

Systematic Analysis on Manufacturing Enterprise Information Management under Perspective of Supply Chain Management

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Abstract: This research aims at analyzing and evaluating manufacturing enterprise information system by a new method with techniques under supply chain theory. With ERP system application to enterprises for the giant, worldwide, independent designers and manufacturers as well as supplier in global market which would be analyzed in several aspects of procurement, designation, manufacture and sales. Expected benefits and risks would be exposed and analyzed under supply chain management theory for optimization from common to better. Raw material suppliers maintain a stable relationship with manufacturer such as System & Components, Service & Solutions according to supply chain operation, which leads a strong competitiveness behavior for clients and orders in market.

1. Expected Benefits of ERP Application

Facts of manufacturer ERP application, Air Bus is one of the largest independent global aviation designers and manufacturers around the world. With products of aircraft engine components both for military and civil, and maintenance, repair and value-added services are provided as well. The clients are separated into several parts, such as civil aviation, the main clients are for civil, and the raw material suppliers are extreme important for relationship establishment through ERP. And policy strategies with business highly depend on technology innovation identified that technology innovation is the core business, which produces efficient solutions and value-added services. ERP system is playing a role on management center to help customers to optimize BPR and manufacturing quality control. ERP system helps to make large amount of investment on research and development to improve the level of competitiveness to make a sustainable growth for this developing platform for customers. Stable policies are real matter for enterprise information development. Due to the complicated market competitiveness and requirement, balanced policies are good for ERP application in recent years, as core technologies. As manufacturer, its competitors in market get stable customers from Boeing CO, GE etc. Even different enterprises own different strategies in information management, there is no one being analyzed by supply chain theory yet. To conclude, it is unnecessary for enterprises to invest more energy on sales prediction in market, the quality and high-tech products are the final purpose for clients. As a result, the whole supply chain of manufacturer consists of 4 parts, for instance suppliers, manufacturer, distributor and clients. For each part, there has a strong relationship with each other, whether the supply chain theory is appropriate for information management which concerns the management operation. With implementation of ERP system, the potential benefits and challenges for enterprises performance would be vital.

To maintain and improve the abilities of information management, ERP system plays role in selection of suppliers, supervisor of material quality and information transmit. It is important for ERP to ensure the material quality conformance, single-served delivery, continuous service and cost control. The Supplier Quality Management (SQM) would be considered for ERP system to estimate the suppliers that GKN select.

2. Analysis of Enterprise Information Management by SCM

2.1 Expected Benefits and Risks for Suppliers

To change the short-term purchasing method, and develop a long-term strategic perspective of supply management to improve the degree of standardization. To establish cooperative relationship with selected suppliers is better than. The early intervention for suppliers can shorten the R&D and product designing cycle. For realizing standardization, quality improvement and early investment reduction through using professional knowledge, all of which have excellent performance. And the principle of benefits development should be executed to ensure the interests of suppliers and enhance the cohesion of the company.

For new suppliers' exploitation, strictly review procedures should be established for the development and investment of new projects by information management. Firstly, the market demand information should be evaluated in terms of marketing prospect analysis, cost calculation, investment benefit, etc. Then investment decisions should be made on the basis of a series of analysis data as well as investment should be strictly controlled to ensure the interests of both sides to avoid losses which are caused by blind selection for enterprises without information management. The integration of information technology and enterprise can be more conducive to stimulate the effectiveness of enterprises as well as operational effective. To apply information management in company means that combination of suppliers with the information management is easy to optimize.

2.2 Expected Benefits and Risks for Manufacturer

For this role in the whole supply chain, ERP system helps manufacturer analyses the data from market, which reflects to change designing directions to match massive demand. Through ERP system, it is much clearer to make a precise comparison between its competitors with itself by targeting core advantages business and operation deficiency. Especially for tech-based corporation, high quality and technology products are essential for developing competitiveness in the market.

Strictly information management process of manufacturer is highly related to pre-confirmation of suppliers' production environment, moreover equipment and raw material suppliers are in common, which are confirmed in accordance with the manufacturing schedule, as the enterprise information shall be issued simultaneously with the fixed data. Generally, external factors are considered in the production including product price, quality, reliability, after-sales service, geographical location, financial status, technical ability, etc. Among them, these are the most critical factors with information management for manufacturer, and benefits are obvious though, in the other hand, potential risks such as leading time, product quality, delivery reliability and human resources. Information manufacturing initiates an openness through enterprise information system to fully perform diversity and estimate the potential challenges.

2.3 Expected Benefits and Risks for Distributors

For the distributor link of whole supply chain, it plays a crucial role as well as a better performance of management generated by ERP system is mainly relying on information system. On the other aspect, ERP system could clearly reflect the real demands to reflect market, and enterprises are sensitive to response for slight changes outside, in addition, distributors could establish a relative balanced inventory level according to enterprise information across the whole chain, which makes it suitable and cost-effective for delivery & development.

As mentioned above, the external factors of enterprises affect the inventory level obviously. The availability of information can determine the quality of demand forecasting. However, information acquisition is a time-consuming and laborious process. Most companies are reluctant to spend such costs to realize benefits to avoid risks. On the other hand, inventory management challenges are caused by bullwhip effect is a good evidence. Starting from their own interests, enterprises in supply chain are difficult to share inventory, sales and demand information which is leading to the gradual

amplification of demand information, and the upstream enterprise's inventory increases, pressure aggravates and costs. In addition, there are other problems with enterprise inventory management, some enterprises do not improve the awareness of scientific inventory, although most enterprises have their own MIS system, cross-departmental information sharing is hard to achieve. Most managers think that inventory management is just material management without considering that inventory is a systematic project, which requires information sharing and unified management.

2.4 Expected Benefits and Risks for Clients

By enterprise information system, the end users in supply chain hope to reduce sales and service costs. According to ERP system, clients make a scientific plan of sales and stock under ERP system, which directly reflects the demand, customers would establish a detailed procurement and sales schedule through ERP analysis, which reduces the transportation, inventory and maintenance costs, as well as the service costs. Under the condition of information technology, the project, contract, performance and follow-up service can carry out scientific management, and focus on large number of existing especially potential clients, to make scientific forecast and analysis on the business market, to generate information reports with sales procedure, various statistical graphics, daily affairs management, comprehensive analysis and prediction. To reduce enterprise publicity cost by using website to sell services directly to clients. For enterprise revenue increase, to use website is also an effective method to apply for enterprise information system to make it more efficiency.

In different period, enterprises must introduce many business procedures with structural organization establishment. Without enterprise information management, these parts are no longer keeping a high operating rate for customer service, call-back system is a very important section for customer management. But, in the long run, with more complicated services and requirements the clients ask, the single information management method is no longer suitable for contemporary enterprises without supply chain management theory. To develop customer satisfaction, connect with upper suppliers become essential and necessary.

3. Prospects of Enterprise Information Management System

3.1 Development of Product Manufacturing and Design under SCM

Due to manufacturing enterprises' core competitiveness are particular, clients are classified into several sections, which have different characteristics. When the products are difficult to be replaced, the orders would stay at a stable and predictable level, and sales investment is less necessary to be considered into business strategies. As for ERP system, particular information from market or manufacturing process are collected from system in order to establish a specific manufacturing plan to reduce costs and lower inventory level. Manufacturing information management seems to be promising under the development of enterprise information to optimize supply chain.

On the other hand, technology innovation development as well as continuous improvement are the main factors to improve core competitiveness ability, technology development is to strengthen enterprises' advantages in order to develop effectiveness through information system, and KPI is another way to measure its performance in terms of matching standards to identify core leading innovation technology and evaluate the performance of enterprises.

Through ERP system, company needs information not only to reflect performance assessment but also marketing research and responses, across the supply chain, effective information is sent to raw material suppliers and new requirements are forcing them to redesign new components for newly products. For enterprise system, this rate of order processing could be convenient for R&D to make new products enter market faster and take higher platform in sales advantage.

3.2 Development of Product Quality and Inventory under SCM

For the quality control of enterprises, enterprise information system plays a role as a quality supervisor during manufacturing process. At first, this system confirms that orders are precisely put into database, and make a procurement plan to raw material suppliers, when delivery implemented,

ERP would test and monitor material quality process. To ensure the whole monitoring process is at a reasonable level, the data would be consistently processed and analyzed. And then, company could choose the suitable suppliers according to the result and analysis. For the material proficiency, ERP could help GKN predict the manufacturing leading time. ERP also could guarantee product quality and brand reputation improvement. In manufacturing area, safety always comes at first place. Not only quality control is under managed by enterprise information system, but also after sales service is included in this system.

The inventory level of enterprise is determined by this system, such as methods of delivery, lead time and inventory capacity. Inventory optimization is controlled by ERP system, and the data of sales with manufacturing abilities would both be analyzed together, which manages the inventory level through information management as well as rapid responses. To decrease the inventory level, orders are the first factors to be confirmed and manufacturing goods are required within schedule. In fact, clients are from places around the world, which gives a challenge for enterprise to give quick response for issues in time. To conclude, a suitable inventory level under information management system is a necessary method to achieve the goal.

3.3 Development of Product Sales and Services under SCM

The sales and services are determined by marketing performance from as well as manufacturers information management performance under SCM theory, which is highly connected with ERP system, which helps companies manage sales abilities and improve services level well in market. Enterprise information management system collects data and processes calculation, moreover, satisfaction of customers is found out that potential issues could be solved by this system. In a matter of fact, solutions would be provided to satisfy with strategies for enterprises. In conclusion, the feedback and data analysis are key advantages to enterprise information management.

According to the ERP system for after-sales service of companies, ERP plays an important role in tracing each product to customers. When orders received, it starts to record the information for the specific product and provide follow-up services with each customer, which would remind clients to maintain products from companies for safety matters and to offer relative product parameters and professional technicians to cooperate with products maintenance to the valued clients. Also, ERP could keep a better relationship with customers and response for the issues from clients as quickly as possible which is also responsible for products repairing service. As it is difficult for end customers to have enough abilities to do a repairing themselves, maintenance would quickly be received through orders from clients and particular engineers are to be sent to site to offer service for solving problems. With system, this process could be quick and efficient, moreover, data and feedback could be scientifically analyzed to acquire a best decision.

3.4 Development of Training and Delivery under SCM

Speaking of training and delivery for enterprise information management, which offers detailed and specific training services in high quality. In addition, it could give guidance to customers for training users the right method of application of products for the purpose of reducing the wastes and damages to the goods.

In delivery part, each product has been manufactured in factory, which would be given a serial number through this system for tracking service to make it safe. When a product is still being delivered to destination on the road, the system could collect the data and analyze the parameters intelligently to supervise products status to review and remodify. Through this system, its strong management abilities and rapid data processing functions could optimize the supply chain and products manufacturing to make a good reputation for these companies. In addition, system development also makes a great contribution to research and designation. ERP could quickly response to customers. This management method could rapidly make a decision by investing more money on specific area, in this way, not only it could reduce the lead time, but also accelerate new products design.

4. Summary

Enterprise information management could achieve the purpose through implementation. By analyzing the structure of supply chain, for example, inventory, products, design, sales, delivery and quality, these factors are all developed into a high level as well as cost will be decreased by this management system. Nowadays companies are facing to a new challenge that potential customers' inside needs are getting more complicated, which is not only in manufacturing item, but also their demands of services. Moreover, service quality comes at a priority place currently for conforming to business strategies. There is promising that enterprise information system could be beneficial for services quality and then to provide clients with products tracking and quick response services through it.

ERP system also has shortcomings. The potential risks are not obvious, but some items need adjust, however, when the outside environment has been changed, it is hard to change directly and precisely in a short time. As a result, uncertainties and wastages are easy to be generated, which is hard to predict the demands and changes because of outside factors. As more and more business competitors join in the market is another risk, but challenges are not only from outside, but also inside. The best solution is to keep core competitiveness by implementation of information management in terms of developing technologies and offering a better after-sales service to keep competitive.

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