

The Relationship between MRO E-Commerce System and Purchase Effects

Kwon, Soon-Won*, Kim, Young-Ei**,
Youn, Myoung-Kil***, Jeon, Ta-Sik****

Abstract

Business corporations have become specialized and on the basis of various interests try to strengthen their competitiveness through a cooperative system of purchase, distribution, service and IT technology. And an advanced Internet-based electronic commerce has witnessed explosive growth and a business-to-business (B2B) electronic commerce.

Through E-marketplace, business corporations achieve such diverse utilities as expenditure curtailment, process reduction and prime cost reduction. And with business depression worldwide and soaring prices of materials, many business corporations consider the introduction of comprehensive purchase of MRO (maintenance, repair and operation) materials.

The Purpose of this study was to examine the definition of B2B E-marketplace and the utilities of MRO commerce correctly focusing on an empirical analysis of cases of MRO supply and purchase business corporations.

The indications acquired from this research results are as follows.

Firstly, as for MRO integrated purchase under the characteristics of the market environment, it had to use the supplier obligatorily through the integrated purchase on the level of CEO's decision-making or the group rather than the voluntary will of the purchasing department or the procurement department.

Secondly, as for the present B2B E-marketplace MRO purchase, the purchasing agency business has formed the mainstream, but it is aiming at the diversification of the benefit by supplementing/correcting the business model such as category type, mediation business type, MRO-type advancing in the store inclusive of the purchasing agency business, keeping pace with the potential market of MRO.

Thirdly, as for analysis of the products, the purchaser wants more various products and assortment of goods than those of the present time, and also to be provided with the precise product information. Especially, as the importance of the product sourcing becomes high, the whole energy has been bestowed on acquirement of the excellent

suppliers.

Fourth, as for use of B2B E-marketplace MRO integrated purchasing system, there are the purchasing companies complaining the inconvenience even until now, and there is the demerit spending the long time during the image move and the process treatment. It shall try to shorten the searching time and the process treatment time as the system is centered on the purchaser.

In order to enhance the efficiency of MRO E-marketplace purchase, followings must be considered:

First, because the importance of product sources ever increases, an excellent supplier must be secured earnestly.

Second, the time of process must be reduced focusing on purchasers.

B2B E-marketplace will increase and diversify electronic commerce continuously. Through MRO E-marketplace, business corporations will reduce expenditure, achieve a transparent and speedy trade, and purchase products of fine quality, thus establishing a most effective market. In addition, in this study the investigator brings focus into MRO which has not been clearly discussed in the academic and business world so far and intensively highlights an indirect material-oriented expenditure curtailment effect. By taking all the aspects of supplier, purchaser and practical economical value into account, the investigator presents a strategic direction for the successful comprehensive purchase of B2B MRO.

Key Words : MRO, E-Marketplace, B2B, Business Model, Purchasing Agency Model

I. Introduction

1. Background and Purpose of Research

1.1. Background of Research

The rapid growth and development of the telecommunication technology of these days is innovative altering not only our daily life but also the paradigm of every field in economy and society. Especially, the telecommunication development has given birth to new shape called 'E-commerce (E-marketplace)', which has given any immense effect to

* Assistant Manager, MRO Korea

** Associate Professor, Dept. of Business Administration, Seoul Digital University (kimyei@sdu.ac.kr)

*** Professor, Dept. of Medical IT & Marketing, Eulji University (retail@eulji.ac.kr)

**** Associate Professor, Shin Sung College

all processes of purchase/production/logistics/sale/service business. Generally speaking, the e-marketplace consists of B2C (Business to consumer), B2G (Business to government), G2C (Government to consumer) and etc. but the trade type, which takes the most part and occurs the big scale of trade among such e-marketplace, is B2B EC(business to business E-commerce). As for MRO (Company consumables: maintenance, repair and operation), which is a part of B2B E-marketplace under the circumstance that the trade is not sufficient owing to the economic depression in the whole world, a lot of companies are positively introducing MRO B2B E-marketplace as the strong device for the cost reduction.

For this reason, as it is recognized that the integrated purchase, which is operated by making the contract with the expert MRO agency, is the trade method giving the benefit to each other, a lot of companies show the concern. The background of this research is to analyze the case of how MRO integrated purchase obtains the desired results through the comparative analysis between M Company, MRO supplier, and S Construction Company, purchaser.

1.2. Purpose of Research

In domestic, B2B EC has been made under the initiative of some large companies. However, owing to the economic depression in the whole world and the worsening of the business showings, as it is defined that MRO integrated purchase becomes the beneficial trade type on the level of the enterprise of middle standing and the small/medium company, recently, on the national level, as the core factor to reduce the purchase cost, they are being supplied through the agency by selecting it.

Therefore, as the direction for the successful operation method is

presented being centered on analysis of the internal/external environment of M Company, supplier, and on the economic/non-economic values of the integrating company through this research, it is purposed to let the company, which actually reviews to introduce MRO integrated purchase, search the strategic plan to be substantially succeeded on the basis of this research. This research will present the strategic direction to let B2B MRO integrated purchase succeeded considering in both the aspect of the supplier and the one of the economic values.

2. Research Objective and Research Method

2.1. Research Objective

This research will limit the scope of the research by selecting M Company, which integrated supplies MRO materials among B2B trade, and the company, which integrated purchases MRO materials. Presently, there are some several tens of MRO material suppliers in domestic being inclusive of the small/medium companies, but this research will analyze MROKorea, which comparatively occupies much market share of the small/medium companies and the company of middle standing even the affiliated companies of the large companies, and the related S Construction Company and D Construction Company, which are integrated supplied with MRO materials. The reasons to select these as the objective companies, are as follows.

Firstly, to grasp the merits and demerits through verification of the benefit on the supplier side and the one on the purchaser side by comparing the supplier with the purchaser.

Secondly, MRO Korea has integrated supplied MRO materials to the companies of middle standing and the small/medium companies at present commencing from the affiliated companies being centered on

<Table 1> Existing Research Comparison Table

	Technology	Organization	Operation	Product/Service	Strategy	Market
Sculley & Woods (1999)		Partnership	Neutrality and liquidity Transparency and integrity Cyber community		Vertical model Market governance Operation of cyber company	
Warren D.Raisch (2001)	Integrity Mutual linkage and connection	Partnership Cooperative Work	Independence and neutrality Liquidity	Construction of brand personalization	Beneficial model Rapid entry in market	
Durlacher Research	Security Convenience of system	Partnership	Liquidity Neutrality Domain expert		Performance of intermediary role in middle term	Inefficient market
CommerceNet(Obstuction Factor) (2001)	Competibility Security Standardization	Culture/Manpower Partnership Recognition of CEO				
Glenn Ramsdell (2000)		Partnership	Liquidity Openness Fixing of right governance	Service coverage		
William blain & company (2007)	Infra System integration Standardization Outsourcing of expert IT field	Biz relationship	Solution and integration of channel conflict Effective logistics network	Solution of problem and presentation of countermeasure	Recognition of difference from B2C Establishment of market segmentation strategy	

these, and to analyze in comparison the difference between the large company and the small/medium company through this.

Therefore, this research is to analyze the implications for MRO integrated purchase, process and etc. of MROKorea and two companies.

2.2. Research Method

This research used the documentary research method that analyzes the whole contents for MRO e-marketplace, which is one of B2B e-marketplace types, existing records, research report, cases between supplier and purchaser and etc., and these have been reflected on each factor of the case study as the positive research was performed through the phone call and e-mail to the company for the case study, and the interview with the person in charge of purchase.

II. Theoretical Study

1. Preceding Research for E-marketplace

2. Research for MRO

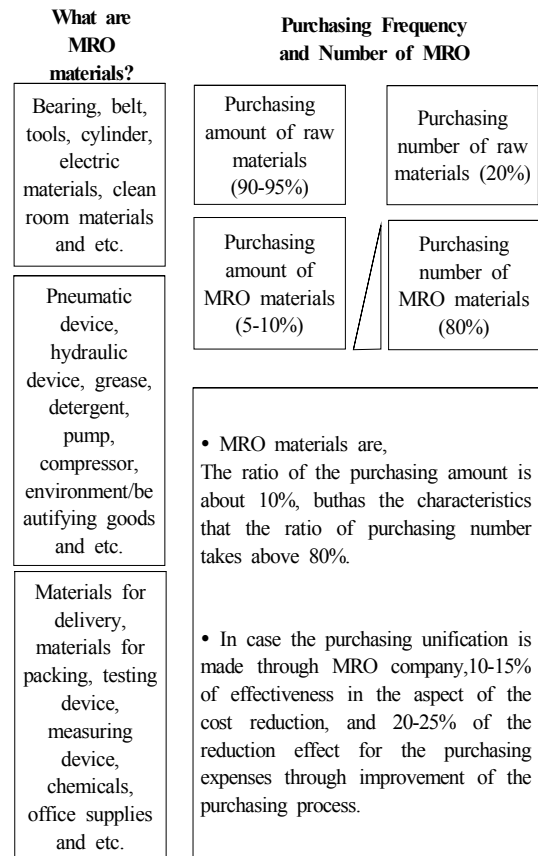
2.1. Definition of MRO

MRO materials, as the abbreviation for Maintenance, Repair & Operation, are inclusive of maintenance of the facilities and equipments, materials for repair and the consumable goods used for the office, and such indirect materials may be different as per the characteristics of the companies, but the general ones are same. The materials for maintenance, as the items purchased as per the regular replacement work and the maintenance schedule, are the ones to be regularly purchased in a specific interval, and the components for the machinery, valve, grease and etc. belong to these. The materials for repair are the ones to be purchased when the machine or equipment is out of order, and as these are the ones to be purchased through the rapid countermeasure against the circumstance, the components for the machinery, bearing, spring and etc. belong to these. The materials for operation, as the ones being necessary during operation of the companies, are the operating components to be purchased regularly or irregularly, the office supplies, copy machine, computer, waste basket, paper and etc., which are small volume but essential in the company activities, belong to these.

2.2. Characteristics of MRO Market

MRO materials have a big trading volume but total purchase expenses is small, and the inefficient purchase is made and has also the characteristics of the irregular purchase. As the objectives of MRO purchase are several thousands to several tens of thousands, much expenses occurs to manage these. In this addition, as it does

not know when and how much MRO materials are purchased owing to its irregular purchase in its characteristics, the expenses for the inventories occurs much because it is difficult to establish the strategic purchasing plan relative to the demand expectation. Namely, the purchasing method in random, in a word, prevailed. As MRO purchased in such random method is not the purchasing plan through the strategic purchasing plan, new supplier with the lower price is not exploited and the price negotiation is lukewarm because of not comparing the price itself much and using the existing company comparatively by giving the weight to the trade customs of the existing company. Such comprehensive problem was that the companies did not know the fact that the purchase process for MRO materials and the conversion into the e-marketplace, by reason of the low expenses, could reduce the more expenses than the reduction amount of the direct materials while the companies cared much about the direct materials such as raw materials, components and etc., and the purchasing process. lots of problems like these have been continued up to now in most of companies.



<Figure 1> Characteristics of MRO Materials

2.3. Business Model of MRO E-marketplace

2.3.1. Information Portal Model

It means the model that the e-marketplace, as a kind of the expert portal (vertical portal), collects the customers and constructs the

community by providing various information and the business opportunity to the MRO-related customers as a kind of the expert portal.

The e-marketplaces selecting this model are various from the portal providing net information to the portal making the online trade possible. The services mainly provided to the customers are MRO-related expert services such as the product information, supply line and product directory, information of the business circles' trend, news, information for employment, advertisement and etc.

As for the trade, it takes up the model that the trade between the parties concerned is possible without the agency. The most basic type is the insertion/search method. This function is to provide the qualified members with the systematic space to notice the contents such as purchase, sale and etc. of the concerned product or service, and the price is decided through one-to-one negotiation per trade. Therefore, in this case, it is difficult to prepare the standardized contract conditions for the trade to be automatically made. Instead, it provides the parties concerned with the technology to make the sufficient information exchanged freely between each other.⁵⁾

2.3.2. Purchasing Agency (Reseller) Model

This model is the one that MRO E-marketplace purchases all the supplied products as it directly becomes the purchaser and then resells them to the purchaser. The biggest effect of this model is to make the economy of scale and also to get the effect for the expenses. The reason is based on the fact that in case of purchasing much quantity, the purchasing price will fall, and that based on this, it can provide the purchaser in the lower price. Naturally, in case of acquiring the purchaser that can be supplied in big volume, it will be the advantageous model, but as all the MRO E-marketplaces in our nation presently have the trend to be enlarged and segmented, they are mainly using this model. This model has the merits that it has the clear locus of responsibility, and that as the process for purchase to delivery and supply is made in a lump, it has more reliability, and that it directly treats the problem if any problem occurs. Also, as the more members are collected, the more supply cost can be reduced, it has the merit on the side of the purchasing company also. However, it has the demerit that it is difficult for MRO E-marketplaces in the small volume commencing newly to enter in it being compared with the existing ones.

2.3.3. Catalog (Sales) Model

This model is similar to the trading relay type of B2C online shopping mall, but it is the type that it does not mediate simply the product trade between the supplier and the purchaser but it supplies the product as per the purchaser's request by acquiring the inventories through the logistics center. This model is namely the niche market model that attracts the companies of middle standing and small/medium companies instead of the purchasing agency model that

needs the big order-collecting expenses by making the contract for purchasing agency with the major large companies already. Presently, MRO E-marketplaces using this model are small but the more MRO E-marketplaces will use this model.

2.4. Case Study for Business Model of MRO E-marketplace

2.4.1. ThomasNet

ThomasNet has taken up the information portal as the online directory providing MRO-related industrial information. As Thomas Publishing Company establishing TR is the company supplying the industrial information on the off-line, it has helped the information provision and purchase related to the product by producing the purchasing guide for the whole industry and by connecting MRO-related seller to the purchaser in North America for more than 100 years. It provided the search of the industry-related product and service or the guide for purchase at the early time when the online was commenced, but it has been developed as the company providing the MRO-related online service by establishing ThomasNet together with GE'sTPN (The Trading Process Network).

As the seller inputs the information for the product to be sold on the web through the e-marketplace operated by ThomasNet while this e-marketplace lets the purchaser acquire the information for the item to the searched through e-procurement channel, it plays the role to reduce the trading expenses by letting the effective information acquired between the purchaser and the seller.

A. The Database

The core of ThomasNet is the database collecting several millions of the information for the manufacturers. 15,600 manufacturers, services for 1,000,000 products and purchase-related information and several millions of CADs to be downloaded on the web have been collected herein. As the information collected on the database is segregated per the item directory, and as there is the sub-directory per each item, the concrete information for the classified products can be searched.

B. Features and Services

It is possible to search the product, service and company required by the purchaser on the web, and ThomasNet helps the purchaser's decision-making by providing the industrial information and know-how kept relative to the purchase through use of the database owned by ThomasNet. It lets the supplier search the high-class information for the online trade on the web and find out the potential purchaser as the internet marketing solution is provided to the supplier. The online catalog, e-marketplace system, CAD solution and etc. provided to the supplier are the important trading devices that can respond to various requirements of the purchasers. Besides, MRO-related recent newsletter and the legal service for trade are provided, and the feedback for the customer satisfaction degree are made through the interactive information transmission (transaction

5) Arthur b. Sculley & William Woods, B2B Exchanges: The Killer Application in the Business-to-Business Internet Revolution, ISI publication,1999(Version 2000 pp.111-117)

Interactive).

C. Revenue Model

As ThomasNet has the strong characteristics of the information portal providing the information, its income largely relies on the charged service for advertisement of MRO-related company and use of the online information rather than the trading commission. As Aliba, globalsource and etc., the major competing companies, which provide the similar information to the global market, can be presented. Comparatively, the merits owned by ThomasNet are the pile degree of the MRO-related customer information and the low operating expenses. Also, as MRO-related products are being expanded from the company consumables to the industrial components, it is expected that the member companies will be increased and the benefits will be also increased in this relation. The sources for the additional income are the registration fee, annual membership fee, expansion of the pay service and etc.

2.4.2. Imarketkorea

Imarketkorea operating both Samsung construction division and MRO is the e-marketplace that is being most rapidly grown in the MRO-related domestic market being based on the annual purchasing power amounting to KW1,200billion of Samsung Group. As it broke through KW1 trillion on the 2nd year and it showed the steady growth, it accomplished the trading volume amounting to KW2.1 trillion in 2004 that is the biggest volume in the domestic e-marketplace. As of 2008, it has occupied 8.65% of MRO-related market share. The price competitiveness based on the purchasing power of Imarketkorea, the system conforming to the domestic site operation developed by themselves, the operation know-how of e-marketplace and acquirement of the excellent suppliers as the members, were largely operated in such growth.

A. The Database

Above 4,000 manufacturers, service for above 50,000 products and purchase-related information, CADs to be downloaded on the web have been collected in Imarketkorea. The collected member companies mainly consist of the purchasing companies centered on Samsung Group, and the purchasing companies and the collaborating companies delivering the products to Samsung. Imarketkorea has increased the sourcing capability based on the information, product and service as to MRO-related companies, and provided the order-made service to the purchasing members corresponding to above 260 companies.

B. Features and Services

The services provided by Imarketkorea are largely segregated into the MRO purchasing agency field and the construction materials purchasing agency field. The purchasing agency field, as the service used for small quantity and frequently-ordered product, provides all the services related to the outsourcing in the whole processes from

search of the order to the product delivery and payment. It provides the order-made service to the large-scale company as per the customer's necessity in linkage to ERP. Namely, it simplifies the purchasing stages as all the purchasing-related processes such as approval of budget, approval of payment and settlement of payment, payment function and etc. are linked to the groupware of the customer, and all the processes after ordering can be confirmed on the online in realtime.

The construction material purchasing agency field has provided the purchasing time for the construction materials with the high price fluctuation, optimization of the logistics method and the purchasing innovation-related service.

C. Revenue Model

The revenue model is the purchasing agency. MRO-related item is only 1~2% of the company sales but it needs much expenses and manpower as it is inefficient for the individual itself to manage it owing to its characteristics of various items, frequent orders and etc. However, in case of using the purchasing agency service, which takes the charge of all the processes from search of the item to ordering, delivery and payment, it will be efficient because it can minimize the inefficiency occurred from the self-purchase and management of the product, waste of the manpower and etc. and then standardize every item that is differently used per branch office.

According to the relevant person of the company, it is said that it is complicated to purchase the related product in case the large company makes the mediating trade through the e-marketplace. As the large company has the purchasing power, the price competitiveness is not high even in e-marketplace, even through Dutch auction and etc. The non-core field participates in B2B trade as a management strategy plan for outsourcing. Therefore, it is the reason that Imarketkorea could increase the trade through the purchasing agency.

2.4.3. Grainger

Grainger, which is the supplier-initiative type among the open market models, is the e-marketplace established for the automobile components logistics company to make the online trade for the automobile components in 1996. At the early time, it was only the one realizing the product catalogs of many companies on the internet like B2C internet shopping mall, but it has been positioned as the representative e-marketplace related to MRO in North America by increasing the B2B trade gradually to the dispersed purchasers.

A. Database

The core of Grainger is the database, and the supplier information for 500,000 supplies and 2,500,000 components (repair parts), which have been constructed in the site, have been collected herein. In case there is any purchasing request from the purchaser, the information for the supplier can be easily used on the web.

B. Features and Services

Grainger is intensifying the function that links the seller to the purchaser through integration of the supply information of MRO-related suppliers. Looking concretely in it, the service, which is provided as per the purchasing environment of each purchaser, is differentiated by segregating the purchasers in the small-scale purchaser and in the big-scale purchaser. It provides the functions for the purchasing approval procedure -- allotment of the budget and tracking of the purchased goods to the purchaser like the large company so that this purchaser can trade through the e-marketplace. Such course has been made in the integrated trading system by providing the ERP system to make the purchase possible even under the purchase system environment of the existing purchasing company.

Meanwhile, it lets the small-scale purchaser make the small trade as the workflow and the applied programs are provided in ASP.

C. Revenue Model

As the mediation-type e-marketplace does not generally take the liability occurred from the trade, the trade occurrence is small and the income of the trading commission is also small. However, Grainger has maintained the trading liquidity through increase of the purchasing customers and etc. by selecting the supplier-initiative-type model even if it is the agency-type model. The major income source is the trading commission. In case of the online trade, the purchaser does not pay it but only the seller does it. The method to collect the trading commission is based on the trading amount, and in case the trading amount is big, any specific discount ratio is applied. Generally, 1~5% of the trading commission is applied as per the trading standards. Besides, there are the charged service created from the specific service, membership fee, advertisement fee and etc. letting the supplier pay the annually designated amount.

<Table 2> Comparison/Summary of MRO-related E-marketplace Model

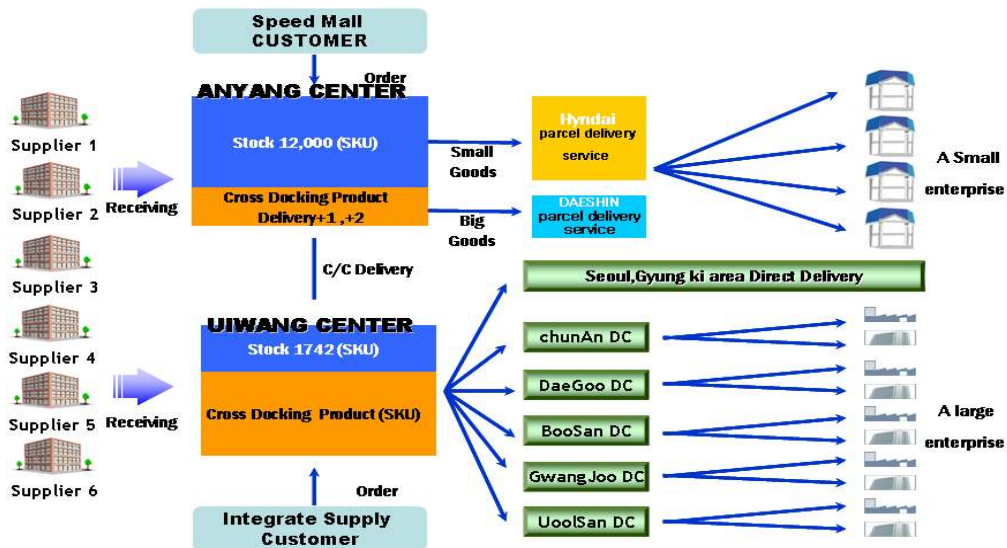
Descriptions	ThomasNet	Imarketkorea	Grainger
Trading Model	Information portal model	Purchasing agency (reseller) model	Catalog sale model
Trading Method	Method that provides the information by constructing the community toward the related customers	Method that makes the sourcing and purchase for the purchased product instead of the purchaser	Method that mediates a lot of the purchasers and sellers on the online
Trading Price	One-to-one negotiation	Fixed price	Fluctuated price in real time
Trading Technology	Use of insertion and search	Use of catalog	Auto trading method
Merits	Sourcing capability of the product is high.	Success in the trade is high as it is possible to provide the order-made service to the member company	Advantageous in the agency trade of the product with high liquidity. Acquisition of the supplier in high quality
Demerits	Income model is weak.	Very difficult to acquire new customer as the agency completion degree is low	Very difficult to induce the trader to the online
Number of Trade	Low	High	High
Major Income Source	Advertisement and online information service fee	Benefit from the difference between supply price and sales price	Commission from the sale

III. MRO Integrated Case Study

1. MRO Korea Business Model

MROKorea is parted in two business departments, and one is the purchasing agency department for the large company and the company of middle standing (Integrate Supply), and the other is the logistics business department (Distribution Supply) that is the catalog online method for the small/medium company and the private customer. Integrate Supply provides the

large company having the big MRO material amount with the services such as reduction of the purchasing expenses, increase of the business efficiency, reduction of the inventory expenses and etc. through introduction of MRO system of the purchasing agency, and as Euiwang DC becomes the main base, it has operated 5 DCs of Cheonan, Daegu, Busan, Wulsan and Kwangju, and the self-vehicular delivery has become its principle.



<Figure 2> Logistics Flow of MROKorea

MROKorea has the similar model called the objective for the large company to the existing MRO companies, but as it performed the logistics business centered on the small/medium companies in 2008, it has obtained 15,000 members on one year from the launching and reached the sales amounting to averagely some KW500,000,000 as of May. Naturally, all the member companies do not make all the orders. However, as the adaptation to the order through MRO-Emarketplace is slow as the characteristics of the small/medium company, it is expected that such trading volume will be tremendously increased considering the number and scope of the small/medium companies and the private companies.

2. Purchasing Innovation Case of S Construction Company, Purchasing Agency Model

The purchasing process of S Construction Company has been reduced from the existing 9 stages to 4 stages, and the database management has been automatically realized as all the trades have been computerized, and made the history management easy. The business for settlement of accounts, which was settled one by one per each collaborating company, has been simplified with one tax account in MROKorea.

The change before and after introduction was wholly very big, and the hours required for selection of the supply and registration of the product have been reduced from 5 days to 2.4 days, and it has brought the epochal reduction effect such as improvement of the business delay ratio, delivery hours, inefficient business and etc.

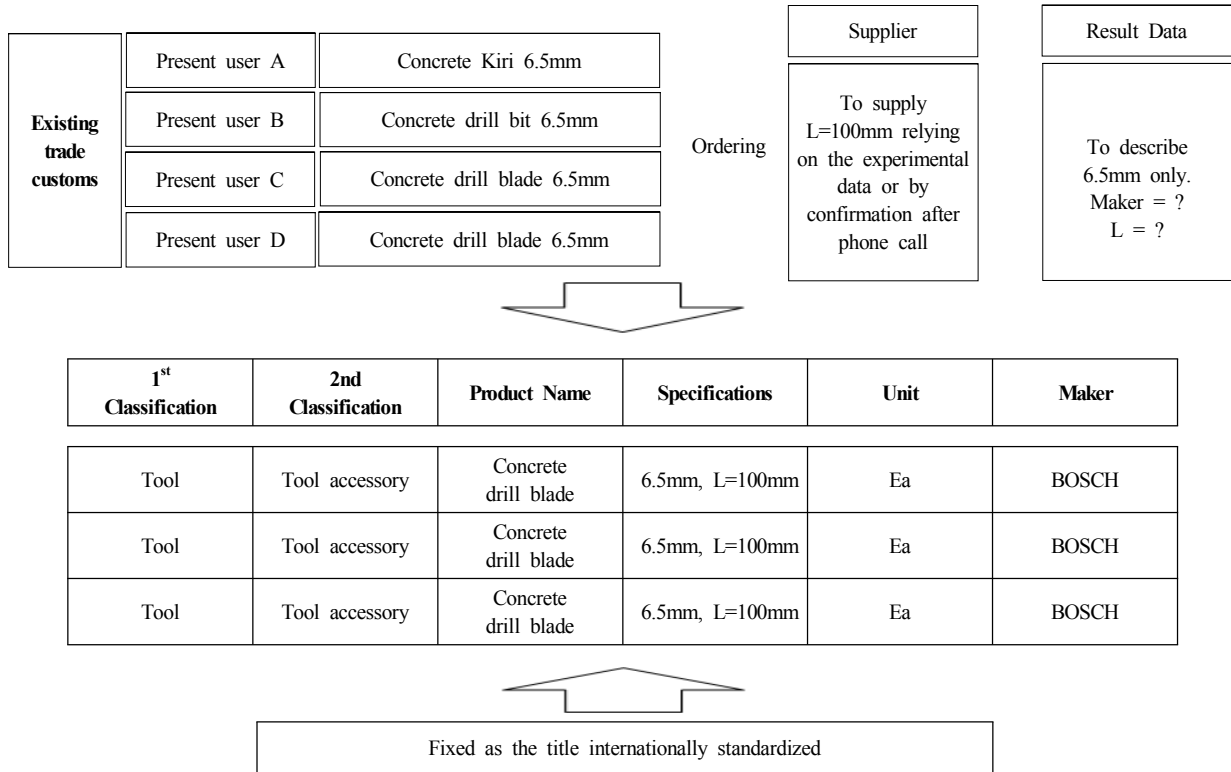
As for S Construction Company, even the product names and specifications marks were different per purchasing company per area and job site. Like <Table 3>, the concrete drill bits were delivered in various names such as Kiri, drill bit, drill blade and etc. per purchasing company, and much confusion occurred owing to the material names not standardized. Such matter resulted in the fact that the MRO material price became different as per how much quantity

was purchased per each site, which became included in the expenses loss of S Construction Company. Owing to the integrated purchasing effect of MROKorea in this relation, it has received the product per site in the title and specifications internationally standardized and also in the uniform price. Looking into the reduction ratio per some item, 10~14% of the reduction effect has brought to most of the items. Like the following <Table 4>, it has acquired the unification of the management expenses, product name and specifications, reduction of the labor fee, reduction of the process and transparency of the purchase, and resulted in 13.5% of the reduction on the basis of total amount on the first year, and showed 1~2% of the reduction effect as per the improvement effect per year. It is said that if 10% increase of the sales rate raises 100% of the ordinary profit, 5% of the purchasing expenses is connected to increase of 144% of the ordinary profit. Like this, the purchasing expenses has the higher effect for the purchasing reduction than any other field, and if the purchasing expenses is reduced, the more profit will return to the company.

Looking into the reduction ratio per some item, 10~14% of the reduction effect has brought to most of the items. Like the following <Table 4>, it has acquired the unification of the management expenses, product name and specifications, reduction of the labor fee, reduction of the process and transparency of the purchase, and resulted in 13.5% of the reduction on the basis of total amount on the first year, and showed 1~2% of the reduction effect as per the improvement effect per year. It is said that if 10% increase of the sales rate raises 100% of the ordinary profit, 5% of the purchasing expenses is connected to increase of 144% of the ordinary profit. Like this, the purchasing expenses has the higher effect for the purchasing reduction than any other field, and if the purchasing expenses is reduced, the more profit will return to the company.

<Table 3> Standardization of Product Name Before/After Introduction of MRO Materials

- Example of Material Standardization Work – Product Name:
Concrete Drill Bit 6.5mm, L=100mm, BOSCH



<Table 4> Integrated Purchasing Effect and Annual Reduction Ratio

(1) Outsourcing Effect (Based on 1st year)

Qualitative Effect	Quantitative Effect (Based on the item/unit price of the results of 2000, SK Construction Company)			
Integration of supply chain: Reduction of the management expenses owing to unification of the supply lines Easy purchasing management integrated (plan) by the main office: Standardization of the product name and specifications Reduction of direct (decrease of purchasing price) /indirect purchasing price (management/ personnel) Acquirement of the purchasing transparency through the process innovation and system management	Fixtures/ consumables 10%	Safety goods 14%	Miscellaneous goods 9.5%	Reduction of 13.5% based on total amount

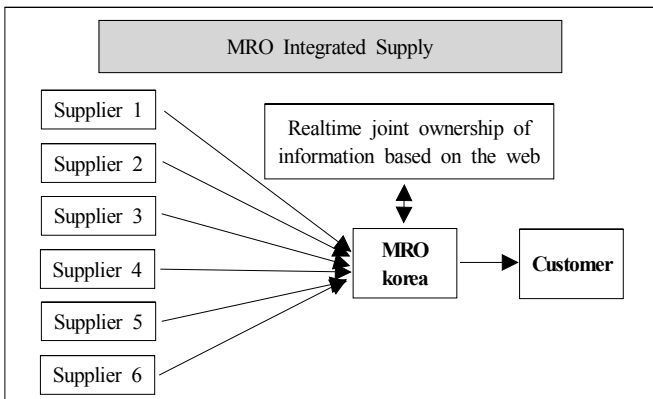
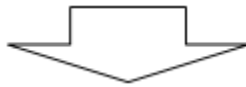
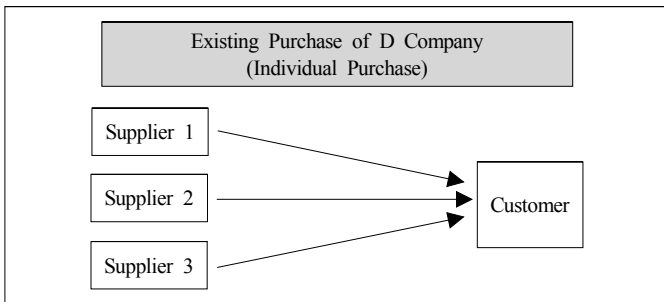
(2) Work Performance Status per Year

1 st Year (Jan. 8 to Mar. 7)	2 nd Year (Mar. 8 to May 7)	3 rd Year (May 8 to Jun. 7)	4 th Year (Jun. 8 to present)
Integration of purchase/management, integrated management of main office, materials standardization work	Coverage of nationwide zones such as Honam Area and etc. Execution of MROK direct delivery of miscellaneous goods Online approach	Coverage of overseas construction site Conversion into direct delivery system to nationwide through integration of the quantity of materials	Expansion of logistics center and construction of the next day delivery system Reserve of strategic inventories (safety goods, cleaning goods)
Reduction ratio 13.5%	Reduction ratio 1.5%	Reduction ratio 1.1%	Reduction ratio 2% (expected)

3. Purchasing Innovation Case of D Company, Logistics Business Type

As D Company is the company purchasing the MRO materials amounting to some KW15million, its major products are the air purification device and the machine production.

It purchased the office supplies from the stationery store and the tools and the consumables for the machinery from the adjacent tool arcade through the existing off-line. As it was narrow to select the logistics networks owing to the regional limit, and as the competitiveness of the unit price fell owing to purchase of small quantity, it faced the limit of the systematical distribution system against one-stop shopping owing to provision of the limited items, and the expenses for the delivery per supplier separately occurred.



<Figure 3> Change of Purchasing Flow of MRO Materials

MRO market status of the small/medium company operated the e-mall or the store with the limited items such as tool expert company, office supplies and etc., and it could not be activated as there was any difficulty to expand the business owing to the regional limit that is difficult to expand the dealing items.

As it has received the proposal from MROKorea as the purchasing innovation business from 2009, it purchased the consumable facilities,

consumables for tools, miscellaneous goods and office supplies amounting to some KW7million for 5 months, and it has attained the some 13% of the reduction effect except the price increase of the raw materials. Also, as it ordered the necessary inventories at the proper time, it reduced the inventory cost.

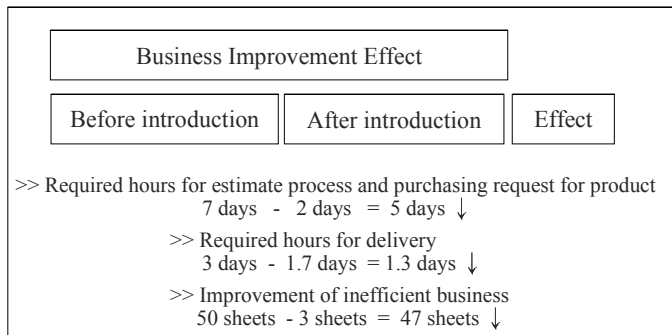
<Table 5> Purchasing Status of MRO Materials of D Company

Descriptions	'09 Jan.	Feb.	Mar.	Apr.	May	Total
Monthly order amount	505,320	1,286,510	1,381,050	1,853,730	2,078,210	7,104,820
Reduction ratio compared with last year per item (%)	12.0%	14.5%	12.3%	12.7%	14.5%	13.2%
Monthly ordering number	6	8	6	5	5	30

Owing to the pressure of purchase through the online and the process problem at the early introduction time, MRO purchasing business was made through going and coming of the phone and fax. However, the purchasing request can become directly made through the business know-how of MRO, education and information system of the present business.

Also, the process from the purchasing request to the settlement of accounts has been simplified into one by connecting to ERP system, internet e-marketplace and electronic settlement system into one from the slip management of the estimate/tax accounts through the existing off-line.

Like the following <Diagram 3-4>, 50 slips have been reduced to 3 slips, and the hours and lead time to treat the purchasing business were long, but as for the time from the purchasing request to the delivery after introduction, some above 5 days have been reduced.



<Figure 4> Business Improvement Effect of D Company

IV. Conclusions

1. Summary of Research Results and Indication

The indications acquired from this research results are as follows.

Firstly, as for MRO integrated purchase under the characteristics of the market environment, it had to use the supplier obligatorily through the integrated purchase on the level of CEO's decision-making or the group rather than the voluntary will of the purchasing department or the procurement department.

Secondly, as for the present B2B E-marketplace MRO purchase, the purchasing agency business has formed the mainstream, but it is aiming at the diversification of the benefit by supplementing/correcting the business model such as category type, mediation business type, MRO-type advancing in the store inclusive of the purchasing agency business, keeping pace with the potential market of MRO.

Thirdly, as for analysis of the products, the purchaser wants more various products and assortment of goods than those of the present time, and also to be provided with the precise product information Especially, as the importance of the product sourcing becomes high, the whole energy has been bestowed on acquirement of the excellent suppliers.

Fourthly, as for use of B2B E-marketplace MRO integrated purchasing system, there are the purchasing companies complaining the inconvenience even until now, and there is the demerit spending the long time during the image move and the process treatment. It shall try to shorten the searching time and the process treatment time as the system is centered on the purchaser.

B2B E-marketplace MRO market is continuously widening, and it will make the future prospect high whether the expenses of the purchasing company is epochally reduced and whether the quantity is stably supplied.

2. Limit of Research and Future Task

There was any limit in analyzing the characteristics of B2B MRO E-marketplace and inducing the activation plan with the cases of two specific companies being applicable to the supplying company and the

purchasing company. Especially, it was difficult to generalize the results as the responses of the phone calls and the request for the supplying company and the purchasing company for data, which were performed for the results of B2B E-marketplace MRO integrated purchase, were low, and it makes it clear that there was any restraint for the approach as it was the research for B2B MRO E-marketplace not known yet. In this addition, it becomes inconvenience not to present the concrete proposal for the future as to the utility of the supplying company and the purchasing company as far as the integrated purchasing effect of B2B E-marketplace MRO materials is concerned. It is indicated that the statistics such as statistical analysis for the utility of the supplying company and the purchasing company, effective system, purchasing type being fit to the domestic, optimal process and etc. and the research for the technical part, will be required in future.

Received: March 11, 2010

Revised: August 20, 2010

Accepted: September 01, 2010

References

- An Chong S.(2005),"A Study on the competitive Structure and Business Models of MRO e-Marketplace," *Journal of International Commerce and Information*, 7(4), 117-135
- Bakos, J. Y. and Baily, J. P.(1997), "An Exploratory Study of the Emerging Role of Electronic Intermediaries," *International Journal of Electronic Commerce*, 1(13), 157-168
- Ellinger, A. E., Lynch, D. F., Andzulis, J. K. and Smith, R. J.(2003), "B-To-B e-Commerce: A Content Analytical Assessment of Motor Carrier Web," *Journal of Business Logistics*, 24(1), 199-220
- Grewal, R.J., Comer, M. and Mehta, R.(2001), "An Investigation into the Antecedents of Organizational Participation in Business-to-Business Electronic Markets," *Journal of Marketing*, 65(July), 17-33
- Kehoe, H., Sharifi, D.F. & Burns, N.D.(2004), "A structured framework for analysis and understanding of factors impacting the effective application of e-marketplaces", *International Journal of Automotive Technology and Management*, 4(4), 394-410
- Kim, J. W, Yi, S. K and Choi, J. H.(2003), "The Factors that Influence the Decision of Participation in B2B E-marketplaces", *Journal of Distribution Research*, 8(2), 85-101
- Kwon, S. W.(2008), "A Study on the Influence of MRO E-marketplace System upon Purchase Effects", *Thesis of master's course*, Myongji University.
- Lee, J. W., Brahmaresne T. & Kim,Y.E.(2009), "Influence of E-Commerce Provider Environments on User Perceived Benefits and Commerce", *The Journal of Economic*

Perspectives 15(1), 55-68

- Lee, Byeong-koo (2001), Research for Development Plan of E-commerce, Thesis of master's course, Konkuk University.
- Lim, S. b., Kim, S. k., Mitchell, R. B. and Hong, S. G.(2004), "A Study of Suppliers' Participation in Private Exchanges: Focusing on MRO Markets," *Journal of CALS/ EC*, 9(4), 37-51
- Lucking-Reiley, David and Spulber, Daniel F.(2001), "Business-to-Business Electronic Adoption of E-Commerce", *Journal of Korean Distribution and Management*, 12(5), 173-195
- Oh, S. H and Kim, S. H.(2008), "Antecedents of Trust and Effects on Commitment in B2B e-Marketplace", *Journal of Distribution Research*, 13(1), 1-33
- Ratnasingham, P.(1988), "The Importance of Trust in Electronic Commerce," *Internet Research: Electronic Networking Applications and Policy*, 8(4), 313-321
- Sharifi, H., Kehoe, D.F. & Hopkins, J.(2006), "A classification and selection model of e-marketplaces for better alignment of supply chains", *Journal of Enterprise Information Management*, 19(5), 483 - 503
- Urban, G.L., Sultan, F. and Cualls, W.J.(2000), "Placing Trust at the Center of Your Internet Strategy," *Sloan Management Review*, 42(1), 39-48