

# An Inventory Management System of Frozen Food Entrepreneur: Requirement and Design

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*Abstract*— System design and development of inventory management systems had the objectives of this research were to study workflow and core business process for frozen food, to study the problems of inventory management and to develop frozen food business management system in small and medium businesses. That can be used to manage inventory properly with studying information form entrepreneurs/manager and workers of inventory management or related field. This research uses data collected from depth interviews and questionnaire therefrom analyze data of the statistics for instance were percentage, mean, and standard deviation. Including analyzing problems arising from operations and system requirements. The research found that; most of businesses were conducting wholesale business and there are 10 – 20 workers. The processes associated with the sales and transportation. The most common problem is about finding products, lost product, long time to find product data/customer data, overflow inventory and lack of stock. Since most of the mistakes of practitioners who lack knowledge and skills. This information about as accompanying information for analysis and design for the development of inventory systems.

**Keywords-** *System development; Inventrory system Frozen food business; Requirement and Design;*

## I. INTRODUCTION

Currently, most of companies/organizations that manufacture or purchasing and selling products often there is a problem in storing products into inventory. Which is a warehouse or raw materials for production to send the products to customers as an intermediary in the transfer of products. Inventory management is important for current business operations. Furthermore, the factors used in determining the amount of inventory are considered difficult. It is essential that entrepreneurs need to know what it can be used to assist in determining the amount of inventory at the right level as knowing the amount of inventory that is suitable for storage and can be controlled. In addition, the inventory management system that would effectively reduce the cost of operations of the

organization by maintaining the level of service to customers has continued.

Inventory management is the main of development for the industrial sector. Especially Small and Medium Enterprises (SMEs), a private business operated by a single owner or entrepreneur. Today, there are many in the business and Personnel in small and medium enterprises must be encouraged to understand the concept of inventory management that will be used in strategic planning, business process improvement. [1] The relationship between partners, understanding of various standards to lead to consistent business management, and able to meet the needs of the final client effectively.

The problems encountered in operating the business of frozen food. As the establishment of a small and medium enterprise (SMEs) with the size of the company and the organization is not very large and focus on monopoly management and decision-making only executives or entrepreneurs. Is one of the risks in business management that requires experience and immediate solutions. Which in some situations may be a solution to problems that are not directly as a result, the overall operation of the business did not go smoothly.

## II. CONCEPTUAL FRAMEWORK

The scope of the study is divided into various issues to cover the objectives of applying the information technology system to the organization and inventory management.

The research focusing on the application of frozen food business management system to allow business processes to be more efficient with the objective of developing a system that can manage product items.

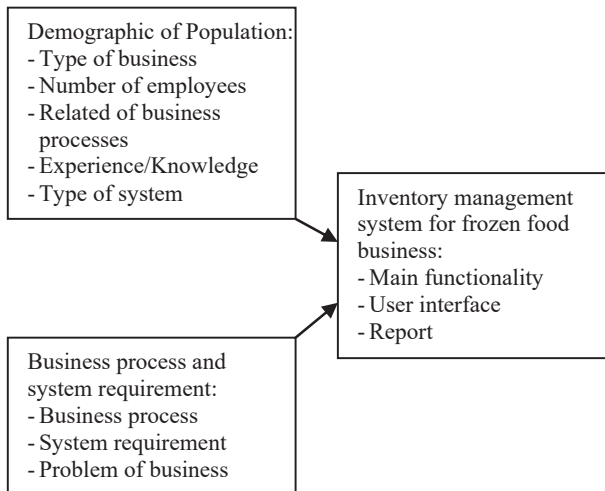


Figure 1. Conceptual framework

### III. LITERATURE REVIEW AND RELATED STUDIES

Wholesale business is a business that helps the economy grow in the country like other businesses by generating revenue to the people. At present, the wholesalers are scattered throughout virtually all types of businesses and can also increase the export products to international markets. Some wholesalers can contact to international market. Therefore, marketing information is very important for wholesalers because they can support contact information, information of inventory management system to increase the export products of opportunities. At my best guess, wholesale business entrepreneurs are facing difficulty in competing with rivals that have adjusted their marketing strategies and expansion into more comprehensive in different areas. Insights into the wholesale business of Kasikorn Thai [2] said that: For the domestic market, wholesalers are faced with competition among the major wholesalers, retailers or modern trade entrepreneurs such as department stores, hypermarket, Convenience store, with plans to continuously expand new investment branches. Especially in provinces with potentials such as provinces along the border Because it is expected that after the opening of the AEC free trade in late 2015, Including investment promotion policies in the Special Economic Zone (SEZs) of the public sector. [3] Especially in border areas both inside and outside the industrial estate will increase the economy and trade in the area which caused a large amount of investor group motivation.

The ERP system is a software that can relate to various relevant functions in the organization. [4] Relating processes in the organization through a database that is central to the ERP system is different from other information systems in terms of real-time data capability and enhances the ability of organizations to rapid adjustment. [5] However, the installation and

implementation of the ERP system is a very complicated task. [6] The ERP system has a relatively high cost and often take a while to implement ERP systems in organizations. As well as the ERP system that can be purchased from software vendors. However, many organizations that implement ERP systems in the organization needing to analyze of system and business processes concisely. It turned out that ERP system does not correspond to the needs of the organization.

The implementing the ERP system needing staff to participate in supporting strategic changes for the organization as well. [7] The installation and use of ERP systems in the organization need to receive appropriate resource allocation. Which is important and necessary to redesign of business process and pattern of work flow.

Arunthai, [8] the research results on ERP implementation systems in Thailand: Said that the reason for implementing ERP systems in organizations for Thai-Owned Companies and Multination Corporations is different, the main reason that Thai companies decide to implement ERP systems in the organization. The expectation is that the ERP system would be able to resolve the problems in the business and can meet the needs of enterprise information technology. To enable the organization to achieve world-class performance.

Inventory management means procurement, issue and storage products [9] for the appropriate size and quantity of each type of product. By considering the quantity of orders that are economical and on the situation on the customer's needs. In order to generate sales and be able to maintain the market share for the storage and maintenance of products to achieve maximum efficiency and reduce inventory levels

### IV. ANALYSIS OF DATA

For research and development there are 4 steps in the process as follows: 1: Study and analysis of user needs 2: System design and development 3: Usability testing and evaluation and 4: System improvement. The researcher used a questionnaire and interviews as a tool for collecting data for research by the population used in research such as entrepreneurs and workers related for business processes that operate frozen food.

The interview with entrepreneur's employee performance, system requirements including problems in the overall business process. And use questionnaires to inquire about general characteristics of the organization, the level of competence about the operation process and system requirements including the level of opinions about the issues that arise in the workplace.

TABLE 1. DISPLAY FREQUENCY AND PERCENTAGE FOR THE DEMOGRAPHIC OF THE ORGANIZATION

Demographic of the organization	Number of frequency	Percentage (%)
Types of business		
Manufacturing	19	38.0
Wholesale and retail	31	62.0
Number of employees		
< 10 employees	16	32.0
10 – 20 employees	24	48.0
21 – 30 employees	6	12.0
> 30 employees	4	8.0
Related of business processes		
Manufacturing	11	22.0
Purchase	7	14.0
Sales/Transportation	24	48.0
Financial/Accounting	8	16.0
Experience/Knowledge of Inventory system		
Have	18	36.0
No have	32	64.0
Type of system		
Software packages	38	76.0
In-House development	12	24.0

The majority of respondents were conducting wholesale business and there are 10 – 20 workers. The processes associated with the sales and transportation, most have no experience or knowledge about the inventory system and use software packages.

TABLE 2. DISPLAY FREQUENCY AND PERCENTAGE FOR SYSTEM REQUIREMENTS/SUB-SYSTEM IN INVENTORY SYSTEM

Function/Sub-system	Number of frequency	Percentage (%)
Customer management	47	94.0
Product management	50	100.0
Inbound management	48	96.0
Outbound management	50	100.0
Report System	46	92.0
User management	36	72.0

The percentage of function/sub-system that are almost no different. Product management and outbound management system ranked first, 100 percent, followed by a 96 percent inbound management system, followed by 94 percent customer management system, respectively. Which collecting information on system requirements and sub-system in the inventory system, the respondents can choose more than 1 option.

TABLE 3. DISPLAY MEAN OF THE ABILITY TO OPERATIONS AND SYSTEM REQUIREMENTS

Ability to operations and system requirements	Level of ability	
	$\bar{x}$	Meaning
Ability to operations		
1. Entrepreneurs are executives in various fields in almost all businesses.	4.54	Most
2. Entrepreneurs promote the use of inventory systems in the organization	4.31	Most
3. Planning and adjusting the business plan to suit the changing situation continuously	4.26	Most
System Requirements		
1. There is an inventory monitoring system for inventory systems.	4.80	Most
2. Need to manage product distribution / order	4.76	Most
3. There is a function to search for customer information and product information.	4.65	Most

From the table above, it shows the ability to operations and system requirements to summarize top three results in order to reflect the operational pattern and power of decision-making to the operation process. To analyze and design the next system development

TABLE 4. DISPLAY MEAN OF THE OPINIONS OF USERS ABOUT PROBLEMS FOR BUSINESS MANAGEMENT

Problems for business	Level of Opinions	
	$\bar{x}$	Meaning
- It takes a long time to search for product/ customer information.	4.28	Most
- Inventory system, resulting in more efficient operation.	4.28	Most
- It takes long time for the preparation of various report summaries for data collection from multiple sources.	4.22	Most

Problems for business	Level of Opinions	
	$\bar{x}$	Meaning
- Entrepreneurs have the power to make decisions on the sole product inspection. As a result, the operation process is delayed.	3.68	More

From Table 4, the summary of the first 3 results and the final comments about problems that arise with the overall business management. Most respondents commented that it takes a long time to search for product/customer information and inventory systems, resulting in more efficient operations

The summary of interviews with entrepreneurs/managers. In-depth interviews with data comprising 4 entrepreneurs and 6 managers. It appeared that summarizes the issues in the fishbone diagram.

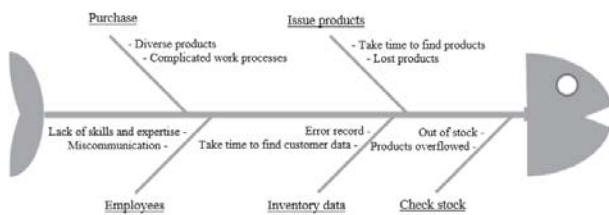


Figure 2. Fishbone diagram for summary of problems for inventory system.

Warehouse process flowchart

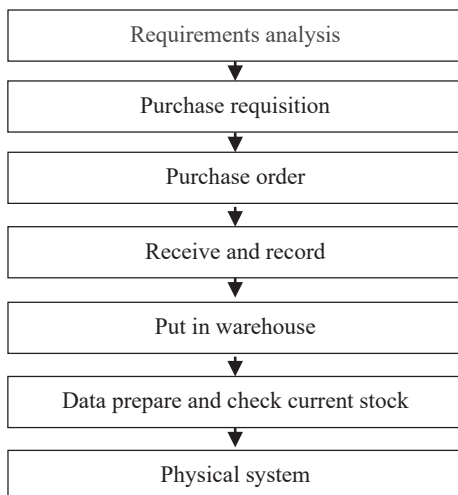


Figure 3. Fishbone diagram for summary of problems for inventory system.

Data linking for the first part is to bring the inventory management system to use in the organization to go into the department management system or other parts. Including to respond to predictions and forecasts Reduce the risk of managing and distributing products. System requirements for basic functionality they want to have a function that can record customer data, search data by customer names, and other product management systems. There are separate types or types of products and there are different storage units. Which can be linked to the receipt of goods in and out to be able to check the issue of products and print out reports.

From the system requirement and analysis to be the context diagram as follows.

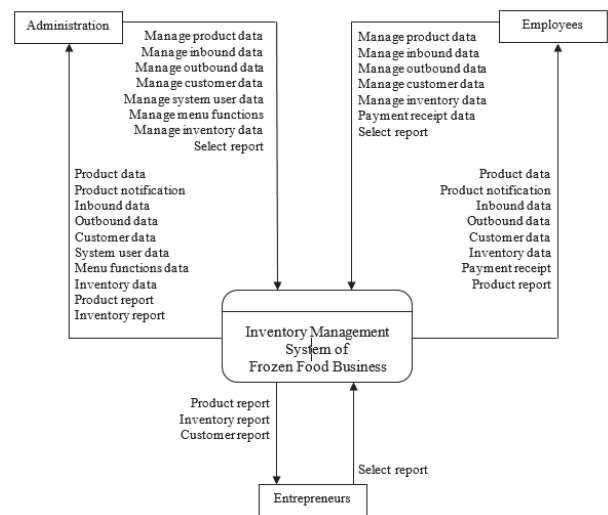


Figure 4. Context diagram

After analyzing the system requirements, we took Software development life cycle (SDLC) is a concept used in project management to describe the stages and tasks involved in each step of writing and deploying software. An SDLC model maps the software development process from its initial planning through maintenance and eventual retirement of the completed application as show in figure 3.

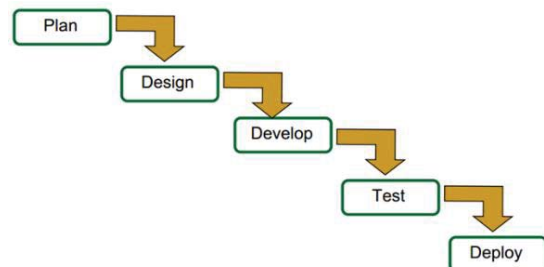


Figure 5. Software development life cycle (SDLC).

## I. CONCLUSION

Development of inventory management system for frozen food business need to study the process leading to the current working model is in development including problems and the need to use the inventory system in business. Then the data was analyzed, designed and developed inventory management system for frozen food business. For further details relating to both internal and external for the purpose of information came continually to update and improve the business of frozen food can be applied to the environment and operational processes specific as possible.

The resulting system was found. Entrepreneurs and operators accept and acknowledge the benefits of using technology in that business and that technology can offer valuable options for the various operations involved in the business. In particular, the management of inventory. Commented that if using technology in the right way will result in better quality of work and resulting in faster work, reduce errors and risks that may occur that affect the overall operation process.

Part of the program inventory. It turned out that can check data from the process of customer data management until the system user management. A system that can manage the implementation process in the warehouse is full and can verify the retroactively.

## II. LIMITATION AND FURTHER STUDY

The study also examined the use of the system to cover all departments. Which some employees still do not have experience, knowledge of inventory systems including adhering to the original work. Therefore, organizations should have a policy on the introduction of new technologies into the enterprise. In order to stimulate and see the importance it should be supported by the operator or manager experience. To make use of information technology in warehouse management is effective.

There should be additional study factors that affect the change in the operational process. Since the current business environment has changed rapidly. There are always factors that affect both internal and external factors that are always emerging.

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