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Research on logistic management in Deltai Medical Company

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Research on logistic management in Deltai Medical Group

Logistic system optimizes and supply chain management

By

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China

A research paper submitted to the World Maritime University in partial Fulfillment of the requirements for the award of the degree of

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DECLARATION

I certify that all the material in this research paper that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me,

The contents of this research paper reflect my own personal views, and are not necessarily endorsed by the University.

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ABSTRACT

Title of Dissertation: **Research on logistic management in Deltai Medical Group —Logistic system optimizes and supply chain management**

Degree: **Master of Science in International Transport and Logistics**

Logistic management is still ignored or just became noted by Chinese small and minimum-sized manufacturing enterprises. The Chinese manufacturing enterprise must face the large gap between traditional logistic systems with world advanced logistic system. Such enterprise as Deltai Medical with lower logistic sense is very common. So it is necessary for them to have the idea of logistic management.

Through the analysis of this typical manufacturing enterprise named Deltai Medical, this author wants to provide a common analysis for small and minimum-sized manufacturing enterprises and some methods to analysis enterprises. Chapter one is the introduction of the article. Chapter two will focus on logistic management status both in worldwide and China and the basic logistic management principles while chapter three will concentrate on the status of Deltai Medical, especially logistic related. Chapter four is the point of the article which is the optimize analysis to logistic system in Deltai Medical. After that, conclusion will provide the solution in whole and suggestion for other Chinese manufacturing enterprises.

KEYWORDS: logistic management, supply chain, purchase, inventory control, production, distribution, warehouse, system optimize

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List of abbreviations

SME Small and minimum-sized enterprise

ERP Enterprise recourse planning

MRP Material requirements planning

MRP II Manufacturing resource planning

JIT Just in time

PD Physical Distribution

AMA American Marketing Associate

1 Introduction

1.1 Background

Logistic has been accepted by more and more enterprises to improve the company competitive. It also catch the attention of manufacturing enterprises because it runs through every production activities from purchasing, inventory, production, to sales, distributor and warehousing.

Although all the people talked about logistic nowadays but in China, as a very big percent of China economic, small and medium-sized enterprises still work without the use of logistic principle. Compare to the world class logistic, Chinese enterprises, especially small and medium-sized enterprises, mostly do not attach importance of the management during the logistics process. They still use traditional way to manage the process in manufactory: no sense of supply chain, work with a slow speed because lack of related IT technology, duplication of work, and lack of customer service…etc. It is hard for them to keep up with the world industry and dangerous in keeping loyal customers and develop new customer. Bad management or no management in logistic will take enterprises out of state.

To facing the opportunity and challenge bring by the world economy, as a very important part of China economy, manufacturing enterprises should take attention on the logistic topic for further development. Only under the scientific logistic management with the total system (no matter the whole supply chain or in-bound) can enterprise have more chance of developing and growth.

1.2 Purpose and scope

The purpose of this article is to research on each links of logistic management in Deltai Medical Group and find the weak points. Firstly, research on every department to find the current states of logistic management, including purchase, raw material inventory, production, sales, distributor, and final products warehousing. Then concentrate on the work states of logistic system in enterprise and in the whole supply chain. Summing up the current logistics management of the enterprises based on these situations for further discussion.

The second work is to clearly understand the goal of this enterprise and find the goal of logistic management. For more customer services or more concentrated on cost reduction? Set the strategy management plan of the question company then we can optimize the logistic based on the plan.

Thirdly, optimize the logistic system based on the basic logistic management principle and the actual situation of the enterprise. Try to find some effective ways, for example, multi-use principles, getting experience from other successful company and so on. Also research on every part of enterprise activities and combine thinking for the whole logistic system.

Then we can come to the conclusion of this topic. It should include the available way for a China small or medium-sized manufactory to develop their own logistic management program, the accessible measure for these kinds of enterprises in China to level up themselves. The most important is to provide information to Chinese enterprises, especially SMEs (small and minimum-sized enterprises) the importance of the power of logistic management—which will provide manufacturing enterprises more vitality and chance of development in this highly competitive world economic

environment.

1.3 Research methods

In this topic, some of the basic logistic management principle are used to determine the direction of optimization, such as supply chain management concept, order point method for inventory control, distribution methods. Some principle also as reference appeared in the article such as ERP, MRP, JIT idea.

The question enterprise as a specific individual has its own features and shortcomings. The analysis is based on the principles but has its own target. It can be the reference for other enterprises to consider their own logistic management program.

2 Overview of logistic management status

2.1 The basic concept of logistic management

The concept of development of logistics

The importance of logistics has been well recognized a long time ago,

> *"As early as 500 BC, Sun Tzu Wu in the Art of War referred to logistical functions and their relationships with strategy and tactics. Alexander the Great was perhaps the first military leader to develop an actual logistics system to support his troops rather than relying on the more common practice of living off the land as the army progressed. The Romans carried a great deal of their equipment and supplies with them, relying on a baggage train incorporating hundreds of pack animals as well as the soldiers themselves for transport…"*[1]

And in modern ages, it is named as "Physical Distribution" (PD) in America in the first and is defined by American Marketing Associate (AMA) in 1935 as,

> *"Logistics is marketing activities associated with the material information from the origin to consumption of all kinds of business activities, including service process."*

In 1963, Hirahara Chiyouku began to call it "Butsuliu" which means "logistics". Logistics only seen to be a cost reduction method during 1965 to 1974 but after the

[1] *Global logistics management.* Kent N.Gourdin, 2001 (1)

oil crisis people began to change the opinion of logistics. From then on, logistics became one part of management. Bowersox[2] has divided the development of logistics into three stages:

Roughly 1950s-1960s

Roughly 1960s-1990s

Roughly mid 1980s-now

There are many definitions of what logistic is in the third period. For example, NCPDM (now CLM) said logistic is "The efficient movement of finished product from the end of the production line. And in some cases includes the movement of raw materials from the source of supply to the beginning of raw production line," (NCPDM now CLM Council of Logistics Management). And Anon said it is to "get the goods from where they arise to the right place, in the right form, at the right time, at the right cost."

On the basis of that, Shapiro, Heskett define it as "those activities that relate to receiving the right product or service in the right quantity, in the right quality, in the right place, at the right time, delivering to the right customer, and doing this at the right cost (the seven R's)". [3]

Again, CLM make the new definition of logistics in 2002 as,

> *"Logistics is a process to meet customer requirements and to plan, implementation and control the high efficiency and low*

[2] *Supply chain logistic management.* Bowersox, 1996

[3] *Logistics strategy: Case and Concepts*, Shapiro, Heskett, 1985

cost of the forward and reverse flow and storage of goods, services and related information in the origin and destination in the supply chain operation."

In 2005, Jonsson, Mattsson think "Logistics is defined as the planning, organization, and control of all activities in the material flow, from raw material until final consumption and reverse flows of the manufactured product, with the aim of satisfying the customer's and other interest party's needs and wishes, i.e. to provide a god customer services, low costs, low tied-up capital and small environmental consequences"[4]

The definition of logistics is ever-improving and the process of logistics is thought to cover the whole process of economic activity.

Logistics in China

The concept of logistics spread into China mainly through two channels, one is in the early 1980s with the introduction of "marketing" from Europe and the United States. In Europe and the United States, all the marketing textbooks, without exception, introduce the concept of "Physical Distribution". For the Chinese translation these two words means "distribution entity" or "physical circulation". We generally use the translation of "distribution entity". The so-called "distribution entity" refers to the entity from the providers of goods to those who in need of physical movement. The other way to spread logistic idea is named "Physical Distribution" which imported from Europe and the United States then to Japan, and the Japanese translated it into Japanese word "logistics". In the early 1980s, China direct introduction the idea of "logistics" from Japan until now.

[4] Jonsson, Mattsson, 2005

The development of logistics management

"The four marketing variables (product, price, promotion, and place) interest with each other; that is, a change to one has ramifications for all the others. The same relationship exists among the logistics components."[5]

The so-called logistics management refers to the process of social reproduction, in accordance with the substance of the flow of information entities, the basic tenets and scientific method of application management, to plan, organize, command, coordinate, control and supervision the logistics activities and make the best coordination and cooperation of the logistics activities, so as to reduce logistics costs and improve logistics efficiency and cost-effectiveness.

The content of logistic management including:

Management of transportation, inventory, etc.;

Management of six concepts: Manning, financial, capital, machinery, method, and information;

Management of logistic planning, quality, technology, and economy.

P.Kotler said that "the system must be introduced into the purpose of logistic which can help to come to a better definition.", "Although the decision-making can require reducing the cost of logistics, the relationship between cost and logistics should be carefully considered".

[5] *Global logistics management*. Kent N.Gourdin, 2001

2.2 Goal of logistic management

Goal of logistic management is to optimize the logistic activities to achieve the best enterprises core competitive advantage. Set the logistic management goal is quite based on the enterprise's focusing. For instance, if the company is quite focus on customer satisfaction, the better way of logistic management is to short the lead time and production time (totally the delivery time) for customer, the cost of manning and controlling may be increasing but the customer satisfaction will also increasing. Or if the company is focus on the inventory optimizing to have a better and lower stock for cost reduction, a system of inventory will be set up but maybe the delivery time won't be the same level with full customer focus. If the enterprise wants to optimize the whole supply chain, the cooperation of suppliers and other cooperator should also be considered into the logistic management plan and the solution will be differ from the above two situations.

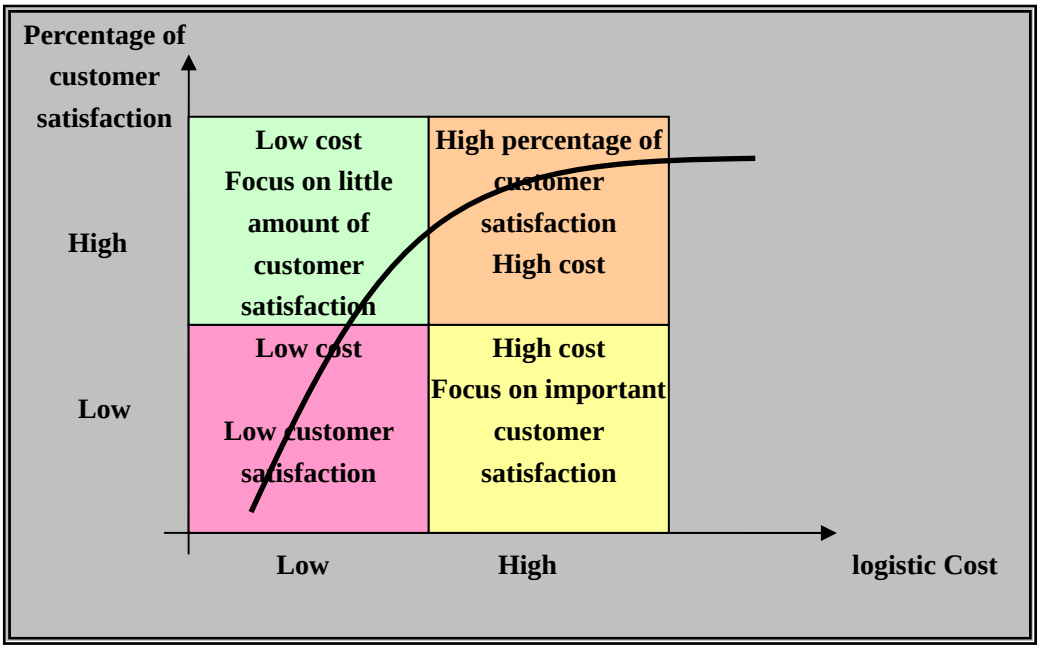

Figure 2.1 – Customer service level with cost

As showed in figure 2.1, different focus on service lead different customer satisfaction. Natural, low cost will receive less customer satisfaction than high cost, no matter what cost. Also, it is not a straight line that customer satisfaction increase with cost, the satisfaction from customer will increase slower and slower when cost continue growth with same volume. Logistic cost appears in the every process in manufacturing enterprises; to provide better customer service with high logistic cost or safe logistic expenditure but lose customer satisfaction which called “economic production” will be a big decision making influence the company development.

2.3 Some specific contents of logistic management

2.3.1 Order Point Method

It is to predetermined point at which inventory is automatically reordered. When inventory drops to the order point, the reordering process is triggered. Presumably the order point is the amount needed until stocks can be replenished, including a margin for safety.[6] It is also called as safety point method. The most important key of this method is to set up a safety stock to provide sudden order. The time period for ordering and receiving always be the same or shorter by the developing of the manufacturing technology.

[6] Business Dictionary: Dictionary of Business Terms, 3rd edition, by Jack P. Friedman, published by Barron's Educational Series, Inc.)

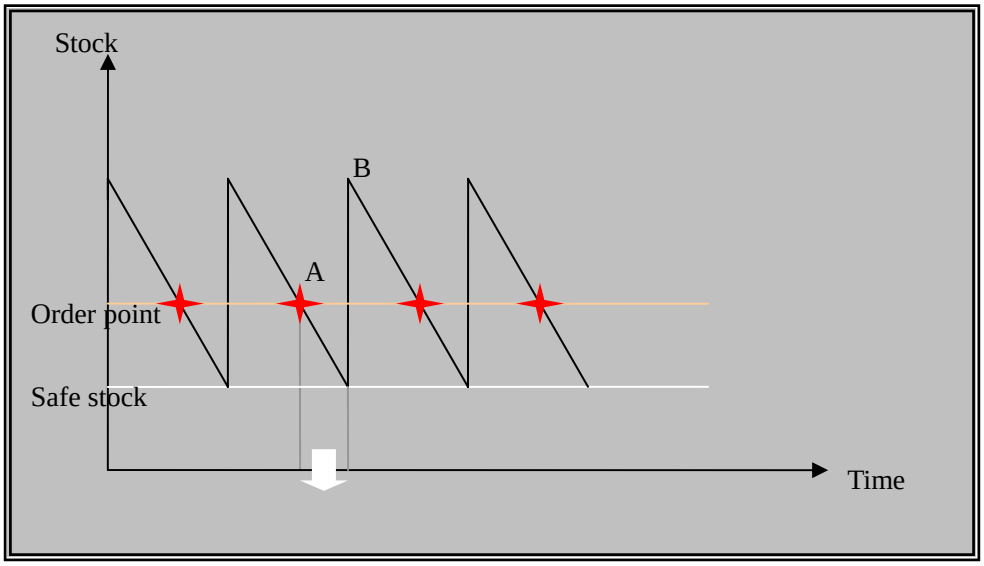

Figure 2.2 - Order Point Method

As showed in figure 2.2, when the raw material inventory decrease under point A, the enterprise will arrange purchase, when the inventory continue consuming to the safe stock point, the purchased material just transfer to the warehouse and inventory straightly raise to point B. This is one turnover of purchasing based on order point method with a certain amount of purchase quantity.

Another form of order point method is to purchase different quantity with a certain time period. Because the consuming of material is different related to the order quantity, when a certain period (a week, 10 days, etc.) arrive, the purchase department order quantity of the margin of point B and point A. The benefit of using this kind of form is that it is easy to control and operate for the enterprise. It is also appreciated by suppliers for you have monthly or certain time period purchase plan, and they may provide you with lower price. But the shortage is that if the need of quantity suddenly increases or decrease, the inventory will be out of stock or there will be just a little amount to purchase, which will increase the purchase cost.

The order time is decided by the stock level which can highly keep the step with the consuming of materials and make the inventory always being rational. The advantage of this method is: it can adapt to the changing consumption rate with the same quantity order. But the shortage is whether there is new order from customer or not, the inventory will always be here to bring inventory cost.

2.3.2 MRP and MRP II

Material requirements planning (MRP) determines the need and time-phasing for those requirements while JIT can be incorporated into the management process to ensure that those needs are met without holding large amounts of inventory. It is used to solve the problem of how inventory management can plan consistent with the requirements of production. MRP system is based on the computer science and according the delivery time of final products to plan all parts of the production, including product schedule, purchase time and quantity…Once the operation can not be completed as planned, MRP system can adjust the timing and amounts of production and purchasing to let the priorities of every operation consistent with the actual situation.

MRP II (manufacturing resource planning) is MRP Ⅱ integrated logistics and the flow of funds, personnel, financial, material, time and other resources for well-planned, rational use, to enhance the competitiveness of enterprises. It combine the company senior management and middle management to promote business management cycle and achieve the most effective business with core of resource plan. It includes the entire enterprise production and management system, business objective, marketing planning, financial planning, production planning, material requirements planning, procurement management, site management, transport

management, performance evaluation and other aspects.

2.3.3 JIT

'Just in Time' is established by Japanese company TOYOTA for through the 1st energy crisis and then to be seen by the western society. It is an inventory strategy companies employ to increase efficiency and decrease waste by receiving goods only as they are needed in the production process, thereby reducing inventory costs. This method requires that producers are able to accurately forecast demand.[7]

Gourdin said a successful JIT system is base on quantity, vendors as partners, vendor co-location with customer which is the three key concepts of the system. That is, to provide service with qualified products in the time just customer need. It is impossible to reach this effect without cooperation and right distribution processing. Using this system can help an enterprise to achieve a speed up turns both in inventory and final products. On the contrary, the disadvantage of it will be the risk of out of stock. And small amounts of production will increase both purchase cost and production cost. To provide JIT service to customer will also take huge cost on transportation.[8]

2.3.4 Distribution principle

There are basically 3 kinds of distribution model concluded as follows:

Direct distribution system

It takes the principle of arrange the cargo delivery from the Centro warehouse of

[7] *Business Dictionary: Dictionary of Business Terms.* Jack P. Friedman
[8] *Global Logistic management, a competitive advantage for the new millennium.* Kent N, Gourdin, 2003

company to the customer directly.

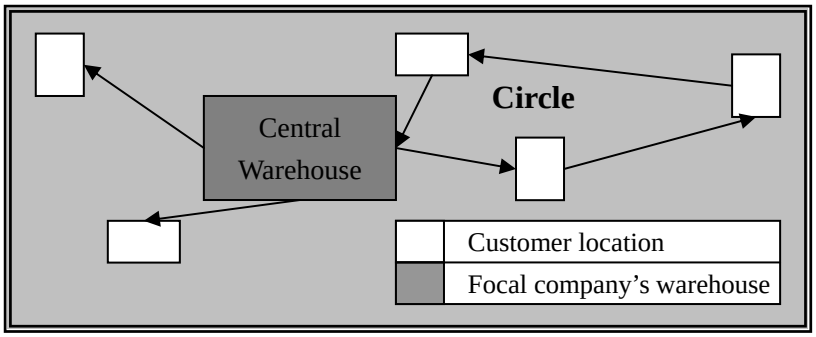

Figure 2.3 – Direct delivery system

As figure 2.2 showed the focal enterprise stored their products in their own warehouse and when meet the delivery time, they arrange the delivery from central warehouse directly to the customer, if there are several orders to deliver in one time, some method will be used to short the total distance of order delivering. For example, define delivery routes under the law of conservation. Thus, under the prerequisite of ensuring quality and delivery time, choose the shortest and convenient distribution route.

The advantage of this kind of distribution system is that it is easy to arrange and control but it has many disadvantages. Under the international trading environment, using direct distribution system is a large waste in transportation cost. Every time, every product should be transported Transocean when it is ordered. It takes a long time and long distance to ship the cargo to customers.

It is better to set some local warehouse for the focal company to arrange distribution for lower cost and quick customer service. As illustrated in Figure 2.3, focal company can arrange transport amount of products estimated to be needed to each local warehouse. When products are ordered, they can straight be distributed from

every local warehouse which is most closed to customer.

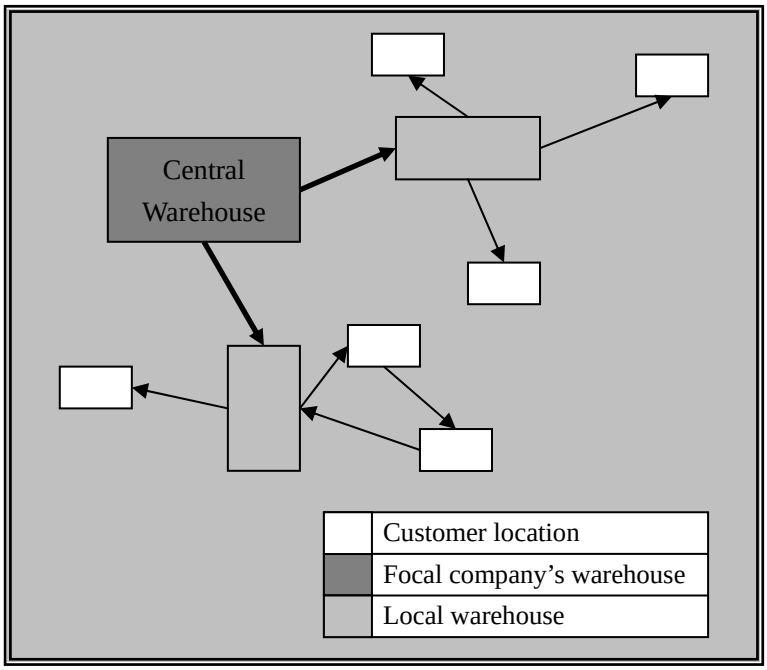

Figure 2.4 – multi-terminal distribution system

Now more any more company start to cooperate with third-party logistic providers to arrange the cargo distribution instead of arrange by themselves. It is quite convenient for the focal company that the only thing they should do is to prepare for logistic provider to pick up products in their gateway or transport their products to the warehouse of logistic provider. All of the rest thing will be done quickly and professionally by logistic service runners. This method can help the focal company focus on its core competitive advantage to provide better product quantity. With a professional logistic cooperator, they can together provide better customer service by shorten and optimize the distribution way. (Showed by Figure 2.4)

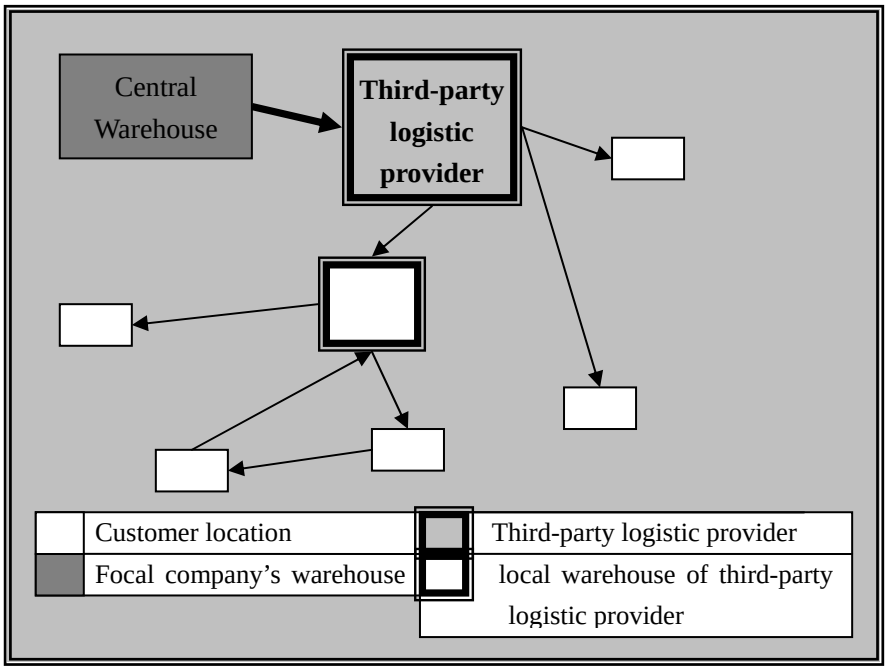

Figure 2.5 - Third-party logistic distribution model

2.3.5 ERP

ERP (Enterprise Resource Planning) is built on information technology and systematic management to provide means of decision-making operation management platform for managers and staffs. ERP system concentrate on information technology and advanced management thinking, reflect the needs in today's market of reasonable allocation recourses, maximum create social wealth. It became the basic of developing in this information age.

2.3.6 SCM

Supply Chain Management, which is based on the ERP system, is the management of enterprise supply chain. It is the management to supply, demand, raw materials purchasing, marketing, production, inventory, orders, and distribution. It includes every aspect from production to delivery, from suppliers' supplier to the customer's

customer.

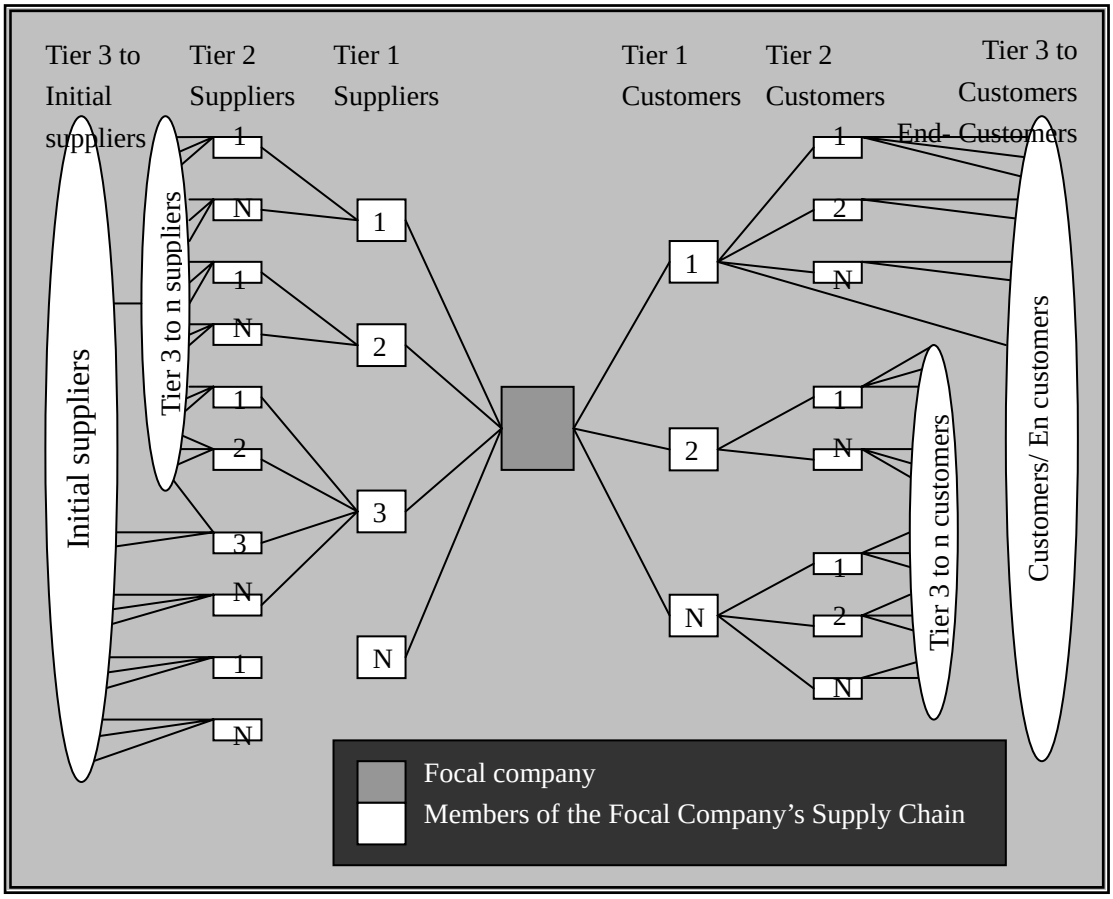

Figure 2.6 – An example of a tier-structured Supply Chain

Source: Supply Chain Management-in Theory and Practice, Copenhagen Business School Press, Bright Dam Jespersen Tage SkjØtt-Larsen, 2005, ISBN 87-630-0152-7, P15

As showed in figure 2.2, a complete supply chain including suppliers' suppliers, suppliers, the focal enterprise, customers, customers' customer and other related logistic providers which are not showed in the figure. "Supply chain management builds upon this framework (logistic) and seeks to achieve linkage and co-ordination between the process of other entities in the pipeline…the definition of supply chain management is:

The management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole."[9]

Supply chain management has four important points:

- Supply chain is a one-way process, in which every part is linked and acts as a whole.

- It is a strategy management of a whole process. If only rely on the information in some areas, the logistic management plan may lead to distortion due to the limitations of the information or distortion

- Inventory in each part are all differ from each other, it is a balance mechanism of the chain instead of a measures of maintain production and sales.

- Supply chain management is a new management measures which use overall integrated approach to replace the interface methods. Try to find a solution to overall balance and control the process via economic theory.

[9] *Logistics and supply chain management –creating value-adding networks.* Martin Christopher, 2005 (5)

3 Current status of logistic management of Deltai Medical Group

3.1 Current company statement

Deltai medical group provides all kinds of Orthopedic Products, Daily Living Care Aids, Medical 3D Elastic Products, 3D Shape wear, Compression Products, Orthotics, Prosthetics, EMS Products, Rescue Personal Equipment, and Positioning Protection Products.

The members of Deltai Medical Group are:

Deltai Medical & Health Articles (Suzhou) Co., Ltd. at Suzhou China, since 1972 in Taiwan, China, since 1992 in China

David Medical Products (Suzhou) Co., Ltd. in Suzhou, China since 2002.

Triple Inc. in Indiana USA since 1997

Triad Orthopedic Products Industrial Co., Ltd. since 1970 in Taiwan.

Medi Trading (Shanghai) Co., Ltd. since 2007 in China.

TOP-LINE Company in Hong Kong

Tricare Medical Co., Ltd in Hong Kong and Taiwan

They start the business since 1972 in Taiwan and keep steady development in 35 year’s efforts as a professional manufacturer in medical products area. In 1992 David medical moved the factory to mainland China and established Deltai Medical &

Health Articles (Suzhou) Co., Ltd. In order to provide more comprehensive medical products, in 2002 a new company was established as David Medical Products (Suzhou) Co. Ltd,.

They keep the highest rate of producing by ourselves. There are over 2500 kinds of materials in the warehouse, total worth 1.5 million. So they can offer the products in the shortest time. And they manufacture the most complete line of orthopedic products in the world with a high production capacity. Most important, they assure: one step, one inspection in every department. So the products are more highly competitive in this area. Further more, they provide fast and safety delivery for orders from customers.

At Deltai their focus is clear and is committed to what Deltai stands for: Quantity, Service, and Profession. Starting from innovative designs to selecting the finest materials to highest standards of quantity control, every effort is devoted to ensure best products are provide to you so that they can be passed on to the customers. Deltai is a company with high level of skilled workers, production volume, products varieties, products quantity and manufacturing facilities.

In herniated from Deltai Medical the rich professional experience, superior management system and tradition-credit, they are confidence to accept the challenge of providing most satisfactory products after studying customers' needs seriously. The quality is insured by a high performance means of production and a strict selection of raw materials. Further more, they provide fast and safety delivery for orders.

Deltai Medical plant is the first professional orthopedic products manufacturer in China. The workshops cover 20,000sq m (220,000 sq feet). The total value of investment is USD 13.5 million. The company is certificated by ISO 9002 in 1998 and then administered ISO 9001:2000 by British Standard Institution (BSI). All of our products are CE marked. The Certificate of Conformity was administered by Det Norske Veritas (DNV).

David Medical plant covers about 35,000 sq m (390,000 sq feet). The total value of investment is USD 21 million. And it's certificated by ISO 9001:2000 and ISO 13485:2003. Their silicone and PVC manual resuscitator have been registered to FDA. With advanced manufacturing facilities, ever-updated technology and large production capability, they have built a good base for the further development.

3.2 Current strategic management plan and practice

3.2.1 Current strategic management plan

A. Focus on cost reduction

The company think：The lower the cost in purchasing, production, inventory, transportation, ordering, the higher the profit will be.

All the company activities will base on the cost reduction rule.

There is no need for forecasting order quantity and set up inventory plan both for material and products/ semi-products because of the delivery time is 45 days in usual practice and it is enough for them to finish the order from purchasing to ready for shipment.

B. Focus on customer service: try to level up the customer service. Make the most customers satisfied with their service.

3.2.2 Current straight management practice

A. Set up a department named center control department to work as a center among purchasing, production, sales, and delivery.

B. Set up the system of working schedule for information transportation between every department. It is work as a rule of transfer information among every department: Sales department should sent questions from customers or in working process to the center department before noon and the center department will sort out them then send to every department for solution, the solution should be resend to the center department before 4 o'clock and the center department will again sort out them and send to the sales department. When sales department receive the formal message of solution, they can work with it.

3.3 specific logistic management practices in Deltai Medical

3.3.1 Purchasing

Figure 3.1 shows the purchase process in Deltai Medical Group, as:

The centre department making the purchase plan according to the order they received from sales department and the producing needs from production department.

Now the centre department is absolutely set purchase plan by the exact quantity orders and production process inquired. When ordered, they began to purchase the material they need, if there is any short of materials in product previous orders, they

will make these two purchases together. In another word, there is no safety stock of raw materials.

The purchase department receives the plan and began to find a most suitable supplier.

They focus on the cost aspect which includes material price, transportation cost and time cost. Low expensive, less time are the evaluation concepts of decision making. They will consider the quote from different suppliers and transport cost of transporting these materials. The lowest cost with no bad quality will be the supplier.

Set long-term relationship with suppliers for more steady supply of raw materials.

To have a steady supplying of raw materials, it is necessary for David Medical to find some long-term cooperators. The purchase process can be simplified and cost will be lower by the cooperation. They actually do that and always purchase materials from their cooperators.

Transport the materials from suppliers to the factory.

They have their own transport tools for material transportation many years. The transport cost take up a high percent in material cost which almost nearly 40%.

The final step of purchase is quantity survey, by using some specific machine to survey whether materials are qualified as sale confirmation and order request. Those materials which not up to the standard will be returned purchase. It is terrible if have emergency orders but materials are not standard for production and many problems will brought out.

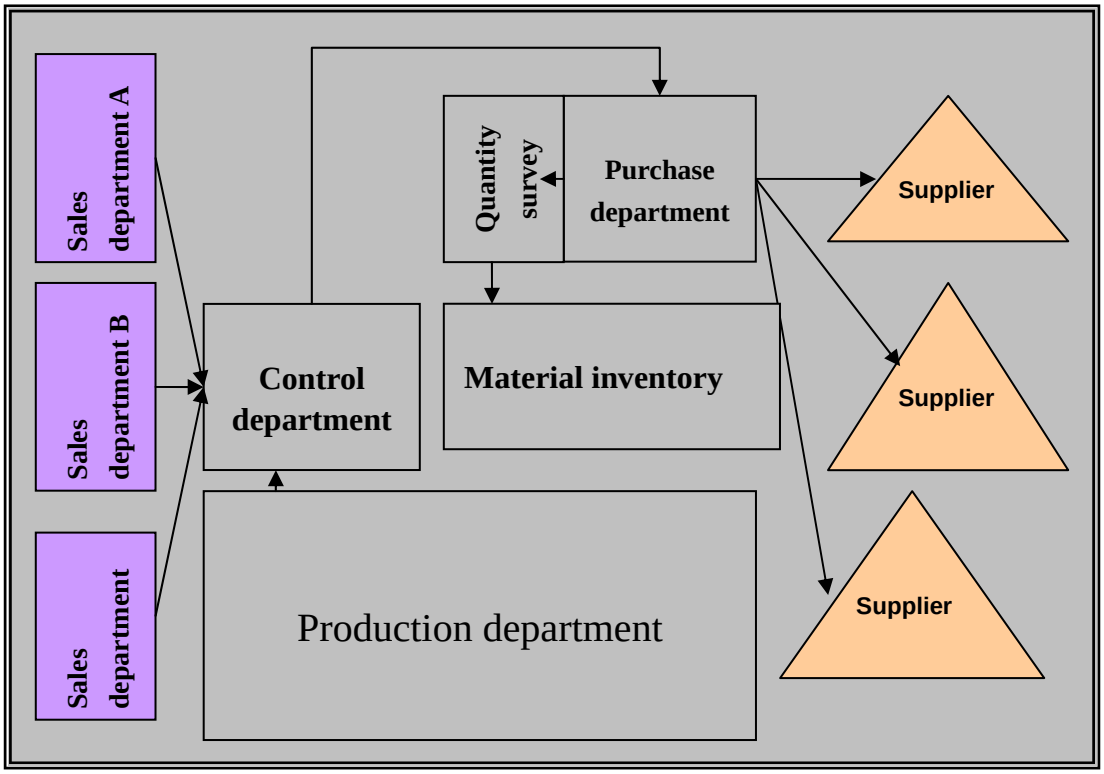

Figure 3.1 – Purchase process in Deltai Medical

Deltai Medical has its own short distance transportation tools. And because they own these resources, they would like to choose suppliers of raw materials within short distance rather than far distance. Sometimes they just choose the nearest supplier for quicker delivery. But the labor cost and other cost is quite higher in Shanghai than in other regions and lost the chance to cooperate with factories in other region. And the choice of supplier will have great impact on quantity, cost and time.

3.3.2 Production

The production process of Deltai Medical concentrates on the material flow. After the production department receives orders from centre control department, they began to set short-term plan for these order.

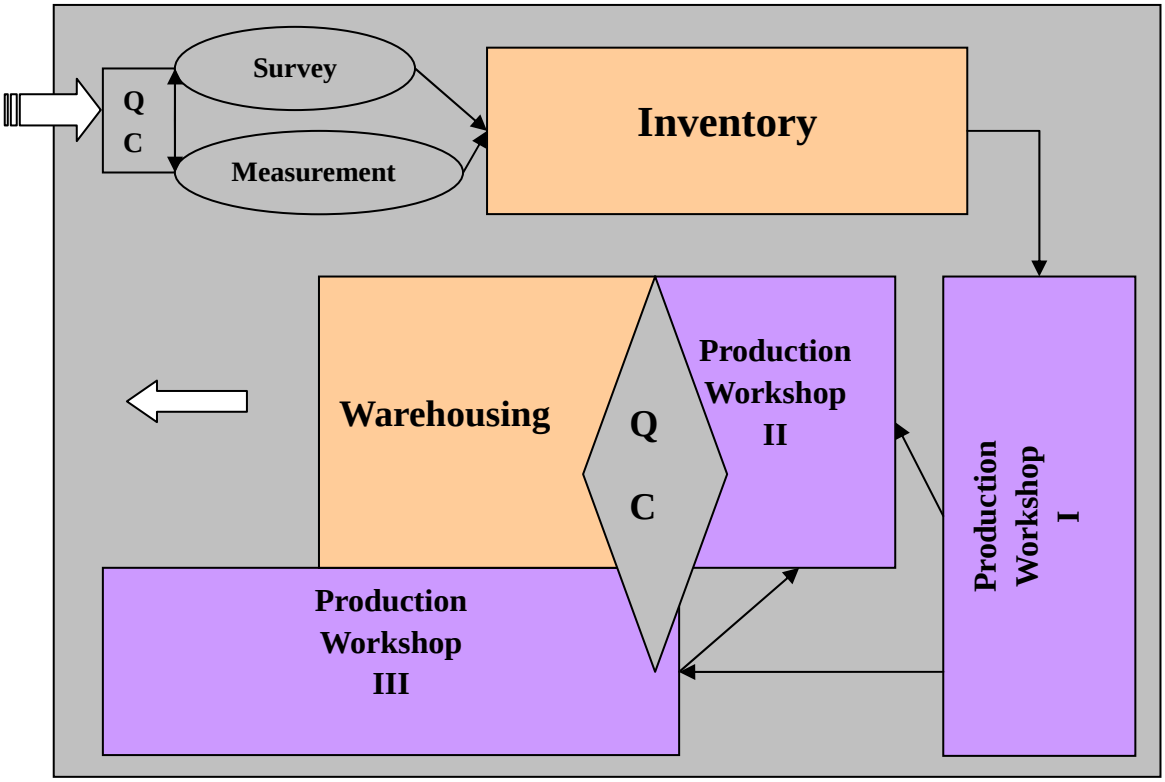

Figure 3.2 – Production process in Deltai Medical

As figure 3 showed all products produced by Deltai Medical should be manufactured by the first step which is produced in the workshop for plastic processing. After that, some will directly be moved to the third workshop for assembling and others will be transferred to the second shop for sewing. Then some will continues to process in the third shop and some products will not because they do not need to be assembled. The final step in the whole production activities—testing will decide whether the products are qualified to deliver or not and qualified ones will be transferred to the warehouse to wait for delivery. All the products will be moved to the next workshop until quality testing process after finish production the previous step. In another word, there is no semi-products warehouse; all the unfinished products will be storied beside the machine which they will be process next.

After statistics, it needs a day for they to prepare production one order for the information transferring from sales department, control department and inventory stock department. The production department never product assembles for semi-products inventory. When receive the order, they turn materials to final products without any remaining.

3.3.3 Inventory

Raw material inventory

As showed in figure 4 that Deltai Medical has its own warehouse for raw materials. Materials stacked no more than three tiers. The space between bay and row is very small and dangerous. Space in front of the house door is also all of stack and it is hard for workers to move materials into the house after a big purchase action. The whole warehouse looks crowded and a large space in height is wasted. It is quite easy to lead to congestion in front of the door.

It is a complete man-working department that almost no electric machinery used in this place. All handling, loading and unloading, collating works are completed by human and some basic manual machinery. The detail information of stored materials is collect by paper, no computer works. The inventory table of how many materials are stored will send to other department every two weeks for reference. For example, the purchase department can understand whether there is spot material or not for the order. But the information will only be updated every 2 weeks and send to every department via fax.

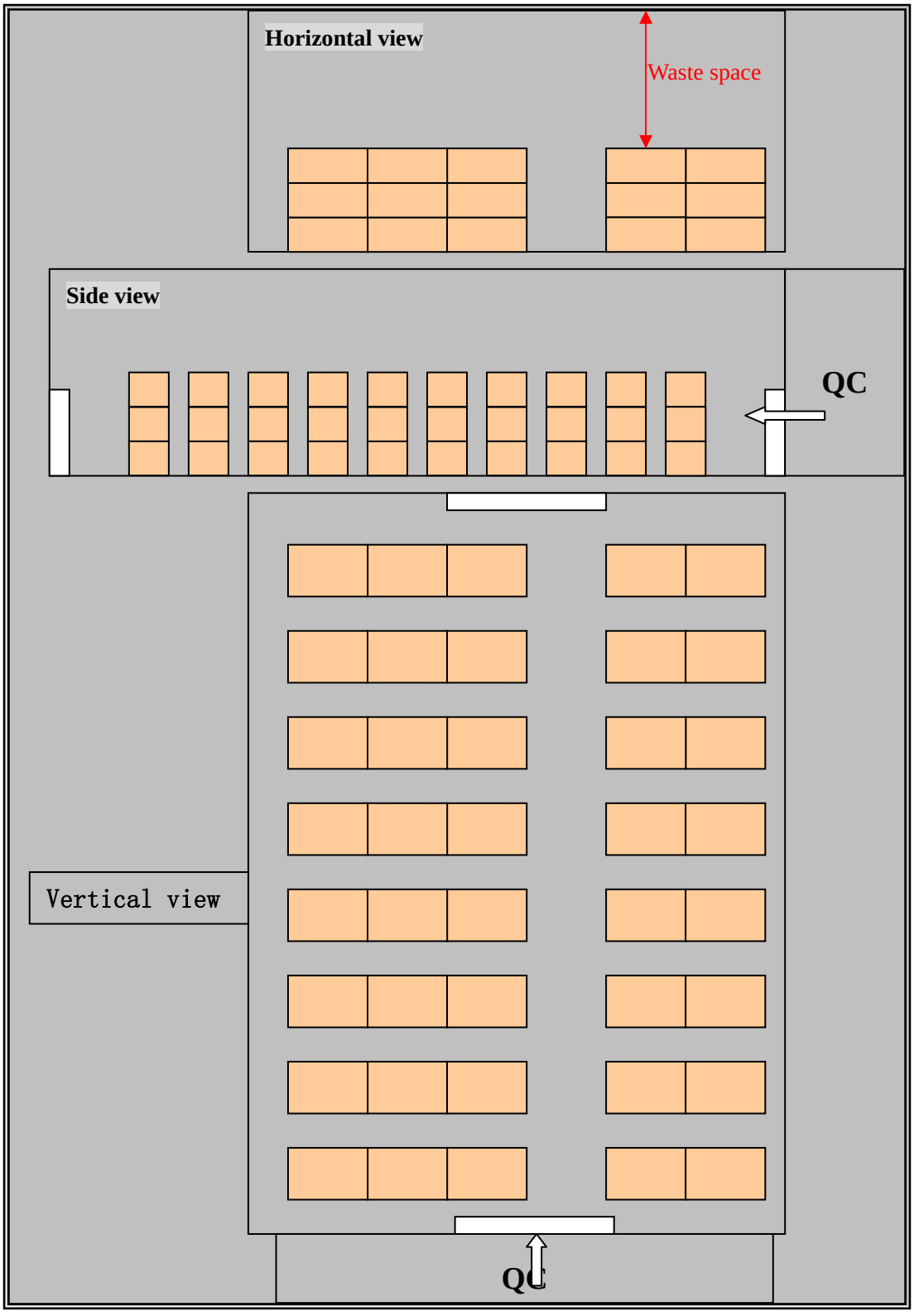

Figure 3.3 – Sketch of inventory - layouts

Deltai Medical purchase raw materials based on the rule of safe stock, which means when the inventory level is lower than the safe stock, they will purchase a certain quantity of materials every time, whenever it is need. The safe stock is calculated by experience and because of there is no database system, materials always being out of stock. Then it will lead to delay of delivery, and an emergency procurement also lead to cost increasing.

Final products inventory

The final product inventory in Deltai medical can just meet the needs of customers who agreed OEM cooperate relationships. These big customers forecast their yearly purchasing quantity then make a monthly inventory quantity need to the focal company in the beginning of year. Deltai Medical will follow the quantity for these named customers, but no extra quantity for other small or medium-sized customers. They always calculate these unpackaged products as final products in stock but which is differ from the concept of the West customer.

3.3.4 Sales

Sales logistics is the product flow between supplier and consumer while sale the product. It is the last concept in the enterprise logistic. It acts as the role of sale products through a series of marketing methods to meet customer demand and realize the value of products. Sale logistic starts from the final products warehouse to the final consumer. It includes: packaging, warehousing, distribution, load and unloading, value-adding processing, order and information processing, and sales logistic network.

David Medical has many sales departments in China main land, Taiwan, America…

to provide service for different customers from different region. The sales department in Taiwan of course forces on the service for customers in Taiwan and also in charge of the bank issues of the whole company. The sales department in America in charge of the customers in that region and committed to the development of the global market because America and Europe are the two origin market of medical products. The sales department in Shanghai is the busiest department for them in charge of almost 80% customer of the whole company. The sales department is quite near to the factory for easy communication. Most of the orders are signed here and they plan to cooperate with other medical products producer in China main land in the future for larger market and business.

Because the whole company is active in various exhibition about medical products in worldwide, new customers are continues to contact with them and they also have many loyal customers and great business cooperator which are the biggest in Europe of America.

The customer will contact with sales department and discuss cooperation, whenever a sale confirmation is signed, the sales department will set up order to the control department, which act as an information center but run more slowly and the control department will arrange rest things to finish the order. When the order is estimated to finish in a certain day, the sales department will inform the shipping department to arrange delivery for customer. The sales department is the link and window between customer and the whole company.

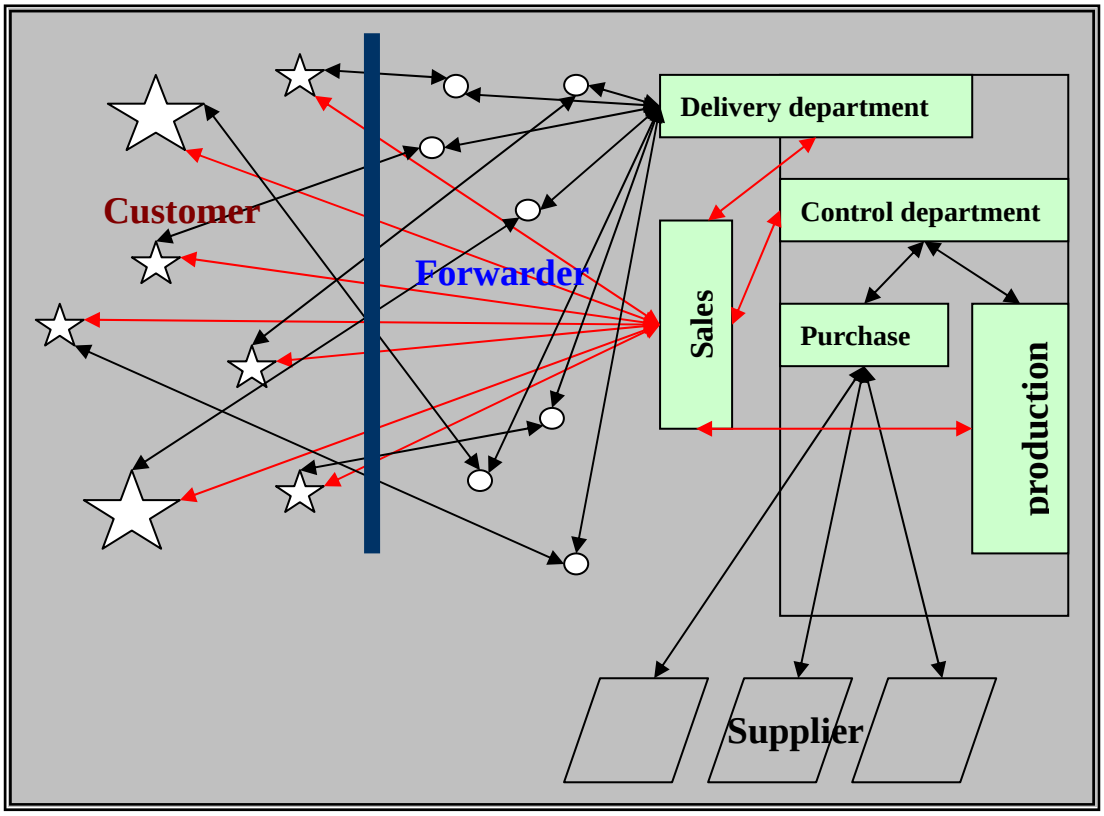

Figure 3.4 – Sales process in Deltai Medical

As figure 3.4 illustrated that the sales department should keep on talking with customer, delivery department of self company, control department and production department for order information. During these contacts are information exchanging, sales department is entangled in these works everyday.

Until now Deltai Medical just sale products via mail, attending the exhibitions, and telephone. But a big market which has been occupied by other enterprises – internet is ignored. This causes a big loss of customer.

The products are packed by different size of carton for sales. There are six kind of standard carton specifications and they never change it. When customer order products, break carton is not allowed. They always inform customer to adjust the

quantity to full carton load.

3.4.5 Distribution

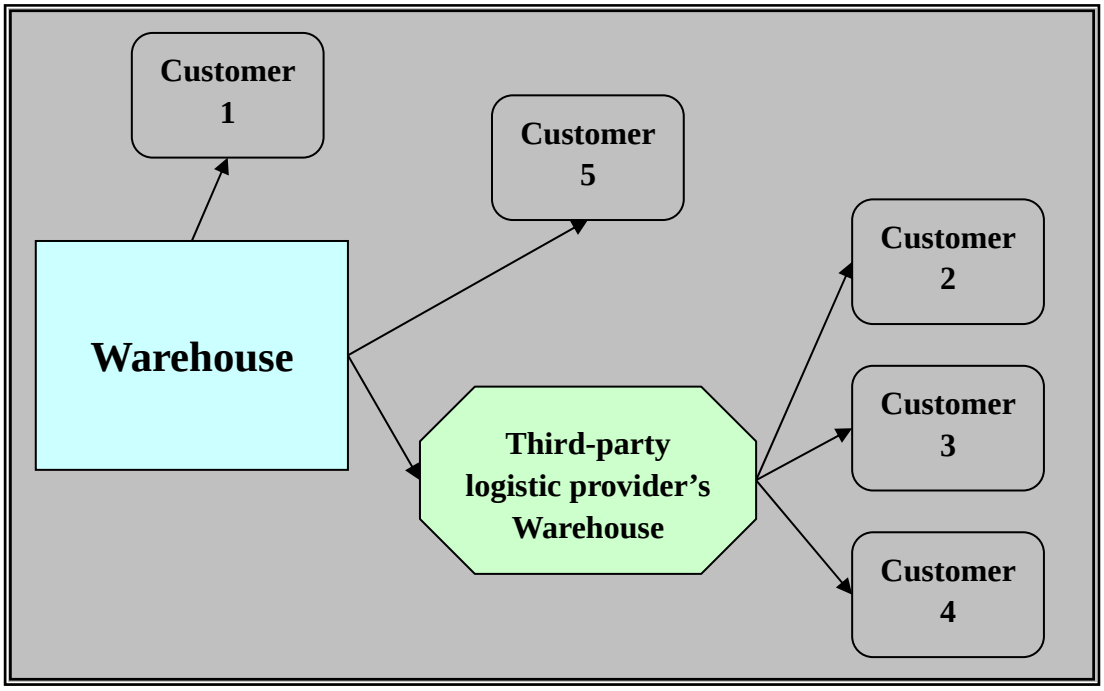

Figure 3.5 – Distribution process in Deltai Medical

The company has its own vehicles and cars for convenience. They can arrange land transportation in regional martial transportation and other works. They have many cooperators in every kind of transportation forms to meet the needs of customers. They delivery goods from the factory warehouse directly by express, sea or air whichever customer like. In another word, they combined using direct deliver system if customers are in the regional place and cooperate with logistic providers for transport cargos to oversea customers.

When distribute cargos to regional customers, customers cannot track the cargo distribution status because no tracking system, real-time reporting system or online

tracking platform in this company. If transport to oversea customers, they can track and tracing cargo status on the website of logistic provider.

4 Optimize the Logistic management in David medical enterprise

4.1 Optimize functional elements of the logistics system

4.1.1 Transportation and distribution

Third-party logistic cooperator

As Deltai medical is a private family enterprise, although it has many recourse and large branches, it is not a good idea for the company to arrange all the relative things of international business, such as distribution, transportation. In order to keep the core competitive advantage, product quantity and advanced technology, the better way for the focal company is to cooperate with third-party logistic provider to arrange some of transportation and distribution instead of do by itself.

The benefits of cooperate with logistic provider to arrange transportation and distribution are showed in table 4.1 as follows:

Table 4.1 – difference between outsourcing logistic and arrange itself

Arrange transportation and distribution company itself	Outsourcing transportation and distribution
Traditional measure, no professional segmentation and service	More professional service, reduce logistic cost and improve efficiency
Dispersed enterprise resource	Save and use limited resources to core business
Huge and complex branch departments	Streamlining and optimization functional departments
High risk	Reduce risk
No cooperate in supply chain	Enhance the competitiveness of the supply chain

- More professional service, reduce logistic cost and improve efficiency

Through cooperating with third-party logistic provider, Deltai Medical can improve logistic efficiency and reduce logistic cost because they can specialize the processing. They are professional transportation supplier that can offer most suitable stowage plan and most suitable vehicles for different order and shipment. If the company arrange transportation and distribution company itself, they must concentrate on issues from purchasing, production to distribution and many other issues, but if Outsourcing transportation and distribution, third party logistic provider can specialized on transportation and distribution; Deltai Medical only have several fixed kinds and number of vehicles for all the services, but third party logistic provider have suitable vehicles for different cargo. They can provide on-time service instead of transport by company itself; they can reduce logistic cost because they are concentrate on transportation, if arrange by focal company, high logistic cost and waste will appear because they are not the professional one. Third-party logistic provider can speed up logistic measure and optimize transportation route by advanced management software. They can provide different customer service level follow the segmentation by focal company. Especially for the company like Dletai Medical, it is easy for them to gain more professional measure through outsourcing.

- Save and use limited resources to core business

We all know those enterprises' resources are limited which is the most problem for development. These resources include: Capital, technology, human capital, production facilities and sales networks, supporting facilities and so on. Nowadays, demand of technology and facilities are very huge that one company cannot obey all the things by itself. Although Deltai Medical has rich experience on the past business, globalization make it became isolated if hold on doing all the things itself. It is

uneconomic for Deltai Medical to do business with our help from the supply chain.

Actually using the limited resources in core competitive advantage—production, lead the whole industry to a better situation which is good to their supply chain. Outsourcing other non-core segment especially transportation will help Deltai Medical to achieve an economical and easy environment for further development—reduce logistic investment and space to use in more efficient ways.

- Streamlining and optimization functional departments

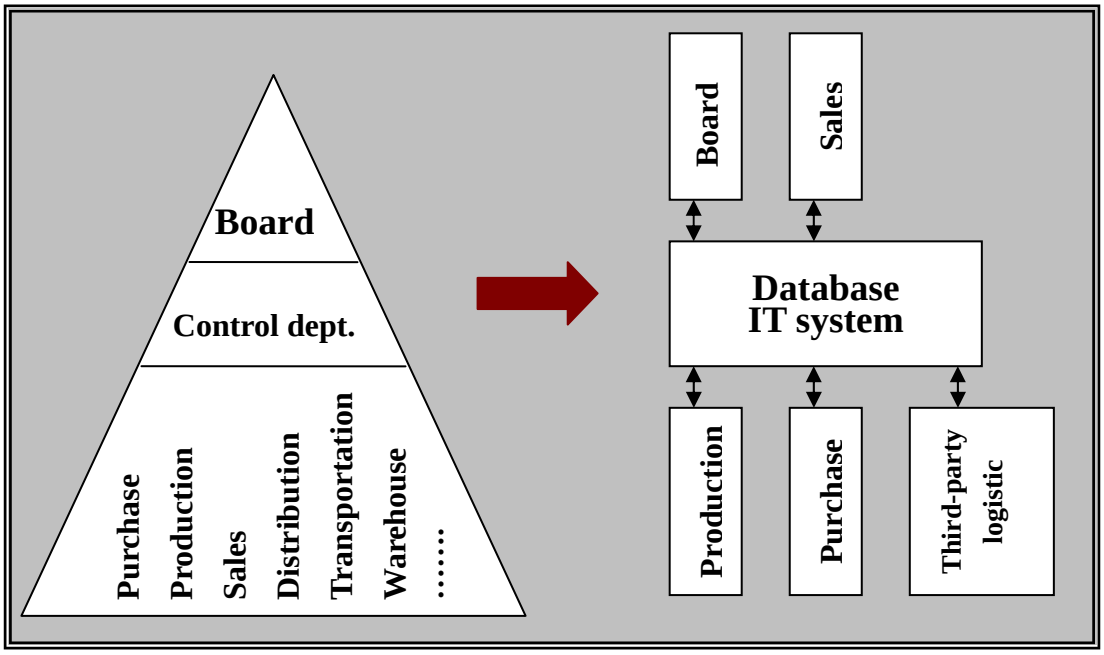

Figure 4.01 – pyramid structure and flat-like structure of one enterprise

With third party logistic provider to arrange part of the company measures can help the focal company structure become more reasonable and have more adjustable space. As showed in figure 4.1, Deltai medical has the company structure as pyramid, which has slow response to information flow. If we change the enterprise structure into a flat-like structure, the enterprise can have quick response to information

exchange and management based on database IT system.

As cooperate with third party logistic provider to arrange transportation and distribution, the focal company can free from these two measures and change the complex and difficult-to-control departments into a flat-like company structure which is quite better than the pyramid structure for the fluent and convenient information flow. The information of all the process including outsourcing logistic can flow free during the company database system.

Because reduce the company size from complex structure based on outsourcing, Deltai Medical can solve the problem of slow response in communicating with every departments and lack of creativity. Also it is better for develop core competitive advantage. If Deltai Medical wants to have their share in this highly competitive market, they should keep flexibility. Outsourcing transportation and distribution can do many in this aspect.

- Reduce risk

The supply chain cooperator, including third-party logistic provider, can build up a strategy alliance to shorten the period of time in the whole supply chain process and reduce the product risk because of the changing of technology and market demand. As every part of supply chain partner play their respective advantages, it help to open the market and raise the quantity of products and service. Because the focal company share the risk with logistic provider—Transportation provider and distribution provider, the possibility of cause huge loss to Deltai medical.

Practice of outsourcing logistics

Gelai De • Kiel, operator manager of branch of Menol Logistics (America) in Aien

Webster, Illinois, summed up nine best outsourcing practice:

- Drawing operating flow chat
- Joint system
- Making plan and schedule
- Form an action group
- Communication
- Well-trained peoples and talents
- Trial operation
- Start in safe mode

To compare the actual situation with Deltai Medical and the logistic service development in China, we tend to choose a number of transportation and distribution company to cooperate together to arrange outsourcing logistic of Deltai Medical. A practice of outsourcing transportation and distribution can be set up as follow:

Cooperation strategy of management of transportation logistic outsourcing

It is important for Deltai Medical to choose the right cooperator of transportation and distribution. Good partner can provider win-win succeed, but poor or not suitable partner will bring unnecessary difficult in arrangement, seriously, make bad effective on operation.

Logistic provider selection-for transportation

Firstly, it is better to have an open tender of transportation provider to choose some better cooperator. On side, it can prevent some unexpected human factors when select cooperator; on the other side, through the process of open tender, the manager of Deltai Medical can have a rough idea of world logistic provider and can comprehensive evaluation all aspects and selection best outsourcing partners.

Due to the status of Deltai Medical in transportation, the factor of select transport cooperator should base on the company status and company tender description.

- Company status which include service level, company hardware, software, cooperate program, business status, business coverage…

Service level of one company directly influences the transportation quality. Service level including whether it can transport cargo on time, whether there is cargo damage, track and tracing system…

Business coverage is quite important for the focal company to choose transport cooperators. If the business field of transportation provider cover the business field of the focal company as figure 4.2 showed, the focal company can get free from these things, if not, it is hard for transportation providers to create new business in the market where they never go.

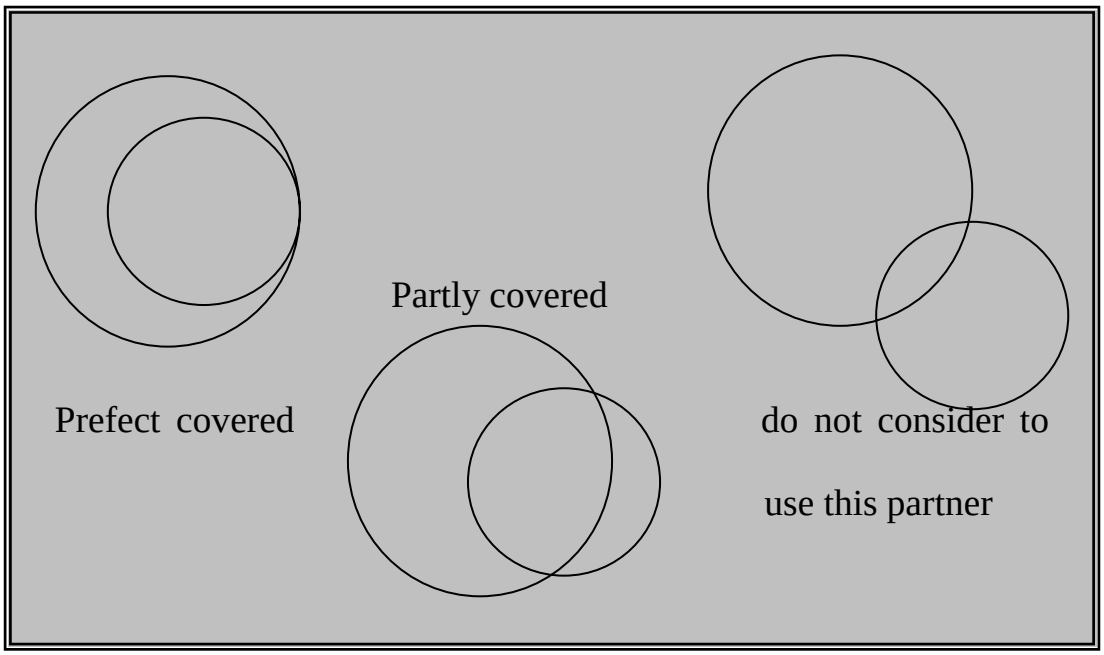

Figure 4.02 business coverage

To have a picture of how the transportation provider works now is also important as the precedent in future cooperation. Cooperate plan submitted by the transportation company is also an important factor to display whether the company has good management and creativity on planning.

After found some suitable cooperator, an outsourcing agreement should be established, which can effectively prevent latter dispute or differences. Set up a clear pricing system. Through detailed and clear terms and agreed profit level to ensure transport cooperator a long-term, stable income. The focal company should aster the operating conditions and profitability, promptly identified risk and guard against it.

Logistic provider selection-for distribution

Similar to the selection of transportation provider, distribution service provider selection should according to the principle of several factors:

- Service level
- Distribution network
- Cooperate program
- …

The focal company should work with distribution partner for reaching “right quantity, right products and without complaints”.

4.1.2 Warehousing

Purchase – raw material inventory control

Material Inventory in Deltai Medical should be changed in three respects: hardware, software, and management concept.

Now the enterprise only uses man power and manual machinery to transfer and cross docking materials. No electric machinery is used, so the stock height is very low compare to using machinery and it is hard and dangerous for workers to stock material without machinery. For cost saving and suitable for private factory, we can choose small machine to transfer martial. For example, Electric forklifts, which can use to lift materials; Diesel fuel re-balance forklift; High-electric reactor and so on.

The company still uses paper work to record material inventory, which is too hard to keep the step with the production and sales speed. Every time sales department require the estimated delivery time for a new order, the related department should work on asking data from every department, including inventory, calculate on the

numbers then make the forecast. If they can use IT system to store inventory information, the only thing they should do is to insert the number when purchase new materials or consuming materials, and when any other department want the data, the computer system can automatically calculate the right and quick data for them.

Because of no machinery used in inventory, the accessible stack height is just about 3 meters (3 tiers). If the mentioned machines are used, 5 tiers are available for stack and make some space for safe stock and management space. It is more convenience to set free space in the entrance and exit for provisional stock.

The shortage of using Order Point Method to control inventory is the cost of inventory stock if there is no customer ordered and no material consumed. The company purchase raw materials from suppliers when inventory is lower than safe stock. The better way for them to save cost is to consider peak and slack season of order.

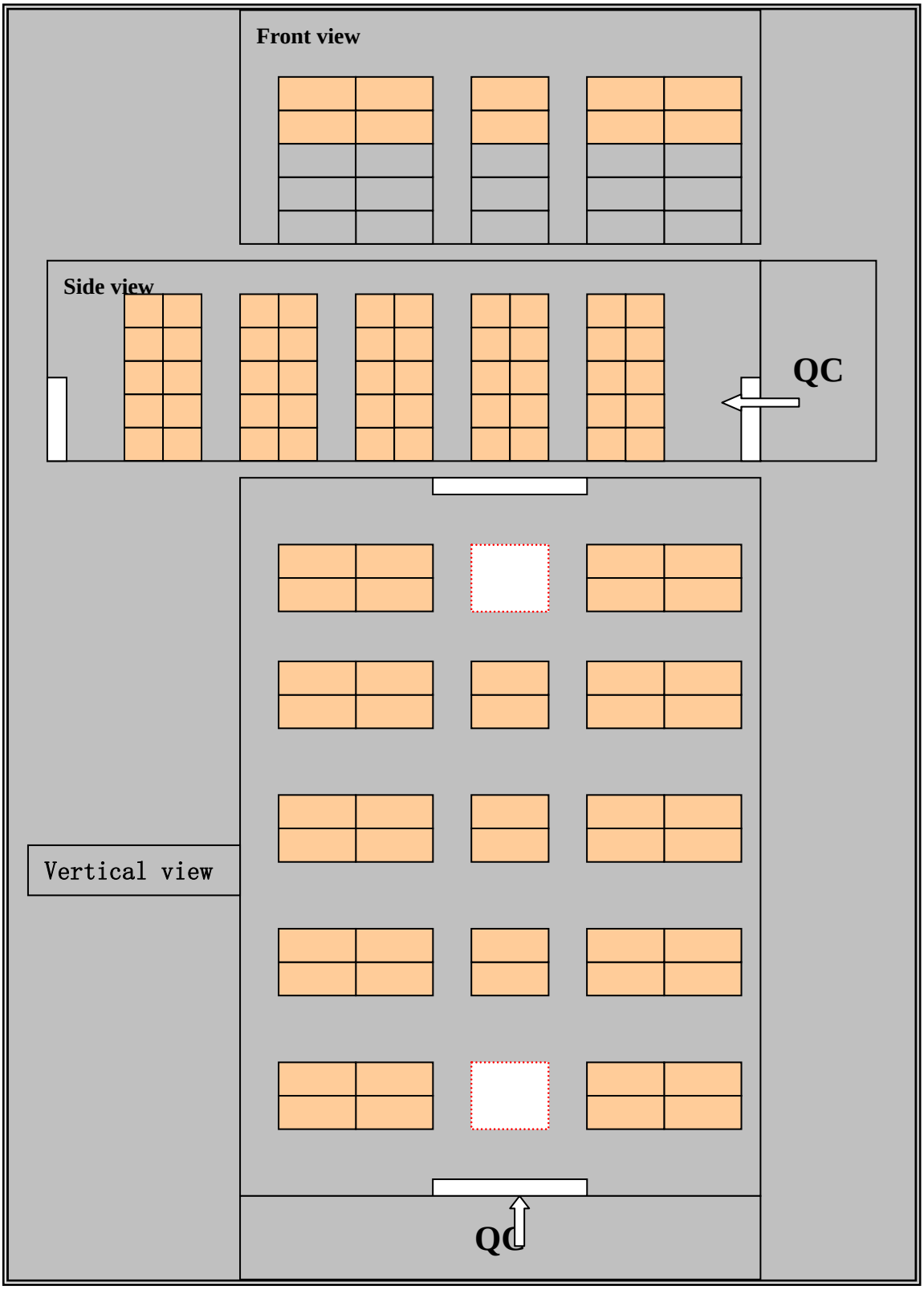

Figure 4.02 – Inventory optimize in Deltai Medical

Here is the order information of every month in Deltai Medical Group showed in Table 2,

Table 2 – Monthly needs of raw material during 2006 to 2008 (Unit: piece)

Material A	2006	2007	2008	Average
Jan	2576	3334	690	2200
Feb	534	580	400	504.6667
Mar	2540	1046	3137	2241
Apr	1508	3303	555	1788.667
May	186	228	103	172.3333
Jun	356	478		417
Jul	423	690		556.5
Aug	336	400		368
Sep	2860	3137		2998.5
Oct	593	555		574
Nov	316	103		209.5
Dec	2886	3728		3307

Material B	2006	2007	2008	Average
Jan	374420	235671	448217	352769.3
Feb	205742	199905	132768	179471.7
Mar	208406	322495	273150	268017
Apr	296740	363688	100260	253562.7
May	103580	265408	92707	153898.3
Jun	120940	140478		130709
Jul	110936	448217		279576.5
Aug	349643	132768		241205.5
Sep	244791	273150		258970.5
Oct	124585	100260		112422.5
Nov	127854	92707		110280.5
Dec	291643	327285		309464

Source: Deltai Medical Group

We can analysis form the above table and conclude as follows (Figure 4.3):

For product A, peak seasons are January, March, April, September, and December;

the off-seasons are February, May, June, July, August, October, and November,.

Fro product B, peak seasons are January, March, April, July, August, September, and December; the off-seasons are February, May, June, October, and November.

If we always order same amount materials every month, a out-of-stock will happen in the peak season because there is a big gap between peak season and off-season or a waste of stock will appear in the off-season.

From the above analysis and induction of the several monthly order amounts, we can reach the following conclusions:

Consequently, the proper application of regarding the order amount as the weight factor in terms of the management of raw material storage can extraordinarily decrease the cost of raw material storage. If putting month in the place of measurement temporal unit, we can make the following regulation in optimizing the administration of the raw material:

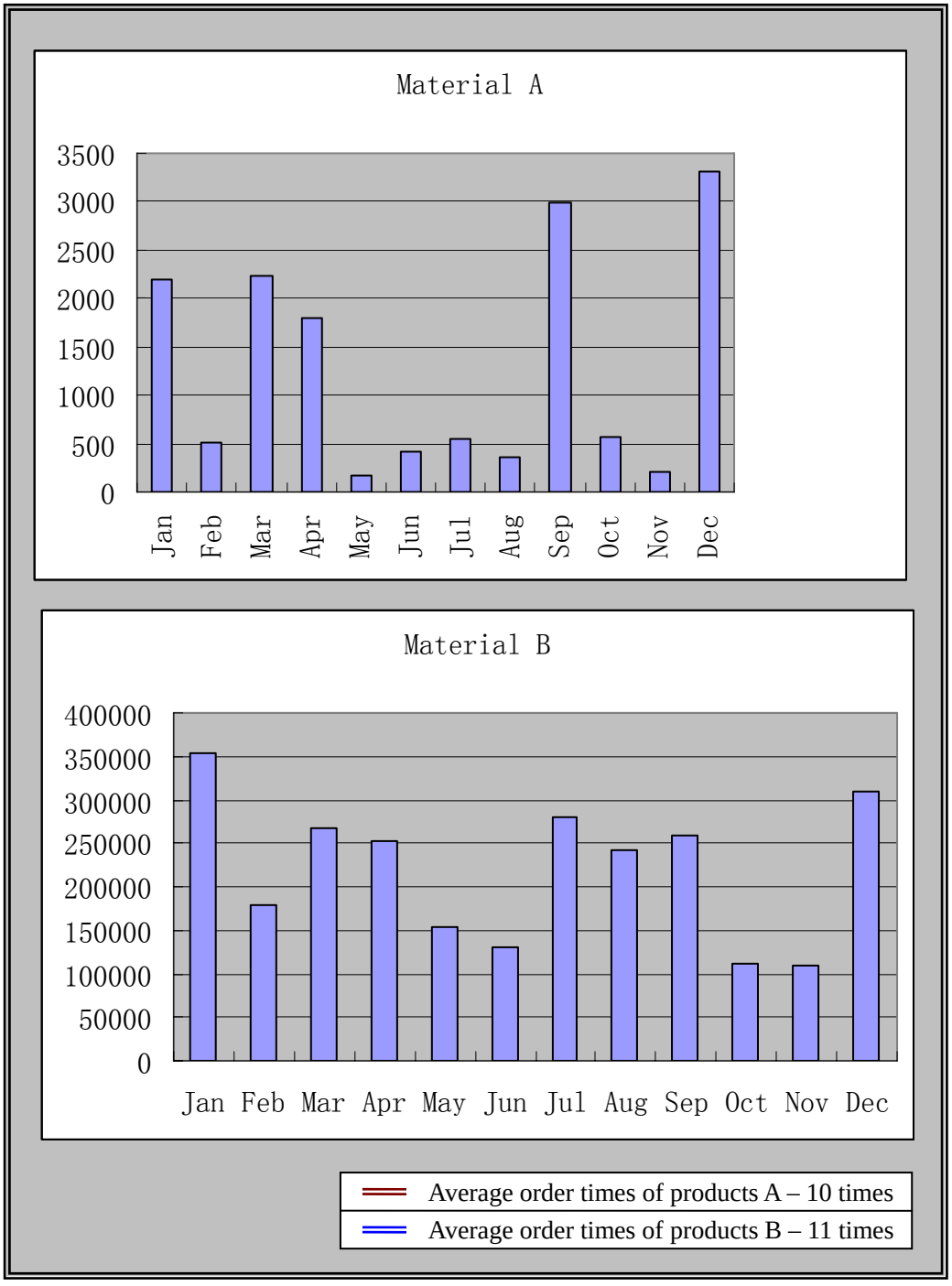

Figure 4.03 – average order amount histogram of material A and B during 2006 to 2008

Source: Deltai Medical

Firstly, we should regulate the storage to a safe level which can be the minimum

using quantities (or second minimum using quantity for safer stock) of a certain month or the average storage of each item of products in a year.

In the focal company, because need of materials always has great change every month, to decrease the cost to the lowest also considering the emergency situation in peak season, we use average order amount as safe stock quantity.

To material A:

Safe stock = Average stock = (2200 +505 +1789 +172 +417 +557 +368 +3000 +574 +210 +3307)/12

=1092

To material B:

Safe stock = Average stock = (352770 +179472 +268017 +253563 +153898 +130709 +279577 +241206 +258971 +112423 +110281 +309464)/12

= 220862

Secondly, we should regulate the stock quantity which means the stock quantity should be the number comes out of the using quantities of the next month subtracting the quantities of safety storage when the storage is decrease to the safe stock level. If safe stock level is higher than the average order quantity of next month, there will be no material ordered. That is, according to the above regulation, the administration model of raw material storage should be:

Table 3 - order quantity of next month

Month	Material A	Material B
Jan	-587.3333	-41390.3
Feb	1149	47155
Mar	696.667	32700.7
Apr	-919.6667	-66963.7
May	-675	-90153
Jun	-535.5	58714.5
Jul	-724	20343.5
Aug	1906.5	38108.5
Sep	-518	-108439.5
Oct	-882.5	-110581.5
Nov	2215	88602
Dec	-1092	-220862

Obviously, the optimized model adapt better to the change of order amount, which is capable of economizing company stock and storage cost in off-season while increasing stock flexibly and supply raw material timely in peak season.

In production-semi-finished products inventory principle

Another important point that the company maybe thought to improve is the production plan. Now they produce for order confirmed and some safe stock of final products, no considering about stocking semi-finished products. If there are semi-finished products inventory, when customer ordered, the factory can quickly assembling parts into final products for a very quick delivery time and jump to a high level of customer service.

The advantage of semi-finished products inventory can be concluded as:

- Shorten delivery time

With the inventory stored, when order is coming, factory can quickly collect the necessary accessory and assembled in the assembly department which is faster than

produce from raw materials. To use semi-finished products inventory, we can achieve a just in time service to customers. Large amount production with parts of the products and assemble in small amount for individual customer.

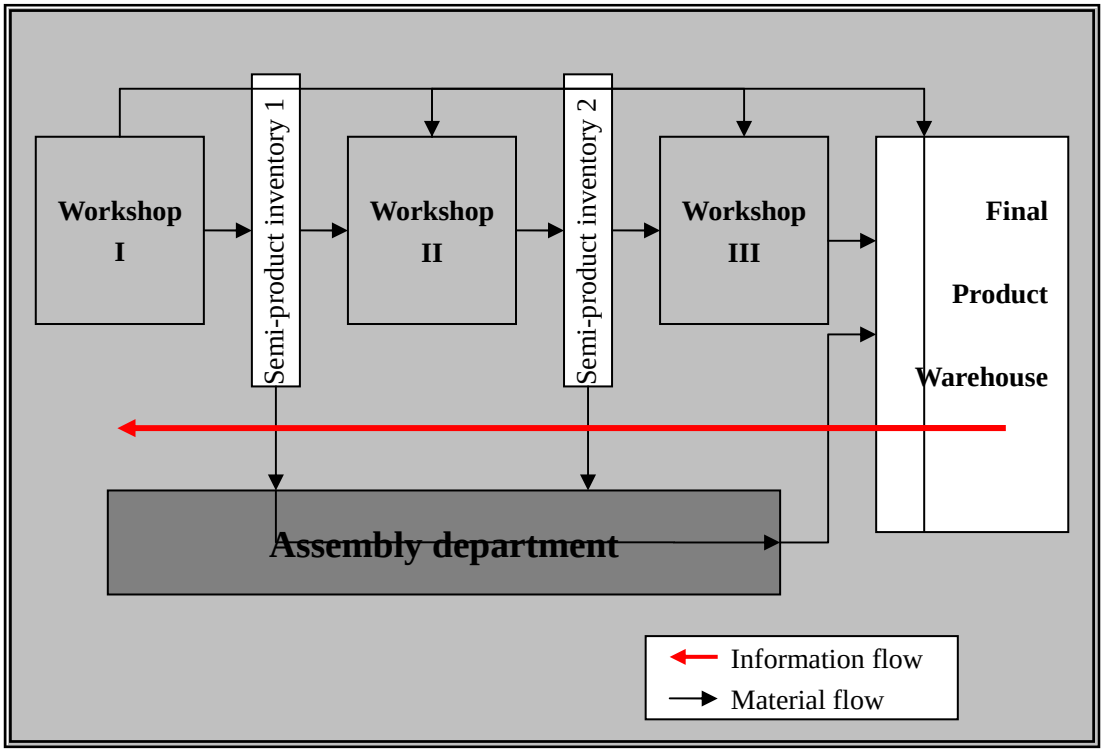

Figure 4.04 - Semi-finished products inventory

- Optimize/adjust work schedule

Because all products in Deltai Medical are produced in these three workshops, in peak seasons, orders surge to fulfill the working schedule and maybe cannot timely plan into produce schedule. If assemblies are stored there will no congestion in peak season. This produce plan can be use to adjust workshop to meet the needs in peak season and working on more order.

- Higher quality control

When one part finished production, a quality control will be done before store this part into semi-finished products inventory. Thus, two or three quality control process will be done before change into final products and deliver to customers. Compare to survey just for once, introducing semi-finished products inventory into production plan will promise higher quality service to customer.

- Increase core competitive advantage and better customer service

With shorter delivery time, higher quality products, the company can achieve a better customer service level with focus on every individual customer. The core competitive advantage of this company is their professional manufacturing technology, by introducing semi-finished products production plan, manufacture process will be optimized and reach a new height.

In sales – final products inventory control

The storage of final products is just the same of material inventory control in principle. A storage plan should be set to control the quantity; warehouse pattern should be considered to safe factors; electric machinery used in warehouse can improve work efficiency and reduce manual works.

The storage plan is also related to the order quantity. For quickly delivery time, it is necessary to have some inventory of final products. It also can be used to prevent a sudden increase of order quantity. But we should be cautious because excess inventory is a waste. Through the analysis of order quantity in every month and estimated the need of every product than set up an inventory level of final products.

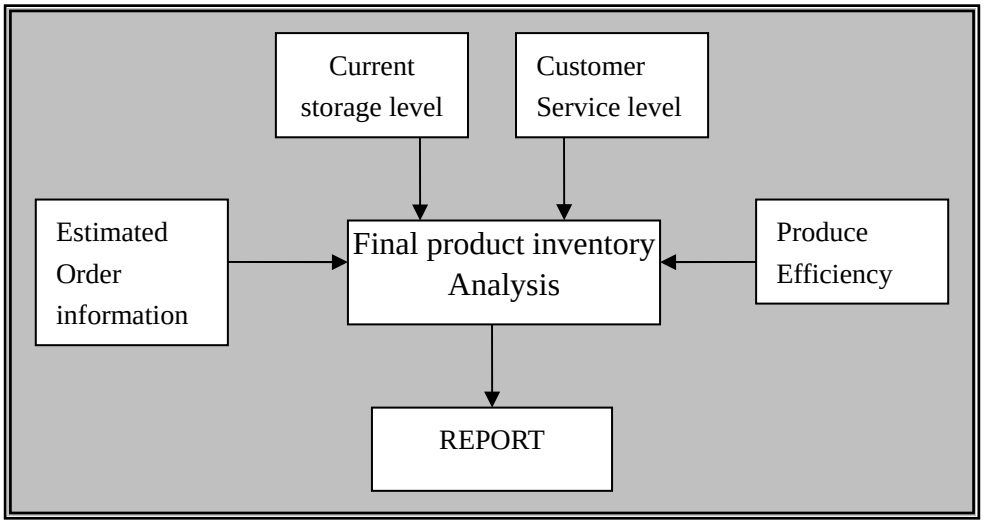

Figure 4.05 is the process of considering storage plan.

Make a comprehensive consider of all aspects and integrated elements, as listed in figure 4.05, and make the report of final inventory stock level to be the Source of information for decision makers. Use mathematic tools and experience to estimate order in the short future, then calculate current storage level as the bearing capacity of enterprises, due consideration to the request of customers then according to production efficiency, make the inventory analysis.

4.1.3 Packaging

It is better for Deltai Medical to improve their packaging for different needs from customer for attracting customer and better customer service. The packages now used in Deltai Medical are just using fro transport, more choice in size will be better during the transportation with different quantity and does good to sales.

It is a good for Deltai Medical to consider creating smaller and humanization package. Small package can be use to attract small customer who may become a bigger one in future. The world market lead small customers to face direct factory

sale department and we should consider them as one of our target customer. Humanization package is the needs of sales. Today's commodity competition is not just itself but all the relative factors. Since we own similar level of technology, when we consider how to create advantages above your competitors, we do not only concentrate on commodity itself, also our service, our package and other related issues. So, package also an important factor in the logistic chain to increase the company's competitive advantage. A third party packaging specialized company as a partner is also a good choice for reduces cost.

4.1.4 Information system

Purchase information system

Purchase logistics information system including two main parts: external information received and the transmission of information in enterprise

- External Information Access System

To provide basic information and choice for enterprise purchasing activities and act as supervision and management positions in the purchase process. In the process of purchasing raw materials stage, the purchase information of the various raw materials will be collected, collation and integrated into database system. The collect information including: Name of raw materials, manufacturers' information, quality rating, price, volume of orders, shipments speed…

Through this series of collection, integrated purchase information system can provide multi-choices for decision-makers to decide most suitable raw materials purchase plan.

In the implementation phase of raw material purchase, the logistics information system can transfer of production and transportation of raw materials real-time through the cooperation with suppliers, and make the focal company to follow up with the corresponding adjustment of the production planning and order processing process at any time.

- The transmission of information among the system

In raw materials selection, purchase and consumption stage, the internal information transmission system in charge of sending the process stage of raw materials procurement to all departments as a reference. At the same time, some of the information can be displayed on the external information exchange platform and become an integral part of customer service for guests from raw materials to ship the complete product information.

In the production sector, production planning staff need to understand the raw material supply situation, if the supply of raw materials is in time, production can be started in accordance with the established production plan; if raw materials is supplied in advance or delay, the plan will have to be adjusted to ensure that the number of stocks at a reasonable Range.

In the sales department, sales can provide the accuracy and timeliness of delivery period of products to the customers, and use for better communication through the adjust production sector in accordance with supply of raw materials.

Production information system

The core competitive advantage of Deltai Medical is their production. They have the most advanced machinery and technology of producing the second kind medical

products. Large amount investing has been put into production process. As using the advanced machine, it is easy for workers to master their work well and the product quality is highly appreciated by the customer. But the shortcoming is document work and information control which should be updated to keep the step with other works in other department and speed up the whole processing. By using the database system can speed up their document work for quicker delivery and customer service.

As figure 4.3 illustrate, When materials are ready and order turn to production process, information will send to database pool and other department will receive these information for better communication. When finished production, the information will also send to related departments at first time and delivery can be arranged at the earliest time.

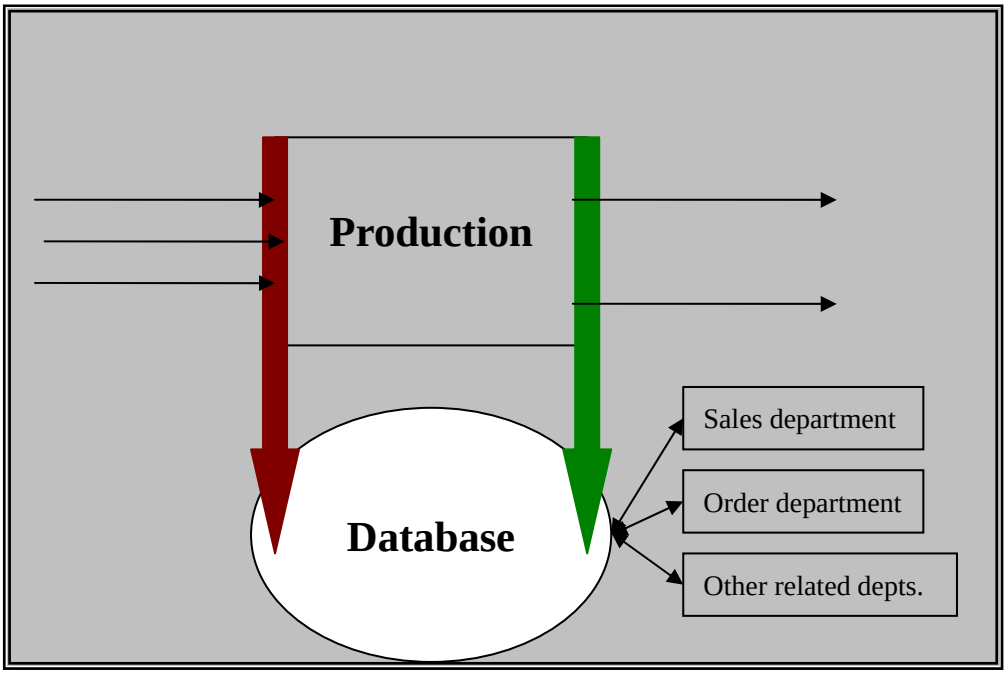

Figure 4.06 – Production optimize in Deltai Medical- Information system

Sales information system

Now in Deltai Medical, It is a heavy work of paper work in sales process. If doing these documentary works without IT system, there will always be mistake, cross work, waste of time and human resources… The needed document in the sales process are: any company and product document and information, quote list, sale confirmation, Performa invoice, invoice, packing list, …etc. It is really a huge work for sales to do all of these things without a system. A large amount time will be waste on copy, paste, enter, search, check… A suitable IT system is quite convenient for staff to get free from this unnecessary work. The system should include: information collect and store, document generate and putout, information search engine, communicate platform and related function.

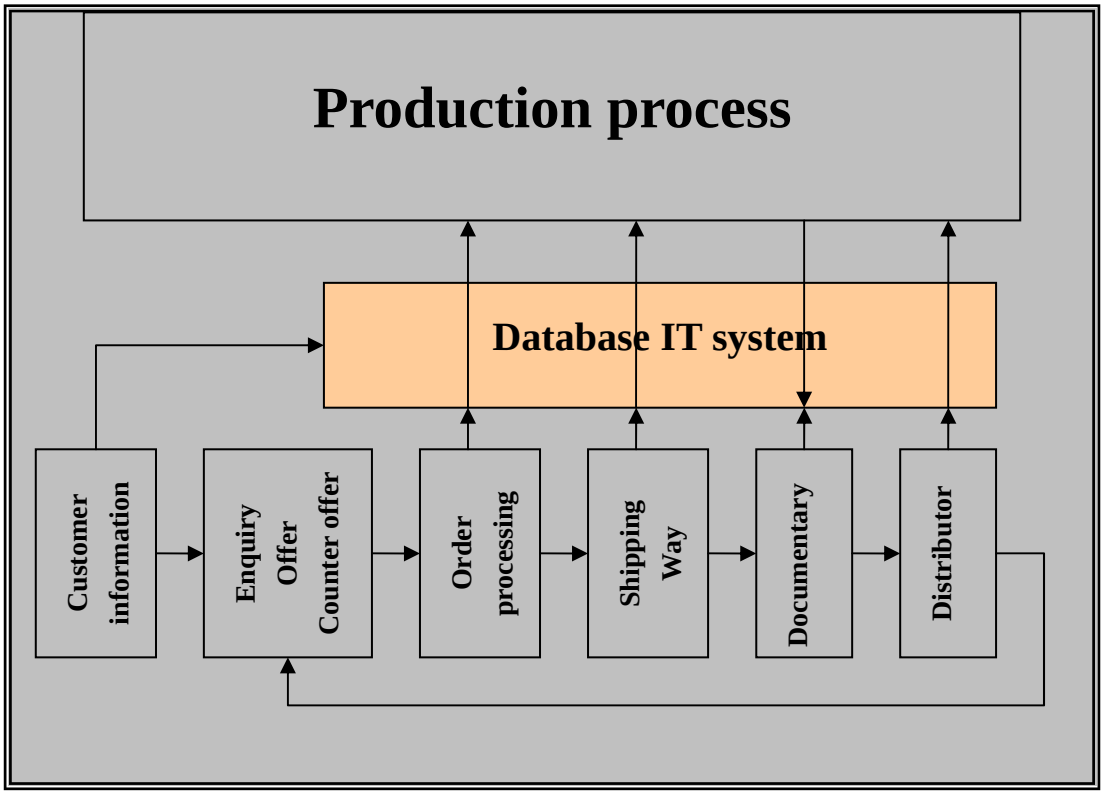

Figure 4.07 – sales processing optimize

By using the database IT system showed as figure 4.4, all the information flow can be stored in the data base. Staff can clearly see the statement of order processing and shipment information and have better communication with customer. It quite shortens the time waste and improves working quality.

For attracting more customer and better customer service, it is necessary and urgently for Deltai Medical to have a B to C platform for internet business cooperation, ordering system and tracking and tracing system.

The suitable online B-to-B or B-to-C platform including above three important opened system can be illustrate as figure 4.5

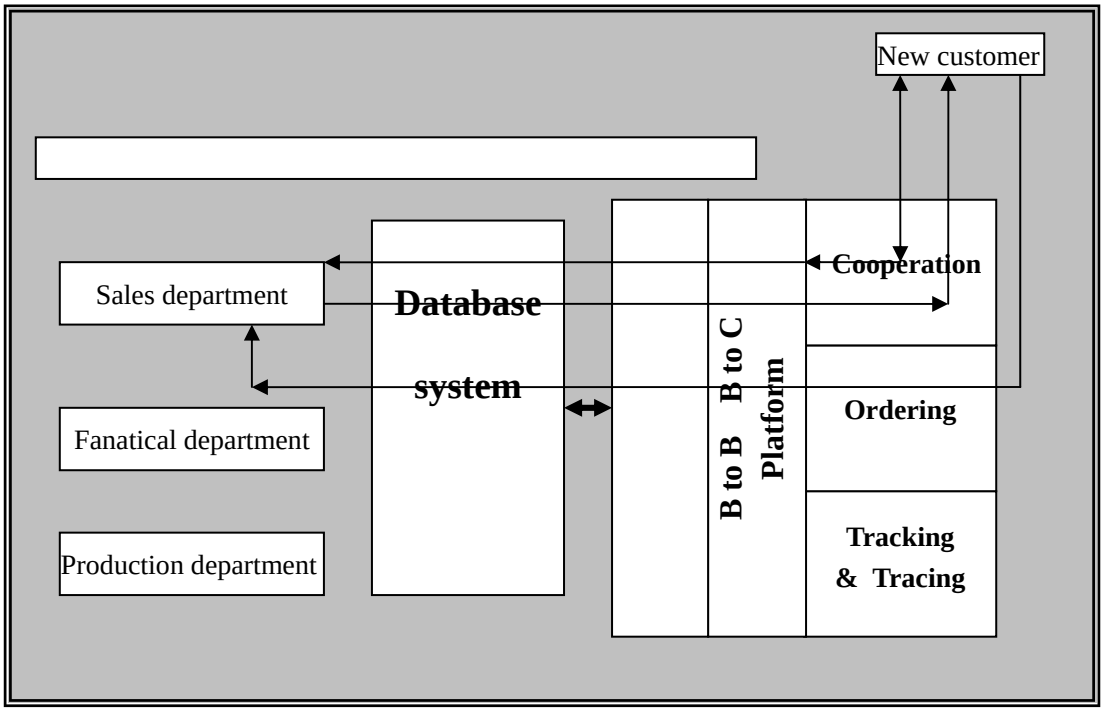

Figure 4.08 – Platform for sales

Integrated Information System

To integrate procurement information system, production information systems, sales

information systems and distribution information system (outsourcing) together, and using appropriate keywords, search engines, to make a integrated information systems from upward logistic production logistics, downward logistics.

In fact, Deltai Medical has a lot of European customers, which have well-developed logistics system. Consultations with clients and discussed, summed up a reasonable plan of whole supply chain logistics information system integration, which is also customers wanted. Once the successful integration of information system, it will be able to greatly increase the efficiency of various links and provide better customer service. February of this year, Deltai Medical has experienced the problem of that inventory can not be readily reflected and result delivery delays, finally make the cooperator of supply chain loss sales ability. If we can work out a unified system of logistics information system, this problem can be easily overcome.

Following is the expected confidence in the logistics systems integration icon see figure 4.09,

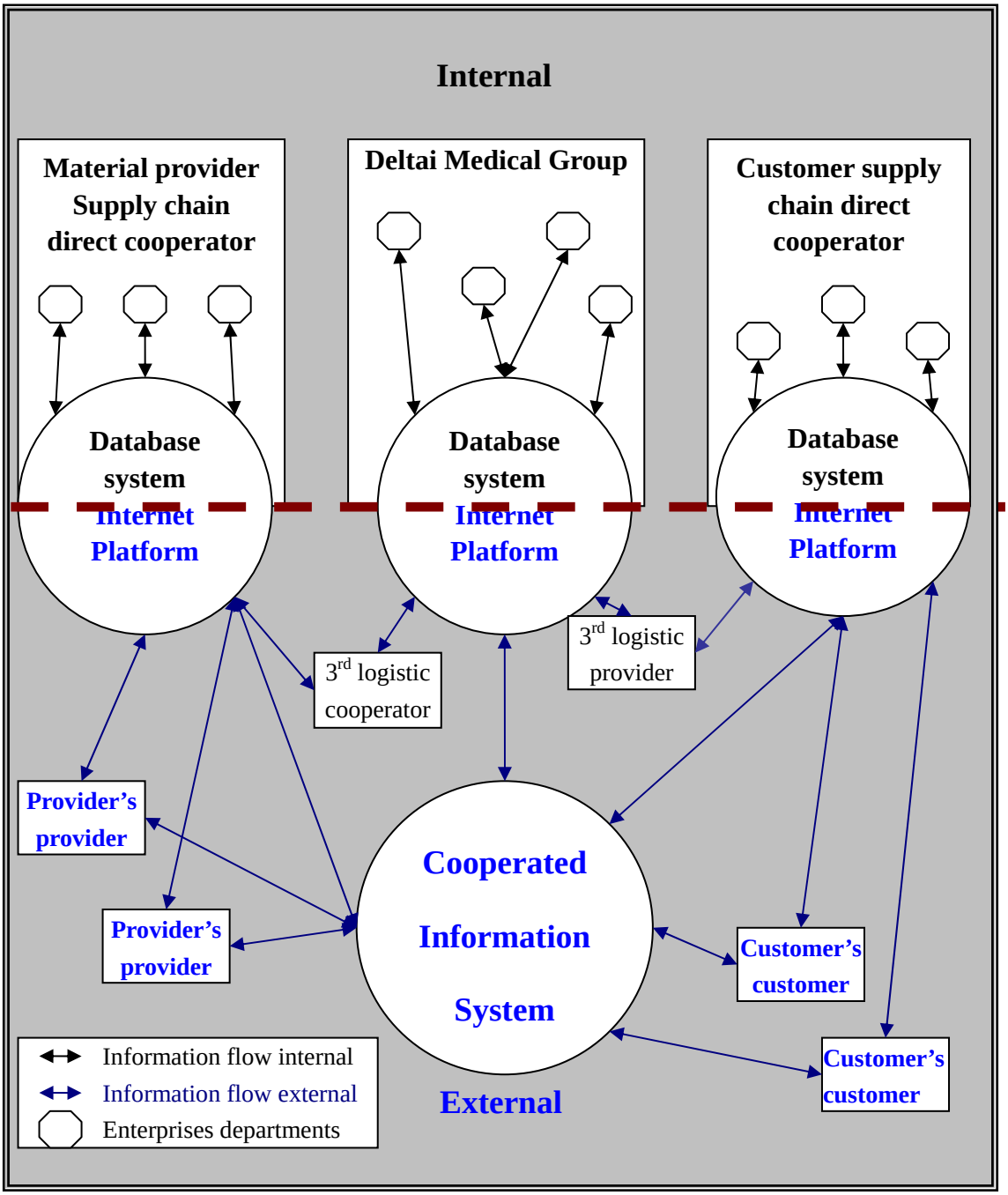

Figure 4.09 plan of logistic information system within supply chain

4.2 Logistic system optimize

4.2.1 Integration Management- Horizontal integration

The horizontal integration in Deltai Medical Group is to integrate every exist department into a whole logistic management system. The first thing should be done necessarily is to use IT system to combine all the information flow in the whole company. It is the first and basic thing for this company to reach horizontal integration. Only with the system control and share information, the different departments of the enterprise can get the information at a database platform and deal with the affairs well.

Every department stores their working process data into the IT database system with a standard form and keywords. Different data from different department will link the related data by keywords. All the data then be collected and turn into information for the use of whole enterprise.

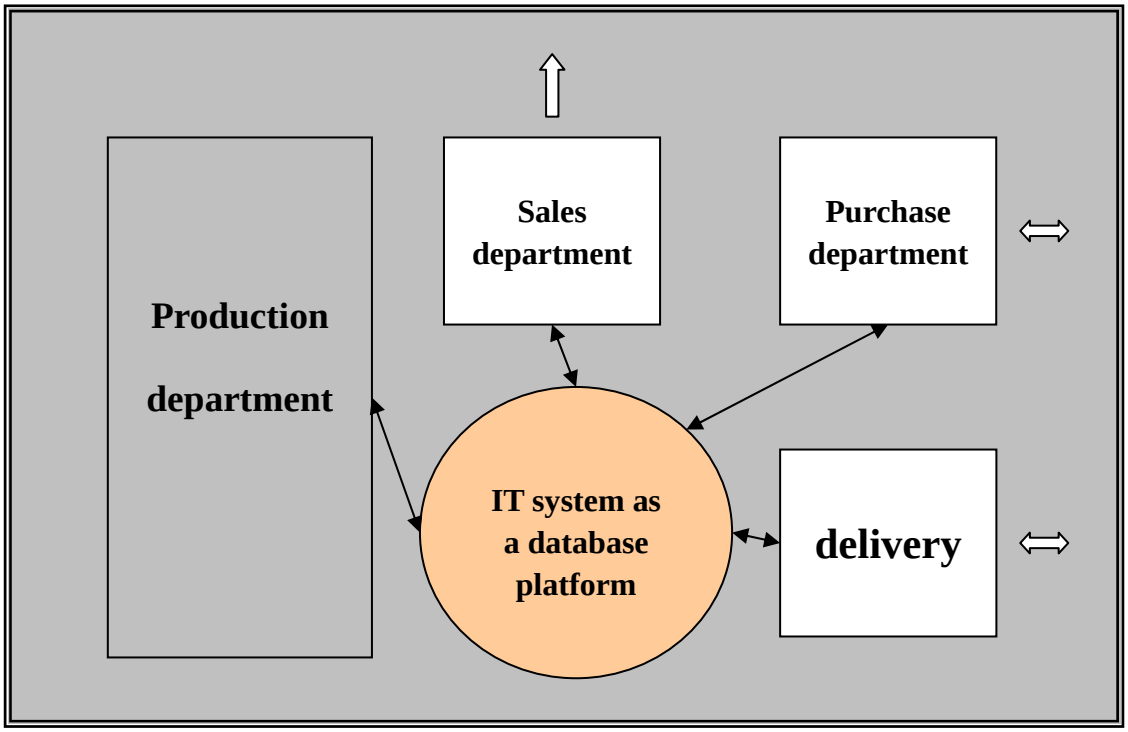

Figure 4.10 - Horizontal integration in logistic system

For instance, the sales department receives a new order from a loyal customer and what she wants to do is to search the order information and production information of this customer. If the company is supported by a database system, the production department (factory of the enterprise) should have inserted many records into the data pool under the same name of this customer, the same as other department, different date, order, products, but same customer as the key word. The working sales can search the information by the keyword customer name and what she can get are the reference of whether it is the first time for this customer to purchase this products, is this customer a big big customer or just a retailer.

4.2.2 Integration Management- Vertical integration

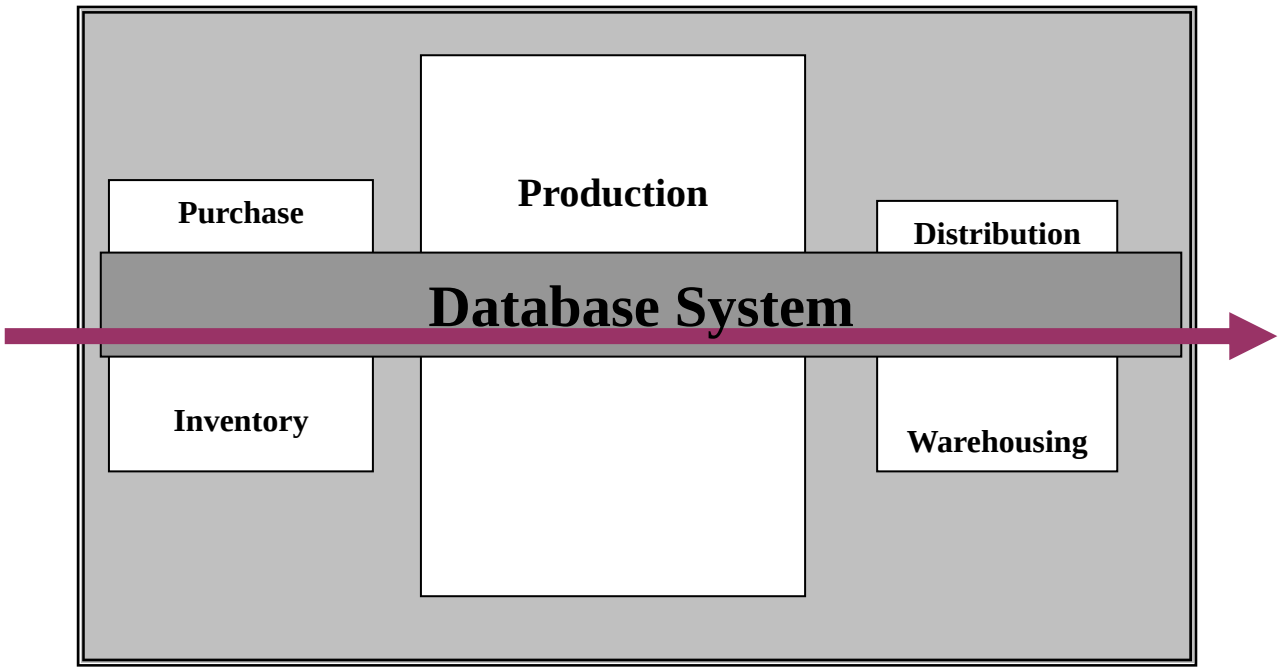

Figure 4.11 - Vertical integration in logistic management

It is to link the whole production process of one order based on the database system. If Deltai Medical still used a traditional way of control the order process without IT technology, it is hard for them to keep up the speed of world delivery time and customer service. With a database system to keep on record the order processing from purchasing of material, inventory, production, to distribution or warehousing. Managers and related work staff can easily catch the process and have quicker, more correct response for better customer services. The next workers can forecast the order processing and ready to start work by using the database system and the delivery department can notice the delivery at the first time and prepare for transport the products.

4.3 Supply chain management

Actually the enterprise only chooses suppliers with the standards of price and quality. Of course these two factors are most important in choosing a qualify supplier, but it is better to introduce more factors to have a wide and better choice: Delivery time, distance, level of warehousing, the ability to deal with unexpected/sudden situation, the traffic situation between supplier and company, financial situation of supplier…etc.

We can set up some most important concept as weight factors. And in each factor, the best supplier will be valued as 1, the second one as 2… Multiple this values with weight index and add all the factors, the smallest score will be the optimized supplier.

Table 4.1 – Weight factor for choosing best supplier

Factor	Weight %	Supplier 1	Supplier 2	Supplier 3
price	25	1	3	2
quality	35	2	1	3
Delivery time	15	3	1	2
distance	10	3	2	1
level of warehousing	5	2	3	1
the ability to deal with sudden situation	5	1	2	3
financial	5	3	2	1
Total	**100**	**15**	**14**	**13**

For example, in table 4.1, we have three suppliers with different performance in price providing, quality of products, delivery time, distance to the focus company, level of inventory, ability to deal with sudden situation and financial statement. The weight of

these seven factors are showed as second column as percentage. The performances of three suppliers are displayed from column three to column five. The result of choosing the best supplier under these factors can be done as follows:

Table 4.2 – choose supplier with weight factor

Factor	Weight %	Supplier 1	Supplier 2	Supplier 3
price	25	0.25	0.75	0.5
quality	35	0.7	0.35	1.05
Delivery time	15	0.45	0.15	0.3
distance	10	0.3	0.2	0.1
level of warehousing	5	0.1	0.15	0.05
the ability to deal with sudden situation	5	0.05	0.1	0.15
financial	5	0.15	0.1	0.05
Total	**100**	**2**	**1.8**	**2.2**

We can conclude from the result that although supplier one have a better than other two in price and quality, it does not the best one if considering all the factors; meanwhile, although the third supplier have best performance in more aspects but if considering the weight factor, it does not the best choice. Comprehensive considered, supplier two became the best choice among these three suppliers based on 7 factors with different weight.

Conclusion

As a typical manufactory enterprise in China, there is a wide gap between world logistic management level and Deltai Medical's logistic management system. The problem can be concluded as: lack of specialized logistic management technology, professionals of logistic planning and managing, IT support system, supply chain management sense…

To solve these problems, several solutions have been discussed to optimize logistic system in Deltai Medical. Based on the data from Deltai Medical and statistic, this author analysis the effective methods for optimizing the logistic system in every parts of the enterprise, including transportation, distribution, warehousing, information and other aspects. Cover all aspects of production activities in manufacturing enterprise from purchasing, production, to sales.

The entire logistics system should quickly set up a database-based information sharing system, which is a necessary condition of modern logistic. Then turn into the research of each parts of the logistic system to improve the system based on the characteristics of focal enterprise. After that, conclude the system optimize plan with details measures based on the supply chain management principle.

The conclusion of logistic system optimizing can be used to work as an sample for other small of minimum-sized manufacturing enterprise to consider their own effective logistic systems to achieve more economy activities in the work process in China.

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