Operations Strategies to realize DCM as the next stage of SCM and Case studies in Japan

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Abstract

Demand Chain Management as the next stage of SCM is focused in this paper and some operations strategies are discussed to realize it. Firstly Demand Information which is the core of Demand Chain is sorted based on our precedent research. Simultaneously the important functions of enterprise are categorized from the view point of Value Chain. Then a DCM Strategy Matrix with the results of these basic researches is built up and the concrete solutions on building DCM System are argued by using DCM Strategy Matrix. Secondly the named Customer Information Service Center (CISC) is proposed. It should be set in the formation of DCM System to play the role of a router on demand information flow. A few concrete examples in Japan to explain the affection of CISC are given and the effectiveness of CISC is investigated. Finally, the Synergy Effect between SCM and DCM is demonstrated.

Introduction

The concept of Supply Chain Management (SCM) had been emphasized in 1990s. The basic research in the academic world and the system development in the practical world have been prospering. SCM, which developed from logistics, is the concept that tries to realize “Just In Time” on supply chain entirely by building an opening network structure among firms from upstream to downstream and also using Information Technology.

Nowadays business world are giving much attention to Demand Chain Management (DCM), which has been targeting on rationalizing and increasing efficiency at developing the information flow from customer to suppliers of products or parts. In contrast to SCM, DCM will be centering on demand chain to develop product and manufacturing process and then pursued the optimization of the material and information flow in the whole chain and the satisfaction of end user. Since the end of 1990's, the related researches have been developed rapidly in several areas.

In this paper, first of all, the characteristics and correlation of SCM and DCM are made clear by reviewing recent typical literatures. Secondly Demand Information which is the core of demand chain is sorted based on our precedent research. Simultaneously the important functions of enterprise are categorized from the view point of Value Chain. Then a DCM Strategy Matrix with the results of these basic researches is built up and

the concrete solutions on building DCM System are argued by using DCM Strategy Matrix. Thirdly the named Customer Information Service Center (CISC) is proposed. It should be set in the formation of DCM System to play the role of a router on demand information flow. A few concrete examples in Japan to explain the affection of CISC are given and the effectiveness of CISC is investigated. Finally, the Synergy Effect between SCM and DCM is demonstrated.

2. Development and limitation of SCM

The most general definition of SCM is "･･･that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements" (Simchi-levi et al, 2000). That is to say, it is a series of management method of transmitting the products and services from upstream to downstream that focusing on material flow in order to meeting customer satisfaction. Especially the building of partnership among companies from the upstream to down-stream, inventory reduction, information sharing, and total optimization of Supply Chain are the most important subjects for realizing SCM. With continuous progressing and rapid development of the management methods and information communication technology during the last two decades for SCM research starting from logistics, it is regarded that these subjects have almost attained which have been targeted initially (Ganeshan, et al., 1998).

However, while SCM has been enforcing, it is hard to build a completely equal partnership between the enterprises. Leadership always is taken by the enterprise with a large scale in upstream or downstream. Especially the acquisition of information related to customers' needs was not symmetrical between quality and quantity. In addition, in a typical supply chain, a linear composition was always formed, end customers were passively located in the end of the Supply Chain.

Most of enterprises set a target of enforcing SCM for achieving highly effective and low cost, as a success factor that can be ensured its own competitive edge, in a word, because of pursuing the improvement of efficiency exclusively, consideration of the demand from customers or consumers becoming negligent, stagnated element was brought for an activation of the entire market.

In recent years, however, the numbers of enterprises that work on taking information of customers needs into its company positively and information of the demand chain is increasing in the business field. Moreover, it gradually pays attention to the formation of

demand chain in the academic field, the research on the DCM concept started in some areas.

From now, we will review the researches on DCM in recent years concisely, analyzed theoretical composition of the concept and result of experimental study collectively.

3. The track of DCM research

Recently, the researches of DCM are becoming active, especially at the end of 1990's the number of researchers who inquiring into deeply of the essence of this concept have increased, some results of studies have been achieved.

Selen, W. et al (2002) have defined DCM as “extending the view of operations from a single business unit or a company to the whole chain. Essentially, DCM is a set of practices aimed at managing and coordinating the whole demand chain, starting from the end customer and working backward to raw material suppliers.

Langabeer et al (2001) define the demand chain as: The complex web of business processes and activities that help firms understand, manage, and ultimately create consumer demand. They emphasize the point that demand chain management attempts to analyze and understand overall demand for markets within the firm’s current and potential product range (Langabeer and Rose, 2001).

Regarding the relationship of Information Communication Technology and Demand Chain, Doherty(2001) mentioned: whilst a relatively simply concept, the processes to achieve it are a lot more complex, due to the number and size of the consumer markets, sales channels, and the quantity of information that is available. Companies are trying to close the loop between the supply and demand chains, by using their real-time consumer knowledge, collaborating with the trading partners, and investing in web-enabled technology (Doherty, 2001).

In the experimental study on DCM, Childerhouse, P et al (2002) introduced a case that a lighting manufacturer designed different demand chains for its own various products. They postulated:“ …based on the premise that modern day marketplaces have diverse requirements for alternative products and services, no one demand chain strategy can best service all there requirements. Actually, it should be based on five variables of DWV3, OW, and OQ, making production plans while always keeping watch on demand, additionally thinks about its own demand chain strategy in ascertaining a dynamic characteristic of those standards, was verified.

Frohlich et al (2002) were especially motivated by the possibility that manufacturing and services are sufficiently different enough that it affects the need for DCM. They

highlighted the significance of integration between supply chain and demand chain, and subsequently describe four web-based strategies, captured in four models (A, B, C, D). And then a stratified random sample was collected from UK manufacturers and services, and there was strong evidence that DCM led to the highest performance in manufacturing, but few signs of DCM in services.

Heikkila (2002) addresses an important question in DCM: “how to find a good balance between good customer satisfaction and supply chain efficiency?” A case study of six customer cases of Nokia Networks, one of the leading providers of mobile telecommunication technology, leaded to postulate propositions exploring that question. Heikkila (2002) verified that it is necessary to build a relationship of trust with the customer, receiving information and cooperation from the customer as supply sides is the most important thing. Moreover, working on the formation of demand chain, customer's participation is necessary. As a result, the demand, even the role that should be played as a supply side became clearer.

David, W et al (2004) insisted that the fusion effect generated between the demand chain and the supply chain is effective for the value chain of the enterprise. They verified the validity of the insistence by using the case with the gambling industry of Australia. And then they demonstrated that E-commerce is playing a key role as an alternative thing of the fusion effect in the value chain of the enterprise.

Through the above-mentioned precedent researches we may have an ordinarily view of the research of the DCM concept. It means valuing of the demand chain is necessary, the research of DCM is an important development assignment to study SCM. Though the concept of DCM is not still completely established, we might sum up common recognition from present stage: “It is necessary to centralize the demand of customers or markets, construct the value creation process with understanding to them, and manage it reasonably by coexisting with Supply Chain”.

However, while establishing the concept, some of recognition to DCM still stays on the demand forecast support. It still can be penetrated that it is few in the researches on strengthening of value creation of the entire chain, development of product and process, creation of new demands.

In the following, we are going to consult the result of the previous studies, and then focus on demand information of demand chain formation. We are able to implement a new analysis, and propose a formation of the system for realizing DCM.

4. DCM Strategy Matrix

According to the explanation above, now we understood the maximum problem at the present stage is that how should be addressed concrete enforcing DCM, and framed formation of system that realizes it. Therefore, we are thinking that it should be started with the analysis of demand information, and draft concrete plans concerning the collection and the typifying would be the first step of implementation of DCM.

About the typifying of information, various methods can be enumerated. For instance, when classifying information with regional (Tanaka, 1996), there is a method to divide by place of dispatch which in the country or foreign countries, etc. Excluding regional, there are various way that Classification according to time and content that information transmitted and so on. For typifying of information by time, it can be regarded classifying information from a year to a day, even to more concrete time window. At the information classification according to the content, it can be typified information by industry and usage etc. For example, according to types of industry sectors, it can be widely discussed that service sector information, manufacturing industry information, finance industry information, telecommunication technology industry information and so on, or corporate information (e.g. information concerning partner enterprises or rival enterprises), public information (e.g. information on trend or new activities of government or municipality), Academic information (e.g. data concerning academic activity and frontier science and technology), mass communication information, etc. Moreover it can be regarded to typify information by using patterns of all information classification above comprehensively.

At the same time, when thinking about demand information, the comprehensive information classification method is necessary, the typifying of information by differences of contents or sources also can be thought. Ogawa (1997) classified information that transmitting from the customers to the manufacturers and Useful for their business into User Info and the Technical Info. User Info is regarding functions that products filling for customers, Technical Info is regarding technologies used by products in sum. Base on the information on necessary function, Ogawa (1997) also ranked and described 4 levels of improvement of product, and 6 levels of development of new product.

On the other hand, from the viewpoint of channels that acquiring demand information, Ota (2002) typified them as four media types. They are M-Type 1 (between specific and the individual), M-Type 2 (Internet), M-Type 3 (inclusive information), and M-Type 4 (supply chain).

From these previous studies of typifying of above-mentioned information or demand information, we know many researchers have paid attention on the importance of

demand information, sent by customer or market, and to analyze demand information from an original viewpoint respectively already.

This paper, due to form the DCM system that finally focus on the demand chain to be a assignment from the analysis of demand information, moreover, not to squeeze to the type of business such as circulation and manufacturing, and to do the typifying of demand information in the wide sense or more, we adopt the typifying of demand information by the media types of Ota, and try to enhance it. This is, in particular, media of call center will be added decidedly based on the above-mentioned four media types.

M-Type 1: (Post mail, Phone, Person to person)

This is the media which acquire demand information from some certainty consumer or customers. Therefore, the reliability of the information which can receive through these media is very high for a company. However, the information may be the specialized need of each customer.

M-Type 2: (Call center)

The roll of call center is to help customers' claim and several inquires for their own goods and services. However, such information is also useful for improvement and innovation of the process, especially design, manufacturing, and distribution. It is a useful media to get information from customers for DCM.

M-Type 3: (Internet)

We get much information from web site, bulletin board, e-mail, etc on internet. The information flow via internet is gotten quickly and interactively. The customer's need via Internet is useful and easy to get. However, one of the characteristics of Internet is anonymity nature. This nature results in the increase of uncertainty.

M-Type 4: (Aggregated information)

This information indicates such that customer's needs or social trends investigated by public sectors, advertising companies, and consulting companies. The information is aggregated for people's general needs. However, the time to aggregate needs at least some weeks and at most some months. Also the information will be known widely so that it is not easy to get differences connected with a comparative advantage.

M-Type 5: (Supply chain)

Supply chain is also an important information media to obtain customer's needs. When a distribution company sends goods to a customer, they acquire much useful information from each customer. However, such information is not easy to return to suppler quickly and certainly.

Besides, in the demand chain's forming, it should be paid attention on which function that enterprises accomplishing use the demand information will be variable when they

reach functions and used to create the value. Here, we were able to divide principal functions of the enterprise from the aspect of the value chain into four categories, and define it as Main Functions.

F-type 1: (Client management)

In order to stabilize corporate earnings and to aim at improvement in the efficiency of a value chain, the client management function plays important roles to build a good relation with customer and to exchange communications. Concretely, they are the series of business of the correspondences and the management procedures about all customer purchase activities, such as a marketing function and customer service function. For example, they are grasping which goods and services the customers wish, the negotiation of purchase stage, the management of the goods after purchase determination, and the after-sale service. In the new market environments, which are the expansion of customers' preference, the shortening of product life cycle, etc., to enrich the client management function is the first step to construct a useful value chain.

F-type 2: (Development)

Development function is the key to achieve the customer satisfaction for a product and service. Development stage is at the position of the top of upstream in the value chain. The function involves mainly two processes of R&D and Design of Products. They include the product planning based on the information, such as an order of a customer and needs of a market, the design of new products, and the production of trial products, etc,. The capability about the accuracy and speed of development is important in this function.

F-type 3: (Production)

How to supply the products quickly and efficiently to the markets or customers to keep with their needs is the most important role in the Production function. Concretely, it includes a series of operations of production plan, the determination of a manufacture form, stock management of an unfinished product or finished-goods. Compared with development function, the Production function lays their emphasis on quantity and time and also influences the quality of a product.

F-type 4: (Physical distribution)

Fundamentally, physical distribution function came as main operations with delivery and management on the way from manufactures to customers. However, more efficient distribution become needed in order to keep with the markets' and customers' needs so that the physical distribution function is changing to new styles which also including the assembly work of the product by some of distributors and intermediaries. So, the physical distribution function is becoming the important function in the value chain.

Through the above-mentioned typifying of demand information and the establishment of the main function, it would be imagined the framework of the demand chain formation. In a word, if we call Figure 1 as DCM strategy matrix, this matrix can examine which demand information type is appropriate in order to increase the Main Functions, how to reform the demand chain between customers and supplier, how to form the system included the computer based system, and how to manage the demand chain.

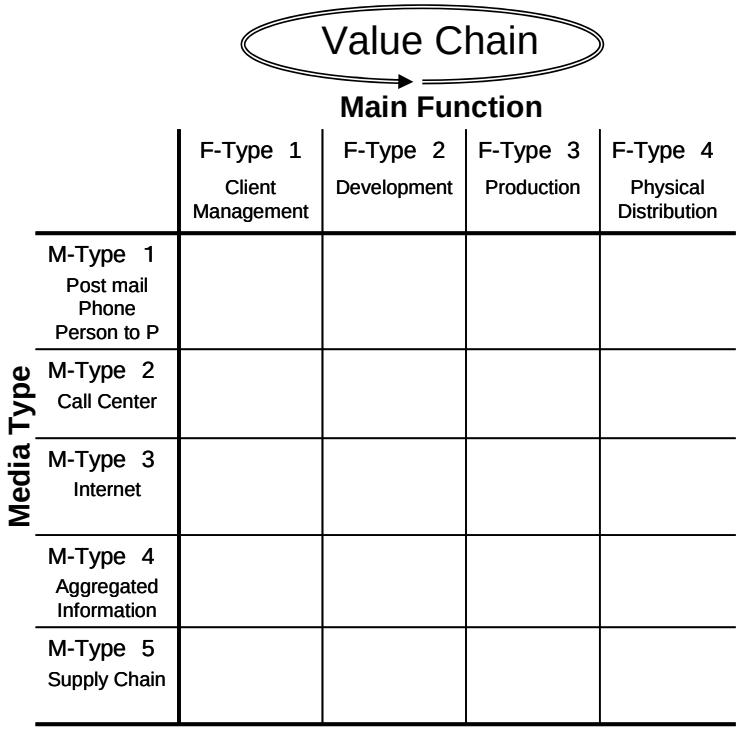

Figure 1. DCM Strategy Matrix

5. Operations Management Strategies for of DCM

5.1 Proposal of CISC

We mentioned about the composition of a strategic matrix which should be used for achieving sophisticated DCM. And we think about the formation of the demand chain from the linkage formed by combining the Media Types and the Main Functions. Which is in a concrete execution operation, how the demand information reflected in the function of the value chain becomes the key point of the DCM. And then, in the execution, the installation of the system that playing a router role is first needed. The router system can be defined as CISC (Customer Information Service Center), and this

it is the first step of realizing DCM.

Wesley et al (1990) pointed out, " organization not only demonstrating its own resource enough in the process of the creation and the reformation but also the excavation and the use of external resources were important". It should be actualized by absorption of activity of the collection and knowledge of external information. As a result, its own knowledge structure is strengthened further. This means an enterprise has to keep this power of creation and the innovative activities, then more and more fresh conceptions will be updating. Therefore, after the demand chain is constructed, improving of this absorption capacity should be needed and strengthened.

In addition, Wesley et al (1990) insisted that the organization should grow up its own vision and the learning abilities to construct absorption capacity. As a result, knowledge diversity of organization in other words, the scope of external resources which absorption capacity reached, can be kept a constant level. Any shortage of elements such as own vision, learning abilities can not be a supportive power to enhance DCM system. In other words, it is hard to implement DCM system if only base on one section or even a single enterprise. It is necessary to strengthen this power that coming from owners of the expertise of various fields.

Moreover, Wesley et al (1990) emphasized that effects will be feebleness if there is lack of recognition of the organization, even if talents every where. Therefore, it is important that the absorption of demand information not only relies on an outside specialist but also achieve an appropriate linkage to the Main Function of the value chain in the formation of the Demand Chain.

Based on the above-mentioned discussion, as a useful operations strategy, we proposed the installation of the router system, CISC (Customer Information Service Center) that collect demand information and accurately transmitted them to the main function (see Figure 2). In short, At the same time as accomplishing the works of collecting demand information, making category and filtering, after understanding the details of each section or function of the enterprise, all information will be conveyed accurately at once to CISC. And all members of the supply chain should join the installation of CISC together because it is difficult for a single section to play the role of CISC. As a result, it is possible to support to the creating environment of sharing information on the supply chain, and the positive effect will be brought to member's collaboration and equal relationship formation.

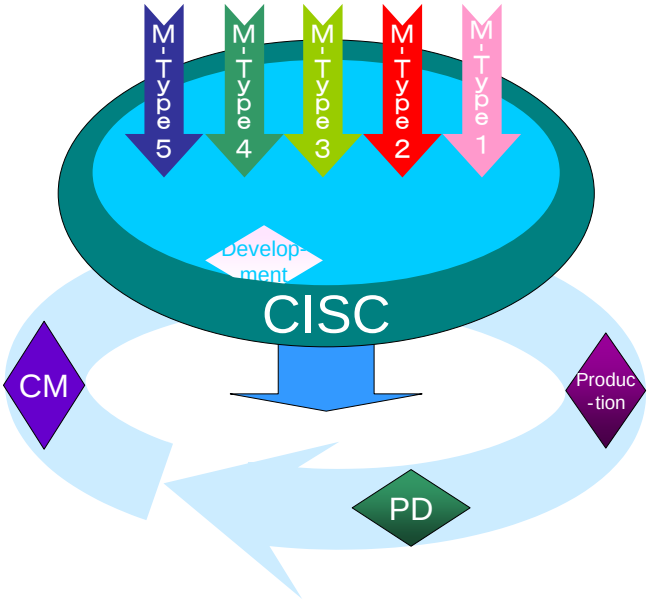

Figure 2. The installation of CISC

5.2 Engagement on DCM implementation

On the following part, to verify the validity of our proposal, we want to introduce some examples of enterprises that working on demand information.

5.2.1 Call Center of KIRIN Brewery Co. LTD

KIRIN Brewery is a major beer maker in Japan. The new system at the call center of KIRIN Brewery became a big trigger for their improvement of product and service. In the new system, the Customer Relations section which taking on call center business was divided into two. One is the "Customer center" corresponding to the proposal of the customer by the telephone or the E-mail immediately, and another is the "Customer satisfactory promotion section" (CSPS) which was newly set (Souma, 2003).

The “CSPS” have played an important role in building their demand chain. It finds out the inventive ideas that affecting the company greatly out of a huge quantity of information, an improvement plan is draw up, a detailed proposal document is collected into, and it is transmitted to a suitable section. At the section, the operations can be improved with these demand information and the efficiency of functions, such as development and marketing, is raised by it. In other words, the “CSPS” was also the key of operating DCM of KIRIN Brewery.

5.2.2 The @cosme of Istyle Ltd.

The Istyle company offers demand information that having high value with other several companies by using the huge customer information database. The name of the database is named as @cosme. Istyle provides the two million word of mouth information that 200,000 customers share with numbers of cosmetics manufacturers, through the @cosme (Souma, 2005).

One feature of the @cosme is that it can provide or collect customer data which is using other companies commodity that a single company cannot be acquired via E-community. Now, with the exception of Matsushita Electric Works, Ltd., the white Otori temple Ltd. of the world's biggest make-up brush manufacturer also developing hot-selling products by using word of mouth information through the @cosme.

From these two cases, we understood that most of enterprises have been used the Media Types which can be shown in the DCM strategy matrix in various shape, trying to reflect them in their own Main Factions. However, in the engagement on such demand chain formation, some problems might occur such as: singularity of demand information and limitation concerning the range of the information gathering. And then like the Istyle company, by locating midway between supply-side and demand-side as CISC, it may have an objective and a complete recognition of customer needs. High reliability can be built on both sides (refer to Figure 2). Moreover, in sharing those information with other enterprises through the ＠cosme, demand information is not only able to transmit to supply-side promptly, but also it is possible to ensure the entire demand chain is smoothly operated.

5.3 Formation of DCM system

Through the above discussion , if the framework of system formation for DCM is drawn, it becomes as shown in Figure 3. First of all in this framework, customer needs will be flowing to supply-side through the Media Type. Then supply-side absorbs demand information around CISC by having enough absorptive capacity and accurate recognition which to the Main Function, implement acquisition and useful demand information. Furthermore, the system administrator should be drawn up a series of rule and the procedure, improved stability and efficiency of the DCM system gradually. As a result, the enterprise or the entire supply chain can catch customer's demand quickly and accurately, promoted the effectiveness and potential of theirs main function.

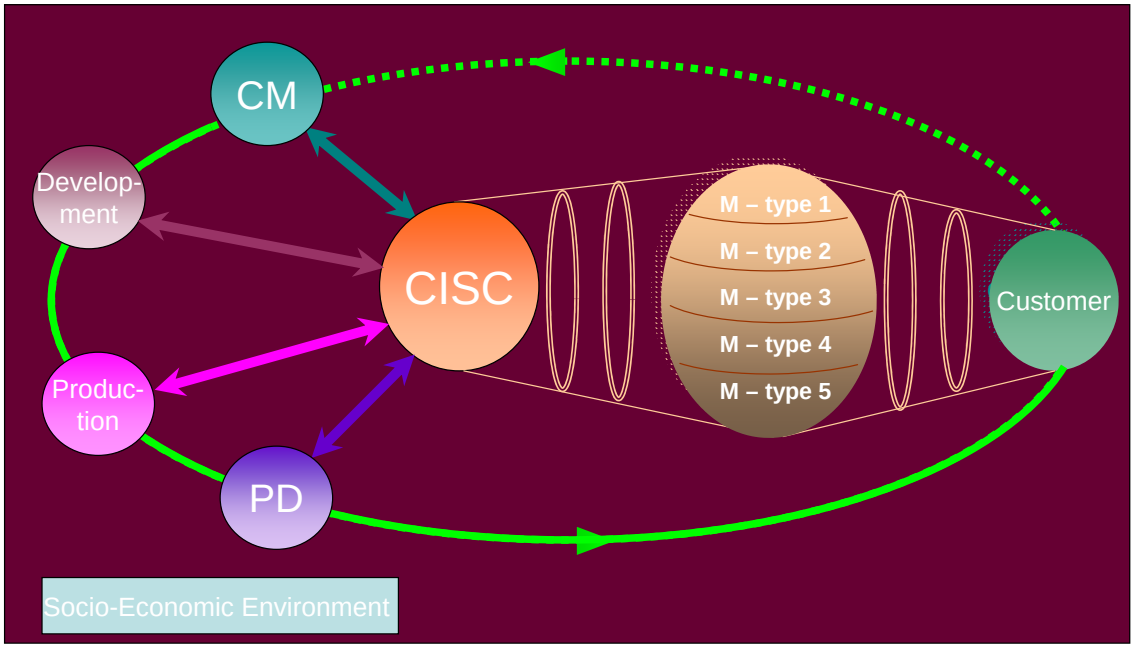

Figure 3. DCM System

6. Synergy effect between SCM and DCM

We described the framework of the DCM system formation and concrete policies concerning the Demand Chain formation above. Now, we are able to discuss the synergy effect by integrating SCM and DCM.

As described in Chapter 2, if we only pursue the efficiency improvement of SCM, do not spend power and time to collection of demand information and the formation of the absorption capacity, the implementation of DCM may not be carried out obviously, even the performance can not be demonstrated original function of SCM.

Besides, Supply chains, by contrast emphasize the efficiencies in the production and logistics processes, while the demand chain emphasizes effectiveness in the business. Therefore, through the demand chain, taking the reins of consumer's demand and select the best market to expect the developing of business process, to achieve capturing and using the technologies and the resources.

As described in Chapter 5, the formation of the DCM system does not only improve the reformation ability of the enterprise and the absorption capacity of demand information, it can be anticipated that playing the role in the place where the effect of SCM does not reach as a supporting role of the SCM execution, demonstrating the performance of SCM enough. Furthermore, if both can be accomplished theirs performances fully, the efficiency of the supply chain is not inferior, the effectiveness of the demand chain can

be achieved at the same time.

7. Conclusions

In this paper, we firstly described the development of SCM. We discussed about the SCM research and the issues involved in the development, and the limitation derived from these issues. Starting from the SCM's limitation, we analyzed the importance of introducing DCM , It is confirmed the correctness of choosing DCM as the subject for SCM elaboration. Next, we introduced the representative articles about DCM research in recent years. They presented the research achievements and the research trail, and summarized the common understanding and existing problems at the current stage.

In the second half of the essay, based on the above previous research and our particular point of view, we represented our plan and strategy of implementing DCM. The importance of developing router system and CISC was discussed. We also described the DCM system framework.

In conclusion, due to the limitation of SCM, we emphasized the importance of the integration of SCM and DCM. The synergy effect of the integration of the two can gain enterprises great advantage in their market competition.

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