

## Research Article

### Study on Frozen Food Industry's Integrated Information Management Strategy Based on ERP

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**Abstract:** In order to study the causes of weak frozen food industry management in China, especially for the industry that produces the high repetitive and high corrosion production using information centres, we analyze that the approach of integrated information management strategy is emphasized in developing of computer integrated Enterprise Resource Plan (ERP). ERP comprises of HRM, financial management, manufacturing management and inventory management. This study focuses on computer integrated information and ERP has impacts on the information use in an organization and how ERP has impacts on the business strategy. We hope these can accelerate the construction of frozen food industry's integrated information management strategy based on ERP, promote sustained and rapid growth in frozen food industry, constantly improve the guarantees for product quality and safety and promote the simultaneous development of integration and informatization.

**Keywords:** ERP system, frozen food industry, integrated information management strategy

#### INTRODUCTION

The frozen food industry in china developed rapidly at the past decade. In the five years through 2013, industry revenue is expected to increase at an annualized 26.9%. The strong growth is mainly due to higher disposable incomes, higher product prices, changing consumption trends caused by the faster pace of modern life, a wider varied of frozen foods, product quality and safety improvements, high growth in mid-range and high-end product segments and the new market development. Over the five years through 2018, the frozen food industry revenue is expected to increase at an annualized 12.9%, with the rate of product innovation and promotion also accelerating (Xie *et al.*, 2008). Additionally, manufacturers will increase investment in brand building and establish sales agents and corporate in china's counties, towns and some developed rural areas. The industry concentration level is also expected to increase further, with an increase in the number of mergers and acquisitions in the frozen food industry (Yu and Zhao, 2009).

International frozen food networks has been characterized based on the leading multinational corporations, many suppliers the basis of division of labor models complement each other. In this model, industry, international competition is divided into two levels: first level, is the competition between multinational companies, such competition in the industrial chain of high-end, leading the industry's

market development; second level, is one of many suppliers in the complementary division of labor competition in the market, such competition at the low end of the industrial chain and the competition fostered a large number of "world factory". The first level of knowledge and technological innovation-based competition, the higher interests of the competition; second level is the scale, efficiency, quality, cost, price competition, it is subordinate to the first level, the economic benefits of competition to get lower. However, in the development process has also accumulated the capability of independent innovation is weak.

Gradually understand the business strategies of foreign enterprises, Chinese frozen food enterprises have also awoken. Domestic famous frozen food enterprises, in the development of international markets, learn the business strategy in developed countries with a good business philosophy and corporate reputation, based on the growing occupation of Asia and Africa and other third world countries, market share, In the face of international well-known brands are also not shy in order to "innovative future strategy" progressive crack the door to international markets, Europe and the United States has become the industry leader well-deserved. Due to device performance and the international manufacturing standards at the same level, from the equipment sales market has been well received by customers in Europe and the United States favored.

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In recent years, the China's government increased assistance and protection to the agricultural sector, increasing agricultural incomes, adjusting the agriculture structure, promoting the rural economy and developing industrialized operations for agriculture (Mingwei *et al.*, 2008). At the same time, the China's government selects leading agricultural enterprises to assist their development and promote the development of agricultural product processing industry. The China's government supplies direct subsidies to frozen food manufacturers and sales corporate to encourage the local industrialized operations of agriculture and exports of frozen foods.

ERP (Enterprise Resource Plan) is a dynamic Foundation based on development strategy focused on sustainable frozen food industry's value chains. Our mission is to constantly improve frozen food quality and safety in china, promote the simultaneous development of integration and informationalization and achieve a qualitative leap in domestic and international market.

#### MATERIALS AND METHODS

Analysis and rationalization of the total information system and strategy should precede computer integration. Techniques such as production flow analysis and computer simulation are important ways of achieving this, This results in more logical and efficient processing, materials handling and therefore manufacturing flow and orderliness, promoting an effective basis of visibility, information and control and maximum benefits from computer information integration (Abad *et al.*, 2009). With the further development of china's economy, the faster pace of modern life and greater variety in frozen food options, domestic demand is expected to continue to increase

strongly. Additionally, people will pay more attention to product quality, safety and nutrition, the development of cold storage and logistics will continue to contribute to the frozen food industry's development. However, frozen food production in china industry revenue is slowly increasing in future (Fig. 1).

**Impact to information flow in organization:** We know that ERP system is the modern integration technology which refers to aspects such as logistics, information use, user satisfaction, information quality etc. At first, we introduce how ERP influence the information flow. The dual cores of ERP system are management ideas and information technology. Information technology means utilizing the information technology to efficiently integrate the funding low, logistics low and information low and then makes them work in coordination in order to achieve optimal performance.

**Impact to information sharing:** We know that ERP system has greatly influenced the information flow, capital flow and logistics flow and then it is better for enterprises to realize the importance of information sharing. There are two kinds of information sharing: one is at the data level and another is at the business-process level. Based on the ERP system, the middleware serves as an information backbone to transfer and convert data among disparate ERP subsystems. In this way, the distributor attempts to implement distributed transactions and integrated manager must process the whole business. With the compressive and clear infrastructure, the information sharing in enterprises are more effective (Xie *et al.*, 2007). Therefore, the business process of ERP system can simplify the information sharing and then make the information sharing more effectively.

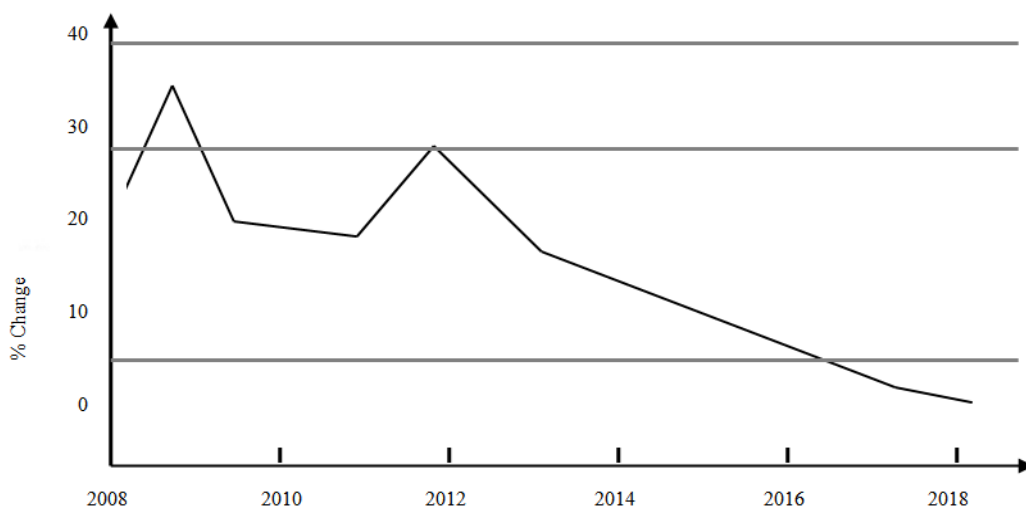


Fig. 1: Frozen food production in China industry revenue; National Bureau of Statistics China

**Impact to information processing:** The information flow and information sharing have been discussed in the above sections. Information processing involves gathering and representing information, recording and holding information, getting information when needed. With the help of ERP system, all departments share information, so information gathering and information recording will be very convenient and quick and the data gathered and recorded will be more accurate. On the other hand, many operations on data can be done by the system automatically, such as different kinds of queries, some statistics on orders or inventory, financial reports etc.

**Impact to production schedule:** Which are quite important to the frozen food companies. And they always have to make production schedules before producing. When they do not use ERP system, the planners can not get the customer's demand amounts on time. ERP system has the function of MRP (Material Requirement Planning), so the production schedule can be particular to every parts or materials that are needed. This is quite helpful to production and procurement departments. The information flow changes brought by ERP system, the managers could more accurate business strategy on production schedule and reduce the production cycle.

**Impact to inventory:** Inventory management may be the most widely talked subject in enterprise management. Most of the frozen food companies pay highly attention to it, because it affects the cost of production and sales. Inventory in a company usually includes the materials purchased for production, products stored for customer's order and some semi-products for machining. So reducing the amount of inventory refers to the three. Firstly, ERP system help material supplier to attain the manufacture's production schedule information in a short time, then they can prepare and deliver the demanded material to the manufacture in time, so that the manufacture could decrease the material inventory spared for production (Amador *et al.*, 2009). The traditional way of the information flow might be through fax, telephone etc. Secondly, ERP system help the manufactures get the customers' order information much faster and more accurate than before, so the manufacture could response to the need more quickly. In another word, they do not need as much product inventory as before. Thirdly, for the sake of shorter production cycle, the semi-production inventory could be reduced. Meanwhile the ERP system also include inventory management function which help the inventory manager get the inventory amount of any material or product very quickly, so that they could make wise decision about the inventory level.

In a word, we use method of Business Process Reengineering (BPR) to improve their business process. ERP system integrates all the function including

production, sale, inventory, finance and HR etc. however, the management system they used before did not cover functions except for material management. Therefore, we need to assemble all the processes seamlessly in order to make the information flow in the ERP system fluently. At the same time, we also make some improvement to the inappropriate processes. It is obvious that the business process definition is a critical part of a management system, including the ERP system.

## RESULTS AND DISCUSSION

In recent years, ERP information technology and systems for frozen food industry is highly specialized and is increasingly being developed by domestic manufacturers.

**Strategic overviews about benefits from ERP system:** As we all know, ERP system is software that integrate all the information processing functions across a company such as production, Human Resource Management (HRM), order management, inventory management, procurement, financial reports. It is obviously the companies that have utilized the ERP system would have many benefits from it. The intangible ones are more fluent information process, internal integration and better customer service (Liu *et al.*, 2007). While the tangible ones covers lowering cost in order management, HRM, purchasing management and inventory management. In a word, the overall profitability improves a lot.

**Strategic decision-making mostly connecting with senior managers from a company:** They make strategic decisions on all aspects and make decision only with their courage and insight. But at most of the time they need information to support and help them, because it is believed that the data tells truth. The information could be the data about sales in recent months or years, the data about cost of inventory, the data about cost on research work etc. ERP system has all information they need and could show in the format on their special needs. So the high level managers could make decision in a short time and which adds flexibility to a firm. According to literatures on Decision Support System (DSS), ERP system constitutes a wide variety of information that provides a perfect basis for decision making (Amador *et al.*, 2009). In the way, ERP system itself can do some help to decision-making and it can also provide large amount of basic data for the DSS which is professional in strategic decision-making. In recent years, more and more ERP providers are trying to realize the function of decision making in their systems and this will make ERP more useful in helping senior managers with the integrated information management strategy.

**From the perspective of frozen food industry's information management strategy:** It benefits the company who implement ERP in three aspects. Firstly, it helps the production managers work out more accurate production schedule, the financial managers make reasonable investment and financing plans, marketing managers make marketing plans and the human resource managers make appropriate personnel plans. Secondly, it lowers the cost of inventory and helps the inventory manager make wiser inventory level. Thirdly, it helps the manager in decision-making. On the other hand, ERP implementation sometimes fails and unfortunately this would make the company cost a lot of money but get meager results (Ruiz-Garcia *et al.*, 2008). Therefore, it seems important to learn the factors which have relations with successful implementation of ERP system. The third aspect is about ERP implementation. We will study a company's ERP implementation journey and find out some tips for ERP implementation.

In optimized human judgement increasingly needs the control and information systems back-up that ERP is capable of providing, particularly against the background of increasing rate of technological change, greater complexity of tasks and interactions. Frozen food industry's strategy and marketing strategies will have to deal in the future (Mingwei *et al.*, 2008). Recent years the new advanced manufacturing technologies are developed rapidly. We studied the relation between ERP and the frozen food industry's integrated information management strategy according to Chinese conditions.

**Not all implementations ending up with success:** As we all know, only the success ones can attain huge benefits from application of ERP system and the failed would bear loss more or less, depending on their cost

on implementation. To be clear, in current context, it will limit the impact of implementation to be successful, not the failed. Furthermore, after discussing the case study, we attend to propose some good suggestions on how to implement ERP successfully. Based on ERP frozen food industry's future development strategy is based on some factors; the two most critical are customer lead time and manufacturing lead time. Manufacturing lead time identifies the maximum length of time between the receipt of an order and the delivery of a finished product. Manufacturing lead time and customer lead time must be matched (Ruiz-Garcia *et al.*, 2008). Therefore, manufacturers must adopt a future development strategy that permits the manufacturing lead-time to match the customer's needs.

The support organizations, indicated vary significantly from firm to firm. The functions most often included are security, personnel, maintenance, human resource development and computer services. Basically, the support organization is responsible for all of the functions not provided by the other model elements. The fundamental mission of sales and promotion is to create customers. To achieve this goal, nine internal functions are found in many companies: sales, customer service, advertising, product research and development, pricing, packaging, public relations, product distribution and forecasting (Amador *et al.*, 2009).

**A leading strategy and ERP providing broad expertise in the development of frozen food industry's company:** At the strategic and operational level, we examine and evaluate roles and missions to address challenges such as defeating the global economic threat and building capabilities for stabilization activities. As shown in Fig. 2, mode of

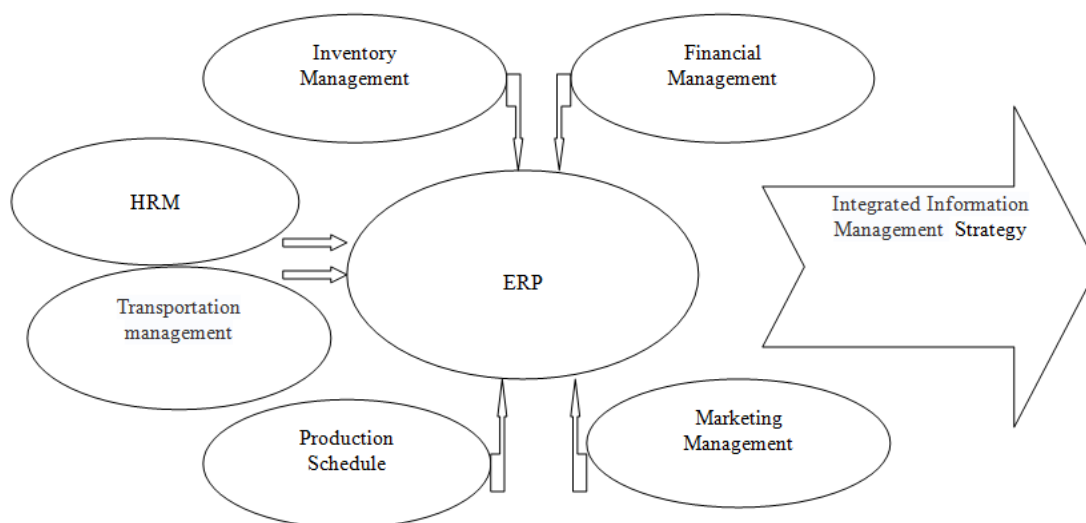


Fig. 2: Mode of frozen food industry's integrated information management strategy based on ERP

frozen food industry's integrated information management strategy based on ERP.

**Information control:**

**Direct numerical control:** A manufacturing system in which a number of data are controlled by a computer through direct connection and in real time.

**Production control:** This function includes decision on various parts onto the ERP system.

**Work handling system monitoring:** The ERP system must monitor the status of each cart and/or pallet in the primary and secondary handling system.

**System performance monitoring and reporting:** The ERP system can be programmed to generate various reports by the management on system performance.

**Utilization reports:** Summarize the utilization of individual workstation as well as overall average utilization of the system.

**HRM reports:** summarize weekly/daily reports of human resource from a ERP (comparing scheduled human resource vs. actual human resource).

**Financial management reports:** Summarize monthly, quarterly, annual reports of financial statements from a ERP (comparing scheduled financial statements vs. actual financial statements).

**Inventory management reports:** Summarize weekly/daily/monthly/quarterly/annual reports of inventory from a ERP (comparing scheduled inventory vs. actual human inventory).

**Marketing management reports.** Summarize monthly, quarterly, annual reports of market from a ERP (comparing scheduled marketing plans vs. actual marketing plans).

**Status reports:** Instantaneous report "snapshot" of the present conditions of the ERP.

**Manufacturing data base:** Collection of independent data bases, Centralized data base, Interfaced data base, Distributed data base.

In the long term, successful entrepreneur encourage creative thinking and turn ideas into commercially viable products or services time and time again. Innovation can be management just like any business discipline. ERP has produced industry-driven, research based innovation management solutions for many years. Based on ERP frozen food industry's integrated information management strategy will effectively achieve the strategic vision and goal of frozen food industry's entrepreneurs.

## CONCLUSION

For many years, there has been a debate among researchers and practitioners about the significance of ERP and their role in future development strategy. This paper examines the practical issues surrounding frozen food industry's future development strategy and offers a framework for better management of strategy based on ERP. The analysis indicates that ERP is an important information solution to firms in china. By integrating the information flow and sharing information inside the firm, it improves the business process, integrate different function within a company and make communication between and across departments conveniently. We propose a consolidated approach that we get three suggestions on implementing ERP including: business process reengineering, comprehensive preparation, accurate and basic data and employee training. It is suggested that strategic initiatives must constantly improve frozen food quality and safety in china, promote the simultaneous development of integration and informatization. In the long term, successful entrepreneur encourage creative thinking and turn ideas into commercially viable products or services time and time again. They must focus on eliminating the information constraints of the system in order to achieve world-class levels of performance.

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