

Research on Role of Cloud Computing in Optimization of Supply Chain Management

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Abstract.In the network era, the concept of supply chain management is a customer-centric. Through the analysis of the customer's actual needs and the prediction of the customers' future needs to pull the products and services. Based on such idea, many new modern supply chain management strategies constantly produced. Such as rapid response strategy, electronic ordering system and enterprise network-based supply chain system and so on.

In the overall structure of the supply chain management, distribution, warehousing, transportation and other areas all have developed very well. But the supply chain management is still facing great difficulties. Although there are some difficulties in the technical and financial resources support the implementation of supply chain management. But the organization, trade partnerships, logistics costs and information-sharing and other issues will be the implementation of supply chain management. The demand has become increasingly evident in the optimization of the modern supply chain management for the virtual structure of the supply chain business contact. Through the cloud computing technology the efficiency of communications between supply chain enterprises can be maximized. The cloud computing can enhance the degree of information sharing in supply chain management.

Optimization of Supply Chain Management

The supply chain is composed of by the member companies have different interests. These enterprises will be coordinated action in order to maximize their own interests. As independent business entities, the enterprises should be coordination and cooperation with other enterprises. It is a complex task, so the supply chain is a typical complex system. The supply chain management is a more complex task. The global market competition trend is gradually increased. New product life cycles are getting shorter. The expectations of customers become increasingly high. The modern enterprise attaches great importance to supply chain management. This has prompted members of the supply chain to think about their operating practices from the perspective of the overall interests of the supply chain. These enterprises establish strategic alliances by the upstream and downstream enterprises or cooperative operation. The implementation of these strategies will enhance the competitiveness of the entire supply chain system. The entire supply chain system will achieve the goal of participating in both win or participate in a multi-win-win goal.

Supply chain management involves four main areas: supply, production planning, logistics and needs. Supply chain management is synchronized and integrated production plan as a guide. Supply chain management relies on a variety of technical support, particularly in Internet / Intranet as the basis. Supply chain management focus on the supply, production operations and logistics to meet the needs. Supply chain management mainly includes planning, cooperation and control the materials and information from suppliers to users. The goal of supply chain management is to improve user service levels and reduce overall transaction costs, and seek a balance between two

objectives.

Base on the information technology development, the modern enterprise optimizes the entire supply chain through the Internet technology environment. They use Internet technology to achieve full self-service transactions. They can conduct cooperation and the exchange of important program information in real time. The supply chain will take the integrated solutions for customer interaction and Internet transactions. The enterprises will transfer the necessary information and process to the Internet, which can effectively respond to customer needs. The enterprises can understand the operations from the overall range, suppliers and customer information. These enterprises adjust balance between core competitiveness and avoid invalid operation to design their own supply chain. The enterprises can effectively control the logistics, information and capital of supply chain. Supply chain management completed all aspects of supply chain operations, including planning, organizing, directing, coordination, control and incentives. Supply chain management is reasonable to regulate the production and circulation process involved in all aspects of logistics, information flow, capital flow and business. Through this process, supply chain management will achieve the best combination to maximize efficiency and provide maximum added value for customers quickly with minimal cost. From a business perspective, the enterprise can integrate and optimize of supply chain logistics, information flow and capital flow by improving the upstream, downstream supply chain relationships. The enterprise can obtain a competitive advantage.

Information Sharing of Supply Chain Management

Supply chain management is a new management philosophy. The structure of the supply chain includes suppliers, suppliers' providers, enterprises themselves, distributors, customers and ultimately customers. The partnerships between the supply chain enterprises include cooperation, collaboration, information sharing, full optimization, create a better profitable, risk-sharing. Supply chain management connects the various enterprise isolated islands of information together. Based on the network technology conditions, supply chain management can establish a cross-enterprise collaboration system. The collaborating companies can pursue and share of market opportunities and integrate the respective separation of business process.

Supply chain management is to optimize and improve supply chain activities. The main research object of supply chain management includes supply chain organizations and the flows among them. The application in supply chain management is integration and collaboration. The goal of supply chain management is to meet customers' needs and ultimately improve the overall competitiveness of the supply chain. The essence of supply chain management is to go deep into value chain of the supply chain process. The right product for customer will be sent to the right place at the right time, in accordance with the right number, the right quality and the right status and the total cost will be minimal.

Information sharing is the basis of supply chain management. The accurate and reliable information can help companies make the right decisions. Coordinated operation of the supply chain built on the basis of the high-quality information transfer and sharing of each node enterprise. Application of information technology will effectively promote the development of supply chain management. It can save time and improve the accuracy of business information exchange, reduce human error in complex, repetitive tasks. Thus the time wasted and economic loss caused as a result of errors will be reduced greatly. The operating efficiency of the supply chain management can be improved. The increase in sharing information on supply chain management is very important. Because information sharing can be done, any node enterprise in the supply chain is able to grasp the needs of the market information and the operation of the whole supply chain. Each link of the logistics information can be transparent with other aspects of the exchange and sharing. Thus, the distortion of demand information should be avoided and the distorted amplification effect of

demand information is eliminated.

In the future information society, the primary task of enhancement the core competitiveness of enterprises should be turned from resource-based information-based. Information resources will become the highest status of core resources. Effective management of information will fundamentally determine the future competitiveness of enterprises. In order to adapt the needs of the market, enterprises need access to information continuously from the external environment. Information sharing is an important means of enterprises to obtain information. For the enterprises, the supply chain is the most important external environment and the most important source of information. Therefore, the information sharing between supply chain members will effectively enhance the competitiveness of enterprises and supply chains.

Cloud Computing and Supply Chain Information Sharing

In the different enterprises and external environment conditions, the effect of information sharing among supply chain members is different. Many factors, including IT applications and information resources excavations within the enterprise and between enterprises, had a great impact on information sharing. Supply chain management involves four main areas: supply, production planning, logistics and demands. Supply chain management will complete the project, cooperation and control of materials and information from suppliers to users. Supply chain posed by the participating companies is a dynamic alliance. Their communication is based on information as a carrier. The smooth flow of information is the key to the successful operation of the supply chain. The special requirements of supply chain information sharing include fast response, low inventory levels, high service quality and personalized service and so on. When the supply chain is limited by the market demand information, the update of production and materials procurement decisions depend on the feedback of production cycle and demand information, which will lead to a longer time lag and miss a good market opportunities. Information sharing can provide accurate information on market demand, to give better auxiliary supply chain business.

Information sharing can improve the efficiency of the joint development and use of information resources among collaborative enterprise of the supply chain. Information sharing is a dynamic model to promote supply chain management. It is user-centric, and integrates the many factors, such as the internal environment, external environment, information technology, information resources, equipment resources, human resources and services and so on, to provide users with the overall service. According to the actual market demand, information sharing in supply chain management effectively combines the various resources of the enterprise. Market Consulting and technical services jointly provide the conditions for cooperation to occupy a favorable position in the market. In this process, the information sharing of supply chain management needs to take efficient means of technology as a powerful support. Cloud computing is an Internet-based super-computing model. It has a powerful data storage and network services. Cloud computing has a huge impact on the construction of information resource sharing platform. In addition to the physical infrastructure and human conditions, information sharing of supply chain management almost all can be achieved by cloud computing.

Cloud computing conducts a series of dynamic configuration of network information resources in accordance with the needs of users. The supply chain enterprises can access the cloud computing platform with a variety of ways by the humanity operation interface and call the service provided. From the service provider perspective, cloud computing platform can be divided into two categories of private cloud and public cloud. Private cloud is a proprietary network or data center using cloud computing technology such as virtualization. Private clouds are built by enterprises in order to satisfy the further needs of the enterprise's own information technology services. It is a smaller, personalization design. Public cloud is usually provided by a professional third-party IT companies.

Public cloud is a model for standards-based cloud computing. In the public cloud service providers create resources such as application and storage. The users can obtain these resources through the network in the public cloud. Cloud computing platform will encapsulate IT resources in accordance with the needs of the users. And the resources provided in the form of services to the supply chain enterprise. According to their different needs, the enterprises can make using their services through the platform interface. The needs range of cloud computing platforms includes the supply chain enterprises——suppliers, plants distribution centers and customers.

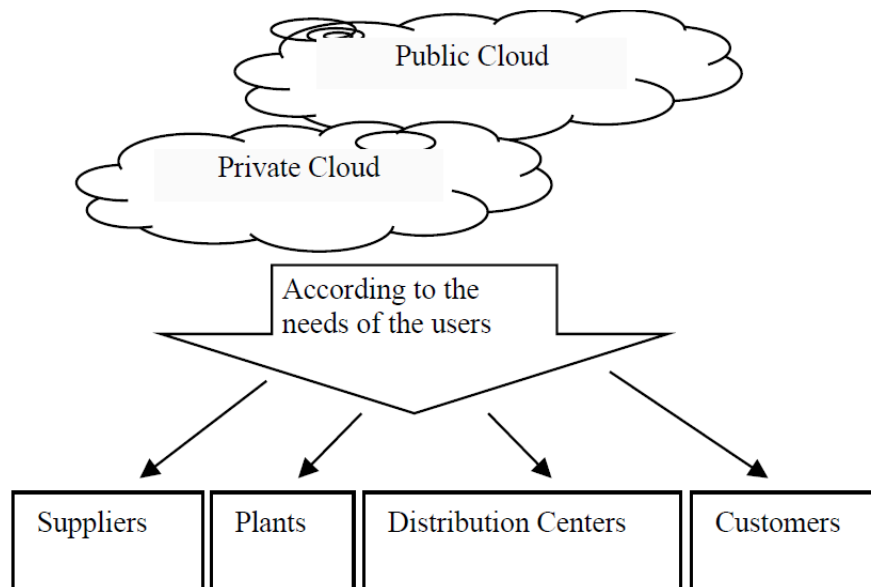


Fig. 1. Supply chain enterprise cloud computing platform

Cloud Computing to Provide the Conditions for Optimizing Supply Chain Management

Supply chain management is the coordination of logistics, information flow and capital flow involved in the production and circulation process. So supply chain efficiency will reach the best. The information flow is the transfer process the information from the source through the channel to reach the sink. The information is accompanied in the supply chain logistics and capital flow, so the information is a major driving factor of the supply chain. Information plays an important role in various parts of the supply chain. Information associated with each node of the supply chain. It is one of the fundamentals to ensure coordination of the various stages. It plays an important role in the supply chain to maximize profits. Information also plays an important role in the supply chain operations. For example, the order quantity and delivery time requirements of downstream businesses will affect the upstream enterprises' production plan. Inventory costs will also be greatly reduced.

The cloud computing model will effectively address the supply chain information sharing problems in the capital, talent and cost. Cloud computing will satisfy the information needs of the supply chain enterprises in the aspects of individuality, diversity, flexibility. Cloud computing is the enterprise information sharing on supply chain development channel and important trend.

For manufacturing enterprises, many supply operations are concentrated in a particular time period. Such as the time of completing the requirements planning is usually the end of each month. Cloud computing makes centralized access server no longer a single or a few. Such task will be implemented jointly by the whole computing server in the cloud and computer to avoid network congestion. With cloud computing, enterprises no longer need to buy too many hardware and software equipment to cope with the peak of business. Enterprises buy a certain amount of cloud computing services in accordance with actual need. It is not responsible for enterprises that system

maintenance and IT personnel training. This will greatly reduce the supply chain management system construction and operation costs.

With the application of cloud computing, enterprises can dynamically get more and more comprehensive supplier information and changes in market information. Information for supply chain management is more optimized. Cloud computing saved a variety of data to the remote cloud storage platform through the network, including corporate data, industry data, market demand data and so. The most enterprises reduce the burden of data management. Cloud computing systems run service program of data processing on a remote large-scale cloud computing platform. Cloud computing is a combination of the computing model of supply chain enterprise data sharing and shared services computing model. Cloud computing is the development direction of the supply chain management optimization techniques.

Development of Supply Chain Management Under the Conditions of Cloud Computing Technology

Cloud computing is a new type of IT commercial service model. Cloud computing is now in a stage of vigorous development. Cloud computing will play a role in the business of supply chain management. The business will be integrated through the cloud computing platform. The establishment of the partnership in the supply chain among the enterprises is a long-term, step by step process. The characteristic of this process is the smooth of supply chain information flow and strengthen of information sharing activities. A lot of information need to be shared in the supply chain, including inventory level, sales data, order status, demand forecasting, production or distribution plans, the companies' quality indicators and their ability level. Supply chain management is the collaboration between enterprises. Information sharing is undoubtedly the key to improve the level of collaboration.

Efficient information sharing between supply chain members can be achieved through the cloud computing platform build. The transfer of information changes from the linear structure to a network structure. Each member of the supply chain not only can receive orders directly downstream, but also can receive the end-customer demand information through the cloud computing platform. Each member can predict the actual demand with the flow of its own information and determine the order of its upstream business. Thus the information distortion caused by long forecast will be effectively avoided. The same time, each member of the supply chain could understand what each type of status information of the goods through the cloud computing platform. They can determine a reasonable plan of ordering, implement the exact ordering strategy and avoid the backlog of goods or shortages.

As an emerging computing model and service model, cloud computing is changing the information sharing model of the traditional supply chain management. In the cloud computing model, supply chain business computer turned to network-centric from the desktop system center. All services and applications can be flexibly provided in accordance with the needs of users online. Cloud computing has been rapid development with their own advantages in the promotion of the various IT manufacturers. Cloud computing solved the organic coordination of all aspects of information sharing in supply chain management. Cloud computing will become an inevitable trend to optimize the supply chain management.

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