1$)** and improving service level **($Y_2$)**. Further, it also found that there is strong relationships between these factors and effective logistics implementation. Importantly, the factors have influence in a higher degree on logistics operations and management, especially factors related to information flow. Physical flow **($Z_1$)** has a relationship to a lesser degree with improving service levels to their customers.

**Discussion and Research Implications**

The results indicate significantly strong relationships between variables. The first hypothesis reflects that entrepreneurs recognize the importance and need of logistics implementation for building and enhancing their competitive advantage. Although adoption of their logistics tends to reduce operating costs more than improve service levels, it also reflects that entrepreneurs have an expectation of outcomes from logistics implementation to a high degree. Further, it found that resources have not been fully utilized. Many Losses of raw materials, for example, occurred in production and movement processes. Transporting finished goods to markets took several weeks, instead of a few days. The symptoms reflect that entrepreneurs sufficiently lack essential skills and knowledge how to effectively implement the logistics strategies to utilize efficiently their resources to minimize costs and improve service levels to customers.

It also found that some factors using IT for logistics for example have a strong contribution and influence on logistics functions and operations. The question is why entrepreneurs provide the factors related to information flow a priority. Mainly, the reason is that entrepreneurs use the internet as importance channel for transaction and receiving orders from customers. However, the internet has been narrowly limited of using only the four and five star products'. Further, some factors related to physical flows influence logistics implementation. Poor warehouse and distribution management, for example, would influence to logistics implementation, in a negative way including their competitive advantage.

While the study covered a wide range of OTOP products, it only surveyed in a specific province. It uses an inductive method or inferential statistics. It studied a small group, but the results should tend to represent the whole population. Therefore, in a broad view, OTOP entrepreneurs would recognize logistics' role and importance as a value-added tool for their operations, including considering as key driving for enhancing their competitive advantage. They would increasingly put more focus on adoption of logistics techniques and strategies with their operations, especially in weak logistics functions (e.g. inventory, distribution and transport management).

Further, entrepreneurs would seek an optimized way for managing logistics functions to reduce costs, in particular non-value added costs. Also, to improve the service level, they would understand importance of customer service, including how to effectively and efficiently manage physical and information flow with higher service quality to enhance customer satisfaction. Controlling is one of the major activities which has been ignored. They would adopt a performance measurement system to monitor and control logistics functions effectively and efficiently. The research implications reflect that building and adopting effective logistics and supply chain strategy offers opportunities to create sustainable competitive advantage. The role of support and assistance from government sectors is still needed, including seeking a way to build sustainable networks among OTOP stakeholders.

**Conclusion and Recommendations**

The paper examined issues related to logistics in the case of Thailand's OTOP products. The literature was reviewed in area of small and medium enterprises (SME), OTOP products, logistics and supply chain. The review provided a foundation for clearly developing a conceptual framework and research objectives. The rigorous methodology was conducted to generate a reliable and valid measurement instrument. Questionnaires and in-depth interviews were a major tool for collecting data. The sampling was randomly chosen to ensure that it represented characteristics and attributes of the population. The obtained data was analyzed using SPSS.

In conclusion, OTOP entrepreneurs have been limited in understanding the role and importance of logistics affecting their operations. However, it found that entrepreneurs have mostly low education, including low skills and knowledge related to logistics implementation. The importance of factors influencing logistics operations has been ignored. Further they lacked a creative system, process, and culture to support systematic adoption of logistics activities. In addition, they lacked efficient and effective integration of activities related to physical and information flows. Therefore, they urgently need to develop and improve understanding and knowledge of logistics to entrepreneurs. Including encouraging them for adopting new logistics techniques and management. Supports and assistances of government sectors still need with the aim is to building sustainable networks, including providing essential facilities and infrastructures.

**Further Research**

The study examines issues of Thailand's OTOP industry related to logistics implementation and its effectiveness, and it provides broad views of OTOP products (foods, cloths and gifts), but needs for focusing on logistics implementation on specific products are necessary so that the results can be effectively applied to specific OTOP products. Further, studies mostly use questionnaire survey to the respondents; it was found that it is difficult to make clearly understandable to entrepreneurs, who have mostly low education, through all items of questionnaire. Future research would find an appropriate methodology to elicit their attitudes and opinions based on research objectives.

**The author's background**

Dr Taweesak Theppitak got three bachelor degrees on political science, and marine engineering, and law. He also graduated on Master of Technology Management and Business Administration from Griffith University and University of Southern Queensland, Australia respectively. After graduated, he got scholarship from the CHE and Burapha University for studying in doctoral degree, and completely finished the DBA from University of South Australia. After having graduated, he completed two postdoctoral program under supporting scholarship from Thailand Research Fund (TRF).
He has currently been working as Associate Professor in Logistics and Supply Chain Management. His research focuses on areas related with management, Tourism Logistics, maritime business, logistics & supply chain, strategic management, port management. He has been now working as Director of Logistics and Management Research Centre, Faculty of Logistics, Burapha University.

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