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## **Public B2B Electronic Marketplaces**

**- A Spatial Perspective -**

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## **ABSTRACT**

### **Public B2B Electronic Marketplaces: A Spatial Perspective**

by Ji-Sun Choi

The objective of this study was to analyze the activities of firms operating public B2B electronic marketplaces (e-MPs) and their participating firms from a perspective of economic geography. It originated from questions related to the influence of the development of Information and Communication technologies (ICTs) on economic space. Public B2B e-MPs were selected as a subject for this study because this sector was regarded as one of the most evolving forms of electronic businesses that integrated advanced ICTs and commerce. In this study, public B2B e-MPs were defined as the electronic marketplaces where multi buyers and sellers participated and traded electronically on electronic space.

Questionnaire surveys on firms operating public B2B e-MPs were conducted based on preliminary in-depth interviews. Five public B2B e-MPs in four industries were chosen and their participants were also investigated through questionnaire surveys and in-depth interviews. Moreover, the transaction data for six months over an MRO e-MP dealing with maintenance, repair, and operating products were acquired and the spatial flow of the products traded over it was analyzed based on two business models: an exchange model and an agent model.

The spatial characteristics of the operating firms of public B2B e-MPs were examined first. Then, the expansion of the spatial coverage of trading partners was investigated. For this purpose, three hypotheses were put forward. The main findings of this study are summarized briefly with regard to the three hypotheses.

First, the hypothesis on the spatial distribution of the operators of public B2B e-MPs was examined. The operators of public B2B e-MPs showed an extreme concentration on the Seoul area in Korea. Gangnam-gu was the most proliferate district where many operators of public

B2B e-MPs were agglomerated.

Gangnam-gu, other Seoul areas, and the provinces (which refers to the areas outside Seoul but within Korea in this study) were identified as the areas by which the location factors of the firms operating public B2B e-MPs were differentiated. Firms in Gangnam-gu, in particular, manifested different characteristics from those in the provinces. A differentiated location factor of firms in Gangnam-gu was the pride or prestige effect. That would arise from the fact that they were located in the most innovative area in Korea. The physical proximity to potentially cooperative firms was also significant, in addition to such traditional location factors as the convenience of transportation and preferable business conditions. On the contrary, the physical proximity to raw materials and to the production places of traded products was considered very important. The spatial proximity to potential buyers or sellers was of great significance. In addition, the familiarity of the managers with the regions was one of the most important factors in choosing locations.

The different characteristics of the three regions are also related to the characteristics of the public B2B e-MPs in each region. Public B2B e-MPs in the provinces were completely vertical e-MPs, whereas the ratio of horizontal ones was higher in Gangnam-gu than in other areas. Firms in Gangnam-gu dealt with more standardized products. They were also related to the low level of the exchange of tacit knowledge and the reduced importance of trust-based relationships than those in the provinces.

Second, the hypothesis on the importance of face-to-face meeting in the businesses of public B2B e-MPs was investigated. Face-to-face meeting was still considered very important in the businesses of the operators of public B2B e-MPs, although electronic communication channels also played important roles in conducting their businesses.

Firms located remote from customers built supporting organizations to strengthen physical communication channels. Some firms dispatched their workers to the provinces where their major buyers or sellers were located. Other firms established branch offices or their own distribution centers in the provinces. Some distribution centers were operated with the cooperation of allied firms. It was observed that firms in the Seoul area went out to the

provinces to keep close relations with potential buyers and sellers. The need for continuous communication with their buyers and sellers or the quality control of their products urged them to leave Seoul or Gangnam-gu.

Third, the hypothesis on the extent of the spatial coverage was examined by industry. The spatial coverage of the participants in MRO e-MPs seemed to be more expanded than that in other industries. The participants in the petroleum e-MP did not go through much spatial expansion, in spite of the active use of public B2B e-MPs, because of limiting delivery zones due to the pressure of transportation cost and the limited distributions of oil storing facilities. The participants in construction material and steel industries experienced difficulty in adapting themselves to the electronic environments.

Several factors that influenced the use of public B2B e-MPs were detected. They were the difficulties encountered in using IT infrastructures, resistance to change of practices, and fear of losing jobs. Other issues included under-the-table money, the pressure for transactions fees, and so on.

Furthermore, there were some factors that lowered the possibility to change the existing spatial coverage of their business areas, even after they began to trade over public B2B e-MPs. In terms of industrial structures, the long lasting practices of the transactions on credit, the existence of dominant market players and the need for fidelity to trading partners, and unstable supply and demand conditions were also important. In terms of products, the need for quality control and product inspections and warranty of products encouraged firms to maintain their existing trading partners.

Taking a step further, a detailed analysis of the spatial flows of the products traded over an MRO e-MP was conducted. The analysis revealed a differentiated spatial impact by business model. The customers that chose suppliers on e-catalogs directly (the exchange model) showed a strong preference for local suppliers. However, those that outsourced MRO product purchasing to the e-MP (the agent model) showed a high level of inter-regional supply preference from remote suppliers. Even though the items of outsourced purchasing were mainly the standardized operating inputs, the high ratios from inter-regional suppliers in

the agent model were shown irrespective of the types of traded products. Furthermore, the tendency towards maintaining satisfactory suppliers resulted in the low possibility of complete transformation into the governance structure based on market coordination even in an era of prevalence of public B2B e-MPs.

Many limitations related to data collection constrain the conclusions that can be made from this study. Rather, this study only casts into light several issues that could be refined in future research. Complementary relationship between electronic space and physical space seemed self-evident, but the overly optimistic expectations of the electronic economy made us overlook the significance of physical space. This study highlighted the need for strengthening offline business activities to succeed in online businesses. The recognition of the importance of offline business activities such as marketing and logistics should precede successful operation of public B2B e-MPs or effective participation in them.

**Keywords:** B2B electronic commerce, public B2B electronic marketplaces, spatial perspective, importance of offline business activities, marketing strategy, face-to-face meeting, supporting organizations, regional agencies, logistics, expansion of online spatial coverage, exchange model, agent model

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# **I. Purpose of Study**

## **1. Background**

The development of Information and Communication Technologies has been playing a crucial role as one of the main drivers for changing the global economic environment and has contributed to the advent of the electronic economy. As with the term such as information economy or digital economy<sup>1</sup>, electronic economy describes the contemporary world where the uses of computer networks potentially affect the performance of the economy by leading to the creation of products and services (Atrostic, et al., 2000).

Electronic commerce (EC) is at the center of the electronic economy. In its narrow definition, EC accomplishes business transactions through electronic networks, minimizing the use of physical resources. The term 'electronic commerce (EC)' has been in existence since 1970s (Leinbach & Brunn, 2001:13). In its beginning stage, EC referred to the inter-organizational information system that was used to link firms to their customers or suppliers through private value-added networks. It was only in the early 1990s that public attention was drawn to the Internet-based EC. This resulted from the introduction of the World Wide Web and the burgeoning computer networks industries.

Although technological impacts on economy are not new at all, the present electronic economy is more attractive to businessmen, practitioners, and researchers. The reason mainly comes from the possibility that the existing way of doing business could be changed completely by the introduction of the new technologies supported by the Internet and computer networks. Even though the degree to which the existing way of doing business is altered is still debatable, EC is sometimes considered the new-generation business model that goes against the traditional business paradigm (Tang et al., 2001:51). EC is often viewed as having the potential to fundamentally change the way firms and markets organize the flow of

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<sup>1</sup> Refer to Porat (1977), Tapscott (1996), and Lynn et al. (1998) for more information on the information economy and the digital economy. Kling & Lamb (1999:2) explain the discrepancies between these two by noting the digital economy focuses on goods or services whose development, production, sale, or provision is critically dependent upon digital technologies whereas the information economy includes all informational goods and services.

goods and services in the economy (Malone et al., 1987:497).

A vast amount of literature on EC has been published since the explosive development of the Internet-related business activities<sup>2</sup>. However, most of these approach EC in terms of economic, managerial or technological perspectives. They are often based on the perception that spatial aspect is not relevant to EC since EC is mainly reliant on virtual electronic networks on cyber space, not on physical space.

The ignorance of spatial dimension is connected to the argument on “the death of geography”. The unprecedented development of information and communication technologies (ICTs) in combination with the development of transportation technologies enabled a rosy speculation of the future in which physical distance would not be a barrier to economic activities. Physical distance was recognized as the obstacle to be overcome by all means. Technological developments seemed to overcome the barriers of physical space to some extent. For instance, the development of Electronic Software Delivery (ESD) enables customers to buy software and get it online immediately, without waiting for physical logistics services<sup>3</sup>. Such technological developments support the possibility of substituting physical space with electronic space. The belief in such a role for information and communication technologies was enough to expect the same kind of impact in terms of EC.

However, the dominant untested belief in the aspatial characteristics when dealing with the development of information and communication technologies as well as EC is challenged by a group of researchers, as will be discussed later in detail. As a result, the virtue of the spatial strategies to encourage business activities is gradually recognized. Technological development is viewed as contributing to the exploitation of minute spatial differences and leads to a more heterogeneous world (Li & Williams, 1998).

Furthermore, it is accepted that the development of EC does not offer a “friction-free” environment even though it dramatically reduces production costs (OECD, 1999c: 15). Nevertheless, the research on EC from a geographical perspective is in its infant stage. Some have attempted to uncover the local nature of EC in terms of online retailing industry. They contend that the EC policies focused on localization are more appropriate for successful

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<sup>2</sup> Refer to the chapter of a review of literature.

<sup>3</sup> Online shopping mall by Ahnlab which is a leading software manufacturer that has developed comprehensive anti-virus and reliable security solutions in Korea ([http://shop.ahnlab.com/index\\_main.](http://shop.ahnlab.com/index_main.)).

businesses, rather than vague strategies for global consumers. At this moment, the study intends to approach the issue of the importance of the strategies making the best use of physical spatial dimension in doing online businesses in terms of business-to-business electronic commerce (B2B EC).

## **2. Purpose of study**

### **■ Research purpose**

This study starts from a series of questions regarding the value of the physical spatial dimension in dealing with EC based on the background situation outlined above. It essentially highlights the behind scene of online businesses. The study focuses on the complementary relationship between online businesses and offline businesses and therefore intends to explore for way to make the full use of offline physical dimension for successful online businesses.

The research area is limited to B2B EC where the behaviors of economic actors are more active and therefore the effects of the introduction of EC are easily monitored. Because of its recent emergence, there are very little empirical works about B2B EC in which business buys from or trades with another business (Garicano, 2000). Previous studies have been approached in terms of either B2C EC or overall EC. This dissertation attempts to discover the main characteristics of B2B EC from a geographical perspective, to understand its influence on the existing structure of economic spaces, and eventually to predict the evolution of economic spaces in the future.

Moreover, the main topic of this study is narrowed to public B2B electronic marketplaces (public B2B e-MPs) and participating firms. Public B2B e-MPs catalyze a new market structure called eBusiness networks, enabling firms to form and disband relationships quickly, share information abundantly, and tile the Net into all of their activities (Sanders and Temkin: 2000). More specifically, unlike private e-MPs that are usually developed on the basis of pre-existing supplier-buyer relationships, public e-MPs are expected to provide more flexible invisible market-places where all firms have the same opportunities to trade. This study assumes that the extent to which the roles of public e-MPs in reshaping the spatial organization of economic actors in the age of electronic economy will depend on some factors

that are differentiated by the sub-types of public e-MPs. This study deals with the diverse aspects of economic activities relevant to Public B2B e-MPs from the perspective of geography.

Keeping the above in mind, the objective of this study is to comprehensively analyze the development of public B2B EC in Korea from a geographical perspective by carrying out the following:

- 1) To understand the development of B2B EC as a whole.
- 2) To examine the locational characteristics of the firms operating public B2B e-MPs.
- 3) To reveal the impact of the introduction of public B2B e-MPs on the spatial coverage of the business activities of customers.
- 4) To draw out valuable spatial strategies in terms of customers as well as operators.

Among the four objectives, the second and the third are the essential parts of this study that need empirical analyses. Of these two, the former is whether the introduction of EC will help to realize the balanced development of physical space in terms of the spatial distributions of the operating firms of e-MPs or not. The latter investigates whether the introduction of EC will contribute to the expansion of the spatial coverage of customers in terms of the change of trading partners or their locations. Based on the result of the empirical analyses as well as theoretical literature review, the policy directions to successfully develop Public B2B e-MPs and to make the best use of them are suggested in the conclusion.

This study intends to interpret the impact of public B2B e-MPs from a spatial point of view. To this end, it puts forward a series of hypotheses to achieve the goal. Although it will be discussed later in detail, main hypotheses are briefly introduced here.

**H1: Regardless of the origin of public B2B e-MPs from advanced IT technologies compressing time and space, the operators of public B2B e-MPs are likely to be concentrated in specific regions with favorable physical location factors rather than to be dispersed across the country.**

**H2: The increase in the use of electronic communication channels is not likely to diminish the importance of face-to-face meeting in the businesses related to public B2B e-MPs, irrespective of the high reliance on electronic networks.**

**H3-A: The spatial coverage of the firms that trade over e-MPs is likely to be expanded. H3-B: The impact of public B2B e-MPs on the spatial coverage of buyers and sellers is likely to be differentiated by some attributes of industries and firms.**

### **3. Organization of study**

The study is composed of seven chapters. The first chapter introduces why the topic is chosen and what the main purpose of the study is. The second chapter outlines the literature review and hypotheses. Literature review first deals with the general introduction of EC, B2B EC, and public B2B e-MPs from diverse perspectives. Then, it summarizes the theoretical background that gives a direction for the meaningful approach for the topic. Finally, several hypotheses are put forward from the literature review. The characteristics of collected data and the methods of analysis are introduced in the order of empirical chapters of this study.

The chapter four, five, and six are the main empirical parts of the study. The empirical analyses are conducted to verify the three main hypotheses in this research. The purpose of the chapter four is to understand the characteristics of the physical location of Public B2B e-MPs in Korea. The chapter five and six focus on the change of spatial coverage involved with business performance after firms take advantage of Public B2B e-MPs. Chapter five is made

up of the analyses of the customers of five case public B2B e-MPs in four industries. Chapter six specifically analyzes the quantitative data about the spatial flow of products traded over an MRO public B2B e-MP related to maintenance, repair, and operating products. It aims at learning the influence of the use of public B2B e-MPs on the expansion of the geographical scopes of business activities of customers. The statistical analysis based on valuable quantitative data from an MRO e-MP is carried out.

Each chapter of four, five, and six has an introduction at the beginning to clarify the purpose of the empirical analysis of the chapter. Then, there are also summary sections at the end of the chapter to examine the suggested hypotheses and sum up what is learned. Finally, the concluding chapter summarizes the results of the analyses once again and the strategic implications of the study are discussed in detail for practical uses. Furthermore, the limitations of the study and suggestions for future research are discussed.

## **II. Literature review and hypotheses**

### **1. Development of B2B EC**

#### **1.1. EC and B2B EC**

##### **■ Electronic Commerce (EC)**

EC refers generally to all forms of transactions relating to commercial activities that are based upon the processing and transmission of digitized data, including text, sound and visual images (OECD, 1997: 11). EC is also defined broadly as ‘doing business electronically’ (Timmers, 1999: Preface xv), and is used interchangeably with ‘electronic business’. Literatures and trade-press tend not to delineate clearly among “electronic business”, “electronic commerce”, “electronic markets,” and related terms (Wigand, 1997: 1). Bartels (2000) distinguishes e-commerce from e-business. According to Bartels (2000), e-commerce covers outward-facing processes that touch customers, suppliers and external partners, including sales, marketing, order taking, delivery, customer service, purchasing of raw materials and supplies for production and procurement of indirect operating-expense items such as office suppliers. Although e-business includes e-commerce, it also covers internal processes such as production, inventory management, product development, risk management, finance, knowledge management and human resources (Bartels, 2000). Norris et al. (2000: 14-16) note that electronic business encompasses three stages by its evolutionary path, ranging from e-commerce and e-business to e-partnering. One way to classify EC is by different actors participating in electronic trades such as governments, businesses, and consumers, including G2G, G2B, G2C, B2G, B2B, B2C, C2G, C2B, and C2C EC (Coppel, 2000: 4).

Korea Institute for Electronic Commerce (KIEC) and Ministry of Commerce, Industry and Energy (MOCIE) suggest five indices to measure EC in practical terms. These include ① whether a firm has a separate department for EC business, ② whether a firm uses a network-related service (e-mails, Internet marketing etc.) for their businesses (such as

marketing), ③ whether a firm performs transactions through electronic networks, ④ whether a firm takes advantage of electronic payment system or electronic money etc., ⑤ whether a firm gathers the opinions of customers through electronic networks (KIEC & MOCIE, 2002: 41). If a firm falls into at least one of the five, it is considered to participate in a broadly defined concept of EC, and the firms that perform the transactions through electronic networks are considered to be members of a narrowly-defined EC.

### ■ The significance of B2B EC

The most important part of EC is B2B EC trading, although B2C EC has received most public attention (Timmers, 1999: Preface xv). B2B EC is a transaction conducted electronically between businesses over the Internet, extranets, intranet, or private networks (Turban et al., 2002: 217). In this definition, a business refers to any organization, private or public, for profit or nonprofit.

Little attention has been paid to B2B EC, not to mention the empirical works. In fact, however, B2B EC has taken the dominant position in total EC sales although B2C EC has received public attention. While it is a tough exercise to measure and speculate EC market size due to the lack of the standardized indices for the boundary and the measurement, there have been several statistical speculations about the possibility for the growth of EC.

Phillips & Meeker (2000:37-38) of Morgan Stanley Dean Witter suggest \$200 billion in online B2B purchases in 2000, growing to \$720 billion and \$1.4 trillion by 2001 and 2002, respectively. Sanders and Temkin (2000) of Forrester research institute forecast that B2B Internet EC will reach to \$6.3 trillion in 2004 and views the proportion of B2B EC as about 93% of the total sales (\$6,789.8 trillion) of EC in 2004. But, we have to be careful when interpreting these figures because most speculations do not seem to give clear definitions about what they referred to as B2B EC or EC. In actual fact, OECD (1999c: 36) lists 8 sorts of B2B EC ratios out of the total value of EC activity, ranging from 61% to 90% with an average of 78%. In spite of their ambiguities in measuring methods, it is obvious that much importance should be placed on B2B EC in the future.

## 1.2. Historical development of B2B EC

One of the most fundamental ways of understanding the development of B2B EC is by the historical distinction between before and after the commercial use of the Internet. The initial appearance of B2B electronic business goes back to the early 1970s when Interorganizational information system (IOS) started to be used to link one or more firms to their customers or suppliers through private value-added networks<sup>4</sup>. One type of IOSs is referred as Electronic Data Interchange (EDI) systems which make use of standard protocols to share information among participating companies through computer-to-computer exchange of electronic documents relating to purchasing, selling, shipping, receiving, inventory, financial and other activities (Archer & Yuan, 2000: 385)<sup>5</sup>. The concept of EDI was originally developed in 1948 when the Berlin Airlift constructed a paper-based standard document to reconcile the data that came from a vast number of different files while its electronic version was developed in some 30 years ago in transportation industry with the original purpose to automate the exchange of papers between organizations. When standards were introduced in the early 1970s, EDI became a more simple and more reliable system especially taking advantage of VANs which are dedicated, private or third-party proprietary communications companies that provide for multi-protocol connectivity and enable secure transactions or information exchange using firewalls, encryption programs and digital signatures (Threlkel & Kavan, 1999: 348).

Lee, Clark & Tam (1999: 186) review advantages taken by firms of EDI technology. EDI/IOS enables firms to create new opportunities to optimize the total industry value chain across multiple organizations. Information integration with trading partners helps that firms not only improve channel efficiencies but also reduce transaction risks. Moreover, they argue that the benefits of EDI adoption are not just for the EDI champions (as usual, large firms which took the initiative), but also for EDI adopters (small and medium sized firms which are

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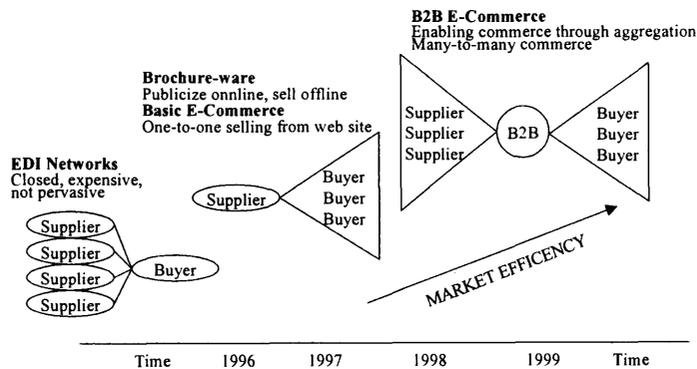
<sup>4</sup> In terms of B2C electronic commerce, a number of suppliers created single-source electronic sales channels in the 1970s. Some innovated companies, however, developed “electronic markets” from “single-source electronic sales channels”, giving up “locking-in” effects, rather providing more chances to choose the best products/services for customers (Malone, Yates, and Benjamin, 1989).

<sup>5</sup> Whatis.com defines EDI as a standard format for exchanging business data which is ANSI X12. ANSI X12 is developed by American National Standards Association and is either closely coordinated with or is being merged with an international standard, EDIFACT.

sometimes compelled to adopt EDI by their powerful, large seller or buyer), as far as EDI networks are used for inter-firm process reengineering.

The use of EDI, however, is limited to relatively large firms because EDI is often thought to be a solution only for large companies, their suppliers and customers due to high implementation and maintenance costs (Threlkel & Kavan, 1999: 348). During this stage of EDI technology, large firms backed their suppliers (or customers) by supporting IT infrastructures, which was absolutely necessary to carry out interorganizational information exchange in many cases. Large manufacturing firms were the main users of EDI at that moment. General Electric (GE), one of the largest EDI service suppliers, estimated that 80 percent of suppliers were not connected to an EDI system, relying on fax, telephone, or mail, according to the interview with a development manager of GEIS in September 1997 (OECD, 1999c: 37).

The advent of Internet has led to the explosive development of EC (Timmers, 1999:3). Even if the influence of Internet was increased by the appearance of browsers in 1993, it is even more recently that the Internet is used on a commercial basis, in addition to its primary contribution to product and service advertising and to interpersonal communication in the form of e-mail (Threlkel & Kavan, 1999: 348). Historical perspective of the evolution of B2B EC is also detailed by the report of Phillips & Meeker (2000:25-26) of Morgan Stanley Dean Witter. The B2B EC by online intermediaries that connect multi suppliers and multi buyers is considered to be the most advanced form of B2B EC. The evolution process of B2B commerce is diagrammed in Figure II-1.



Source: Phillip & Meeker (2000: 25), Morgan Stanley Dean Witter Internet Research

**Figure II-1 Overview of the evolution of B2B EC**

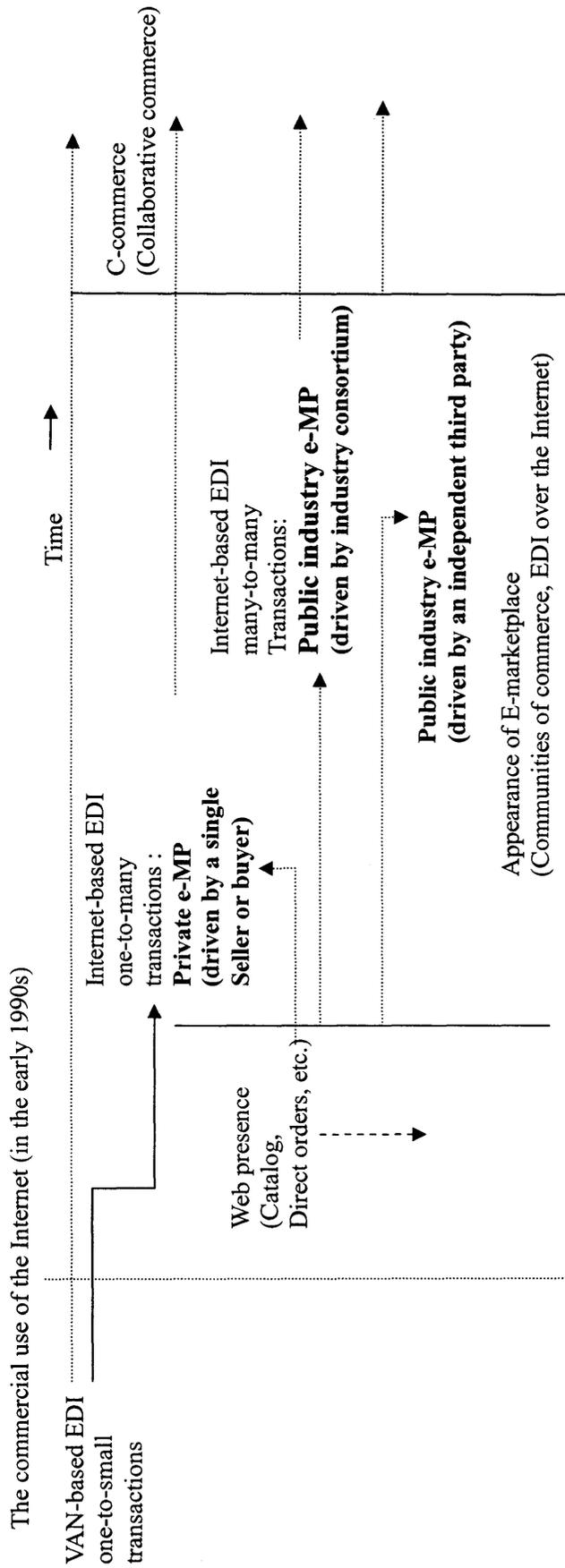
They also introduce four phases of B2B EC (Table II-1). Phase 1 is “Batch EDI” stage where VAN-based EDI networks are utilized with technically rigid, complex standards in batch mode. These transactions are carried out with ‘pre-selected’ suppliers or buyers. Phase 2 is the stage of “Basic E-commerce”, in which EC is initiated between buyer and seller without an intermediary. A few early adopters of Internet based commerce use their Web sites as a primary sales channel and most of them are just presenting marketing and catalog data and very small percentage of them can accept orders or provide order status information. Phase 3 is represented by “Communities of Commerce” where third-party Web destinations appear, bringing together trading partners into a common community that creates market transparency. At the final phase 4, “Collaborative Commerce” is built on Phase 3 by adding support for other business processes before, during, and after the order. Collaborative Commerce (C-commerce) is a more complete reflection of the complex workflow between demand and supply chain.

**Table II-1 Four phases of EC**

Phase	Phase 1 Batch EDI	Phase 2 Basic E-Commerce	Phase 3 Community Commerce	Phase 4 Collaborative Commerce
Flexibility	Low; rigid format	High, open standards	High; open standard	High; open standards
Costs	High; proprietary network	Low; leverage Internet	Low; leverage Internet	Low; leverage Internet
Business processes supported	Batch orders	Catalog orders	Catalog plus Auction and Bid/Ask	Multiple order forms; B2B interactions
Market transparency	Low; fixed supplier base	Low; no centralized market	High; intergeography transparency	High; intergeography transparency

Source: Phillip & Meeker (2000: 26), Morgan Stanley Dean Witter Internet Research

The historical development of B2B EC is illustrated in Figure II-2 based on literature review. The introduction of the Internet brought about the proliferation of e-MPs in diverse types and was considered to evolve into a type of collaborative commerce.



Source: Revised by the author based on some literatures including Phillips & Meeker (2000) and Andrew et al.(2000)

**Figure II-2 The evolutionary path of B2B EC and Research area**

### **1.3. Impact of B2B EC on industrial organizations**

The proliferation of B2B EC is expected to exert a crucial influence on the governance structure of firms and their geographical scopes. According to Nezu (2000), the Internet enabled firms to choose the best possible suppliers regardless of their locations and the long-term relations between companies were replaced by open market based relations.

Based on the prediction of the trend towards electronic markets coupled with external outsourcing, Mariotti & Sgobbi (2001) suggest two scenarios consistent with the vertical disintegration processes. One scenario is “the market solution”. It is called “total vertical disintegration” and that means on-line perfect, or quasi-perfect markets where many-to-many spot interactions take place, taking advantage of transparency. The other scenario is “the network solution”. Unlike the former case, repetitive interactions still connect the productive units along the value chain and relational networks develop. The second case is again divided into two sub-types such as “monocentric networks”, and “polycentric networks”. Monocentric networks take place when different productive units substitute for the vertically integrated firm to form relatively stable networks, ruled by a leader that coordinates the activities along the supply value chain. In comparison, polycentric networks differ from monocentric ones in that the generated networks are not necessarily stable, but evolving ones where firms enter into temporary agreements and partnerships in order to complement their core competencies. The network solution is more efficient as long as non-negligible market imperfection including information asymmetries and asynchronies between financial transaction and economic transaction exists in electronic markets (Mariotti&Sgobbi, 2000:116).

Possible evolutionary paths are also demonstrated by Timmers (1999). His suggestions for the future of B2B EC are summarized with the phrase “competing and collaborating in value networks and dynamic markets”. In his typology, “a value network” of relationships focuses on integration of information flows to exploit information and knowledge in the network for strategic business objectives, whereas “a dynamic market” is a market-mediated set of relationships focused on increasing flexibility and opportunity for strategic business objectives (Timmers, 1999: 183). Some key characteristics are given in Table II-2.

**Table II-2 Characteristics of value networks and dynamic markets**

<i>Type</i>	<i>Focus</i>	<i>Timescales</i>	<i>Mutual commitment</i>	<i>Investment per Relation</i>	<i>Relations</i>
Value network	Increasing value through internal relations	Medium-long	High	High	Few
Dynamic Market	Increasing value through external relations	Short-medium	Low	Low	Many

Source: adapted from Timmers (1999: 184)

A firm may evolve from a complete in-house production to a member of a value network or a dynamic market configuration. Moreover, the value network can evolve into a dynamic market configuration and the opposite evolution from a dynamic market configuration toward a value network in a vertical or horizontal way is also possible. There can be overlap between the two forms, namely hybrid forms, where market-mediated relationships are combined with tight integration of information systems (Timmers, 1999: 185). In this regard, Archer & Yuan (2000:388-389) differentiate competitive sourcing supported by e-MPs from collaborative sourcing typically related with market hierarchies in B2B relationships through supply chain management.

Whether firms put an emphasis on building loyalty, trust, and commitment or not is a decisive factor to predict the governance structure of firms and their spatial scope as a result of the prevalence of B2B EC. The research on the change of the buyer-seller relationships after the wide prevalence of B2B EC goes back to those on the influence of ICTs on the inter-firm relationships. Malone and his colleagues (1987:489) are known for the prediction that the overall effect of information technology is to increase the proportion of economic activity coordinated by markets, not hierarchies in terms of inter-organizational relationship. Their prediction about movement toward e-MPs resulted from the general decrease of the asset specificity and complexity of product description by the development of ICTs, saving coordination costs.

Simultaneously, however, they did not ignore the importance of the electronic integration effects in some industries where high asset specificity and complex product descriptions were

still common to improve product development and product distribution (Malone et al., 1987:493-495). They also pointed out the paradoxical aspect of inter-firm relationships in the era of information economy. It was that even though manufacturers were increasing the volume of components purchased externally following the electronic market mechanism, they were decreasing the number of suppliers from which these components were purchased, increasing the asset specificity of products taking advantage of the electronic hierarchies. The manufacturers used information technology to get the best of both worlds, i.e. they were making increasing use of electronic markets, but their relationships with each of the suppliers in these markets were becoming increasingly like electronic hierarchies (Malone et. al, 1987: 495). Bakos and Brynjolfsson (1993) more clearly contend that the trend toward fewer and more permanent inter-company trading relationships if initial transactions are satisfactory due to the realization of the significance of noncontractible attributes of the relationships. According to them, the need in noncontractible information sharing and noncontractible investment for quality control encourages fewer and more reliable partnerships with their trading partners.

Although the organizational impact of the development of B2B EC is not the main focus of this proposed study, it is considered important in this study because the organizational impact leads to the spatial impact at the time of the proliferation of B2B EC.

#### **1.4. Types of B2B e-MPs**

Broadly, all the types of B2B EC activities can fall into the categories of e-MPs. e-MPs are electronic markets where a seller (or sellers) and a buyer (or buyers) make transactions through electronic networks. In case of B2B e-MPs, sellers and buyers are all firms. B2B e-MPs are narrowly viewed as cybermediaries or electronic brokers that bring together a huge number of sellers and buyers. In the section, a broader definition of B2B e-MPs is accepted to take various types of B2B EC activities into consideration. A few important dimensions are introduced among the various standards on which B2B e-MPs are grouped.

### ■ Ownership: Private e-MPs vs. Public e-MPs

B2B e-MPs can be classified as private e-MPs of one-to-many mode and public e-MPs of many-to-many mode. Turban et al. (2002: 220) refer to private e-MPs as company-centric models and public e-MPs as many-to-many marketplaces or the exchange. Company-centric models are divided into sell-side marketplaces and buyer-side marketplaces. A company has complete control for the participants of marketplaces. Turban et al. (2002: 220) define public e-MPs or exchanges as the electronic marketplaces where many buyers and sellers meet electronically for the purpose of trading electronically with each other.

Andrew et al. (2000) of Boston Consulting Group also divide major e-MPs as dominant players of markets into two sub-groups, private e-MPs and public e-MPs, compared to small niche players such as matchmakers and specialists. This classification refers to who the operators of e-MPs are. Private e-MPs are driven by a single seller or buyer and aim at achieving a competitive advantage in supply chain management, managing highly differentiated suppliers with few substitutes. Although e-procurement or e-sales sites are similar to private e-MPs, all the sites cannot evolve into private e-MPs because significant market share and power are needed to establish the closed relationship with their partners as is the case with GE Aircraft Engines, Cisco systems, Dell (Andrew et al., 2000:28). On the contrary, public e-MPs are founded by either an industry consortium or an independent start-up. Public e-MPs are open to any industry participant and pursue to develop efficient relationships among participants based on collaborative services. They predict that while at the initial stage direct corporate e-procurement or e-sales will dominate, public e-MPs will grow more rapidly (Andrew et al., 2000:9). Matchmakers focus on transactions and commerce services in relatively fragmented industries. Specialists are the e-MPs that perform a particular function that can be applied across multiple industries such as functional specialists (auctions, RFQ), commerce services specialists (finance, logistics), or collaborative specialists (design, supply chain management) etc. (Andrew et al., 2000: 22, 40).

Phillips and Meeker of Morgan Stanley Dean Witter Research Company (2000: 39) identify four general B2B exchange types under which there are many variations. These include Buyer-Managed, Supplier-Managed, Distributors/Market Makers, and Content Aggregators. Buyer-Managed and Supplier-Managed types are related to private e-MPs,

whereas Distributors/Market Makers type is directly involved with public e-MPs. According to their definition, Content Aggregators are focused on building and maintaining multi-vendor catalogs and provide diverse and customized digital catalogs of many companies to customers, helping firms which are not able to do it by themselves. Especially, this type is very useful for the industries that do not have the compatible product codes across the whole industry.

### ■ Products: Vertical e-MPs vs. Horizontal e-MPs

The types of traded products also divide e-MPs into two sub-types, horizontal marketplaces and vertical marketplaces (Turban, et al., 2002:221). Horizontal marketplaces are those that concentrate on a service or a product that is used in all types of industries such as office suppliers, PCs, or travel services. Vertical marketplaces are those that deal with one industry or industry segment such as electronics, cars, steel, chemicals, and so on.

Generally, such a classification represents the dichotomy of the types of traded products. Manufacturing inputs used in production are traded in vertical e-MPs whereas operating inputs are traded in horizontal e-MPs. According to Kaplan and Sawheny (2000: 98), manufacturing inputs are the raw materials and components that go directly into a product or a process, and these are generally purchased from industry-specific, or vertical, suppliers or distributed, sometimes requiring specialized logistics or fulfillment mechanisms. Operating inputs are often called maintenance, repair, and operating (MRO) goods, not parts of finished products, including office suppliers, spare parts, airline tickets, and services. These tend not to be industry specific, so they are frequently purchased from horizontal suppliers that serve all industries. MRO ranges from facilities, maintenance, repair to consumables such as stationery and cleaning material. For example, stationery such as copy paper, printer toner, pencils, electricity or electronic products such as electric cables, lubricants and gas, machinery parts such as bolts and bearings are all MRO<sup>6</sup>.

Manufacturing inputs, sometimes called product incorporated items, are related to the creation of stable and long term relationships along supply chains because buyers require the assurance of stable provision (Xideas and Moschuris, 1998). Operating inputs, so-called MRO

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<sup>6</sup> Adapted from the definition by iMarketKorea (<http://www.imarketkorea.com>)

products are likely to be traded based on price and quality competitiveness, compared to manufacturing inputs. The purchasing processes of MRO products seem more appropriate to be restructured after the introduction of B2B e-MPs, breaking off the existing relationship, if any. MRO products are generally considered as the most appropriate products for being traded through e-MPs. It is because MRO products belong to the product category with inefficient transaction processes and sophisticated customers. As the inefficiency of current transactions and the sophistication of buyers are higher, the products are known to be suitable for getting online (Berryman et al., 1998: 155-156)<sup>7</sup>. In their paper, the products including MRO, PCs, standard semiconductors, assembly components, travel services and low-end networking products are grouped as the products that are suitable for moving online fast. Buyers in the category can save money on the goods by reducing inefficiency related to transaction processes and sellers can reach new customers. Specifically, the purchasing cost of MRO products is only 1-2 percent of company sale<sup>8</sup>, and 10-15% of total purchasing cost. However, the frequency of the orders of MRO products amounts to 70-80% of total purchasing orders in a company<sup>9</sup>. The variety of required products, the need for frequent orders, the reliance on specific suppliers, the frequent spot orders result in the difficulty in efficient purchasing processes and the waste of time, money, and human effort. Therefore, moving online in the field of MRO purchasing is considered to improve the efficiency and effectiveness of purchasing processes.

Horizontal B2B e-MPs are not limited to MRO e-MPs. The e-MPs focused on foreign trade can also be included in this category since they serve various types of industries (Park, S.W., 2001: 63-64). In this sense, the e-MPs in the field of non-specialized trade can be grouped as horizontal B2B e-MPs, even though they do not specialize in foreign trade.

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<sup>7</sup> Transaction inefficiency is related to poor information flow, complex or multi-tiered distribution channels, and fragmented supplier and customer bases. Buyer's sophistication is measured by the ability to define clear product specifications, the degree of understanding of the differences between vendors, and how comfortable they feel about buying a product without seeing it.

<sup>8</sup> adapted from <http://www.imarketkorea.com>

<sup>9</sup> adapted from <http://www.entob.com>

### ■ Business models: Agents (resellers) vs. Exchange (Brokerage)

Based on the interviews with some B2B e-MPs and newspaper reports from The Electronic Times<sup>10</sup>, it is found that Public B2B e-MPs are also classified by the way they earn profits into those with agent models and those with exchange models (Table II-3). The B2B e-MPs with agent models are the public e-MPs which directly buy what their buyers want from suppliers and resell them to buyers, earning profits by price difference, or markups. By comparison, the Public B2B e-MPs with exchange models are not involved with the transactions of their participating firms. Instead, they are only concentrated on giving the room for comfortable transactions through auction or bidding etc. and their profits are mainly from the membership fees to be the member of their B2B e-MPs or transaction fees.

The supporters of each model argue that their own model is more competitive and valuable than the counterpart. The Public e-MPs with (procurement) agent models argue that those with exchange models go through the difficulty in earning the profits that are needed to continue their businesses. On the contrary, the Public e-MPs with exchange models contend that their own models become the dominant ones in the end because they sincerely follow market mechanism. However, it is not certain which model takes the dominant position in the future because they are only at the embryonic stage.

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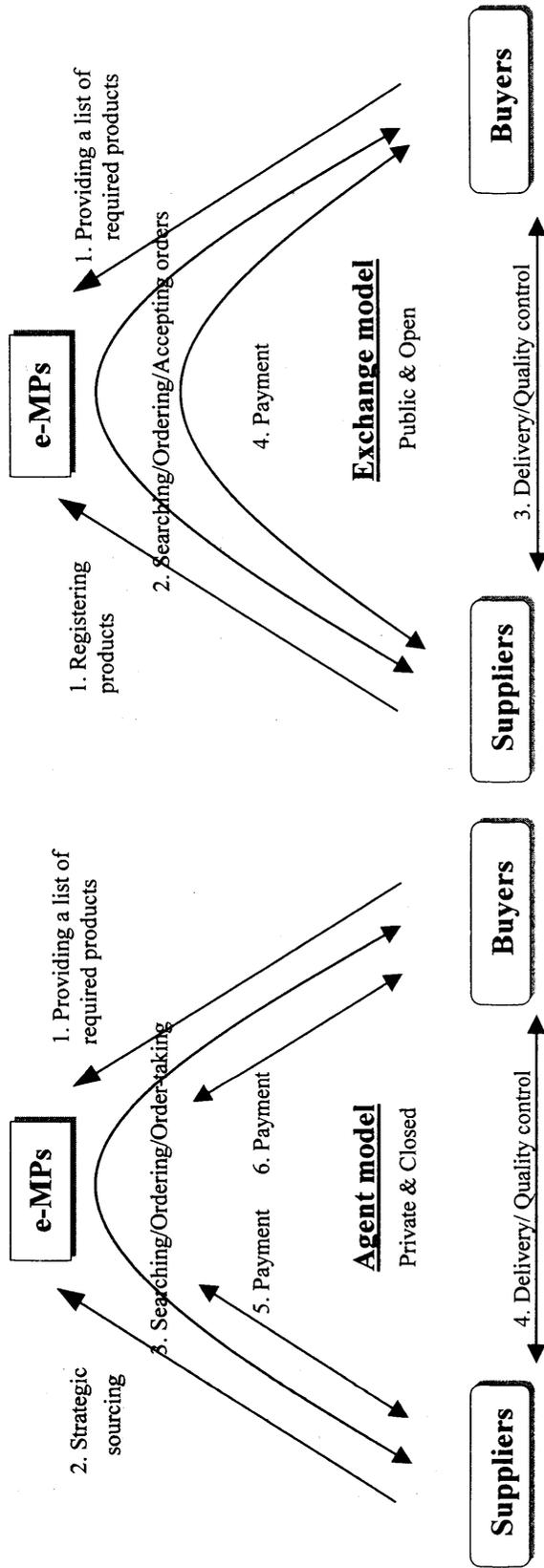
<sup>10</sup> Refer to the newspaper articles from eTimes at <http://www.etimesi.com/news/detail.html?id=200112140022> and <http://www.etimesi.com/news/detail.html?id=200112140159>

**Table II-3 The characteristics of Public B2B e-MPs by business models**

Items	<i>(Procurement) agent models</i>	<i>Exchange (Brokerage) models</i>
Characteristics	Private & Closed	Public & Open
Tax-invoices	<ul style="list-style-type: none"> <li>• To be issued twice</li> <li>① Suppliers↔e-MPs,</li> <li>② e-MPs↔Buyers</li> </ul>	<ul style="list-style-type: none"> <li>• To be issued once</li> <li>① Suppliers↔Buyers</li> </ul>
Source of revenues	<ul style="list-style-type: none"> <li>• Mark-up (price differences)</li> </ul>	<ul style="list-style-type: none"> <li>• Transaction fee</li> <li>• Membership fee</li> </ul>
Profit rates	<ul style="list-style-type: none"> <li>• High</li> </ul>	<ul style="list-style-type: none"> <li>• Relatively low</li> </ul>
Management strategies	<ul style="list-style-type: none"> <li>• Customer-driven Model</li> <li>• To make efforts to attract buyers (contracts of unit prices, quantity etc.)</li> <li>• e-MPs need tight control</li> </ul>	<ul style="list-style-type: none"> <li>• e-MPs as the centers of transactions</li> <li>• To try to offer fair conditions for transactions</li> <li>• Not to be biased to one side</li> </ul>

Source: Results from e-mail interviews with the managers of Entob and of Auction (April, 2002)

Transaction processes by the two business models are introduced in Figure II-3. In the agent model, buyers provide a list of required products to e-MPs and e-MPs source the products in place of buyers. The purchased products are listed on e-catalogs and buyers place orders. Products are delivered from sellers to buyers. e-MPs make payment to sellers and buyers make payment to e-MPs. In the exchange model, sellers directly register products on e-catalogs and buyers search for required products directly. Transactions are made without the intervention of the operators of e-MPs.



Source: eNtoB

Figure II-3 Transaction procedures over e-MPs by business model

### ■ Method of sourcing: Systematic Sourcing vs. Spot Sourcing

Systematic sourcing involves negotiated contracts with qualified suppliers, which in general cover the long-term, leading to close relationships, while in spot sourcing firms try to fulfill an immediate need at the lowest possible costs, where firms do not care about their buyers or sellers (Kaplan and Sawheny, 2000: 98)<sup>11</sup>. Systematic sourcing treats long-range supplier-buyer relationships and spot sourcing is made as the need arises (Turban et al., 2002: 267).

According to the interview with a manager of a Public B2B e-MP, systematic sourcing is often involved with contracts based on the price of units. It is also related to the long-term based contracts. Once they come to agree the price of the units for some period, customers visit the web site and make orders whenever they need the products for the contract period. It often happens in the contracts between customers and Public e-MPs with agent models. On the contrary, spot sourcing is simply to buy whenever customers need the products. It mainly happens when long-term based demand prediction is not possible due to unstable market environments. Therefore, the prices are sometimes decided on a dynamic market pricing. Many transactions over the Public B2B e-MPs with exchange models occur through spot sourcing. The spot sourcing can happen in the situation of agent models as well.

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<sup>11</sup> B2B hubs are divided into four types including MRO hubs, Yield managers, Exchanges, Catalog hubs by applying the two-way classification scheme such as manufacturing inputs vs. operation inputs (what are transacted), and systematic sourcing vs. spot sourcing (how they are transacted). MRO hubs are Horizontal markets that enable systematic sourcing of operating inputs, Yield managers are Horizontal markets that enable spot sourcing of operating inputs. Exchanges are Vertical markets that enable spot sourcing of manufacturing inputs. Catalog hubs are Vertical markets that enable systematic sourcing of manufacturing inputs (Kaplan and Sawheny, 2000).

## 1.5. Development of global B2B EC

The task of speculating B2B market size is a difficult one. A consensus on the operational definition of EC and the way to calculate it has not been reached. It is more difficult to extrapolate the growth rate of B2B EC. Nevertheless, there have been continuous attempts to develop a way of calculating and speculating the market size of B2B EC. A report from OECD (1999c) lists eight sorts of B2B EC ratios out of total value of EC activity, ranging from 61% to 90% with an average of 78% (Table II-4).

**Table II-4 Estimated ratio of B2B EC to total EC**

Firm	Year	%	Source
IDC	1997	61	Meeker, Mary, 1997, "Internet Retailing Report", Morgan Stanley, <a href="http://www.ms.com">http://www.ms.com</a> , 28 May
Negroponte	1998	70	Moltzen, Edward, 1998, "Is E-commerce Underestimated?," Computer Reseller News, <a href="http://www.techweb.com">http://www.techweb.com</a> , 8 April.
Forrester Research	1998	84	Forrester Research, 1998b, "European New Media Strategies", Forrester Research, Vol.1, No.1, April.
Forrester Research	2001	88	Forrester Research, 1998a, "Report Predicts Strong Growth in Euro E-Business", <a href="http://www.internetnews.com">http://www.internetnews.com</a> , 7 April
ActivMedia	1996	72	ActiveMedia, 1998, "FutureScapes Executive Report", Peterborough, New Hampshire, <a href="http://www.activMedia.com">http://www.activMedia.com</a> , 15 March
Lorentz	1997	80	Lorentz, 1998, "Electronic Commerce: A New Factor for Consumers, Companies, Citizens and Government", <a href="http://www.premier-ministre.gouv.fr/">http://www.premier-ministre.gouv.fr/</a>
Price Waterhouse	2002	78	Price Waterhouse, 1998, "Price Waterhouse Predicts Explosive E-commerce Growth," <a href="http://www.internetnews.com">http://www.internetnews.com</a> , 8 April.
Piper Jaffray	2001	90	Cohen, Bob, 1998, "Business-to-Business E-commerce Market Poised for Rapid growth", ITAA Press Release, 17 February
Average		78	

Source: Readapted from OECD (1999c), p.36.

A careful interpretation is required to understand the status and the growth of EC. This section deals with several sources to provide the statistical values with which to figure out the current situation of B2B EC and speculate future developments. Phillips & Meeker (2000:37-38) of Morgan Stanley Dean Witter suggested that \$200 billion in online B2B purchases occurred in 2000, growing to \$720 billion and \$1.4 trillion by 2001 and 2002, respectively. Sanders and Temkin (2000) of Forrester Research Institute forecast that B2B Internet EC will race to \$6.3 trillion in 2004. They speculate that the proportion of B2B EC will be about 93%, saying that B2C EC will approach toward \$454billion, compared with \$6.3 trillion in 2004. In spite of their ambiguities in measuring methods, it seems apparent that B2B EC has much larger parts of total EC estimation than B2C EC does and these trends will continue over time.

In addition, Sanders and Temkin (2000) of Forrester Research also analyze the regional sales of B2B EC as well as B2C EC (Table II-5). They report that Asia Pacific region will take 24.2% of B2B EC in 2004, compared to 8.3% in 2000. North America is predicted to have a dominant influence on B2B EC although its proportion is decreasing from 77.7% in 2000 to 51.3% in 2004. Europe is also predicted to show the gradual increase in the proportion of B2B EC.

**Table II-5 Regional market size of B2B EC by Forrester Research**

(Unit: Billion \$, %)

Region	2000		2001		2002		2003		2004	
North America	468.8	77.7	841.1	73.9	1,387.7	67.3	2,183.9	59.1	3,252.3	51.3
Asia Pacific	49.9	8.3	108.9	9.6	266.3	12.9	672.8	18.2	1,532.7	24.2
Western Europe	78.8	13.1	175.6	15.4	382.0	18.5	778.4	21.1	1,410.7	22.3
Latin America	3.3	0.6	6.3	0.6	12.7	0.6	29.5	0.8	76.0	1.2
Africa and Middle East	2.0	0.3	4.2	0.4	9.6	0.5	23.0	0.6	48.8	0.8
Eastern Europe	0.9	0.1	1.6	0.1	3.0	0.1	6.2	0.2	14.9	0.2
Total	603.7	100.0	1137.6	100.0	2061.3	100.0	3693.8	100.0	6335.4	100.0

Source: Raw data in the format of Excel file relevant to Sanders and Temkin (2000.4) was downloaded from the website of Forrester Research

## 2. Development of B2B EC in Korea

### 2.1. Current status of EC in Korea

According to the forecast of Forrester Research, the estimation of the growth of EC in Korea for the next few years is shown in Table II-6. The percentage of EC out of total sales in Korea in 2004 is estimated to be 16.4%, while an average for Asia Pacific region is only 8.0%.

**Table II-6 The growth of EC in Korea**

(Unit: billion \$)

KOREA	2000	2001	2002	2003	2004	
EC	\$ 5.6	\$ 14.1	\$ 39.3	\$ 100.5	\$ 205.7	16.4%*
B2B	\$ 5.2	\$ 13.1	\$ 36.5	\$ 93.4	\$ 191.1	
B2C	\$ 0.4	\$ 1.0	\$ 2.8	\$ 7.1	\$ 14.6	

\* The percentage of the sales through electronic commerce out of total sales in 2004

Source: Raw data in the format of Excel file relevant to Sanders and Temkin (2000.4) was downloaded from the website of Forrester Research

According to the statistics from Korea National Statistical Office (KNSO) in June 2002, the total sales of EC during 2001 amounts to 118,980 billion KRW, among which the sale of B2B EC during the same period stands at 108,946 billion KRW<sup>12</sup> (Table II-7). The survey for B2B sales is basically performed for B2B e-MPs encompassing private and public e-MPs. The sales from B2C-based cyber shopping malls to firms are included.

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<sup>12</sup> The figures from KNSO are very different from those from Forrester research and other research institutes due to the differences in the operational definition of EC and the measuring methods.

**Table II-7 EC sales by the participating economic actors**

(Unit: billion KRW, %)

Types	Year of 2001					
	1 <sup>st</sup> Q	2 <sup>nd</sup> Q	3 <sup>rd</sup> Q	4 <sup>th</sup> Q	Total	Composition (%)
Total sales of EC	24,263	26,645	31,866	36,206	118,980	100.0
B2B EC*	22,735	24,242	29,658	32,311	108,946	91.6
B2G EC	900	1,705	1,447	2,985	7,037	5.9
B2C EC	525	588	656	811	2,580	2.2
Etc.	103	110	105	99	417	0.4

\*B2B EC sales (108,946 billion KRW) are the sum-up of the sales over B2B e-MPs (108,595 billion KRW) and B2B sales over cyber shopping malls (351 billion KRW) estimated by Cyber Shopping Mall Survey.

Source: Korea National Statistical Office(KNSO, 2002)

As far as the sales of B2B EC from only B2B e-MPs are concerned, the total amount during the fourth quarter of 2001 is 32,233 billion KRW, among which sales over private e-MPs amount to approximately 96.6%, compared to 3.4% from sales over public e-MPs. Sales over buyer-oriented e-MPs take the dominant proportion of the total B2B sales over B2B e-MPs, accounting for 74.5%. In both cases of buyer-oriented and seller-oriented B2B e-MPs, transactions are mainly performed with the trading partners which have already had existing relationships before they get online (Table II-8). Closed transactions amounted to 81.4% for buyer-oriented private e-MPs, and 91.2% for seller-oriented private e-MPs. It is more interesting in that one of the expected main functions of B2B e-MPs was the ushering in of more opportunities to the firms that want to expand their business area by offering open-based competitive environments. According to these statistics, the transaction through B2B e-MPs is dependent on the existing long-term trust-based relationship and it is also related to the fact that private e-MPs are main actors that mediate B2B e-MPs. Although the total number of B2B e-MPs including Private and Public B2B e-MPs is not provided by KNSO, it offers the number of Public B2B e-MPs. The number of Public B2B e-MPs at the end of 2001 stands at 273.

**Table II-8 B2B EC sales by the types of e-MPs**

(Unit: billion KRW, %)

Types	Third quarter of 2001 year	Fourth quarter		Absolute increase	% (increasing rate)
			% (share)		
Sales of B2B EC*	29,557	32,233	100.0	2,676	9.1
<b>Buyer-oriented Private e-MPs</b>	22,623	24,016	74.5	1,393	6.2
Open**	(4,389)	(4,461)	(18.6)	(72)	(1.6)
Closed (or Cooperative)***	(18,234)	(19,555)	(81.4)	(1,32)	(7.2)
<b>Seller-oriented Private e-MPs</b>	5,919	7,109	22.1	1,190	20.1
Open**	(456)	(627)	(8.8)	(171)	(37.5)
Closed (or Cooperative)***	(5,463)	(6,482)	(91.2)	(1,019)	(18.7)
<b>Public e-MPs (Intermediary- oriented)</b>	1,015	1,108	3.4	93	9.2

\*Sales of B2B EC are calculated by the subtraction of B2B sales over cyber shopping malls (351 billion KRW) from total sales of B2B EC.

\*\*Open: any firms are welcome to participate in B2B EC based on their competitiveness

\*\*\*Closed (or cooperative): participating firms in B2B e-MPs have had long-term relationships with the e-MP operators even before they start online transactions

Source: Korea National Statistical Office (KNSO, 2002)

By comparison, the survey performed by KIEC (Korea Institute of Electronic Commerce) and MOCIE (Ministry of Commerce, Industry and Energy) shows the whole picture of the status of Korean EC as of the end of 2000 from the perspective of the participating firms, not the operators of e-MPs. Even though it may not completely reflect the current status of B2B EC in Korea because it deals with total EC sales, it is valuable in that it is one of the most comprehensive works that have been carried out in terms of participating firms in EC. In the survey of 1,948 firms that were ranked in the highest position of the total sales in SIC two-digit levels, 37.6% were selling or buying through electronic networks, while

65.2% were reported to conduct the broad definition of EC<sup>13</sup>. With regard to the way firms participated in EC, the firms counting on Internet-based EDI amounted to 22.5%, accompanied by firms using traditional EDI with 10.1%, private B2B systems with 9%, and firms participating in e-MPs with 5.4% (KIEC & MOCIE, 2002: 45).

## **2.2. Strategy of the Korean government to promote EC**

The Korean government aims to increase the ratio of electronic commerce out of the national total commercial activities from the 8.8% to 30% by the year 2005 through the transformation of traditional brick-and-mortar industries with Information and Communication Technologies<sup>14</sup>. According to MOCIE, the ratio of e-commerce transactions in 2002 reached 12.7%. The size of Korean EC increased by 48% from 119 trillion KRW in 2001 to 177 trillion KRW in 2002<sup>15</sup>.

The Korean government began to make active efforts to promote EC since the Basic Act on e-Commerce and the Electronic Signature Act were enacted in February 1999. President Kim Dae-jung issued the Comprehensive Policies for EC Development in February 2000. They include five major policies and forty action programs. The sixteen Ministries of the Korean government including MOCIE (Ministry of Commerce, Industry and Energy) and MIC (Ministry of Information and Communication) cooperate together to accomplish the issues. The five major policy agenda encompass: ① increasing the credibility of the cyber market through constructing regulatory framework to protect consumer confidence, ② expanding operational base for EC by developing such infrastructures as IT networks, technologies, and IT experts and so on, ③ enhancing the leading role of public sectors in the development of Korean EC, ④ increasing the industrial competitiveness by encouraging the participation of industrial actors in EC, and ⑤ responding effectively to global digital economy as a leading country. The national strategy for developing EC, the so-called e-

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<sup>13</sup> Refer to the section of "A review of literature" to know the difference of operational definitions between broad EC and narrow EC

<sup>14</sup> "ROK to pull up e-Commerce Ration to 30 Pct by 2005", Jun-21-2002, adapted from <http://www.korea.net>

<sup>15</sup> "E-commerce ratio rises 12.7% in 2002", Jan-15-2003, adapted from [http://www.mocie.go.kr/eng/news/download/0115\(e\).pdf](http://www.mocie.go.kr/eng/news/download/0115(e).pdf)

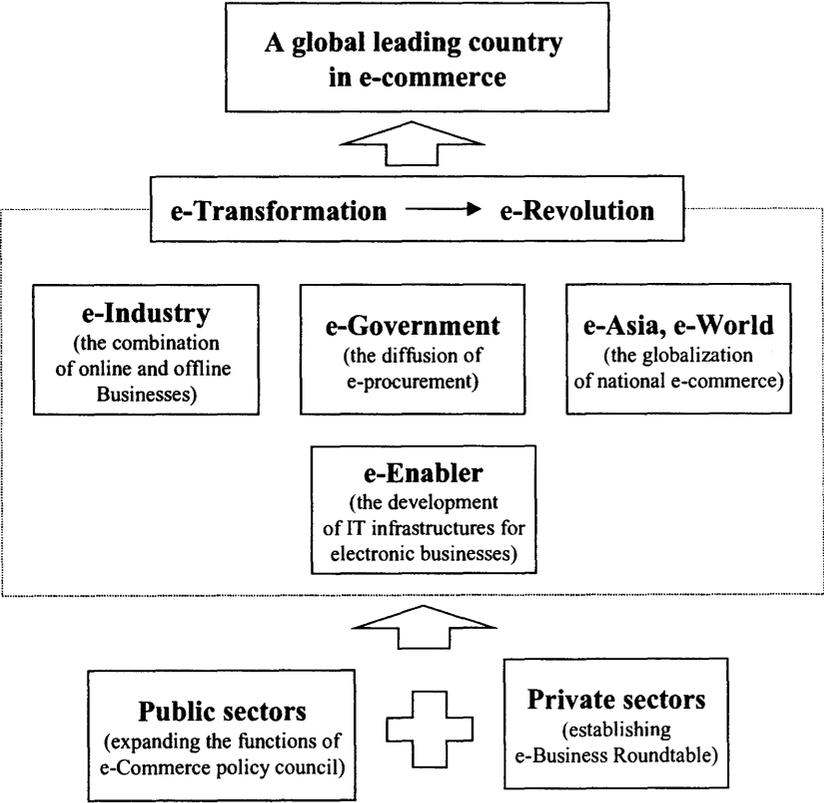
Business Initiative in Korea, was announced in April 2001 and attempted to approach the issues in more concrete and systematic ways. The concrete action programs for 2002 year are introduced in Table II-9.

**Table II-9 2002 Major tasks of EC policy**

<p><b>1. Preparing regulatory framework</b></p> <ul style="list-style-type: none"> <li>- To establish lower ordinances including the Basic Act on EC</li> <li>- To streamline applicable regulations and systems for e-finance trade, e-trade, e-notarization, resolution of international disputes, consumer protection, etc.</li> <li>- To establish the Basic Act on Electronic Financial Trade</li> <li>- Develop ways to resolve disputes around cyber squatting</li> </ul>
<p><b>2. Expand operational base for EC</b></p> <ul style="list-style-type: none"> <li>- To enhance network including upgrading of Internet access network</li> <li>- To ensure availability of e-business professionals; Establish graduate school programs for e-businesses, cyber academy for women</li> <li>- To develop measures to promote growth of e-learning industry</li> <li>- To support technology development for e-business</li> <li>- To support EC standardization</li> <li>- To expand logistical infrastructure</li> <li>- To build standard integrated B2B e-payment system for all financial institutions</li> </ul>
<p><b>3. Promote EC in public sector</b></p> <ul style="list-style-type: none"> <li>- To build integrated e-procurement system for government</li> <li>- To link different e-procurement systems and build procurer-driven system</li> <li>- To introduce e-business to insolvent companies receiving public funds</li> </ul>
<p><b>4. Building e-business network for all industries</b></p> <ul style="list-style-type: none"> <li>- To support B2B network implementation</li> <li>- To support IT implementation of 30,000 SMEs</li> <li>- To digitalize major industrial complexes</li> <li>- To support EC of agricultural, fishery and livestock products</li> <li>- To build CALS/EC base for construction industry</li> </ul>
<p><b>5. Globalization of EC</b></p> <ul style="list-style-type: none"> <li>- To focus on e-trade including Korea-Japan e-trade network, PAA and ASEM e-trade network, etc.</li> <li>- To strengthen multilateral cooperation in the WTO and OECD, etc.</li> <li>- To strengthen bilateral cooperation including organization of Korea-Japan EC policy consultation meeting and conclusion of Korea-China EC cooperation agreement</li> <li>- To establish global e-business support center</li> </ul>

Source: Readapted from MOCIE (Ministry of Commerce, Industry and Energy), 2002, pp.39-40.

The Korean government aims at becoming the e-Hub of Asian EC within a few years by leading to the active participation of associated actors. The Korean government develops four strategies based on the basic five major policy agenda. The construction of e-Industry in private sectors, the encouragement of e-Government in public sectors, the development of e-Enablers in terms of infrastructures, and the hope for the pivotal role in e-World are included in the four strategies. They are well illustrated in Figure II-4, which is provided by MOCIE (Ministry of Commerce, Industry and Energy).



Source: Adapted from the website of the electronic commerce divisions of the MOCIE (Ministry of Commerce, Industry and Energy) (<http://www.ecommerce.go.kr>)

**Figure II-4 Strategy for the development of electronic commerce in Korea**

The concept of e-Transformation is considered important. It is a different concept from e-Infrastructure. E-Transformation is the shift from traditional offline business practices into new ones based on the advanced and transparent information and communication technology. Although the construction of IT infrastructure is a pre-requisite for successful e-Transformation of traditional industries, it is not enough to guarantee the desired transformation.

To encourage this, as for B2B EC, the Korean government intends to build e-Business networks across private industries. In the beginning of the year 2000, nine industries were chosen as the key industries for pilot projects to develop industry-specific infrastructures and related B2B EC-related models. Eleven industries were added in 2001 and another ten industries are newly selected in the year 2002. The government supports a considerable percentage of the required money to carry out the projects in the form of matching funds. The industries that have benefited from this program so far are listed in Table II-10. The Korean government plans to support the projects to implement B2B Networks.

**Table II-10 B2B Network Implementation Support Project**

Project (beginning year)	Industry
First year (2000)	Automobiles, electronics, shipbuilding, heavy industry, steel, electricity, biotechnology, textiles, and distribution industries (9 industries)
Second year (2001)	Watches, fasteners, tools, agriculture and livestock, construction, fine chemicals, molding, petrochemicals, corrugated packaging, furniture/timber, and logistics (11)
Third year (2002)	Semiconductor equipment and automation, new ceramics, nonferrous metals, ophthalmic optics, toys, construction facilities, animation, paper, environmental technology, and credit guarantee (10)

Source: MOCIE (Ministry of Commerce, Industry and Energy) (2002), p.37.

Even though it is too early to evaluate the success of the B2B network implementation of each industry, some industries have been experiencing difficulties in carrying out their original plans. The low rate of the participation of expected offline companies is viewed as one of the most serious barriers<sup>16</sup>. Besides, biotechnology, agriculture and livestock, and

<sup>16</sup> “Low rate of the participation of offline companies in the second year project of B2B network implementation support”, August-12-2002, adapted from <http://www.kbizbrain.com>

construction are undergoing re-evaluation processes because of their unsatisfactory results.<sup>17</sup>

The impediments to the development of B2B EC in Korea are listed in Table II-11.

**Table II-11 Impediments to the development of B2B EC in Korea**

Area	Problem
Inefficiency and lack of awareness in business operation processes	<ul style="list-style-type: none"> <li>- Potential for efficiency improvement was introduced without attendant improvements in business processes</li> <li>- Lack of information exchange and sharing between businesses</li> <li>- Overlapping in electronic and paper documents</li> </ul>
Unreasonable and nontransparent trading practices	<ul style="list-style-type: none"> <li>- Non-transparent market tendencies</li> <li>- Preference for face-to-face transactions owing to antiquated trading practices</li> </ul>
Inefficiency in manufacturing industry structure	<ul style="list-style-type: none"> <li>- Failure to utilize strategic partnerships (Vertical integration)</li> <li>- Large business-oriented monopolistic industrial structure and lack of open cooperation for EC owing to excessive emphasis on competition</li> </ul>
Immature IT environment of SMEs	<ul style="list-style-type: none"> <li>- Inferior IT environment</li> <li>- ERP system implementation too costly</li> <li>- Reduced investment resource due to lack of funds</li> </ul>
Inadequate regulatory framework	<ul style="list-style-type: none"> <li>- Delay in EC proliferation resulting from regulatory issues</li> </ul>

Source: Readapted from MOCIE (Ministry of Commerce, Industry and Energy) (2002), p.31.

### 3. Spatial impacts of the development of ICTs

Physical location patterns of firms and their location factors are the main issues on which many researchers have concentrated. Once firms are located in specific places, their locations are never changed unless they are closed or relocated, though. In that regard, the literatures on the locations of specific firms tend to have been focused on their expansions or changes over time by new plants, research centers, or offices.

By comparison, a group of scholars in this field have tried to study the inter-firm relations, linkages, or inter-firm networks as a means to understand the business

<sup>17</sup> "The three industries such as biotechnology, agriculture and livestock, and construction are undergoing re-evaluation processes", September-02-2002, adapted from <http://www.kbizbrain.com>

characteristics around specific regions. These include prominent studies on material flows or knowledge flows following an interwoven web of supply chains. Although most of them succeeded in analyzing complex inter-firm relationship around specific firms or industries, the importance was not placed on its characteristics as a type of location patterns.

Under the appearance of electronic space, in combination with advanced ICTs, the change of spatial organizations can be achieved through reorganizations in the electronic space without major relocation of facilities and people in the physical space by reorganizing information flows between different sites and functions (Li & Williams: 1998:14). This study attempts to consider invisible inter-firm relations as a type of industrial locations in the dimension of invisible but truly existing electronic space.

### **3.1. Unevenness of physical space<sup>18</sup>**

The interaction between “technology” and “business process” is key to understanding the impact that EC is having on the nature of economic transactions and on the economy (OECD, 1999b: 10). To understand the effects of the developments of ICTs on space is helpful to predict the effects of EC on physical space. It is beyond doubt that technological developments, especially the radical changes of ICTs have profound effects that we have never experienced before. Human life becomes liberated from the constraints of space and frictional effects of distance (Graham, 1998: 168). However, it does not necessarily mean we live in the spaceless world. Rather, we live in more complicated world in which anything cannot be answered easily with “either-or” questions.

Revolutionary technological developments are deeply related to the discussion about the advent of the globalization era that has become so popular in terms of describing the contemporary world since the late 1980s. In general, globalization is based on the global economy which is more functionally integrated and interdependent. One of the main reasons we are interested in globalization discourses is that they tend to end up with the demise of geography and national boundaries (Yeung, 1998: 292).

It goes back to the Godfrey (1979:1) and Toffler (1985) who said that “the constraints of

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<sup>18</sup> Graham (1998), Yeung (1998), Li et al. (2001), and Pratt (2000) are against the argument of the end of geography. They review debates about the end of geography, some of which are cited here.

space and time and the particularities of place diminish and disappear altogether and all information will be found in all places at all times<sup>19</sup>(Li et al., 2001: 699). Cairncross (1997) in his book titled “death of distance” suggests that distance will no longer determine the cost of communicating electronically and no longer will location be key to most business decisions. Traditional bounds posed by the constraints of space and time are fast being changed (Batty, 1997: 337). There have been many literatures which supported them, predicting that “the end of geography”, “the borderless world”, “frictionless world”, and “the weightless world”, even though the terms they used were slightly different. More specifically, it is also said that the role of geography in shaping the location of new economic activities such as EC is at best limited, at worst it is non-existent (Pratt, 2000: 425).

On the contrary, a group of researchers have tried to show “geography still matters” even in the era of the digital revolution. Yeung (1998: 293) argued that the reduction of spatial barriers presented an opportunity for capital to exploit differences between places on much smaller scales, creating an inherent tendency towards greater spatial differentiation and territoriality in spite of the homogenization of space by the internationalization. This statement is in line with that of Li et al. (2001) who said that information systems redefine and do not eliminate geography, as information systems allow organizations to exploit minute differences between places in a complex yet cost effective manner. According to them, the physical space and place, compared to the electronic space, remain fundamentally important. The introduction of information economy does not mark the “end of geography” or the “death of distance”, but an extremely complex new geography of economic activity is being created. Although in the electronic space the ‘friction of distance’ has been eroded, other aspects of friction such as linguistic and cultural differences, derived from place, remain (Li et al., 2001: 704).

### **3.2. Unevenness of electronic space**

Ever since Weber identified transportation cost as one of the three main location factors which decided industrial locations at the beginning of 20<sup>th</sup> century, no one doubted that

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<sup>19</sup> recited from Li et. al, 2001:699

physical distance between plants (or firms) and raw materials or markets was the most significant factor firms should consider to succeed in their businesses. The efforts to overcome limitations imposed by physical distance led to the developments of new transportation technologies including railways, cars and airplanes which enabled firms to move their raw materials and products more easily than ever before. The astonishing increase of spatial business area lay behind it. Real-time communication and information exchanges between business partners were inevitable for the distributions of products. Therefore, it is no doubt that the technologies have contributed to the new understanding of space and time in an era of the advanced technologies.

In the meantime, we can think about the concepts of electronic distance as the counterpart of electronic space compared to physical distance of physical world. Electronic distance is measured on the electronic space with electronic networks. To understand electronic distance is useful to understand the compression of time and space by the development of ICTs. Wilson & Arrowsmith (2000) show the maps of electronic space through the communication cost from the source country, explaining them as telecom tectonics. They argue the relationship between cost and distance is not linear in electronic space. The defining element of physical world is distance, but the defining element of electronic space is the cost of interaction (Wilson & Arrowsmith, 2000: 32). The distorted continental shapes by the measurement of the communication cost are an example of the difference of electronic distance from physical distance.

Kitchin (1998: 387) suggests three main reasons space and time remain significant in cyberspace. First, cyberspatial connections and bandwidth are unequally distributed in the physical world. Second, whilst information on-line might seem geographically dislocated, information is only as useful at the locale where the body resides. Third, cyberspace depends on real-world spatial fixity such as the points of access, the physicality and materiality of wires. Malecki and Gorman (2001) exemplify the uneven geographical structure of the Internet as one of general-purpose technologies. Malecki and Gorman (2001) show the uneven geographical structure of the Internet, contending “not the end of geography”. Warf (2001) exemplifies there still exist long-standing categories of core and periphery within cyberspace, such as the divisions between developed and less-developed nations, or cities and rural areas, showing access to the internet is deeply conditioned by where one is. As another

example, the use of the Internet in Japan is unevenly spread within Japanese society. It is due to the disparities between 'knowledge rich' and 'knowledge poor', breaking the dream of the utopian visions of the information society that emphasizes on the role of ICTs in integrating national society by fair information sharing (Morris-Suzuki and Rimmer, 2000).

## **4. Research hypotheses**

In this section, the possibility to research public B2B e-MPs from a geographical perspective is examined based on the previous literature review and major hypotheses for this study are put forward at the end of each sub-section.

### **4.1. Physical agglomerations of B2B e-MPs**

Traditional supply chains are based on physical modes and face-to-face meetings with limitations such as travel and delivery of information. By comparison, virtual product modeling and worldwide simultaneous engineering with video conferencing are simplified in EC-enabled supply chain, lowering operation costs through reduced inventory level and improving customer satisfaction (Ünal, 2000: 65). The business activities mediated by B2B e-MPs are considered free from the constraint of geography at least to some extent, although the limit of geographical expansion of business area is mentioned later. Then, how do you speculate the locations of B2B e-MPs as the mediators of online economic activities? A general consensus has not been whether B2B e-MPs still depend on traditional location factors or not. Some recent research implies the possibility of physical agglomeration of e-MPs.

#### **■ Traditional agglomeration economy**

From the perspective of geography, firms that operate B2B e-MPs are not likely to be completely free from traditional location factors in terms of cost-minimization strategy and demand-maximization strategy, as is the case with manufacturing firms. Traditionally, three types of scale economies relevant to agglomeration economy were recognized (Table II-12).

They include economies internal to a firm at a given location, which is sometimes called the company town; economies external to a firm at a given location, but internal to an industry at that location, called localization economies; and economies external to both the firm and the specific industry at a particular location, called urbanization economies (Goldstein & Gronberg, 1984: 91). Apart from the economies internal to a firm, localization economies and urbanization economies have been at the center of discussion in terms of physical agglomeration.

**Table II-12 Types of economy of scale**

Types	Type of economy of scale	Economy of scale Depends on	Example of an economy of scale achieved
External (Different firms)	Place-specific (Urbanization)	Size of city	Range of urban Services
	Industry-specific (Localization)	Size of industry	Research and development
Internal (Same firm)	Firm-specific	Size of firm	Advertising and marketing
	Plant-specific	Size of plant	Larger machines (cube-square law)
	Product-specific	Length and volume of production run	Division of labor

Source: Berry et al., 1987: p.181

Urbanization economy is usually achieved by being located in large cities where various types of industries are existent. Firms take advantage of superior transportation facilities, diverse and dynamic labor markets, and higher level of various services. Firms can enjoy the advanced infrastructure and social capital in large cities without private investments. By comparison, the localization economy is the external economy which is achieved by being close to the firms in the same industry or associated industries. Firms can get the benefits from neighboring firms visibly or invisibly, exploiting diverse industrial linkages including vertical linkages, diagonal linkages, lateral linkages, common-service linkages etc (Berry et al, 1987: 180-183).

## ■ Non-traditional agglomeration economy

In addition to the study based on the traditional transaction cost theory, the new approach to figure out the reason for the local clustering of some firms is on the way. The recognition of the local agglomeration of advanced IT-based and innovative firms implies that the development of those technologies does not necessarily lead to the dispersed distribution of the related firms. The reason can be explained in terms of the development of innovative industrial districts. Collective learning is known to play a pivotal role of developing localized innovative milieu. Collective learning is defined as a dynamic process of the cumulative creation of knowledge freely transferred among economic agents whatever its origin by interactive mechanisms based on shared rules, norms, organizations and procedures (Capello, 1999: 356). The growth of regional clusters of high technology small and medium sized enterprises (SMEs) in Europe exemplifies the value of spatial proximity in conducting successful businesses behaviors in high technology related SMEs (Keeble and Wilkinson, 1999). It is in line with the previous research on the regional characteristics of the Cambridge region that is called institutional thickness (Keeble et al., 1999). Another empirical research about the innovative linkages and proximity of SMEs in German regions was carried out by Sternberg (1999). The concept of innovative milieu is deeply interwoven with the concept of untraded interdependences of Storpers (1995)<sup>20</sup>. It encourages the relationships including formal and informal collaborative and information networks, interactions through local labor markets, and shared conventions and rules for developing communications and interpreting knowledge.

More directly, there is some research on the locations of B2B firms. They also put an emphasis on the importance of local proximity in establishing the embedded trust and knowledge. For instance, Pratt (2000) explains a clustering of new media firms which are revolutionizing economic activity known as EC and B2B EC, with the concept of the untraded interdependences. He argues that even though the need to cluster for minimizing economic transaction costs are remarkably reduced due to technological developments, there is still a valuable, but easily ignored, reason why new media (or multimedia) firms are

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<sup>20</sup> recited from Keeble and Wilkinson, 1999: 299

clustered. That is to exploit “untraded dependences”, more specifically the need for face-to-face communication. In his case study of Silicon Alley in New York, he shows that a social milieu, a very particular social-spatial network, may be the most important factor in locating new media activity. The role of B2B e-MPs in enhancing the exploitation of social capital in geographically defined business clusters should not be ignored (Steinfeld, 2002). He focuses on the relationship between trust/ personal relationships and inter-organizational information system paralleled with IT technologies. According to his study based on literature review, it seems clear that the significance of trust and personal relationships in the network society is not diminished at all. B2B e-MPs needs to concentrate on a way to improve trust and personal relationship through collaborative EC, not just to attempt to create transaction support system and substitute social capital with electronic system. The development of the tools to develop collaborative EC based on social capital will encourage the synergetic utilization of B2B commerce in geographically defined business clusters. The offline activity in the geographically defined business clusters is still important even in the introduction of online community, e-MPs.

H1: Regardless of the origin of public B2B e-MPs from advanced IT technologies compressing time and space, **the operators of public B2B e-MPs are likely to be concentrated in specific regions with favorable physical location factors rather than to be dispersed across the country.**

## 4.2. Communication channels of B2B e-MPs

The development of electronic networks resulted in dramatically increased flexibilities in doing businesses- i.e. making virtual work team or corporate restructuring without physically relocating people or resources-in terms of physical distance in a sense. The creation of electronic virtual organizations accelerated the reliance on electronic communications, connecting decentralized business units (Strader et al., 1998). The emphasis on the importance of electronic attributes of e-MP-related often leads to the ignorance of the communication channel of physical modes.

However, some research empirically demonstrates the importance of physical

communication channel even in the era of the electronic economy. That is to say, even though the unprecedented development of ICTs gives the hope to overcome the barriers that prohibit firms from creating trust through electronic networks, electronic networks do not substitute for personal relationships in coordinating production. Electronic networks and personal relationships are complementary method of coordination, not competing mechanism (Kraut et al., 1998). Through an empirical analysis to challenge three easily believed assumptions<sup>21</sup>, Kraut et al. (1998) verified that the firms that heavily use electronic networks were also relying on personal relationships for coordination. Furthermore, the case study of Prato district in Italy shows the failure of the telecommunications network, SPRINTTEL that was originally intended to connect individual manufacturers to each other and to other related service firms in the district (Kumar et al., 1998). The new telecommunication networks did not replace the long-lasting relationships and trust. The firms and associated authorities did not feel the value of sustaining the telecommunication networks by paying for them. The existing patterns of trust, relationships and culture are considered to result in the situation. It is an extreme case to show the trade-off relationship between trust-based relationship and IT-based telecommunication networks.

Through reviewing literatures involved, Johannessen et al. (2001) conclude that in spite of firms' efforts to enhance the investment and the use of IT, it does not result in the increase of productivity as they expected because IT technologies in general just facilitate the transfer of explicit knowledge, not tacit knowledge. Tacit knowledge can be increased through organizational learning such as apprenticeship teams system internally and through external meeting places facilitating the transfer of external tacit knowledge externally. They put the emphasis on the positive balance between the use of tacit knowledge and explicit knowledge, and the importance of company's external knowledge base, to promote the sustainable competitive advantage.

To place importance on face-to-face meeting does not necessarily mean that firms prefer to cluster in a specific region. Some may prefer to be located near their important business

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<sup>21</sup> (a) Electronic networks substitute for personal relationships in coordination production, (b) electronic data networks are a prerequisite for virtualization of production and that the availability of electronic networks may lead firms to outsource more components of production than they would have otherwise, and (c) use of these networks generally has a positive effect on coordinating production

partners, but others may not. They can make workers to reside in the business area where there exist the business partners, instead of being located close to them. Regardless of whether they are clustered or not, it is one of the examples of showing the importance of offline business activities in operating e-MPs.

**H2: The increase in the use of electronic communication channels is not likely to diminish the importance of face-to-face meeting in the businesses related to public B2B e-MPs, irrespective of the high reliance on electronic networks.**

### **4.3. Geographical Scopes of the firms trading in public B2B e-MPs**

Generally, Internet-based commerce is considered to reduce greatly the spatial gap posed by geography by logically connecting businesses regardless of location, which enhances market transparency<sup>22</sup> (Phillips & Meeker, 2000: 12). Because ICTs have somewhat collapsed time and space, EC—an organic combination of ICTs and commerce—has been expected to take on a global nature as one of its basic principles. Under the assumption of its born global nature, globally interoperable policies were required (Dryden, 2000).

EC is known to share the same characteristic with all innovations based on ICTs that it pushes towards the vertical disintegration of the firm and shifts the trade-off between hierarchy and market in favor of the latter (Mariotti & Sgobbi, 2001:111). Nezu (2000), the Directorate for Science, Technology and Industry of OECD emphasized that EC would contribute to the expansion of the geographical scope of business behaviors in a short article titled “a Revolution with power” like this:

*“The Internet has opened up the possibility of doing business with the best possible supplier, no matter where they are located. The time needed to conclude a deal has been reduced, often to several minutes, thanks to safer online transmission of documents. The need for costly business trips, long telephone discussions and face-to-face negotiations behind closed doors has*

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<sup>22</sup> Price transparency- Net markets can eliminate arbitrage situations when only a broker knows the price. Net markets can result in sellers making more money and buyers paying a lower price, since broker margins are reduced (Phillips & Meeker, 2000: 316).

*been greatly reduced and may soon be a thing of the past. The result is that carefully nurtured long-term business relations between companies ... are now falling apart. EC has thrown the procurement market open to suppliers of all sizes, addresses and backgrounds, rendering the more fraternalistic business model obsolete."*

**H3-A: The spatial coverage of the firms that trade over e-MPs is likely to be expanded.**

However, despite the easily accepted proposition about the global nature of EC, some literatures to identify the local nature of EC started to be published.<sup>23</sup> The emphasis on global market strategies of EC was one of the most generalized, and easily believed, assumptions. Despite the rhetoric that EC is free from the constraints of geography, however, there are some reasons to reconsider the role of physical location in making EC polices (Steinfeld & Whitten, 1999).

The result of the introduction of e-MPs in businesses cannot be easily concluded in terms of economic spaces. In the section, some factors that may affect the change of the utilization of economic spaces in businesses are dealt with through literature review and basic hypotheses are constructed. To understand the factors critical to attract potential buyers and sellers to e-MPs will also help to figure out why the impacts are differentiated.

First of all, transportation cost is important for firms which produce material that needs

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<sup>23</sup> Knoppers (1998) contends that localization and multilingualism are needed to tailor local consumers' demand. Such literatures as Steinfield & Whitten (1999), Steinfield & Klein (1999), Steinfield, Mahler & Bauer (1999) suggest that firms which carry out some parts of their businesses online are recommended to maintain local or physical presence and to exploit potential benefits as much as possible, rather than to ignore it. More specifically, Steinfield, Mahler & Bauer (1999) argue that defending their local markets is more important than expanding into new markets, especially to local retailers. The reason that local businesses have competitive advantages over web-only rivals comes from the higher level of trust and embeddedness, the appropriate response to the consumer needs and behavior, the advantage from complementarities between web and physical presence, and the effective use of local knowledge (Steinfeld & Whitten, 1999). Although the purpose is a little different, Dainel & Klimis (1999) argue that more localized personalized markets are one evolutionary path of electronic markets in such industries as the financial services markets where confidence between the supplier and buyer is absolutely necessary for successful creation of markets, especially in the case of a regionalized industry in comparison with global personalized markets such as the music industry.

high rates of delivery costs. While the significance of transportation cost in the age of electronic economy is dramatically reduced, firms still spend money to deliver their products as long as they are related to material goods or tangible ones. In this regard, three functions of the Internet that Gurău et al. (2001) suggested to identify the impact of the Internet on the physical logistics system are meaningful. Internet can be used as a communication channel, a distribution channel, and an optimization tool for physical logistics system. Against the popular belief that the Internet represents a revolutionary tool which can in total transform the business transaction procedures, they argue the Internet is not replacing the classical system of distribution, regardless of the importance of the Internet as a distribution tool for digital products.<sup>24</sup>

The attributes of traded products are one of the most influencing factors on the behaviors of e-MP operators and their buyers and sellers. Products are divided into tangible ones and intangible ones, and tangible ones are also classified into standardized ones and customized ones. Customized products are the products that are changed to meet the end-user's unique needs at a low cost (Gattiker et al., 2000: 127)<sup>25</sup>. Product attributes including asset specificity and complexity of product description in EC are also important to decide their methods of organizing economic activities such as market structure or hierarchical structure (Malone et al., 1987). The more specific assets firms have and the more complex descriptions are needed for products, firms are more likely to choose hierarchical coordination than market coordination. Bouwman (1999) argues that spatial criteria still play an important role in the era of the networks that enable communication over long distance. His argument is based on traditional transaction cost theory. He notes that transaction-cost minimizing behavior is

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<sup>24</sup> Even among material goods, Van Hoek (2001) suggests three factors of concern in digital distribution. The first one is the value/volume ratio of products. Products with higher value and lower volume such as computer memory chips will be carried offline whereas the products that have lower monetary value and are more voluminous will benefit from digital distribution. Second factor is the possibility of digitizing products and the final one is the preference for customers about online purchasing. In addition, the difference by the types of products and services is known to affect the decision to purchase over the Internet. Phau et al. (2000) classify products and services into eight groups by three dimensions including cost and frequency of products, value proposition, and degree of differentiation. They show that low outlay, frequently purchased products, intangible or informational products, or the products with high potential of differentiation are preferred to be purchased online.

<sup>25</sup> Similarly, Li et al. (2001: 711) refer to a distinction between material and immaterial goods and services, which is made by Verhoest et al. (1999). In case of material ones, physical distributions are absolutely needed for business performance while immaterial ones, or digital ones, can be produced, transacted, transported, and consumed all within electronic space.

facilitated not only by information and communication, but also by spatial proximity. Two arguments are followed. The first one is about the barriers due to logistics, consumption and after-sale services of physical goods and personal service that lead to a limited geographical scope of EC. The other one comes from the importance of the processes such as negotiation and monitors that need information-rich communication channels like face-to-face meetings to make sure of the trust between trading partners (Bouwman, 1999: 60). According to him, as products are more specific, and more complex information is transferred, firms need to be physically close even in the electronic economy. Furthermore, as more complex business processes are involved, firms prefer such a communication channel as face-to-face meeting to computer-mediated communication.

The attributes of traded products are usually measured in terms of standardization. The standardization of products can be understood in two ways. First, the characteristics of the technologies that are used to make products are considered. Standardized products are usually defined the items that are produced with the commonly-used technologies by many firms. They are not specialized or customized. Second, the standardization is related to the creation of e-catalogs for online transactions. The standardization of the descriptions of products is one of the essential parts that should be achieved for constructing of successful e-MPs. The products based on high-technology are not necessarily difficult to standardize the specifications. Likewise, the standardized products in terms of involved technology are not necessarily easy to get online. More important part in terms of EC is the standardization of the specifications of products. However, because the standardized products in terms of production technology are easily categorized with the easy descriptions, the two dimensions of standardization need to be considered seriously.

E-knowledge networks or e-commerce supply chains are directly related to the successful creation of electronic virtual organizations. Electronic virtual organizations use ITs to support the communication necessary to coordinate activities across decentralized business units, whereas non-electronic organizations use close geographic proximity for coordination (Strader et al., 1998).

In the past, firms were forced to vertically integrate to minimize their information and external coordination costs. It was considered as one of the ways to prevent their trading partners from opportunistic behaviors. Virtual organizations help geographically dispersed

actors to form inter-firm partnerships, heavily depending on telecommunications and data networks (Kraut et al., 1998). But, even in the case, the accumulation of trust is required to be a member of virtual organizations through the whole processes including partner identification, evaluation and selection processes. Co-producers of virtual organizations must already be familiar with each other, even though the strength of virtual organizations lies in their ability to form quickly (Schönsleben, 2000: 37). The proliferation of virtual organizations is more likely to lead to industrial organizations based on “the network solution” (Mariotti & Sgobbi, 2001) or “the value networks” (Timmers, 1999), taking advantage of the effect of electronic hierarchies (Malone et. al, 1987). It follows the argument by Bakos and Brynjolfsson (1993) of fewer and relatively permanent inter-firm trading relationships. These concepts do not completely have the same meaning, but they have at least one thing in common that invisible trust-based relationships are essential. Regardless of the prediction toward market-based buyer-seller relationships, firms place much importance on the trust-based existing relationships and maintain the existing relationships even after they accept B2B EC.

Koenig and van Wijk (1994) define trust as an informal mode of control governing mutually identified actors suggesting that it reduces uncertainty regarding mutual behavior through a process of self-control<sup>26</sup>. The importance of the trust factor on EC is shown in recent empirical research about the relationship between e-MPs and suppliers in Korea. Oh (2002) finds that relationship benefits, trust, and interdependence are affecting relationship commitment<sup>27</sup> and the pursuit of the relationship commitment through electronic communication networks is a way to get the benefits of stability as well as flexibility. Another empirical study about the meaning of trust in B2B EC has been performed through the relationship between MRO e-MPs and buyers in Korea by Kwon (2002). He shows that the relational exchange<sup>28</sup> still has a positive effect on purchasing efficiency, the level of system integration, while it has a negative effect on the level of price down and the level of supply

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<sup>26</sup> Readapted from Kumar et al., 1998:215

<sup>27</sup> Relationship commitment is related to pursue coordination and production efficiency through establishing continuous electronic relationships (Oh, 2002).

<sup>28</sup> In his dissertation, relational exchange is the antonym of market exchange. It means the accumulation of collaborative relationships between buyers and the electronic marketplaces they have used as buyers use a few specific electronic marketplaces (Kwon, 2002).

externality. The relational commitment and the relational exchange are both relevant to the importance of trust based relationships and put the stress on it against the predictions about the market-based governance structure.

When the value of trust accumulation in EC is accepted, trust level that can be achieved through electronic networks may be another determining factor to choose their trading partners. If trust is generated through electronic networks with distant trading partners easily, the importance of spatial proximity with their partners will be diminished. Winder (2001) argues that it does not matter whether partners are at a distance or not in accumulating trust. According to him, network relationships are more important than physical distance. However, it is still debatable whether trust-based relationships can be created and maintained completely online from a geographical perspective.

Under the perception of the limited functions of ICTs in enhancing trust-based relationships, spatial proximity was viewed to be essential in establishing and maintaining trust-based relationships. Trust-based relationships were considered as one of the most important factors that forced firms to be agglomerated or clustered in specific localities. Local embeddedness<sup>29</sup> based on physical proximity was an inevitable prerequisite for a successful new industrial district (Park, S.O., 1996). It is also related to the argument that the tacit knowledge cannot be easily transferred without long-term trust-based inter-firm relationships and therefore the creation of trust-based relationships through physical proximity among involved firms is a key to successful inter-firm relationships.

In the digital age, most firms plan to conduct their business electronically. "Information" becomes the main medium through which business transactions are exchanged. It is not viewed as a by-product of the strategic activities performed around the physical value chain, rather it begins to play a strategic role in itself (Bhatt & Emdad: 2001: 79)<sup>30</sup>. The significance of electronic networks through which knowledge or information is transferred has been

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<sup>29</sup> Embeddness is related to the extent of trust which is built up over period of time through repeated interactions.

<sup>30</sup> As the information has its own importance in economic environments, the pure economics of a piece of information, compared to the pure economics of a physical "thing", is identified due to the basic differences of their attributes (Evans & Wurster, 2000:15-17). While sometimes the term of information is interchangeably used with knowledge, in many cases, they are differently understood. According to Lee & Yang (2000: 783), information is transformed into knowledge when a person reads, understands, interprets, and applies the information to a specific work function. Knowledge becomes visible when experienced persons put into practice lessons learned over time.

perceived in some research these days. Lee and Yang (2000) suggest the concept of “knowledge value chain” along physical value chain which consists of knowledge management (KM) infrastructure and the KM process’s activities and knowledge performance. The process of KM consists of knowledge acquisition, knowledge innovation, knowledge protection, knowledge integration, and knowledge dissemination.

More directly involved with EC, Bhatt and Emdad (2001) deal with “the virtual value chain”, compared with “the physical value chain”. Although they argue that the relative importance of a virtual value chain and the physical value chain will be different depending on the characteristics of products and services, they also note that a virtual value chain is an important determining factor for the success of EC. Electronic networks around the virtual value chain offer the advantages of reach and range in collecting, organizing, and analyzing activities, and the advantages in mixing, matching, bundling, and unbundling of information, and the advantage of redirecting and manipulating in the changing environments (Bhatt & Emdad, 2001: 81). These are extended to the discussion on “e-knowledge networks” which combine the positive benefits of knowledge management (KM) systems with those of inter-organizational systems (IOS) (Warkentin, Sugumaran & Bapna, 2001: 153). E-business network or e-knowledge network is related to EC knowledge or electronic business knowledge which is created and shared through collaborative networks of partners, with whom they perform businesses or make electronic transactions. Ünal (2000) implies the significance of knowledge and information flows in the processes of EC with the comparison of traditional supply chain and e-commerce supply chain. Information is shared within the traditional supply chains within the company and only with great cost/complexity outside the company whereas within e-commerce enabled supply chain, the right information to the right link is authorized with worldwide access. Traditional supply chains use the intra-company teams with limited additional members whereas e-commerce supply chains tend to get global members quickly, securely plus the intra-company teams (Ünal, 2000: 65).

Despite of the importance of knowledge exchange in the electronic economy, all the types of knowledge are not likely to be transferred easily through e-knowledge networks or e-commerce supply chains. Tacit knowledge, compared with explicit knowledge, cannot be diffused through the networks because it is personal, context-specific, and therefore hard to formalize and communicate (Nonaka & Takeuchi, 1995:59). The need for transferring tacit

knowledge is an essential reason to be located near the business partners with whom they want to share the knowledge. It is also related to the importance of trust between business partners. The long-lasting trust based relationship is the most important driving factor to share confidential knowledge to the partners.

**H3-B: The impact of public B2B e-MPs on the spatial coverage of buyers and sellers is likely to be differentiated by some attributes of industries and firms.**

### III. Methodology for case studies

The empirical case studies of this dissertation are made up of three chapters including Chapter IV, V, and VI. Chapter IV focuses on revealing the characteristics shown in the spatial distribution of the operators of public B2B e-MPs. Chapter V attempts to figure out the extent of the expansion of the spatial coverage in selecting the trading partners of the firms participating in public B2B e-MPs. Chapter VI takes a step further by comparing the degree of the expansion of the spatial coverage by business models within an MRO e-MP. Chapter VI is based on the result of Chapter V, which concluded that the participants in MRO e-MPs generally seemed to show more tendencies toward expanding spatial coverage than those in vertical e-MPs to some extent. The types of required data and the methods of analyses are different by each chapter. The basic characteristics are outlined in this chapter. Before going into the matter, the key concepts of this study are operationally defined.

#### ■ **B2B EC**

B2B e-MPs are the invisible markets in which a seller (or sellers) and a buyer (or buyers) make transactions through electronic networks. According to literature review, the B2B e-MPs includes (1) The Internet-based EDI transactions as the continuum of traditional VAN-based EDI relationships, (2) newly created B2B e-MPs where buyers and sellers come together and attempt to complete their transactions in a most efficient and effective way, and (3) the presence of online homepages as marketing channels.<sup>31</sup> In this study, B2B EC is limited to its narrow definition, which means the transactions between firms through electronic networks using the Internet online marketplaces. The online transactions based on tradition VAN-based EDI systems take only a small percentage out of total B2B EC<sup>32</sup>.

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<sup>31</sup> Andrew and his colleagues (2000:11, Exhibit 2) of Boston Consulting Group include (1) EDI via value-added networks, (2) EDI-via the Internet, and (3) the Internet-only transactions in estimating total sum of "online purchasing" of B2B EC in the US.

<sup>32</sup> The Statistics from Korea National Statistical Office suggest that the proportion of the transactions through traditional VAN-based electronic networks is about 3.8% in buyer-driven B2B private marketplaces and about 10.0% in seller-driven private ones during the first quarter of 2002 year KNSO, 2002/09).

## ■ **Public B2B e-MPs**

The study only focuses on public B2B e-MPs, not the private e-MPs that are driven by a single buyer or seller. As mentioned, public B2B e-MPs are the electronic marketplaces where many buyers and sellers meet electronically for the purpose of trading electronically with each other (Turban et al., 2002: 220).

In fact, private B2B e-MPs in Korea at present take the dominant proportion of total B2B EC sale. As mentioned earlier, the percentage of B2B EC sales over public e-MPs only stands at 3.5% for the year 2001, according to Korea National Statistical Office<sup>33</sup>. Nevertheless, the research on the public e-MPs is valuable in that they are growing rapidly and are considered as the next evolutionary type of e-MPs succeeding to private e-MPs.

## ■ **Spatial distributions of the operators of public B2B e-MPs**

One of the two major themes of this study is to uncover the characteristics involved with the spatial distribution of the firms operating public B2B e-MPs. The spatial characteristics are dealt with in several ways. The first one is to measure the degree of concentration by spatial indices. The distinct location factors by various characteristics of the operators or their e-MPs are considered important. Besides, the attention is paid to the importance of face-to-face meeting in business activities of the operators of public B2B e-MPs and the enhancement of offline business activities.

## ■ **Spatial coverage of participants**

The other of the two major themes is to figure out the spatial impact of the introduction of public B2B e-MPs in business transactions in terms of the participants in online marketplaces. The spatial impact is measured as the change of the spatial distributions of trading partners when comparing before and after online transactions. If the portion supplied

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<sup>33</sup> Adapted from KNSO ([http://www.nso.go.kr/eng/releases/e\\_suec0144.htm](http://www.nso.go.kr/eng/releases/e_suec0144.htm))

from remote suppliers in online purchasing increased when compared to the spatial distribution of suppliers in the previous offline purchasing, the spatial coverage of the buyer is expanded. The change of the spatial coverage is considered as a measure to evaluate the role of public B2B e-MPs in expanding the economic spaces in which business activities are performed. It ultimately can be understood as an initial step with which the frictionless economic spaces are realized in the future where firms do not care about the physical spatial limit when deciding trading partners as many hope for.

## **1. Data and methods of analysis for Spatial distribution of public B2B e-MPs in Korea (Chapter IV)**

### **1.1. Quantitative analysis**

#### **■ Data collection**

Two ways of gathering information about the firms operating public B2B e-MPs were used for quantitative analyses in Chapter IV.

##### **① Phone call survey**

A phone call survey was carried out to check whether they were doing businesses at present and to exclude some firms that were no longer in operation. The survey was carried out during the months of July and August 2002. It was planned to improve the reliability of the data. Online websites were visited and it was checked whether firms were doing business and phone numbers and addresses were updated. Then, finally, phone calls were made to the checked firms to make sure whether they were operating public B2B e-MPs and asked them to answer questionnaires. The firms operating more than one website in the list were asked to identify their main site.

► Population

The list of the websites of public B2B e-MPs was acquired from the 2001 Electronic Commerce White Paper published in October 2001. The total number amounted to 316 in the list. At first glance, six were excluded because they were listed twice. 310 public B2B e-MPs were finally included in this study. In addition, the list from KbizBrain (<http://www.kbizbrain.com>) that specialized in providing EC related information and knowledge was added. Because Kbizbrain.com provided the list of B2B e-MPs to 2001 Electronic Commerce White Paper, it was expected to get the recently updated list. The list was gathered on the 27<sup>th</sup> of June. In total, 78 websites were newly detected. Finally, 390 of public B2B e-MPs were included in this study (Table III-1).

**Table III-1 Composition of a population for public B2B e-MPs** (On June, 27, 2002)

Source	Only on the KbizBrain website	Only in the White Paper	Both*	Others**	Total
Number of sites	78	19	291	2	390

\* Both includes the list of Kbizbrain.Com and of 2001 Electronic Commerce White Paper.

\*\*Others mean the websites from newspapers or magazines.

► Result of the phone call survey

Actually, over 140 public B2B e-MPs proved not to be in operation. In addition to that, we failed to contact some operators in spite of several trials and these were assumed to have stopped operating their businesses, at least temporarily even though we did not completely check their status. This showed the unstable industrial situations of the firms operating B2B e-MPs.

As a result, we succeeded in getting the basic information from 143 B2B e-MPs including private and public ones. Only public B2B e-MPs were again selected and finally 111 websites proved to be public B2B e-MPs. A few websites that were scheduled to begin online transactions within 2002 were included in the 111 websites. The result of preliminary phone call survey is shown in Table III-2.

**Table III-2 Result of preliminary phone call survey**

	Population	Public B2B e-MPs	Closure**	Contact failure**
Sites	390	111 (143*)	143	104

Survey period: From July to August, 2002

\*The number of B2B e-MPs regardless of whether they were public or private ones

\*\*Closure: no websites or (temporary) closure of B2B business etc.(the existence of websites was investigated in February and July 2002 )

\*\*Contact failure: Phone number is available but no one receives, website exists but no information about company locations and phone numbers or reject to answer any question

## ② Questionnaire survey

The operators of the 111 public B2B e-MPs were asked to answer questionnaires from the middle of July to the middle of September. The firms operating more than one public B2B e-MP were asked to answer about a representative one. Some answered by e-mail or fax. Others, especially the firms in the provinces<sup>34</sup> were visited to get more in-depth information. As a result, 68 cases were used for the analysis of this study. Basically, respondents are limited to the public e-MPs over which B2B business transactions were already made<sup>35</sup>.

According to the data from Korea National Statistical Office, at the end of 2001, public B2B e-MP amounts to 273 companies. Approximately 25% of total Korean public e-MPs are included in this study. The comparison of the population and the sample is represented in Table III-3.

<sup>34</sup> The provinces mean the outside areas of Seoul in Korea in this study.

<sup>35</sup> However, even though the two of the respondents did not carry out B2B electronic trading at the end of August 2002, they were included because one was doing associated businesses over a year and was expected to start B2B trading businesses within this year and the other had the experience to mediate trading even though they shut down trading temporarily.

**Table III-3 Public e-MPs by industries (as of at the end of 2001)**

Industries	Total* (2001)				Sample firms**		Sample/Total (%)
	Traded money (billion KRW)	%	Frequency	%	Frequency	%	
Total	1,108	100	273	100.0	68	100.0	24.9
Chemicals	199	18.0	17	6.2	3	4.4	17.6
Construction/Construction materials	245	22.1	19	7.0	3	4.4	15.8
Food and Beverages	131	11.8	19	7.0	8	11.8	42.1
Steel	28	2.5	12	4.4	5	7.4	41.7
MRO	145	13.1	28	10.3	15	22.1	53.6
Textiles, Clothing	11	1.0	4	1.5	2	2.9	50.0
Foreign trade and Non-specialized trade	182	16.4	47	17.2	6	8.8	12.8
Medicines	33	3.0	15	5.5	2	2.9	13.3
Petroleum	69	6.2	7	2.6	5	7.4	71.4
Machinery and industrial materials	26	2.3	33	12.1	7	10.3	21.2
Electronics	29	2.6	25	9.2	9	13.2	36.0
Others	10	0.9	37	13.6	3	4.4	8.1

Source: \*Korea National Statistical Office (KNSO, 2002)

\*\* Questionnaire survey

## ■ Methods of quantitative analysis

### ① Measuring the degree of concentration

Spatial indices are introduced to measure the degree of concentration in quantitative terms. They are as follows:

- Location quotient
- Coefficient of localization
- Coefficient of geographic association

Location quotient (LQ) measures the extent to which different areas depart from some norm such as national average. When the value of LQ equals unity, the spatial distribution of a given industry is the same as that of the base magnitude. When the value is higher than one, the given industry is more concentrated in a specific region than base magnitude. By comparison, when the value is lower in a region than one, the degree of the concentration is less than that of the base magnitude in the region. As an example, LQ can be calculated with the equation below (Wheeler and Shaw, 1985: 304-305):

$$LQ = \frac{(X_i / X)}{(Y_i / Y)} = \frac{X_j}{k}$$

$X_i$ =employment in a given industry i, in an area,  $X$  = total employment in an area

$Y_i$ =national employment in activity i,  $Y$  = total national employment

$X_j$ =percentage of an activity in j,  $k$ =national percentage

However, the numerators and the denominators are not fixed with the equation. Researchers can use any base they consider important for understanding specific regional phenomena (Isard, 1960: 124). The variables such as income, value added, population, and area can also be regarded as good bases.

Coefficient of localization is a measure of relative regional concentration of a given industry compared to some total national magnitude including population, land area, manufacturing employment, or income (Isard, 1960: 251-252). For instance, the index can be the comparison of the percentage of regional employment in the given industry with the percentage of regional distribution of base magnitude. When the given industry is spatially

distributed exactly the same as the base magnitude, the value of the coefficient of localization is zero. In contrast, when the given industry is entirely concentrated in a region, the value is unity. The way to calculate the coefficient of localization is outlined as follows:

*(1) Subtracting the percentage share of the given industry ( $A_n$ ) from the percentage share of total base magnitude ( $B_n, C_n, D_n...$ ) for each region*

*(2) Adding all positive differences, or all negative differences*

*(3) Dividing the sum of the positive (or negative) differences by 100*

*: Coefficient of localization =  $S / 100$  ( $0 \leq \text{coefficient of localization} \leq 1$ )*

Coefficient of geographic association originally defined by Florence (1943) attempts to compare the geographic distribution of a specific industry to the geographic distribution of the base industry (Isard, 1960: 253). It can be considered as the expanded form of the coefficient of localization. It measures the extent of the deviation of the spatial distribution of the given industry from the base industry. The way to calculate the coefficient of geographic association is the same as that of the coefficient of localization.

## ② **Measuring location factors for the operators of B2B e-MPs**

One of the most important parts of the questionnaire survey for the operators of public B2B e-MPs is to ask to evaluate the importance of listed location factors. In total, 31 items were included in the survey. The degree of importance was measured on a five-point scale, on which 1 is very important and 5 is not at all important. The included items are as follows:

### **1) Cost factors**

#### **• Operating cost factors**

- The rent of buildings is low.
- The cost of using information and telecommunications infrastructure is low.
- The cost of operating offices such as parking and utilities is low.

- **Labor cost factors**

- A pool of skilled labor exists around the area.
- The turnover of the labor force is flexible in the area.

- **Transportation cost factors**

- The raw materials of the transacted products are produced nearby.
- The manufacturing plant in which the transacted products are produced is located nearby.

## **2) Demand factors**

- Buyers (potential customers) are located nearby.
- Sellers (potential customers) are located nearby.

## **3) Regional factors**

- **Local linkage factors (external authorities)**

- Potential cooperating firms such as IT-solution or IT-consulting firms are located nearby.
- Logistics firms involved with your firm are located nearby.
- Financial firms including banks and venture capital are located nearby.
- Advanced service firms in the fields of law, accounting, or advertising are located nearby.
- The firms connected to EC are located nearby.
- Firms in the same industry are located nearby.
- The public authorities helping businesses are located nearby.
- Your firm uses venture buildings or venture-incubating facilities in the region.

- **Local linkage factors (Firms' internal units)**

- The building your firm has possessed in the past is used.
- The parent company of your firm is located nearby.

- The shareholder firms of your firm are located nearby.
- The headquarters of your firm is located nearby.
- The distributing stores of your firm are located nearby.
- The manufacturing plants of your firm are located nearby.
- The research and development laboratories of your firm are located nearby.

- **Regional factors (external factors)**

- Transportation is very convenient.
- Business infrastructures are preferable.
- Environmental amenities are attractive.

- **Regional factors (psychological factors)**

- The expectations for the growth of the region are very high.
- To be located in the region makes you feel some prestige or pride.

#### **4) Other factors**

- **Strategic factors**

- Your firm prevents competing firms from occupying that area.

- **Personal factors**

- The managers of your firm are familiar with the location because they have some experience to live or carry out businesses in the place in the past.

### **③ Measuring the differences by regional group**

Three regional groups were chosen based on the analysis of the location factors. At the first glance, the difference between the firms in Seoul and those in the provinces was outstanding. Then, Gangnam-gu showed peculiar characteristics that were distinct from the firms located in other districts within Seoul. Because there was a tendency for Gangnam-gu and Seocho-gu to be considered as a group, it was originally planned to combine the two

districts into one group. However, the result of the analysis of location factors showed that the characteristics of Gangnam-gu were different from those of Seocho-gu. Therefore, Gangnam-gu was seen as an independent group. Three regional groups were selected as follows:

- The firms located in Gangnam-gu
- The firms located in other districts in Seoul
- The firms located in the provinces

The characteristics by the regional groups were investigated based on several questions in the questionnaire survey. They include:

- Types of industry
- The degree of standardization of traded products
- The degree of the exchange of codified knowledge
- The degree of the exchange of tacit knowledge
- The degree of the importance of trust in selecting business partners
- The degree of the dispersion of the participants in the responding public B2B e-MPs

#### **④ Measuring two contrasting communication channels**

The study also attempted to exemplify the importance of face-to-face meeting as well as electronic communications channels for verifying the second main hypotheses. The firms operating public B2B e-MPs were also asked to evaluate the importance of each communication channel. In addition, the relationship between the two communication channels was also investigated.

## **1.2. Qualitative analysis**

### **■ Data collection**

In-depth interviews were carried out through two phases. First, the pilot survey for Public B2B e-MPs was conducted as a way to gain an insight into the current situation regarding the development of Public B2B e-MPs at the beginning of 2002. About ten public B2B e-MPs were visited and the basic information on firms as well as industries was gathered.

Based on the result of the preliminary survey, the main survey was conducted from July to October 2002. Some of the firms investigated during the preliminary survey were revisited to gather more specific information about the study. Furthermore, the firms located in the provinces were also included for the interview survey to comprehend the characteristics of the operators of public B2B e-MPs that were not located in Seoul. Some firms were visited more than twice in case the additional information was required. Telephone and e-mail were also used as ways of acquiring the additional information.

The information from the in-depth interviewees was often directly inserted as it was supporting the result of the analysis of questionnaire surveys or was reflecting the unexpected profiles of the business behaviors of the firms operating public B2B e-MPs. However, the information from some firms was only used as the background information on which the themes of this study were constructed and proven.

The list of the firms from the preliminary and main interview surveys is provided in Table III-4.

**Table III-4 List of the operators of public B2B e-MPs for preliminary and main interview surveys**

Firms* (in alphabetical order)	Sites	Time of contact
AnySteel.com	www.anysteel.com	2002.09~11
AuctionB2B	www.b2bauction.co.kr	2002.01
BuynjoyB2B	www.buynjoyb2b.com	2002.01, 2002.08
Chung-Nyun Corp.	www.marine-net.co.kr	2002.09
convergeKorea	www.converge.com	2001. 03
e-KCC	www.buildpia.com	2002.08-09~11
e2Open	www.e2open.com	2001. 03
EC21	www.ec21.com	2002.08
ELECOMPO	www.partsdumping.com	2002.04
Electropia	www.e-pia.com	2001. 05, 2002.08
eNtoB	www.entob.com	2002.01, 2002.09~11
Entos Information technology	www.enginem.com	2002.08
FISHROUND.INC	www.fishround.com	2002.09
iMarketKorea	www.imarketkorea.com	2002.02, 2002.09~11
International Fishery Exchange Marketplace	www.i-fisdaq.com	2002.09
ITMEX	www.itmex.co.kr	2001. 07
KOREAePlatform	www.koreab2b.com	2002.02
LGMRO	www.lgmro.co.kr	2002.02
Meatprice.com	www.meatprice.com	2002.08
MROKOREA	www.mrokorea.com	2002.08
OILPEX	www.oilpex.com	2002.08-09~11
Pharmsnet	www.pharmsnet.com	2002.08
SHINSEGAE I&C	www.gomro.co.kr	2002. 01
Tpage.Com	www.tpage.co.kr	2001. 07

\*The results of the interviews with some firms in this table were not directly used in this study, but provided useful background information. Some public B2B e-MPs unfortunately closed their businesses after the interviews. Although some firms operating private B2B e-MPs were also interviewed, the list was not included in this table.

## ■ Methods of qualitative analysis

In-depth interview is another valuable source through which the present situation of the development of B2B EC in Korea is analyzed. Whereas questionnaires are the first step in carrying out empirical analyses, they have limits in discovering the underpinning processes through which the inter-firm relationships in terms of spatial organizations are recreated. Therefore, in-depth interviewing is an essential analytical method for this study.

In the Chapter IV, the in-depth interviews with the firms operating public B2B e-MPs are carried out to understand the characteristics on the spatial distribution of the operators of public B2B e-MPs. More specifically, the contents of the interviews are used as an important evidences to support the verification of the hypotheses two.

The enhancement of offline business activities and the relocation after some newly recognizing location factors are detected through the interviews. In addition to the result of the in-depth interviews, the general information from the websites of public B2B e-MPs was considered so important in this chapter.

The methodology for Chapter IV is summarized in Figure III-1.

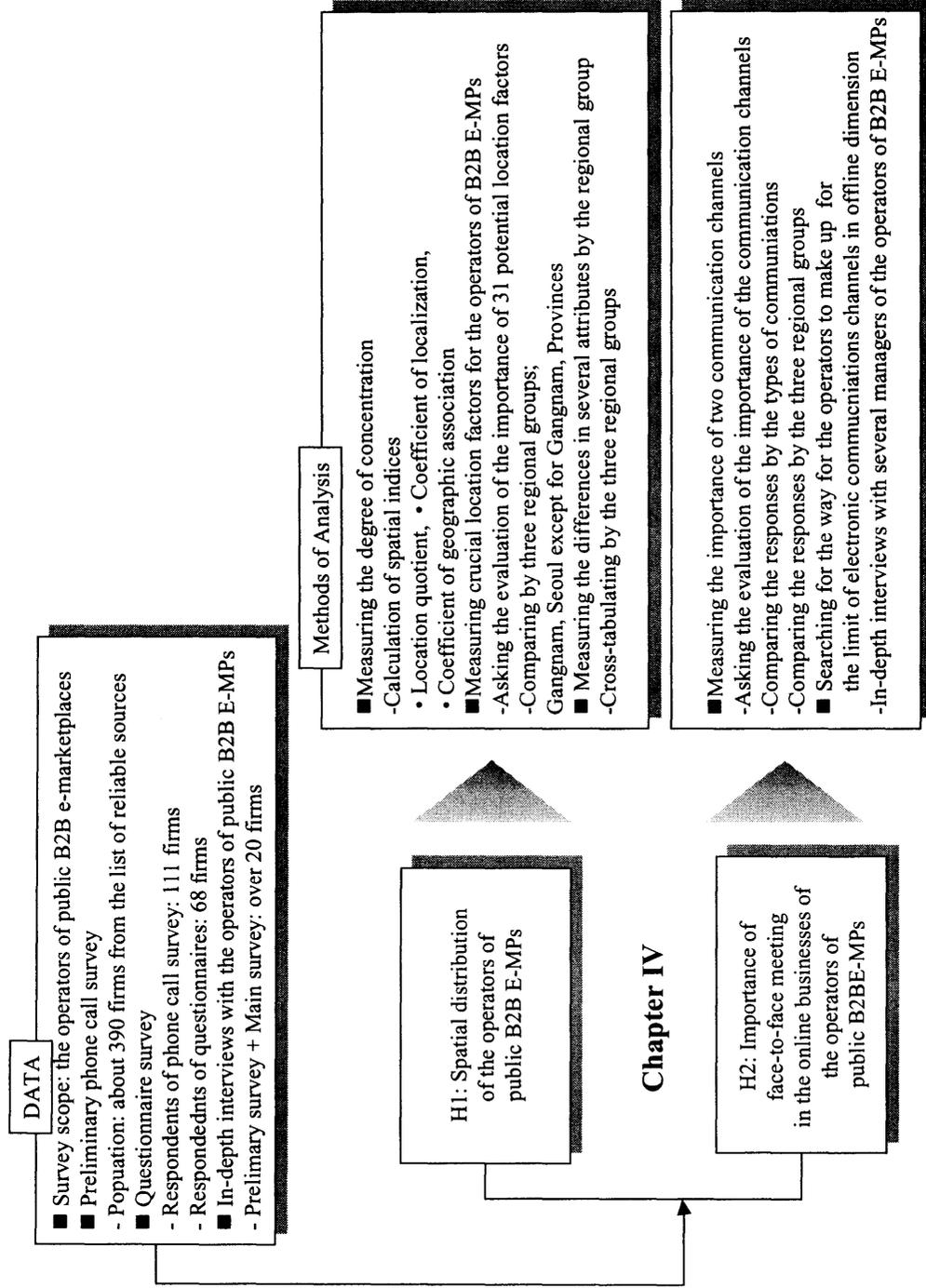


Figure III-1 Methods of analysis for Chapter IV

## **2. Data and methods of analysis for Change of spatial coverage of participants (Chapter V)**

### **2.1. Data**

Some firms operating public B2B e-MPs are selected out of the respondents of the questionnaire survey in Chapter IV. The questionnaire survey for the buyers and sellers that participated in the cases of e-MPs was conducted. The survey for the participants was more difficult than the survey for e-MPs. It was due to the problems related to the privacy protection for sellers and buyers by e-MP operators. Originally, it was planned to choose one e-MP out of each industry category from Korea National Statistical Office and twelve e-MPs were contacted in total. Two types of information were asked. One is the information about the way to operate their e-MPs and the other was about the information of their buyers and sellers and they were asked to help send questionnaires.

Ten e-MPs agreed to provide some information about their e-MPs in detail. But, unfortunately, some of them refused to help to investigate buyers and sellers. As a result, five out of ten cooperated in gathering information about buyers and sellers. Some of them allowed me to send questionnaires to their buyers and sellers and the others helped to interview with major buyers or sellers. It took about two months to start contacts and get the permission to investigate their buyers and sellers. Therefore, the number of the case firms was minimized. The basic information about the five e-MPs that allowed the survey for their buyers or sellers for the study is provided in Table III-5. In addition, many operators of e-MPs helped this study by providing important information with in-depth interviews, even though the survey for their customers was not allowed due to the confidentiality on the part of operators.

In-depth interviews were also carried out with the buyers and sellers in the case of e-MPs. The in-depth interviews were used as a way of augmenting the result of the questionnaire survey. In case it was not possible to conduct questionnaire survey, the in-depth interviews were considered as an alternative method to help understand the spatial impact of the introduction of public B2B e-MPs.

Table III-5 Cases of Public e-MPs by industries\*

Industry	Websites	Ownership			Product		Business model		Sourcing		Logistics		Main payment	
		Subsidiaries	Consortium	Independent	Vertical	Horizontal	Exchange	Agent	Spot	Systematic	VMS**	Cash	Credit	
Steel	www.anysteel.com	0			0		0	0	0		0			0
Construction (Construction materials)	www.buildpia.com	0			0		0	0	0		0		0	0
Petroleum	www.oilpex.com			0	0		0		0		0		0	
	www.entob.com		0			0	0	0	0		0		0	0
MRO	www.imarketkorea.com	0				0	0	0			0		0	0

\*The operators of this table are limited to help to conduct questionnaire survey for or interview with the buyers and sellers of their e-MPs.

Many firms gave some information about their e-MPs during the study, even though they rejected allowing the survey to be extended to their customers.

\*\*VMS= Vendor managed stocks; Traded products are delivered directly from sellers to buyers without passing the storage warehouses of e-MPs.

## 2.2. Methods of analysis

Chapter V attempts to verify the change of spatial coverage in terms of participants over vertical and horizontal e-MPs through questionnaires and in-depth interviews. The list of the cases of e-MPs in this chapter is shown in Table III-6.

**Table III-6 Methods of analysis by the cases of e-MPs**

Industry	Websites	e-MP Interviews	Participants Questionnaires	Participants Interviews
Steel	www.anysteel.com	O		O
Construction (Construction materials)	www.buildpia.com	O	O	O
Petroleum	www.oilpex.com	O	O	
MRO	www.entob.com	O	O	
	www.imarketkorea.com	O	O	

Many types of questions were originally included in the questionnaire for this chapter. Unfortunately, however, only the essential part of the questionnaire was used for the analysis in this study because the reliability of some responses was not verified because of the complexity of questions and no responses for some important questions. Thus, many questions were only used for background information instead of being included in this study.

The in-depth interviews with the participants were planned to make up for the questionnaire analysis. The in-depth interviews were of great use to comprehensively understand the situation the participants of e-MPs were in. Two sellers and five buyers of AnySteel.com responded to the in-depth interviews. Four sellers and two buyers of BuildPia.com were interviewed. The basic characteristics of the interviewed firms are introduced in Table III-7 and Table III-8.

**Table III-7 List of interviewed firms involved with AnySteel.com**

Company name	Characteristics	Type	Type of online transaction
Seller A	An official distributor of POSCO	Online sellers	Exchange model
Seller B	A large steel maker	Online sellers	ASP* service
Buyer A	A manufacturer of steel related products	Online buyers	Exchange model
Buyer B	A distributor of steel products	Online buyers	Exchange model
Buyer C	A distributor of steel products	Online buyers	Exchange model
Buyer D	A manufacturer of steel related products	Online buyers	Exchange model

\* ASP stands for application service provider. It is defined as a software vendor who allows organizations to lease information systems applications (Turban et al., 2002:663).

**Table III-8 List of interviewed firms involved with BuildPia.com**

Company name	Characteristics	Type	Type of use
Buyer A	A major construction company	Online buyer	Online bidding (Exchange mode)
Seller A	A supplier of Kumgang Construction Co.	Online sellers	Online bidding (Exchange mode)
Seller B	A supplier of Kumgang Construction Co.	Online seller	Online bidding (Exchange mode)
Buyer B	An official distributor on PVC windows and doors for KCC	Online buyer	Online catalog (Agent model)
Seller C	A manufacturer of fasteners	Online seller	Online catalog (Agent model)
Seller D	A distributor of construction materials	Offline seller	Offline

The questionnaire survey and the in-depth interview focus on revealing the change that participants went through after the use of public B2B e-MPs. Key measurements are divided into three sub sections.

- Measuring the change of the spatial coverage after the introduction of public B2B e-MPs
  - Comparing the spatial coverage before and after the utilization of public B2B e-MPs
  
- Measuring the preference for existing trading partners
  - Strategy to choose trading partners in online transactions
  - Choice of respondents when new trading partners suggest better trading conditions than existing ones
  
- Measuring other related characteristics such as:
  - Importance of delivery distance in online transactions
  - The barriers for the development of B2B transactions in case industries, etc.

The methodology for Chapter V is summarized in Figure III-2.

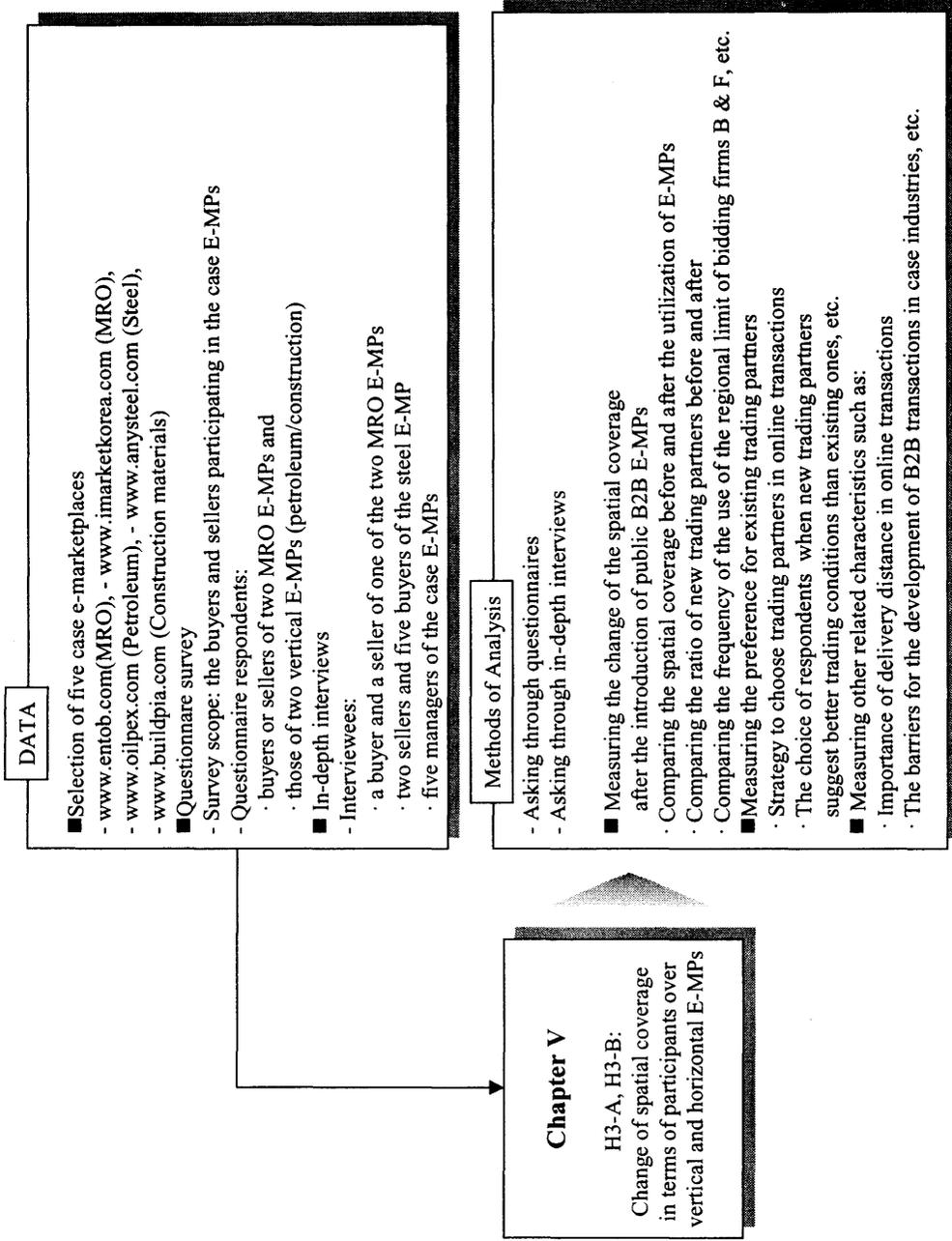


Figure III-2 Methods of analysis for Chapter V

### **3. Data and methods of analysis for spatial flows of the products over eNtoB e-MP (Chapter VI)**

#### **3.1. Data**

##### **■ Data collection for analyzing the spatial flow of products traded**

The data about the spatial flows of traded products for the first half-year of 2002 was provided for the analysis in Chapter VI by eNtoB, one of the five major MRO e-MPs. Data was mainly aggregated by three types of measurements including traded money, the number of line-items, and traded volume. Traded money or total sales is calculated by multiplying the price of each item and the number of the items traded together. The number of line-items<sup>36</sup> refers to the number of different traded items in purchasing orders. Each of about 250,000 items in the e-catalog of eNtoB can be a line-item in ordered lists<sup>37</sup>. Line-items are different from traded volume. Traded volume is operationally defined as the total amounts of the traded items in purchasing orders and is calculated by adding the purchased quantities of each line-item in every purchasing order.

The number of line-items amounted to 24,466 in the transactions using e-catalogs with exchange model for the first half-year over eNtoB<sup>38</sup>. In total 54 customers<sup>39</sup> purchased MRO products taking the advantage of Storefront selling (SFS) with e-catalogs and 596 sellers provided them with the products. Because some sellers trade with more than one buyer, they are double counted. When double counted sellers are excluded, the numbers of the sellers are 352 firms.

In comparison, the number of line-items in the transactions using e-catalogs with agent

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<sup>36</sup> The term "line-item" is commonly used in eNtoB.

<sup>37</sup> Purchasing orders (POs) are the official request for required items by buyers.

<sup>38</sup> eNtoB also provides the reverse auction or bidding service where customers list up the required products and some suppliers participate and finally the suppliers who suggest the best conditions are chosen as trading partners. However, in this analysis, the POs based on the reverse auction or bidding services are excluded.

<sup>39</sup> Customers are counted based on the number of regional offices or plants, which means a firm can be registered with more than one customer. The registration at the level of firms is called domain name. Customers may be composed of many actual buyers with different user IDs.

model was 4,823 during the same period. The number of customers who participated in the transactions during the same period amounted to 49. The number of sellers who provided the customers with the required products amounted to 248. If the recounted sellers are excluded, the number of sellers is reduced to 150. According to the data analysis, the average number of the suppliers with whom a single buyer has made transactions on the storefront selling during the period is 11 firms, whereas it is 5.1 firms in Markup, or the agent model transactions. The total sales through exchange model and agent model amounted to over 12 billion KRW and 6 billion KRW during the period, respectively.

One of the main reasons for the low proportion of the e-catalog transactions with the agent model is that eNtoB just began to enhance the transactions with the agent model<sup>40</sup>.

**Table III-9 Number of buyers and sellers for the first half-year in 2002**

(Unit: number of firms)

Items	Business model	Exchange model (SFS transaction)**	Agent model (Markup transactions)**
The number of customers		54	49
The number of suppliers		352	150
The number of suppliers that made transactions with the customers*		596	248
Average number of suppliers by each customer		11.0	5.1
Average number of customers by each supplier		1.7	1.7

\* A supplier can provide MRO products to more than one customer.

\*\* SFS, Markup is the unique terms used by eNtoB and is explained in Chapter VI.

Source: recalculated from the data provided by eNtoB

The smaller number of suppliers provides MRO products to the customers in the agent model transactions than in exchange model transactions. It is closely related to the strategy of the e-MP of sourcing and managing suppliers. Principally, the e-MP is actively involved with the transactions in the agent model. It is in charge of sourcing the best products from the most competitive suppliers on behalf of customers. The e-MP attempts to look for competitive suppliers for each item and to guarantee a level of the amounts purchased from them if

<sup>40</sup> An interviewee predicted that the portion of the transaction with the agent model would surpass that with the exchange model in the near future.

possible. When a supplier provides large quantities of products, negotiation is easy to lower the price and also the revenue for the supplier is increased. This scenario is also relevant with regard to delivery. If the amounts delivered at any time are large, the transportation cost for the sellers decreases on the side of sellers. These factors are combined and affect the strategy to decrease the number of suppliers<sup>41</sup>.

### ■ Data collection from the participants for each business model

Two representative buyers were selected for the in-depth interviews to learn the reasons for a differentiated preference for local suppliers. eNtoB helped to select the two of the representative firms that have traded through the two business models.

- **Buyer A: with exchange model**

The proportion of the purchased amounts by buyer A firm for the first-half year of 2002 through eNtoB amounts to 19% in terms of traded money. It ranked top among all the buyers that traded over eNtoB with the exchange model.

- **Buyer B: with agent model**

Buyer B firm is one of the first movers that outsourced MRO purchasing to eNtoB a year ago. Although it ranked third (8%) among the firms using the agent model of eNtoB in terms of traded money over eNtoB, it ranked first in terms of the number of suppliers traded with it. eNtoB strongly recommended the firm as one of the firms that enjoyed the benefits by outsourcing MRO purchasing over eNtoB.

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<sup>41</sup> The trend is also recently reported in other MRO electronic marketplaces in Korea, according to an article from The Digital Times (2002-04-15 <http://www.dt.co.kr>). It is involved with the effort to enjoy the economies of scale by growing one competitive supplier instead of multiple suppliers in each item.

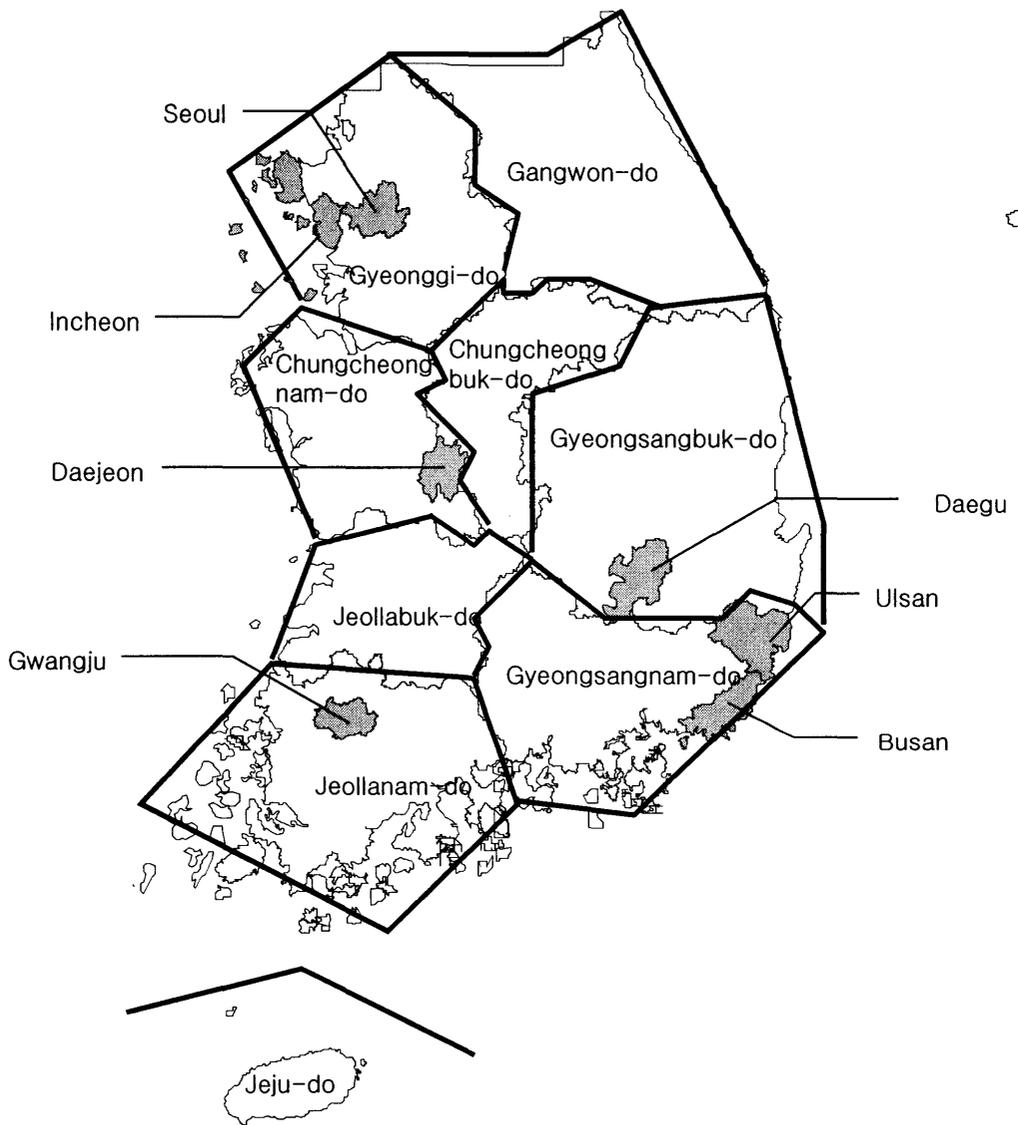
### **3.2. Methods of analysis**

The data is aggregated according to administrative districts such as provinces or “-do (in Korean)” and metropolitan cities or “-Gwangyeoksi (in Korean)” in order to investigate the spatial flows of traded products through the B2B e-MP. A total of sixteen administrative districts are dealt with in the study. Seoul metropolitan city, Incheon metropolitan city, Gyeonggi-province, Gangwon-province, Daejeon metropolitan city, Chungcheongnam (or Chungnam)-province, Chungcheongbuk (or Chungbuk)-province, Jeollabuk (or Jeonbuk)-province, Gwangju metropolitan city, Jeollanam (or Jeonnam)-province, Daegu metropolitan city, Gyeongsangbuk (or Gyeongbuk)-province, Ulsan metropolitan city, Busan metropolitan city, Gyeongsangnam (or Gyeongnam)-province, and Jeju-province are included (See Figure III-3). Such a classification is not completely satisfactory, as it does not recognize the physical closeness between border regions. Nevertheless, the classification is used because it is most common in dividing Korea by regional unit and cautious interpretation is required.

The Chapter VI intends to measure intra- and inter-regional flows of the traded products over the case e-MP by the regional unit in terms of traded money, traded volume, the number of line-items. The basic purpose is to reveal the spatial characteristics by such business models as exchange model, and agent model. The differences by product types are considered important such as MR (maintenance, repair products) products and O (operating products) products. In addition, the locations of sellers by business models are analyzed.

Taking a step further, the reasons for the differences in regional flows by business models are investigated through in-depth interviews with the managers of two case firms such as buyer A and buyer B. The simple analysis for the data acquired from the case firms is attempted.

The methodology for Chapter VI is summarized in Figure III-4.



**Figure III-3 Regional units for the analysis of product flow**

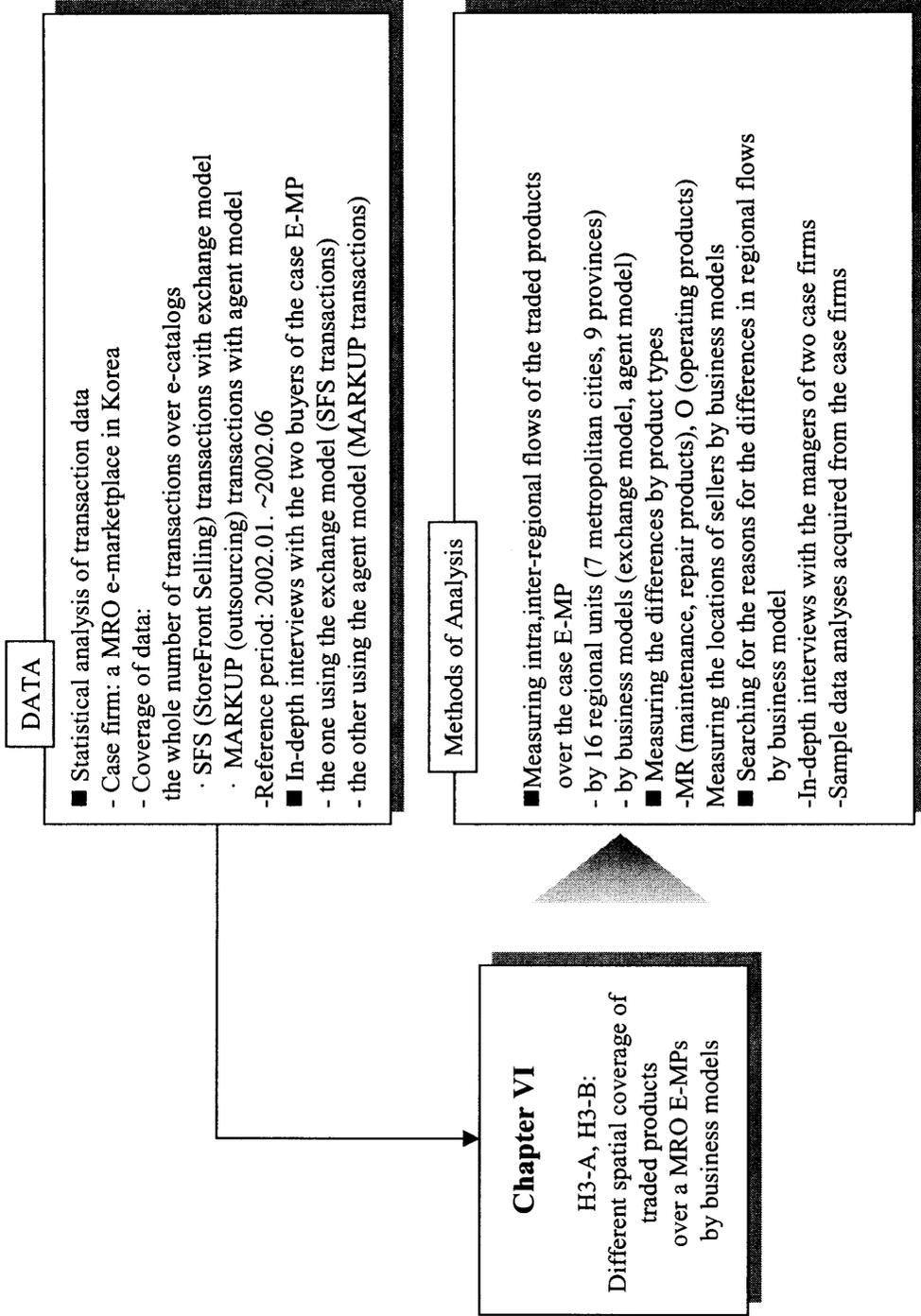


Figure III-4 Methods of analysis for Chapter VI

## IV. Public B2B e-MPs in Korea

### 1. Introduction

This chapter aims at revealing the characteristics of the spatial distribution of the firms operating public B2B e-MPs in Korea from a geographical perspective. The first two of the main hypotheses of this study are examined in this chapter. Some sub-hypotheses are introduced to exemplify the main hypotheses in detail.

H1: Regardless of the origin of public B2B e-MPs from advanced IT technologies compressing time and space, **the operators of public B2B e-MPs are likely to be concentrated in specific regions with favorable physical location factors rather than to be dispersed across the country.**

H1-1: The operators of public B2B e-MPs are likely to be concentrated in a few specific regions. The values of the spatial indices such as LQ and the coefficient of localization are likely to represent the high concentration of the firms operating public B2B e-MPs in specific regions.

H1-2: The operators of public B2B e-MPs are more concentrated than the firms of seemingly related industries such as traditional wholesale and commission businesses and B2C e-MPs in terms of the coefficient of geographic association.

H1-3: The location factors of the operators of public B2B e-MPs are likely to be differentiated by the region they are located in.

H1-4: The differences in the location factors by region are likely associated with the different characteristics of the operated public B2B e-MPs by region.

**H2: The increase in the use of electronic communication channels is not likely to diminish the importance of face-to-face meeting in the businesses related to public B2B e-MPs, irrespective of the high reliance on electronic networks.**

H2-1: Face-to-face meeting is not likely to be less important than electronic communication channels in the business activities of the firms operating public B2B e-MPs.

H2-2: The importance of the physical communication channel such as face-to-face meetings is likely to be reflected in offline dimension in some ways.

## 2. Sample data description

The procedures through which to select sample data were described in detail in the methodology Chapter III. The basic characteristics of the collected sample data are shown here. About 26% of the sample firms are the firms with at most 10 employees and in total 88% are the firms with at most 50 employees (Table IV-1).

**Table IV-1 Employees of sample firms** (Unit: count, %)

Employee	Frequency	%	Cumulative %
- 10	17	25.8	25.8
11-50	41	62.1	87.9
51-100	5	7.6	95.5
101-300	2	3.0	98.5
301-	1	1.5	100.0
Total	66	100.0	

Source: Questionnaire survey

About 53% of the sample firms were established in 2000. About 82% of the firms began to operate public B2B e-MPs in 2000 or 2001 (Table IV-2).

**Table IV-2 Establishment and B2B beginning years of sample firms (Unit: count, %)**

Year	Item	Establishment year		B2B e-MP Beginning year	
		Pre-1998	8	12.5%	-
1998	7	10.9%	3	4.8%	
1999	9	14.1%	5	8.1%	
2000	34	53.1%	25	40.3%	
2001	6	9.4%	26	41.9%	
2002	-	-	3	4.8%	
Total	64	100.0%	62	100.0%	

Source: Questionnaire survey

Among 55 firms that responded to the question inquiring about the types of establishment, 15 firms (27%) were founded by the investment of parent firms as subsidiaries, 15 firms (27%) were founded by the joint investments of more than one firm as industrial consortium, and the remaining 25 firms (46%) were founded by independent start-ups (Table IV-3).

**Table IV-3 Establishment characteristics of sample firms (Unit: count, %)**

Types	Frequency	%	Cumulative %
Consortium	15	27.3	27.3
Independent start-ups	25	45.5	72.7
Subsidiaries	15	27.3	100.0
Total	55	100.0	

Source: Questionnaire survey

The firms that use exchange models without the direct intervention of market operators were 27% and those with agency models were 33% and the remaining 40% of the firms were using the two models at the same time (Table IV-4).

**Table IV-4 Business models of sample firms** (Unit: count, %)

Types	Frequency	%	Cumulative %
Exchange	17	27.0	27.0
Agency	21	33.3	60.3
Both	25	39.7	100.0
Total	63	100.0	

Source: Questionnaire survey

56 firms (82%) out of the sample firms of the survey were the so-called dotcom companies which were established for the purpose of doing electronic businesses (Table IV-5). The operation of public B2B e-MPs was in charge of a department of offline distributing companies in the remaining 12 firms (18%).

**Table IV-5 Ratio of dotcom companies of sample firms** (Unit: count, %)

Types	Frequency	%	Cumulative %
Dotcom companies*	56	82.4	82.4
Distributors	12	17.6	100.0
Total	68	100.0	

\* Dotcom companies are defined in this study as firms that specialize in online businesses.

Source: Questionnaire survey

About 87% of the sample firms responded that their potential buyers and sellers were not limited to associated specific groups such as shareholders or parent firms (Table IV-6). Some firms that began their businesses with a few customers such as shareholders also answered that their customers were not limited to the small number of customers in that they were making efforts to expand market into unspecified diverse firms.

**Table IV-6 Characteristics of main customers of sample firms (Unit: count, %)**

Types	Frequency	%	Cumulative %
Associated few customers	5	7.5	7.5
Unspecified customers	58	86.6	94.0
Others*	4	6.0	100.0
Total	67	100.0	

\*Direct use+ Unspecified customers (3), Direct use+ Associated few customers (1)  
Source: Questionnaire survey

### **3. Spatial distribution of public B2B e-MPs**

#### **3.1. Locations of the firms operating public B2B e-MPs**

##### **■ Spatial distribution of the firms operating public B2B e-MPs**

The analysis of the spatial distribution with phone call survey demonstrates the considerable concentration of the firms operating public B2B e-MPs in Seoul (Figure IV-1). Approximately 84% (93 firms) out of total 111 firms were located in Seoul. In spite of the general belief about the irrelevance of EC related firms to physical locations, the result implies that the firms of public B2B e-MPs are overwhelmingly influenced by physical locations. Gangnam-gu takes the proportion of 31% out of the firms in Seoul. Seocho-gu and Yeongdeungpo-gu follow Gangnam-gu by 14%, respectively. The three districts occupy about 59% of the total distribution of Seoul. Even in terms of the total distribution across the country, the number of public B2B e-MPs in Gangnam-gu stands at 26%. There are 12 firms in Gyeonggi-provinces surrounding Seoul. In total, 95% of the firms that operate public B2B e-MPs are agglomerated in the Seoul metropolitan area.



The spatial distribution of the sample firms from questionnaire survey is similar to that of the phone call survey (Table IV-7). Seoul has a dominant position of Korean public B2B e-MPs and Gangnam-gu in Seoul is the center of the core where almost 29% of Korean total public B2B e-MPs are agglomerated. The concentration of the firms operating public B2B e-MPs in Gangnam-gu, Seoul-city, and furthermore in the Seoul metropolitan area are evident in Figure IV-1 and Table IV-7.

**Table IV-7 Spatial distribution patterns of the firms that responded to questionnaire survey** (Unit: count, %)

Regions	Gu (Districts)	Frequency	Percentage	Seoul percentage
Seoul-city	Gangnam	16	23.5	29.1
	Seocho	7	10.3	12.7
	Yeongdeungpo	7	10.3	12.7
	Jung	7	10.3	12.7
	Jongno	2	2.9	3.6
	Yongsan	5	7.4	9.1
	Guro	3	4.4	5.5
	Gwangjin	3	4.4	5.5
	Mapo	1	1.5	1.8
	Seongdong	1	1.5	1.8
	Gangseo	1	1.5	1.8
	Yangcheon	1	1.5	1.8
	Geumcheon	1	1.5	1.8
	Seoul-total	55	80.9	100.0
Gyeonggi-province		7	10.3	
Gwangju-city		1	1.5	
Jeollanam-province		1	1.5	
Busan-city		3	4.4	
Gyeongsangnam-province		1	1.5	
Total		68	100.0	

Source: Questionnaire survey

### ■ Spatial distribution of public B2B e-MPs by industry

The regional distribution of public B2B e-MPs in Korea and Seoul by industry is briefly summarized based on the data from phone call survey, where the total number of public B2B e-MPs in operation as of at the end of August 2002 amounted to 111 firms.

In terms of the whole country, all the firms operating the horizontal e-MPs relevant to MRO products and foreign trade/non-specialized trade were located in Seoul (Table IV-8). Besides, all of the e-MPs in the field of construction/construction materials, medicines/medical equipment and logistics were located in Seoul. Most e-MPs in chemicals/petroleum and computer/semiconductors were also based in Seoul.

Although about a half of the firms in each industry were located in Seoul, there were some firms in the provinces in such industries as food and beverage, steel, and machinery and industrial materials. About four firms out of nine firms involved with machinery and industrial materials were located in Gyeonggi-do. Out of twelve firms involved with food and beverage, three were in Busan city. Out of seven firms in steel industry, three were located in the provinces. The three were located in Gyeonggi-do, Gwangju-city, and Jeollanam-do, respectively.

**Table IV-8 Spatial distributions of public B2B e-MPs by industry**

Industry* \ Region	Seoul	Gyeonggi	Gwangju	Jeonnam	Busan	Gyeongnam	Total
Chemicals/Petroleum	8(80.0%)	2(20.0%)					10(100.0%)
Construction/Construction materials	5(100.0%)						5(100.0%)
Food and Beverages	8(66.7%)	1(8.3%)			3(25.0%)		12(100.0%)
Steel	4(57.1%)	1(14.3%)	1(14.3%)	1(14.3%)			7(100.0%)
MRO	16(100.0%)						16(100.0%)
Textiles, Clothing	1(50.0%)	1(50.0%)					2(100.0%)
Foreign trade, Non-specialized trade	12(100.0%)						12(100.0%)
Medicines	6(100.0%)						6(100.0%)
Machinery and Industrial materials	4(44.4%)	4(44.4%)				1(11.1%)	9(100.0%)
Computer/IT/ Electronics	17(89.5%)	2(10.5%)					19(100.0%)
Logistics	2(100.0%)						2(100.0%)
Others	10(90.9%)	1(9.1%)					11(100.0%)
<b>Total</b>	<b>93(83.8%)</b>	<b>12(10.8%)</b>	<b>1(0.9%)</b>	<b>1(0.9%)</b>	<b>3(2.7%)</b>	<b>1(0.9%)</b>	<b>111(100.0%)</b>

\* Industrial classification is originally based on that in the Electronic Commerce White Paper in 2001 and in KbizBrain.Com as of at the end of 2001. Some categories are modified based on the classification from Korea National Statistical Office.

Source: Restructured based on the 2001 Electronic Commerce White Paper, Kbizbrain.Com and Phone call survey

In the meantime, analysis of the spatial distribution of Seoul, the e-MPs with computer/IT industry, MRO industry, and foreign trade/non-specialized trade industry are prominent in Gangnam-gu (Table IV-9). In addition, public B2B e-MPs exist in Gangnam-gu in all the other industries excluding steel and textiles/clothing. MRO e-MPs are also noticeable in Seocho-gu and Yeongdeungpo-gu.

**Table IV-9 Spatial distributions of public B2B e-MPs in Seoul by industry**

Industry*	Region	Gangnam	Seochu	Yeongdeungpo	Jung	Jongno	Yongsan	Guro	Gwangjin	Mapo	Seongdong	Gangseo	Yangcheon	Geumcheon	Songpa	Total
Chemicals/Petroleum		2(25.0%)		2(25.0%)	2(25.0%)		1(12.5%)		1(12.5%)							8(100%)
Construction/Construction materials		1(20.0%)	2(40.0%)		1(20.0%)				1(20.0%)							5(100%)
Food and Beverages		2(25.0%)	1(12.5%)	1(12.5%)	1(12.5%)						2(25.0%)				1(12.5%)	8(100%)
Steel				1(25.0%)		1(25.0%)		1(25.0%)					1(25.0%)			4(100%)
MRO		5(31.3%)	4(25.0%)	4(25.0%)	2(12.5%)				1(6.3%)							16(100%)
Textiles, Clothing				1(100.0%)												1(100%)
Foreign trade, Non-specialized trade		5(31.3%)	2(16.7%)	1(8.3%)					1(8.3%)			1(8.3%)				12(100%)
Medicines		1(16.7%)	1(16.7%)			1(16.7%)			1(16.7%)	1(16.7%)		1(16.7%)				6(100%)
Machinery and Industrial materials		1(25.0%)	1(25.0%)			1(25.0%)		1(25.0%)								4(100%)
Computer/IT/ Electronics		8(47.1%)		1(5.9%)		2(11.8%)	4(23.5%)	2(11.8%)								17(100%)
Logistics		1(50.0%)		1(50.0%)												2(100%)
Unclassified		3(30.0%)	2(20.0%)	1(10.0%)	1(10.0%)	1(10.0%)					1(10.0%)		1(10.0%)			10(100%)
Total		29(31.2%)	13(14.0%)	13(14.0%)	7(7.5%)	6(6.5%)	5(5.4%)	4(4.3%)	3(3.2%)	3(3.2%)	3(3.2%)	2(2.2%)	2(2.2%)	1(1.1%)	1(1.1%)	93(100%)

\* Industrial classification is originally based on the classification in the Electronic Commerce White Paper in 2001 and in KbizBrain.Com as of at the end of 2001. Some categories are modified based on the classification from Korea National Statistical Office.

Source: Restructured based on the 2001 Electronic Commerce White Paper, Kbizbrain.Com and Phone call survey

The analysis of the spatial distribution based on the questionnaire survey is shown in Table IV-10 and Table IV-11. The ratio of the B2B e-MPs of MRO products (27%) is the highest, followed by the marketplaces relevant to electronics (16%), foreign trade/non-specialized trade (11%). All the horizontal marketplaces dealing with MRO products and foreign trade/non-specialized trade were located in Seoul.

By comparison, all the marketplaces located in the provinces, not in Seoul belonged to the vertical marketplaces that have to do with one industry or industry segment. The three e-MPs in Busan treat food and beverage products and are mainly related to seafood products. One in Gwangyang city is the marketplace involved with steel because there is a large steel mill in the city. In addition, the e-MP dealing with machinery and industrial materials is at one of the centers of Korean industrial complexes in Changwon-city, Gyeongsangnam-do.

**Table IV-10 Spatial distributions of the sample public B2B e-MPs by industry**

Region Industry*	Seoul	Gyeonggi	Gwangju	Jeonnam	Busan	Gyeongnam	Total
Chemicals	2 (3.6)	1 (14.3)					3(4.4)
Construction/ Construction materials	3 (5.5)						3(4.4)
Food and Beverages	4 (7.3)	1(14.3)			3(100.0)		8(11.8)
Steel	2 (3.6)	1(14.3)	1(100.0)	1(100.0)			5(7.4)
MRO	15 (27.3)						15(22.1)
Textiles, Clothing	1 (1.8)	1(14.3)					2(2.9)
Foreign trade, Non-specialized trade	6 (10.9)						6(8.8)
Medicines	2 (3.6)						2(2.9)
Petroleum	5 (9.1)						5(7.4)
Machinery and Industrial materials	3 (5.5)	3(42.9)				1(100.0)	7(10.3)
Electronics	9 (16.4)						9(13.2)
Others	3 (5.5)						3(4.4)
Total	55 (100.0)	7(100.0)	1(100.0)	1(100.0)	3(100.0)	1(100.0)	68(100.0)

\* Industrial classification is adapted from Korea National Statistical Office  
Source: Questionnaire survey

The high ratio of MRO and electronic related e-MPs in Seoul is related to the concentration of such e-MPs in Gangnam-gu within Seoul. MRO e-MPs take a proportion of 31% and the e-MPs treating electronic equipment (25%) are placed second. Besides, Gangnam-gu has the public B2B e-MPs dealing with foreign trade/non-specialized trade, food and beverage, petroleum, machinery and industrial materials, and others. The e-MPs in Yeongdeungpo-gu are specialized in the products related to MRO items (47%), while the types of items such as construction materials, food and beverage, MRO, foreign trade/non-specialized trade, and machinery and industrial materials are traded in the e-MPs in Seocho-gu. In case of Jung-gu, the e-MPs dealing with chemical products contribute to a proportion of 29%.

**Table IV-11 Spatial distributions of the sample public B2B e-MPs in Seoul by industry**

Region Industry*	Gangnam	Seocho	Yeongdeungpo	Jung	Jongno	Yongsan	Guro	Gwangjin	Mapo	Seongdong	Gangseo	Yangcheon	Geumcheon	Total
Chemicals				2(28.6%)										2(3.6%)
Construction, Construction materials		2(28.6%)		1(14.3%)										3(5.5%)
Food and Beverages	2(12.5%)	1(14.3%)		1(14.3)										4(7.3%)
Steel (Iron)							1(33.3%)						1(100.0%)	2(3.6%)
MRO	5(31.3%)	2(28.6%)	4(57.1%)	2(28.6%)			1(33.3%)		1(100.0%)					15(27.3%)
Textiles, Clothing			1(14.3%)											1(1.8%)
Foreign trade, Non-specialized trade	2(12.5%)	1(14.3%)						1(33.3%)			1(100.0%)	1(100.0%)		6(10.9%)
Medicines					1(50.0%)			1(33.3%)						2(3.6%)
Petroleum	1(6.3%)		2(28.6%)			1(20.0%)		1(33.3%)						5(9.1%)
Machinery and Industrial materials	1(6.3%)	1(14.3%)			1(50.0%)									3(5.5%)
Electronics	4(25.0%)					4(80.0%)	1(33.3%)							9(16.4%)
Others	1(6.3%)			1(14.3%)						1(100.0%)				3(5.5%)
<b>Total</b>	<b>16(100.0%)</b>	<b>7(100.0%)</b>	<b>7(100.0%)</b>	<b>7(100.0%)</b>	<b>2(100.0%)</b>	<b>5(100.0%)</b>	<b>3(100.0%)</b>	<b>3(100.0%)</b>	<b>1(100.0%)</b>	<b>1(100.0%)</b>	<b>1(100.0%)</b>	<b>1(100.0%)</b>	<b>1(100.0%)</b>	<b>55(100.0%)</b>

\* Industrial classification is adapted from Korea National Statistical Office

Source: Questionnaire survey

## **3.2. Measurement of concentration by spatial indices**

The locations of the firms operating public B2B e-MPs showed a considerable concentration in Seoul, especially in Gangnam-gu. The degree of the concentration of the operators is measured in the comparison to base references. It aims at figuring out the characteristics of spatial distribution of the operators of public B2B e-MPs. Three spatial indices are chosen and introduced in the section. They include LQ, the coefficient of localization, and the coefficient of geographic association. The way to measure the spatial indices was already explained in detail in the methodology for case studies, Chapter III. In this section, the values of the three indices are calculated and analyzed.

### **3.2.1. Location quotient**

Location quotient (LQ) measures the deviation of the distribution of a given industry by region, as explained in an earlier section on methodology. In this study, population, the total number of establishments, the number of the establishments belonging to KSIC51<sup>42</sup> (wholesale and commission trade) are used as the bases to measure the extent to which each region is deviated from the distributions of the three base magnitudes. The number of firms operating public B2B e-MPs from the result of phone call survey is used as the numerator for calculating LQ. The result is summarized as follows.

In the analysis carried out in seven metropolitan cities and nine provinces, the LQ was more than one only in Seoul whatever base magnitudes were (Table IV-12). The value equaled 3.91 based on the spatial distribution of population, 3.51 based on that of total establishments. All the other regions showed values less than one. The calculation based on the spatial distribution of wholesale and commission trade is not very different from the previous results. However, the value is 1.84, which is much lower than those based on population and total establishments. It is because wholesale and commission trade were already considerably concentrated in Seoul. Nevertheless, the value of 1.84 means that the operators of public B2B e-MPs reveal a greater tendency towards being located in Seoul than those operating wholesale and commission trade.

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<sup>42</sup> KSIC stands for Korea Standard Industrial classification. For more information, please refer to <http://www.nso.go.kr:7001/standard/industry/industry.cfm>.

**Table IV-12 Calculation of LQs for the number of the operators of public B2B e-MPs in Korea by different bases\***

Region**	LQ (Base)	LQ (Population)	LQ (Total establishment)	LQ (Wholesale and commission trade (KSIC51))
Seoul		3.91	3.51	1.84
Gyeonggi-do		0.56	0.67	1.07
Gwangju		0.31	0.31	0.35
Jeollanam-do		0.21	0.20	0.32
Busan		0.34	0.31	0.29
Gyeongsangnam-do		0.14	0.14	0.21

\*The reference year of population, total establishment, and wholesale and commission trade is 2000, that of the operators of public B2B e-MPs is 2002.

\*\*The regions without the firms operating public B2B e-MPs are excluded.

Source: Population (2000 Population and Housing Census Report, Korea National Statistical Office), total establishment (2000 Report on Basic Characteristics of Establishments; Whole country), wholesale and commission trade (2000 Report on Basic Characteristics of Establishments by each region), and the operators of public B2B e-MPs (Phone call survey)

LQs are also calculated by district within Seoul and reflect the regional characteristics clearly (Table IV-13). At first glance, the contrast between Jung-gu and Gangnam-gu is remarkable. The LQ for Jung-gu (LQ=5.69) based on population, the tradition central business district (CBD), is almost the same as that of Gangnam-gu (LQ=5.89). However, the LQ based on total establishment is even less than one in Jung-gu (LQ=0.81), whereas that is still extremely high in Gangnam-gu (LQ=4.34). It is noteworthy in that the ratio of total establishments in Jung-gu amounts to about 9% of those in Seoul and ranks first among 25 districts within Seoul and Gangnam-gu follows it by about 7%. As a result, the value indicates that there is a low concentration of public B2B e-MPs in Jung-gu, compared to a high concentration of the total establishments. In contrast with trend, Gangnam-gu is specialized in the extreme concentration of public B2B e-MP firms that deviates the average distribution of the total establishments highly. In the meantime, while Seocho-gu and Yeongdeungpo-gu indicate almost the same situation as Gangnam-gu, the absolute values of the LQs by the three bases are lower than those in Gangnam-gu.

In conclusion, the LQs by district within Seoul demonstrate the important role of new industrial centers including Gangnam-gu, Seocho-gu, and Yeongdeungpo-gu. Among them, the importance of Gangnam-gu should not be overlooked, as the absolute values are much higher than those of Seocho-gu and Yeongdeungpo-gu.

**Table IV-13 Calculation of LQs for the number of the operators of public B2B e-MPs in Seoul by different bases\***

District***	LQ (Base)**	LQ (Population)	LQ (Total establishment)	LQ (Wholesale and commission trade (KSIC51))
Jongno-gu		3.75	1.17	0.48
Jung-gu		5.51	0.81	0.30
Yongsan-gu		2.30	1.76	1.19
Seongdong-gu		0.98	0.96	1.20
Gwangjin-gu		0.84	1.00	2.36
Mapo-gu		0.87	0.98	1.52
Yangcheon-gu		0.46	0.66	2.07
Gangseo-gu		0.42	0.57	1.39
Guro-gu		1.08	1.08	0.70
Geumcheon-gu		0.40	0.42	0.41
Yeongdeungpo-gu		3.55	2.46	2.09
Seocho-gu		3.76	2.83	2.31
Gangnam-gu		5.90	4.34	3.94
Songpa-gu		0.17	0.20	0.15
Gangdong-gu		0.22	0.28	0.74

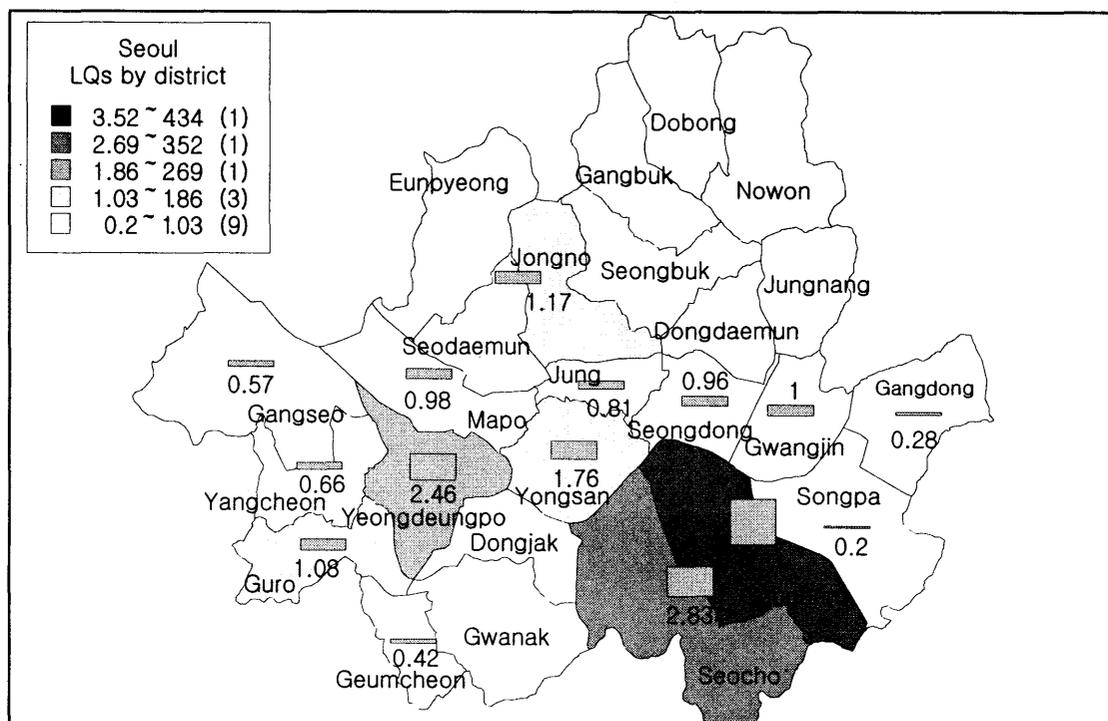
\*The number of firms operating public B2B e-MPs used in the calculation is obtained that from the phone call survey, whose total number is 111.

\*\*The reference year of population, total establishment, and wholesale and commission trade is 2000, that of the operators of public B2B e-MPs is 2002.

\*\*\*The districts without firms operating public B2B e-MPs are excluded.

Source: Population (2000 Population and Housing Census Report, Korea National Statistical Office), total establishment (2000 Report on Basic Characteristics of Establishments; Whole country), wholesale and commission trade (Raw data from Seoul metropolitan government on the Basic Characteristics of Establishments (2000)), and the operators of public B2B e-MPs (Phone call survey)

The map showing the LQs by district within Seoul based on the number of total establishments is presented in Figure IV-2.



Notes) The number of the firms operating public B2B e-MPs used in calculation is that from phone call survey, whose total number of the operators is 93 in Seoul.

**Figure IV-2 LQs for the number of the operators of public B2B electronic marketplaces in Seoul based on total establishment by district**

### 3.2.2. Coefficient of localization

Coefficient of localization is a measure of relative regional concentration of a given industry compared to some total national magnitude including population, land area, manufacturing employment, or income, as mentioned in the methodology section (Isard, 1960: 251-252). In this study, the coefficient of localization is calculated in terms of the spatial distributions of the number of the operators of public B2B e-MPs (Table IV-14). Spatial distributions of population and the total number of establishments are basically used as the references with which to compare the degree of the deviation of the spatial distribution

of the operators of public B2B e-MPs. Furthermore, two indices representing the regional differences in the use of electronic space are added. They are the percentage of internet users and the percentage of “.kr” domain by region. To sum up, these are as follows:

- Population
- The number of total establishments
- The number of Internet users
- The ratio of “.kr” domain

**Table IV-14 Coefficients of Localization of public B2B e-MPs by different bases\***

Base (Reference) Coverage	Population (2000)	Total establishments (2000)	Internet users (2002.06)	.kr domain (2002.10)
Korea (by 16 provinces)	0.62	0.60	0.59	0.27
Seoul (by 25 districts)	0.60	0.45	-	-

\*The number of firms operating public B2B e-MPs used in the calculation is obtained from the phone call survey, whose total number is 111.

Source: • Population: (Korea, Seoul)-2000 Population and Housing Census Report, Korea National Statistical Office. • Total establishments: Korea-2000 Report on Basic Characteristics of Establishments; Whole country, Korea National Statistical Office, Seoul-2000 Report on the Census on Basic Characteristics of Establishments by Seoul metropolitan government. • The number of Internet users-A survey on Internet users and Internet behavior in Korea 2002.06, Korea Network Information Center. • The number of .kr domain -Monthly Internet statistics, 2002.10, Korea Network Information Center

As is revealed in the analysis of LQs by region, the spatial distribution of the firms operating public B2B e-MPs is quite different from that of population and total establishments. It is obvious in the calculation of coefficient of localization. The value of the coefficient of localization of public B2B e-MP industry based on population is 0.62 in terms of the whole country. The value based on total establishments is 0.60, which is almost the same as that based on population. Using this criteria, zero means that the equal distribution of a given industry with base magnitude. The values of 0.62 and 0.60 mean the considerable deviation from the spatial distribution of population and total establishments. Even though there is a difference in the value based on total establishment, the situation within Seoul is not very different from that of the whole country. Considerable deviation is revealed.

The coefficient of localization is also calculated based on some base distributions indicating the spatial distribution of the diffusion of the Internet in terms of the whole country. The ratio of the Internet users by region is introduced. Furthermore, the regional percentage of the registration of .kr domain is also used to calculate the index. The value of the coefficient of localization based on the Internet users is almost the same as those based on population and total establishments. It is because the users of the Internet are dispersed across the country in proportion to the spatial distribution of population. By comparison, the value based on the regional registration of .kr domain is 0.27 and lower than those based on other base magnitudes. When taking into account the fact that about 86% of .kr domain is “.co.kr” domain used for commercial purpose<sup>43</sup>, the spatial distribution of the regional registration of .kr domain is more or less similar to that of the operators of public B2B e-MPs.

### **3.2.3. Coefficient of geographic association**

The characteristics of the spatial distributions of public B2B e-MPs are compared with those of related industries. The purpose is to clarify the spatial characteristics of public B2B e-MPs by figuring out the similarities and the dissimilarities with seemingly associated industries. To this end, coefficient of geographic association is used in this study (Table IV-15). The way to calculate the index was described in the methodology section. When the value is zero, complete geographical association exists, whereas it is one, no geographic association exists. In this study, the four types of spatial distribution of potentially associated industries are introduced.

- The number of the establishments of the wholesale and commission trade, except of Motor Vehicles and Motorcycles (KSIC 51)
- The number of the establishments of the KSIC 5-digit level industries dealing with the same kinds of products as public B2B e-MPs within those of KSIC 51
- The number of the establishment of the Wholesale on a Fee or Contract Basis (Commission trade, KSIC 511)
- The number of the firms operating B2C e-MPs

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<sup>43</sup> According to Korean Network Information Center, the ratio of .co.kr domain is 85.86%, followed by .pe.kr domain (6.18%) as of October 2002(<http://isis.nic.or.kr>).

**Table IV-15 Coefficients of Geographic Association by different bases\***

Base Coverage	Wholesale and commission trade KSIC 51	Industries dealing with the same kinds of products as public B2B e-MPs**	Wholesale on a Fee or Contract Basis KSIC 511	B2C e- MPs***
Korea (by 16 provinces)	0.39	0.39	0.41	0.11
Seoul (by 25 districts)	0.43	0.41	0.36	0.25

\*The number of firms operating public B2B e-MPs used in the calculation is obtained from the phone call survey, whose total number is 111.

\*\*Refer to Table APPENDIX A-1

\*\*\*B2C e-MPs: The list of B2C e-MPs is acquired from KbizBrain.Com (<http://www.kbizbrain.com>). The list is made based on the websites where B2C transactions are carried out. Therefore, there may be some duplicated counts when a firm provides more than one website. In addition, some may not be in operation.

Source: • KSIC 51, • KSIC 511-Korea: 2000 Report on the Census on Basic Characteristics of Establishments; Whole country, Korea National Statistical Office, Seoul: 2000 Report on the Census on Basic Characteristics of Establishments by Seoul metropolitan government

• Industries dealing with the same kinds of products as public B2B e-MPs-Korea: Recalculated from the five-digit level industry data from 2000 Report on the Census on Basic Characteristics of Establishments by 16 local governments, Seoul: Recalculated from the raw data on a five-digit level of the Census on Basic Characteristics of Establishments provided by Seoul metropolitan governments. • B2C e-MPs- Restructured from the list by KbizBrain.Com (<http://www.kbizbrain.com>)

According to the index, the geographic association of wholesale and commission trade is not very high in terms of Seoul and the country as a whole. By contrast, the spatial distribution of the operators of B2C e-MPs is geographically associated with that of the operators of public B2B e-MPs in terms of the country as a whole (the value=0.11). Interestingly, however, the degree of the geographic association between the two industries is low in terms of Seoul (the value=0.25). As shown in Table IV-16 in the next section, the firms operating B2C e-MPs are relatively less concentrated in Gangnam-gu. Moreover, although the absolute number is small, all the districts within Seoul have at least one firm operating B2C e-MPs.

### 3.3. Locations of the firms operating B2C e-MPs

The locations of the firms operating B2C e-MPs were investigated to enable comparison to be made with those of firms operating B2B public e-MPs. While the data about B2B e-MPs was collected after checking whether they do businesses at the moment or not with phone call survey and website visiting, the data on B2C e-MPs entirely depended on the list of B2C e-MPs provided by KbizBrain.com (<http://www.kbizbrain.com>). Therefore, it should be kept in mind that some of them might have stopped operating and the data does not exactly reflect the current status of the B2C e-MPs.

Data was gathered from Oct.12 to 19 2002 and the basic information of each B2C e-MP was recorded on a spreadsheet to analyze the characteristics by regions and product types. In total 1,009 websites were detected and they were aggregated by the locations of the firms and by industry. The results are shown in Table IV-16.

**Table IV-16 Spatial distributions of B2C e-MP firms in Korea\***

Regions	Gu (Districts)	Frequency	Percentage	Seoul percentage
Seoul-city	Gangnam	144	16.0%	21.9%
	Seocho	104	11.6%	15.8%
	Yeongdeungpo	45	5.0%	6.8%
	Jung	37	4.1%	5.6%
	Jongno	29	3.2%	4.4%
	Yongsan	103	11.5%	15.7%
	Guro	8	0.9%	1.2%
	Gwangjin	23	2.6%	3.5%
	Mapo	26	2.9 %	4.0%
	Seongdong	12	1.3%	1.8%
	Gangseo	16	1.8%	2.4%
	Yangcheon	12	1.3%	1.8%
	Geumcheon	3	0.3%	0.5%
	Gangdong	7	0.8%	1.1%
	Gangbuk	4	0.4%	0.6%
Gwanak	12	1.3%	1.8%	

Regions	Gu (Districts)	Frequency	Percentage	Seoul percentage
	Nowon	5	0.6%	0.8%
	Dobong	1	0.1%	0.2%
	Dongdaemun	11	1.2%	1.7%
	Dongjak	12	1.3%	1.8%
	Seodaemun	1	0.1%	0.2%
	Seongbuk	7	0.8%	1.1%
	Songpa	22	2.4%	3.3%
	Eunpyeong	9	1.0%	1.4%
	Jungnang	5	0.6%	0.8%
	Seoul-total		658	73.2%
Incheon-city		22	2.4%	
Gyeonggi-province		84	9.3%	
Daejeon-city		13	1.4%	
Chungcheongnam-do		5	0.6%	
Chungcheongbuk-do		6	0.7%	
Gangwon-do		5	0.6%	
Jeollabuk-do		2	0.2%	
Gwangju-city		11	1.2%	
Jeollanam-do		2	0.2%	
Daegu-city		33	3.7%	
Gyeongsangbuk-do		5	0.6%	
Busan-city		32	3.6%	
Ulsan-city		5	0.6%	
Gyeongsangnam-do		12	1.3%	
Jeju-do		4	0.4%	
Total		899	100.0%	
Missing data**		110		

\*The list of B2C e-MPs is acquired from KbizBrain.Com. The list is made based on data from the websites where B2C transactions are carried out. Therefore, there may be some duplicated counts when a firm provides more than one website. In addition, some may not be in operation.

\*\*Missing data means the number of B2C e-MPs whose location data is not provided on the KbizBrain websites or is overseas.

Source: KbizBrain.Com (<http://www.kbizbrain.com>). The list of B2C e-MPs was acquired from KbizBrain and their basic information including location data was entered in an Excel spreadsheet and recalculated. (Data collection period: Oct.12~19, 2002)

The significant roles of Seoul and Gangnam-gu as the center for B2C e-MPs are still recognized even though the extent is not so much as in those of public B2B e-MPs. About 73% of the firms are located in Seoul and about 22% of the firms from the Seoul area are located in Gangnam-gu.

The ratio of Gyeonggi-do does not reflect much difference in the locations between B2C e-MPs and public B2B e-MPs. Whereas there were very few public B2B e-MPs in other regions excluding Seoul and Gyeonggi-do, other metropolitan cities and provinces play crucial roles as areas where B2C e-MPs are founded. Metropolitan cities such as Daegu, Busan, Incheon, and Daejeon in particular function as bases from which firms begin to do businesses related to B2C e-MPs although absolute number is still small.

The spatial distribution of B2C e-MPs within Seoul is similar with that of B2B public e-MPs in that Gangnam-gu plays a pivotal role in attracting considerable number of the e-MPs. However, it is different in that the proportion of the B2C e-MPs in Gangnam-gu is lower than that of the B2B public B2B e-MPs.

While Seocho-gu and Yeongdeungpo-gu gain the second places in the distribution of public B2B e-MPs, Seocho-gu and Yongsan-gu are grouped second in that of B2C e-MPs. The high ratio of B2C e-MPs involved with computers and electronic appliances contributes to the second rank of Yongsan-gu. Yongsan-gu is famous for The Electronic Shopping Town that is composed of lots of small dealers and several large shopping centers and buildings. As one of the largest electronic markets in Korea, the dealers reasonably open cyber shopping mall in addition to their existing physical stores.

In spite of the importance of Yongsan-gu in the distributions of B2C e-MPs, the districts that take more than 5% of the B2C e-MPs are almost the same as those of B2B e-MPs. They are Gangnam-gu (21.9%), Seocho-gu (15.8%), Yongsan-gu (15.7%), and Jung-gu (5.6%), accompanied by Jongno-gu (4.4%). The major districts related to B2B e-MPs encompass Gangnam-gu (31.2%), Seocho-gu (14.0%), Yeongdeungpo-gu (14.0%), Jung-gu (7.5%), Jongno-gu (6.5), and Yongsan-gu (5.4%).

In the meanwhile, the items that are traded over cyber shopping malls are various. Currently the B2C e-MPs in Seoul cover all the types of products excluding very few categories such as motor vehicle parts and accessories and secondhand goods (See Table APPENDIX A-2). Although most categories recorded the percentage over its average ratio

(73.2%), the number of e-MPs relevant to agricultural, fishery, and livestock (35.3%) and health goods (37.5%) is low. The cyber shopping malls dealing with the two categories are scattered across the whole country. Furthermore, it is inferred that the B2C e-MPs relevant to agricultural, fishery, and livestock are located close to the production places of raw materials to some extent.

The cyber shopping malls in Gangnam-gu deal with the various items such as electronic appliance, household goods, health goods, flowers, books, stationery, jewelry, sports goods, food/beverage, goods for children, music/art, motor vehicle parts, non-specialized goods, computer, fashion and agricultural/fishery/livestock etc. Except for the two categories whose absolute number in Seoul is below 10, household goods (38%) and non-specialized goods (30%) take the highest ratios of the B2C e-MPs in Gangnam-gu (See Table APPENDIX A-3).

## **4. Characteristics of public B2B e-MPs by region**

### **4.1. Differentiated location factors by region**

In this section, the location factors of the firms operating B2B e-MPs are analyzed. As mentioned in Chapter III, respondents were asked to give ratings from 1 (strongly important) to 5 (not at all important) on 31 location factors<sup>44</sup>. The location factors crucial to the firms in Gangnam-gu were noticeably different from those crucial to the firms in the provinces (Table IV-17).

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<sup>44</sup> In some cases, the respondents of questionnaires were not the founders of companies. They were asked to evaluate the importance of each location factor based on the knowledge they learned or heard from. Because most companies in this field have been established since 1998, respondents were considered to have some information on the location factors of their companies.

**Table IV-17 Location factors of sample firms**

No.	Location factors	Gangnam	Other Seoul	Seoul Total	The provinces*	Korea Total
1	The rent of buildings is low	3.06	2.85	2.91	2.64	2.86
2	The cost of using information and telecommunications infrastructure is low	3.00	3.21	3.15	3.55	3.21
3	The cost of operating offices such as parking and utilities is low.	3.19	3.18	3.18	3.09	3.17
4	A pool of skilled labor exists around the area.	2.75	3.56	3.33	3.27	3.32
5	The turnover of the labor force is flexible in the area.	2.94	3.56	3.38	3.64	3.42
6	The raw materials of the transacted products are produced nearby.	4.44	4.05	4.16	1.91	3.79
7	The manufacturing plant in which the transacted products are produced is located nearby.	4.31	4.26	4.27	2.00	3.89
8	Buyers (potential customers) are located nearby.	3.00	3.33	3.24	2.27	3.08
9	Sellers (potential customers) are located nearby.	3.06	3.38	3.29	2.09	3.09
10	Potential cooperating firms such as IT-solution or IT-consulting firms are located nearby.	2.69	3.56	3.31	4.00	3.42
11	Logistics firms involved with your firm are located nearby.	3.81	3.72	3.75	2.64	3.56
12	Financial firms including banks and venture capital are located nearby.	2.94	3.49	3.33	4.00	3.44
13	Advanced service firms in the fields of law, accounting, or advertising are located nearby.	3.19	3.62	3.49	4.36	3.64
14	The firms connected to EC are located nearby.	2.88	3.46	3.29	4.45	3.48
15	Firms in the same industry are located nearby.	3.13	3.72	3.55	3.82	3.59
16	The public authorities helping businesses are located nearby.	3.00	3.69	3.49	3.91	3.56
17	Your firm uses venture buildings or venture-incubating facilities. in the region	3.19	4.00	3.76	4.55	3.89
18	The building your firm has possessed in the past is used.	4.00	3.44	3.60	3.64	3.61
19	The parent company of your firm is located nearby.	3.94	3.77	3.82	3.36	3.74

No.	Location factors	Gangnam	Other Seoul	Seoul Total	The provinces*	Korea Total
20	The shareholder firms of your firm are located nearby.	3.31	4.00	3.80	4.09	3.85
21	The headquarters of your firm is located nearby.	3.94	3.67	3.75	3.82	3.76
22	The distributing stores of your firm are located nearby.	4.31	3.95	4.05	3.82	4.02
23	The manufacturing plants of your firm are located nearby.	4.81	4.28	4.44	3.55	4.29
24	The research and development laboratories of your firm are located nearby.	4.63	4.08	4.24	4.27	4.24
25	Transportation is very convenient.	2.13	2.44	2.35	3.55	2.55
26	Business infrastructures are preferable.	2.31	2.72	2.60	3.45	2.74
27	Environmental amenities are attractive.	3.69	3.49	3.55	3.45	3.53
28	The expectations for the growth of the region are very high.	2.81	3.28	3.15	2.73	3.08
29	To be located in the region makes you feel some prestige or pride.	2.50	3.36	3.11	3.09	3.11
30	Your firm prevents competing firms from occupying that area.	3.94	4.28	4.18	3.55	4.08
31	The managers of your firm are familiar with the location because they have some experience to live or carry out businesses in the place in the past.	3.56	3.41	3.45	1.91	3.20
	N	16	39	55	11	66
	Average	3.37	3.57	3.51	3.37	3.49

Notes) 1=strongly important, 5=not at all important

\* The provinces mean the outside areas of Seoul in this study.

Source: Questionnaire survey

According to the survey analysis, there are differences in the locations factors that affected location decisions by region. 31 items were listed in the questionnaire and respondents were asked to answer the extent of the importance they put on each item on a five-scale basis where “1” is strongly important and “5” is not at all important. Then, the averages of the answers about each item were calculated by region. The objective was to investigate the differences in the location factors of firms that operate public B2B e-MPs. Mainly the items that have the averages lower than 3 are dealt with in this section.

The e-MPs in Gangnam-gu put the highest priority on the convenience of transportation

(Average=2.13), preferable business infrastructure (A=2.31). Interestingly, the firms in Gangnam-gu consider that to be located in Gangnam-gu makes them feel prestige or pride (A=2.50). Gangnam-gu has been known as the core area where Korean IT-based innovative firms were agglomerated<sup>45</sup>. The firms in Gangnam-gu believe that only to be located there can give a good image about the competence of their firms to business partners. The expectation for the growth of Gangnam-gu (A=2.81) was higher than other regions.

Practically, the agglomeration of the advance service firms in Gangnam-gu is revealed to be an important location factor of the firms that plan to open public B2B e-MPs in the district. First, IT-solution or IT-consulting firms in the Gangnam-gu were thought to be helpful for their businesses (A=2.69). The existence of the firms involved with EC is attractive to the firms of public B2B e-MPs in Gangnam-gu (A=2.88). The existence of financial firms including banks and venture capital (A=2.94) is a significant factor that is considered when making decisions about. Moreover, a pool of skilled labor (A=2.75) and the flexible turnover of labor forces (A=2.94) around Gangnam-gu are viewed as advantageous to set up businesses in the area.

In the meantime, the convenience of transportation (A=2.44) and the business infrastructure (A=2.72) are also important factors to consider when firms choose their locations in the Seoul area excluding Gangnam-gu. The low rent of buildings is also considered important. The firms in the other regions excluding Gangnam-gu place less importance on the expectations for the growth of the regions and for the reputation of the regions than the firms in Gangnam-gu. Although the low cost of operating offices such as parking and utilities (A=3.18) is another location factor, the absolute average value is over 3

The location factors of the firms that operate public B2B e-MPs in the provinces are very different from those of the firms in Gangnam and other areas in Seoul. The familiarity of the managers with the regions (A=1.91) is one of the most important factors. Generally, they feel familiar and comfortable because they have some experience in working within a particular

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<sup>45</sup> Gangnam-gu is known as the habitat of a lot of IT-related innovative venture firms both in name and reality. Teheran Valley inside Gangnam-gu is the representative area where such high-technology based innovative firms and associated advanced service firms are located close to each other. Teheran valley is the area along Teheran-road which is between Gangnam subway station and Samsung subway station. The area was named in the mid-1990s when about a hundred IT-related firms became located in the area. Knowledge-based advanced service firms were also clustered around the area such as computer-software firms, engineering firms, advertising and design firms or financial and legal service firms (Kim et al., 2002).

region.

The proximity to the production of the raw materials of traded products (A=1.91) is another important factor of the firms in the provinces. The closeness to the manufacturing plants of the traded products (A=2.00) is also important for their location decisions. The locations of sellers (A=2.09) and buyers (A=2.27) should be close to the firms because they consider the continuous communication with potential customers as essential for successful businesses. The intention to be located to involved logistics firms (A=2.64) is shown to be relatively important. The low rent of buildings (A=2.64) was a significant factor that influenced their location decisions.

#### **4.2. The importance of production factors in deciding locations**

The analysis of the location factors of the firms in Gangnam-gu implies the importance of the production cost factors in some ways. In fact, the top priority is on the convenience of transportation (Average=2.13), preferable business infrastructure (A=2.31). Moreover, regional prestige or pride (A=2.50), and the expectation for the growth of Gangnam-gu (A=2.81) were rated as important by the firms located in Gangnam-gu.

Besides, the following aspects were considered as important location features involved with production factors:

- the existence of IT-solution or IT-consulting firms in the district (A=2.69),
- the firms involved with EC (A=2.88),
- financial firms including banks and venture capital(A=2.94)
- a pool of skilled labor in the district (A=2.75)
- the flexible turnover of labor forces(A=2.94) around Gangnam-gu

The variables that represent some important production factors are selected and their relationships with the spatial distribution of the firms operating public B2B e-MPs are investigated with bivariate correlation analysis. The selected variables are as follows:

- ▶ Variables representing capital
  - Number of venture capital firms (2002)

- Number of other investment companies, KSIC 65939 (2000)
- Employees of other investment companies, KSIC 65939 (2000)
  
- ▶ Variables representing labor
  - Number of computer trading service institutes, KSIC=80911 (2000)
  - Employees of computer training service institutes, KSIC=80911 (2000)
  
- ▶ Variables representing land
  - Number of buildings (2000)
  - Number of commercial buildings(2000)
  - Ratio of commercial buildings (2000)

According to the result in Table IV-18, the number of venture capital firms (Capital), the number of employees of computer training service institutes (Labor), and the ratio of commercial buildings (Land) turn out to be strongly correlated to the spatial distribution of the operators of public B2B e-MPs within Seoul (They are significant at 0.01 level (2-tailed)).

**Table IV-18 Analysis of correlations of distributions of production factors with those of the firms operating public B2B e-MPs by district in Seoul**

Production factors	Variables	Index (N=the number in Seoul) (%=Ratio of those in Seoul)	Number of establishment (Classified by data source)***			Employees
			KbizBrain** (N=292) (86.4%)	Phone call survey (N=93) (83.8%)	Questionnaire survey (N=55) (80.9%)	Questionnaire survey (N=1,576) (87.7%)
Capital	Number of venture capital firms (2002)	Pearson Correlation	.949**	.957**	.941**	.901**
		Sig. (2-tailed)	.000	.000	.000	.002
		N	8	8	8	8
	Number of other investment companies ***** (2000) (KSIC=65939)	Pearson Correlation	.954**	.937**	.927**	.841**
		Sig. (2-tailed)	.000	.000	.000	.000
		N	25	25	25	25
	Employees of other investment companies (2000) (KSIC=65939)	Pearson Correlation	.907**	.890**	.850**	.757**
		Sig. (2-tailed)	.000	.000	.000	.000
		N	25	25	25	25
Labor	Number of computer training service institutes (2000) (KSIC=80911)	Pearson Correlation	.065	.153	.013	-.150
		Sig. (2-tailed)	.757	.466	.951	.473
		N	25	25	25	25
	Employees of computer training service institutes (2000) (KSIC=80911)	Pearson Correlation	.749**	.794**	.667**	.507**
		Sig. (2-tailed)	.000	.000	.000	.010
		N	25	25	25	25
Land	Number of buildings (2000)	Pearson Correlation	-.225	-.205	-.216	-.170
		Sig. (2-tailed)	.280	.325	.299	.417
		N	25	25	25	25
	Number of commercial buildings***** (2000)	Pearson Correlation	.536**	.508**	.528**	.528**
		Sig. (2-tailed)	.006	.010	.007	.007
		N	25	25	25	25
	Ratio of commercial buildings (2000)	Pearson Correlation	.792**	.729**	.757**	.708**
		Sig. (2-tailed)	.000	.000	.000	.000
		N	25	25	25	25

\*\* Correlation is significant at the 0.01 level (2-tailed)

\* Correlation is significant at the 0.05 level (2-tailed)

\*\*\* KbizBrain=the list of e-MP from KbizBrain.Com (<http://www.kbizbrain.com>) as of Nov. 2002, Phone call survey=the list of public B2B e-MPs from phone call survey of this study, Questionnaire survey=the result of the questionnaire survey of this study

\*\*\*\*KbizBrain=excluding the firms that have no information on locations

\*\*\*\*\* Venture capital firms belong to the category of other investment companies, KSIC=65939 according to the operational definition of Seoul metropolitan government (Seoul metropolitan government, 2001b: 143).

\*\*\*\*\* Commercial buildings may contain diverse types of buildings for commercial purpose, not only office buildings  
Notes) Analysis of Bivariate Correlations with SPSS 8.0

In contrast, however, in spite of the high ratio of commercial buildings, the vacancy rate of office buildings in Gangnam/Seocho/Songpa is extremely low, as shown in Table IV-19. Therefore, the rental fees in Gangnam/Seocho/Songpa area are also considerably high. It was also in line with the high rental fees for office buildings in Seoul (Table IV-20).

**Table IV-19 Rental fees and vacancy rate of office buildings by region in Seoul**

(as of July 1, 2002)

Type \ Region	Central business area	Yeouido /Mapo	Gangnam/ Seocho/ Songpa	Others	Seoul total*	Whole country**
Average rental fee (thousand KRW/m <sup>2</sup> )	1,846	1,276	1,568	1,076	1,523	1,291
Increasing rate of rental fee (%)	4.97	7.17	6.26	2.24		
Vacancy rate (%)	4.3	3.5	0.9	3.0	2.8	4.8

\* 53 sub-regions were selected as the sample area for the survey on office buildings in Seoul

\*\*The survey was limited to 7 Metropolitan cities

Source: Survey on the estimation of the rental fees and the earning rate of buildings in Korea (2002), Korea Association of Property Appraisers (<http://www.kapanet.co.kr>), Land Bureau of Ministry of Construction and Transportation (<http://www.moct.go.kr>)

**Table IV-20 Average rental fees for buildings by metropolitan city**

(as of July 1, 2002) (Unit: thousand KRW/m<sup>2</sup>)

Type	Total	Seoul	Busan	Daegu	Incheon	Gwangju	Daejeon	Ulsan
Office	1,291	1,523	733	677	732	595	419	627
Store	1,230	1,521	1,172	911	952	680	818	690

Source: Survey on the estimation of the rental fees and the earning rate of buildings in Korea (2002), Korea Association of Property Appraisers (<http://www.kapanet.co.kr>), Land Bureau of Ministry of Construction and Transportation (<http://www.moct.go.kr>)

As a conclusion, the high concentration of the operators of public B2B e-MPs in Gangnam-gu is closely related to the expectation for the easiness of loaning capital, and sourcing skilled-labors. Such factors make the operators of public B2B e-MPs rush to the region, leading to fierce competition for offices and raising rental fees.

### **4.3. Differentiated characteristics of public B2B e-MPs by region**

#### **■ Differences in industrial types**

Horizontal e-MPs deal with the products related to various industries. MRO e-MPs are a typical example of horizontal e-MPs. Public B2B e-MPs in the field of foreign-trade/non-specialized trade can also be included in the horizontal e-MPs. According to the analysis of Table IV-21, public B2B e-MPs in Gangnam-gu are more likely to be horizontal e-MPs, especially MRO public B2B e-MPs. Public B2B e-MPs in the provinces were 100% vertical public B2B e-MPs. Of the 68 firms that were sampled, 13 were located in the provinces. The industries of the firms in the provinces encompass machinery and industrial materials (4 firms), Food and beverages (4), Steel (3), Chemicals (1), and Textiles and clothing (1). All of them belong to vertical B2B e-MPs.

**Table IV-21 Industrial characteristics of public B2B e-MPs by region**

Industry		Region		Gangnam	Other Seoul	The provinces	Total
		Fre.	%				
Horizontal	MRO	Fre.	5	10	0	15	
		%	31.3	25.6	0.0	22.1	
	Foreign trade, Non-specialized trade	Fre.	2	4	0	6	
		%	12.5	10.3	0.0	8.8	
Vertical	Construction/Construction materials	Fre.	0	3	0	3	
		%	0.0	7.7	0.0	4.4	
	Machinery and industrial materials	Fre.	1	2	4	7	
		%	6.3	5.1	30.8	10.3	
	Petroleum	Fre.	1	4	0	5	
		%	6.3	10.3	0.0	7.4	
	Textiles, Clothing	Fre.	0	1	1	2	
		%	0.0	2.6	7.7	2.9	
	Food and Beverages	Fre.	2	2	4	8	
		%	12.5	5.1	30.8	11.8	
	Medicines	Fre.	0	2	0	2	
		%	0.0	5.1	0.0	2.9	
	Electronics	Fre.	4	5	0	9	
		%	25.0	12.8	0.0	13.2	
	Steel	Fre.	0	2	3	5	
		%	0.0	5.1	23.1	7.4	
	Chemicals	Fre.	0	2	1	3	
		%	0.0	5.1	7.7	4.4	
	Others	Fre.	1	2	0	3	
		%	6.3	5.1	0.0	4.4	
Total	Fre.	16	39	13	68		
	%	100.0	100.0	100.0	100.0		

Source: Questionnaire survey

## ■ Differences in the extent of standardization of traded products

The analysis of traded products also shows that the products that are traded in the e-MPs in Gangnam-gu are more standardized than those in the provinces (Table IV-22). It seems to be related to the fact that the all the public B2B e-MPs in the provinces in the sample firms are vertical ones.

MRO products are generally viewed as standardized products compared to industrial or manufacturing ones. Standardization can be used in two ways. First, the standardized products are the products that are produced without the high level of technology or highly-skilled workers. The products are used without complex customization procedures. Second, the standardization can be looked at in terms of e-catalogs. When a product is easily to be included in online catalog with the precise explanation of specifications, it is considered to be suitable for EC. The extent of the standardization of the products of the public B2B e-MPs in other Seoul areas is between that in Gangnam-gu and that in the provinces. Generally, however, it is known that the items traded through the public B2B e-MPs in the area are more standardized than those in private e-MPs.

**Table IV-22 Evaluation of the standardization of traded products by region**

Region		Gangnam	Other Seoul	The provinces	Total
Standardization					
Agree	Fre.	8.0	16	2.0	26
	%	53.3	42.1	16.7	40
Neutral	Fre.	2.0	12	4.0	18
	%	13.3	31.6	33.3	27.7
Disagree	Fre.	5.0	10	6.0	21
	%	33.3	26.3	50.0	32.3
Total	Fre.	15.0	38	12.0	65
	%	100.0	100	100.0	100

Notes) Respondents were asked to check the extent to which they agree to the statement "The product is fairly standardized for the industry."

Originally asked on a five-scale basis in the questionnaire. Agree includes strongly agree and agree. Disagree includes strongly disagree and disagree.

Source: Questionnaire survey

■ Differences in the types of transferred knowledge

Knowledge types transferred with business partners were analyzed. Respondents were asked to evaluate the extent of the exchange of codified and tacit knowledge. Codified knowledge or information was defined as routine, easily codified, public, or context-free one. Tacit knowledge was referred to concrete know-how, crafts, skills, personal, practical, context-specific knowledge, or knowledge acquired from experiences. The proportion of the firms, which answered that codified knowledge was transferred in the relationship with sellers and buyers, was 64.3%, 60.5%, and 18.2% in Gangnam-gu, other Seoul areas, and provinces, respectively (Table IV-23).

**Table IV-23 Exchange of codified knowledge with sellers and buyers by region**

Region Evaluation	Gangnam	Other Seoul	The provinces	Total
Agree	9	23	2	34
	64.3%	60.5%	18.2%	54.0%
Neutral	2	9	6	17
	14.3%	23.7%	54.5%	27.0%
Disagree	3	6	3	12
	21.4%	15.8%	27.3%	19.0%
Total	14	38	11	63
	100.0%	100.0%	100.0%	100.0%

Notes) Respondents were asked to check the extent to which they agree to the statement "Routine (easily codified or public, context-free) knowledge or information is mainly exchanged."

Originally asked on a five-scale basis in the questionnaire. Agree includes strongly agree and agree. Disagree includes strongly disagree and disagree.

Source: Questionnaire survey

Considering the relationship with cooperative firms, the percentage of the firms where codified knowledge was exchanged was 57.1%, 52.6%, and 27.3%, respectively (Table IV-24). In both types of relationship, the degree of the exchange of codified knowledge was remarkably low in public B2B e-MPs in the provinces.

**Table IV-24 Exchange of codified knowledge with cooperators by region**

Region Scale	Gangnam	Other Seoul	The provinces	Total
Agree	8	20	3	31
	57.1%	52.6%	27.3%	49.2%
Neutral	2	10	6	18
	14.3%	26.3%	54.5%	28.6%
Disagree	4	8	2	14
	28.6%	21.1%	18.2%	22.2%
Total	14	38	11	63
	100.0%	100.0%	100.0%	100.0%

Notes) Respondents were asked to check the extent to which they agree to the statement "Routine (easily codified or public, context-free) knowledge or information is mainly exchanged."

Originally asked on a five-scale basis in the questionnaire. Agree includes strongly agree and agree. Disagree includes strongly disagree and disagree.

Source: Questionnaire survey

In contrast, 21.4% of the firms in Gangnam-gu strongly agreed to the statement that concrete know-how, crafts, skills, personal, practical, context-specific knowledge, or knowledge acquired from experiences, were exchanged with sellers and buyers, followed by 18.2% of the firms in the provinces, and 15.8% of the firms in other Seoul areas (Table IV-25). 35.7%, 42.1%, and 45.5% of the firms in each area agreed to some extent that tacit knowledge was exchanged in the relationship with sellers and buyers.

**Table IV-25 Exchange of tacit knowledge with sellers and buyers by region**

Region Scale	Gangnam	Other Seoul	The provinces	Total
Agree	5	16	5	26
	35.7%	42.1%	45.5%	41.3%
Neutral	6	12	2	20
	42.9%	31.6%	18.2%	31.7%
Disagree	3	10	4	17
	21.4%	26.3%	36.4%	27.0%
Total	14	38	11	63
	100.0%	100.0%	100.0%	100.0%

Notes) Respondents were asked to check the extent to which they agree to the statement "Concrete know-how, crafts, skills, personal/practical/context-specific knowledge, or the knowledge acquired from experiences are exchanged with trading partners."

Source: Questionnaire survey

In case of the relationship with cooperative firms, the proportion of the firms that agreed at least to some degree is 35.7%, 44.7%, and 54.5%, respectively (Table IV-26).

**Table IV-26 Exchange of tacit knowledge with cooperators by region**

Scale \ Region	Gangnam	Other Seoul	The provinces	Total
Agree	5	17	6	28
	35.7%	44.7%	54.5%	44.4%
Neutral	5	11	0	16
	35.7%	28.9%	0.0%	25.4%
Disagree	4	10	5	19
	28.6%	26.3%	45.5%	30.2%
Total	14	38	11	63
	100.0%	100.0%	100.0%	100.0%

Notes) Respondents were asked to check the extent to which they agree to the statement "Concrete know-how, crafts, skills, personal/practical/context-specific knowledge, or the knowledge acquired from experiences are exchanged with trading partners."

Source: Questionnaire survey

Comparing the extent to which codified knowledge and tacit knowledge are exchanged, codified knowledge is more likely to be transferred than tacit knowledge. This proved common in both the relationships with sellers and buyers and the relationships with cooperative firms. It seems reasonable in that the high level of trust-based relationship is needed to exchange tacit knowledge because tacit knowledge is composed of invisible experience, crafts, skills, know-how, personal and practical knowledge.

The comparison of the exchange of the two types of knowledge by region reveals an interesting result, as shown in Table IV-23, Table IV-24, Table IV-25, and Table IV-26. The firms in Gangnam-gu show comparatively low level of the exchange of tacit knowledge. It is opposite to the pattern observed in the exchange of codified knowledge. As a result, although the firms in Gangnam-gu are more active in exchanging easily understood and codified knowledge, many of them still lag in communicating invisible and context-specific knowledge. It does not mean that all of the firms in the area are not interested in exchanging tacit knowledge, though. 21% of the firms strongly agreed that the exchange of tacit knowledge happened in conducting businesses. Nevertheless, the overall statistical value

about the exchange of tacit knowledge in Gangnam-gu was lower than that of the firms in other Seoul areas and the provinces.

### ■ Differences in the importance of trust-based relationships

To investigate the extent to which the trust-based relationship is important in doing businesses, respondents were asked to evaluate the degree to which they agreed to a statement. The statement was that Trust was considered to be a more important factor to making contracts than other conditions, such as price.

The type of business partners differentiates the importance of trust-based relationship by region. About 64.3% of the firms in Gangnam-gu answered that they preferred the existing partners to some degree in the relationship with buyers and sellers (Table IV-27). However, in the case of the provinces, in total about 81.8% of the firms answered that they prefer the existing business partners. 73.7% of the firms in other Seoul areas gave the same answer.

**Table IV-27 Importance of trust in selecting sellers and buyers by region**

Region Scale	Gangnam	Other Seoul	The provinces	Total
Agree	9	28	9	46
	64.3%	73.7%	81.8%	73.0%
Neutral	4	9	2	15
	28.6%	23.7%	18.2%	23.8%
Disagree	1	1	0	2
	7.1%	2.6%	0.0%	3.2%
Total	14	38	11	63
	100.0%	100.0%	100.0%	100.0%

Notes) Respondents were asked to check the extent to which they agree to the statement "Trust is considered to be a more important factor to making contracts than other conditions such as price."

Originally asked on a five-scale basis in the questionnaire. Agree includes strongly agree and agree. Disagree includes strongly disagree and disagree.

Source: Questionnaire survey

On the contrary, however, the importance of trust in the relationship with cooperators is highest in the firms in Gangnam-gu (85.7%), followed by those in other Seoul areas (76.3%), and those in the provinces (72.7%) (Table IV-28). This is in line with the importance of the

location factors relevant to the physical closeness to potentially cooperative firms by the operators in Gangnam-gu. The agglomeration of many firms in Gangnam-gu can be interpreted as the effort to increase the trust-based relationship based on the physical proximity with cooperative firms, rather than with buyers and sellers. In contrast, the firms in the provinces consider the trust-based relationship with buyers or sellers more important than that with cooperative firms and it is reflected in their location factors of which the physical proximity to potential buyers or sellers were taken into account.

**Table IV-28 Importance of trust in selecting cooperators by region**

Region Scale	Gangnam	Other Seoul	The provinces	Total
Agree	12	29	8	49
	85.7%	76.3%	72.7%	77.8%
Neutral	2	7	3	12
	14.3%	18.4%	27.3%	19.0%
Disagree	0	2	0	2
	0.0%	5.3%	0.0%	3.2%
Total	14	38	11	63
	100.0%	100.0%	100.0%	100.0%

Notes) Respondents were asked to check the extent to which they agree to the statement "Trust is considered to be a more important factor to making contracts than other conditions such as price."

Originally asked on a five-scale basis in the questionnaire. Agree includes strongly agree and agree. Disagree includes strongly disagree and disagree.

Source: Questionnaire survey

#### ■ Differences in the spatial distribution of buyers and sellers

The firms that trade over the public B2B e-MPs in Gangnam-gu are dispersed across the country to some extent. More than half of the firms operating e-MPs in Gangnam-gu answered that their buyers and sellers were dispersed across the country to some extent (Table IV-29). However, 50% of the firms operating e-MPs located in the Seoul except for Gangnam-gu replied that their buyers and sellers are somewhat not dispersed across the country. In the case of the e-MPs in the provinces, the geographical concentration of sellers and buyers stands out clearer than others.

**Table IV-29 Spatial distributions of sellers and buyers**

Scale \ Region		Gangnam	Other Seoul	The provinces	Total
Completely dispersed	Fre.	3	4	0	7
	%	23.1	10.5	0.0	11.5
Somewhat dispersed	Fre.	4	9	3	16
	%	30.8	23.7	30.0	26.2
Neutral	Fre.	3	4	2	9
	%	23.1	10.5	20.0	14.8
Somewhat not dispersed	Fre.	2	19	3	24
	%	15.4	50.0	30.0	39.3
Completely not dispersed	Fre.	1	2	2	5
	%	7.7	5.3	20.0	8.2
Total	Fre.	13	38	10	61
	%	100.0	100.0	100.0	100.0

Source: Questionnaire survey

## **5. Importance of physical communication channel in online businesses**

### **5.1. Communication channels of public B2B e-MPs**

e-MPs are ideally expected to provide online invisible marketplaces in which any seller or buyer stops by and look around products and make contracts without physical face-to-face meeting. However, on the other hand, there have been some debates on the importance of constructing and accumulating the trust-based relationship for successful online businesses. The empirical analysis of this study partially shows that the stress on the function of electronic communication channels should not be interpreted as the negligence of the value of face-to-face meeting in e-MPs.

### 5.1.1. General overview

In this study, electronic communication channels are defined as the communication through electronic mails, telephone/fax, video conferencing, VAN-based EDI, and the Internet. Electronic communication channels are considered important in doing businesses involved with e-MPs. According to the survey of this study, about 77% and 78% of the respondents answered that electronic communication channels were strongly important or important in doing businesses in the relationship with sellers and buyers as well as with cooperators (Table IV-30).

**Table IV-30 The importance of electronic communication channels**

Electronic channels Region Scale	Sellers and buyers		Cooperators*	
	Frequency	Percentage	Frequency	Percentage
Strongly important	44	65.7	39	59.1
Important	8	11.9	12	18.2
Neutral	11	16.4	14	21.2
Not important	3	4.5	1	1.5
Not at all important	1	1.5	0	0.0
Total	67	100.0	66	100.0

\*Cooperators=formal or informal alliance firms

Source: Questionnaire survey

However, it did not mean that electronic communication channels replaced physical communication mode in the business activities related to public B2B e-MPs. The survey also revealed that face-to-face meeting was still very important in conducting their businesses (Table IV-31). In total, 81% firms of the sample firms answered that they considered face-to-face meeting important at least to some extent in the relationship with buyers and sellers. The value of face-to-face meeting is strengthened in the relationship with strategic alliance firms, or cooperative firms. Approximately 86 % of the sample firms answered that face-to face meeting was important and none of the sample firms answered that face-to-face meeting was not important.

**Table IV-31 The importance of face-to-face meeting**

Face-to-face meeting Scale	Region	Sellers and buyers		Cooperators*	
		Frequency	Percentage	Frequency	Percentage
Strongly important		43	63.2	39	60.0
Important		12	17.6	17	26.2
Neutral		10	14.7	9	13.8
Not important		3	4.4	0	0.0
Not at all important		0	0.0	0	0.0
Total		68	100.0	65	100.0

\*Cooperators=formal or informal alliance firms

Source: Questionnaire survey

This result is line with the Kraut et al.(1998) who argued in support of the positive relationship between personal relationship and electronic communications. They argued that the two communication channels were complementary, not replacing each other. It is related to the argument on the limit of the IT-based communication channels in doing businesses (Johannessen et al., 2001).

The emphasis on face-to-face meeting in conducting businesses is clearly evident in the responses to the question that was asked to compare the two communication channels (Table IV-32). No firms replied that electronic communication channels alone were enough to do businesses in the relationship with buyers and sellers as well as cooperators. Rather, about 54% of the firms answered that face-to-face meeting was more important than electronic communication channels in the relationship with buyers and sellers. Approximately 60% agreed that face-to-face meeting was more important than electronic communication channels in the relationship with cooperative firms. The firms that attributed equal importance to each communication channel stood at about 26 % in the relationship with sellers and buyers and 27% in the relationship with cooperative firms. Interestingly, the firms that answered that electronic communication channels were more important than physical communication mode to some extent only equaled 19% in the relationship with sellers and buyer and 13% in the relationship with cooperative firms, respectively.

**Table IV-32 The comparison of the importance of the two types of communication channels**

Item	Sellers and buyers		Cooperators	
	Frequency	Percentage	Frequency	Percentage
Face-to-face meeting is much more important	11	16.2	10	14.9
Face-to-face meeting is more important than electronic channels	26	38.2	30	44.8
Face-to-face meeting is equally important as electronic channels	18	26.5	18	26.9
Electronic channels are more important than face-to-face meeting	13	19.1	9	13.4
Electronic channels are much more important	0	0.0	0	0.0
Total	68	100.0	67	100.0

Source: Questionnaire survey

### 5.1.2. Importance of the types of communication channels by region

Approximately 87% of the public B2B e-MPs in Gangnam-gu acknowledged that electronic communication channels were important in conducting their businesses with sellers and buyers to some extent, while 62% of those in the provinces answered that electronic communication channels were important to some degree (Table IV-33). The importance of electronic communication channels is also recognized in the relationship with cooperative firms. About 86% of the firms in Gangnam-gu put some importance on the exchange of electronic communication channels in the relationship with cooperative firms and about 62% of the firms in the provinces considered electronic communication channels important to some extent.

**Table IV-33 The importance of electronic communication channels by region**

Types		Sellers and buyers				Cooperators			
Region		Gangnam	Other Seoul	The provinces	Total	Gangnam	Other Seoul	The provinces	Total
Scale*									
Important	Fre.	13	31	8	52	12	31	8	51
	%	86.7	79.5	61.5	77.6	85.7	79.5	61.5	77.3
Neutral	Fre.	1	7	3	11	2	8	4	14
	%	6.7	17.9	23.1	16.4	14.3	20.5	30.8	21.2
Not important	Fre.	1	1	2	4	0	0	1	1
	%	6.7	2.6	15.4	6.0	0.0	0.0	7.7	1.5
Total	Fre.	15	39	13	67	14	39	13	66
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes) Originally asked on a five-scale basis in the questionnaire. Important includes strongly important and important. Not important includes not important and not at all important.

Source: Questionnaire survey

About 88% of the firms in Gangnam-gu also recognized the importance of face-to-face meeting in carrying out businesses with sellers and buyers (Table IV-34). Moreover, all the respondents in Gangnam-gu (100%) responded that face-to-face contact was important to some extent in the relationship with cooperative firms. In comparison, even though values were a little lower, about 85% of the firms in the provinces answered that face-to-face meeting was important to some extent in the relationship with sellers and buyers and 77% of them recognized the importance of face-to-face meeting in the relationship with cooperative firms.

**Table IV-34 The importance of face-to-face meeting by region**

Types		Sellers and buyers				Cooperators			
Region		Gangnam	Other Seoul	The provinces	Total	Gangnam	Other Seoul	The provinces	Total
Scale*									
Important	Fre.	14	30	11	55	14	32	10	56
	%	87.5	76.9	84.6	80.9	100.0	84.2	76.9	86.2
Neutral	Fre.	2	6	2	10	0	6	3	9
	%	12.5	15.4	15.4	14.7	0.0	15.8	23.1	13.8
Not important	Fre.	0	3	0	3	0	0	0	0
	%	0.0	7.7	0.0	4.4	0.0	0.0	0.0	0.0
Total	Fre.	16	39	13	68	14	38	13	65
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

\*Originally asked on a five-scale basis in the questionnaire. Important includes strongly important and important. Not important includes not important and not at all important.

Source: Questionnaire survey

As already mentioned in this study, the small sample size due to the small population size is a major limitation for the conclusions that can be drawn from the results of the analysis of the questionnaire survey. Cautious interpretation and future analysis are required. Nevertheless, when only relying on the result of the questionnaire, the firms in Gangnam-gu and in the province put the same importance of electronic communication channels in the relationship with buyers and sellers as in the relationship with cooperative firms. However, the firms in Gangnam-gu placed more importance on electronic communication channels than those in the provinces in the relationship with buyers and sellers as well as with cooperative firms.

The physical communication channel represented by face-to-face meeting was generally considered important regardless of the locations of firms. A little more firms in Gangnam-gu put importance on face-to-face meeting in the relationship with cooperative firms than in the relationship with sellers and buyers. In contrast, a little more firms in the provinces placed importance on face-to-face meeting in the relationship with sellers than in the relationship with cooperative firms.

As a next step, respondents were asked to compare the importance of the two communication channels in each relationship (Table IV-35). On the whole, face-to-face

meeting was overwhelmingly viewed as more important than electronic communication channels irrespective of the locations of respondents, as implied in above.

In detail, about 80% of the firms in Gangnam-gu considered that face-to-face meeting is more important than electronic communication channels in the relationship with cooperative firms and about 62% of the firms in the provinces gave the same answer.

**Table IV-35 The comparison of the importance of the two types of communication channels in the relationship with cooperative firms by region**

Scale*		Region			
		Gangnam	Other Seoul	The provinces	Total
Face-to-face meeting > electronic communication channels	Fre.	12	20	8	40
	%	80.0	51.3	61.5	59.7
Face-to-face meeting = electronic channels	Fre.	2	12	4	18
	%	13.3	30.8	30.8	26.9
Face-to-face meeting < electronic channels	Fre.	1	7	1	9
	%	6.7	17.9	7.7	13.4
Total	Fre.	15	39	13	67
	%	100.0	100.0	100.0	100.0

\*Originally asked on a five-scale basis. Face-to-face meeting > electronic communication channels include ① face-to-face meeting is much more important and ② face-to-face meeting is more important than electronic channels. Face-to-face meeting = electronic channels means ③ face-to-face meeting is equally important as electronic channels. Face-to-face meeting < electronic channels include ④ electronic channels are more important than face-to-face meeting and ⑤ electronic channels are much more important  
Source: Questionnaire survey

On the contrary, while about 69% of the firms in the provinces considered face-to-face meeting as more important than electronic communication channels, about 60% of them gave the same answer in the relationship with buyers and sellers (Table IV-36).

**Table IV-36 The comparison of the importance of the two types of communication channels in the relationship with sellers and buyers by region**

Scale	Region	Gangnam	Other Seoul	The provinces	Total
	Face-to-face meeting > electronic communication channels	Fre.	9	18	9
%		60.0	46.2	69.2	53.7
Face-to-face meeting = electronic channels	Fre.	4	11	3	18
	%	26.7	28.2	23.1	26.9
Face-to-face meeting < electronic channels	Fre.	2	10	1	13
	%	13.3	25.6	7.7	19.4
Total	Fre.	15	39	13	67
	%	100.0	100.0	100.0	100.0

\*Originally asked on a five-scale basis. Face-to-face meeting > electronic communication channels include ① face-to-face meeting is much more important and ② face-to-face meeting is more important than electronic channels. Face-to-face meeting = electronic channels means ③ face-to-face meeting is equally important as electronic channels. Face-to-face meeting < electronic channels include ④ electronic channels are more important than face-to-face meeting and ⑤ electronic channels are much more important

Source: Questionnaire survey

Although it was hard to make a clear conclusion due to the insufficient number of sample firms, the firms in Gangnam-gu relatively put more emphasis on face-to-face meeting in the relationship with cooperative firms and those in the provinces placed more importance on face-to-face meeting in the relationship with buyers and sellers.

The importance of face-to-face meeting in the relationship with buyers and sellers by the firms in the provinces is mainly explained by the fact that one of the most important location factors for them was the proximity to potential buyers or sellers. The importance of face-to-face meeting with cooperative firms may also be partially explained considering that some firms in the provinces have cooperative relationship with local firms. Even in cases where cooperative firms were located in remote areas, the firms in the provinces could visit them on a regular basis because the number of cooperative firms was usually small.

The importance of face-to-face meeting in the relationship with cooperative firms by the firms in Gangnam-gu can be also explained in the same way. Many cooperative firms may be located in Seoul or within the Seoul metropolitan area. Or because their number was not large,

the firms in Gangnam-gu did not seem to have any difficulty in meeting and consulting them located in the provinces.

Then, one of the most interesting findings of this section comes from the fact that the firms in Gangnam-gu put noticeable importance on face-to-face meeting in the relationship with sellers and buyers. How can the firms in Gangnam-gu maintain the face-to-face contact with potential buyers or sellers that were usually innumerable? In an effort to get an answer to this question, in-depth interviews were conducted and the result was summarized in the next section.

## **5.2. Importance of proximity to buyers and sellers**

To a large extent, the situation on the locations of public B2B e-MPs was described based on the questionnaire survey. However, it is too early to clearly identify the location factors that public B2B e-MPs should take into account. In this section, spatial aspects are examined based on relocation of public B2B e-MPs and supporting organizations of the e-MPs. They are regarded as the evidences with which to speculate the future trend of the locations of public B2B e-MPs in Korea to some degree. In-depth interviews with the managers of some e-MPs are mainly used in the study.

### **5.2.1. Relocations**

During the in-depth interviews with some public B2B e-MPs, it was discovered that some of the firms were relocated from their sites. The reasons for the relocation are indicative of what factors should be considered important when they open public B2B e-MPs in terms of spatial strategy. The three cases are introduced in the section with the explanation of the general characteristics.

## (1) EngineM.com

### ■ Company profile

EngineM.com was separated from the computer-related department of Ssangyong Heavy Industries Co., Ltd. in March 2000<sup>46</sup>. The e-MP com is mainly divided into two parts. The first one is production parts market and the other is the service parts market. Production parts market is the e-MP where the components needed to produce engines are traded. Service parts market is the e-MP where the components that are required to repair the engines are traded. The two types of markets are diagrammed in Figure IV-3.

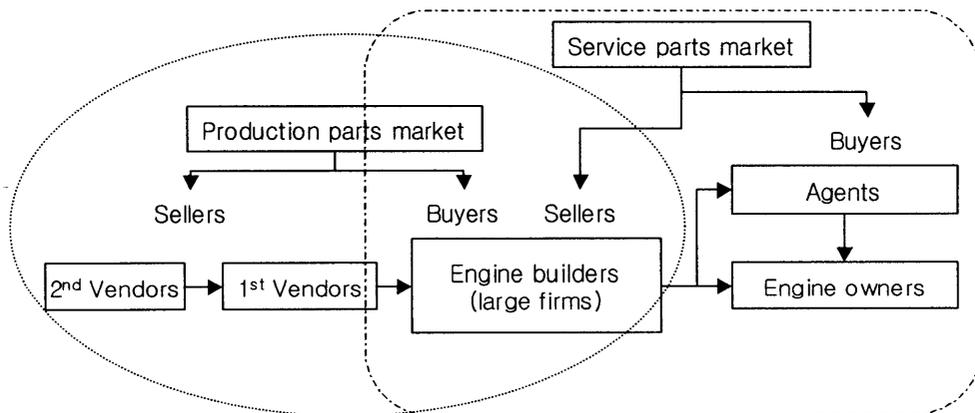


Figure IV-3 Business models of EngineM.com

### ■ Business models

EngineM.com originates from a large manufacturing company, Ssangyong Heavy Industries, Co. The major sellers and buyers of EngineM.com are associated companies with the parent company. However, it does not pursue the private e-MP that is driven by a single seller or buyer. Rather, EngineM.com attempts to become a public matchmaker. In the past, it

<sup>46</sup> Ssangyong Heavy Industries Co. renamed it as STX Corporation in May, 2001.

tried to attract a large engine building company as a buyer. However, the engine builder was reluctant to become a member of an e-MP that was established by its rival company. The issue was related to sharing information or knowledge between rival companies. Nevertheless, EngineM.com is still attempting to attract engine builders to its web site. A large engine builder that has no relation to EngineM.com is expected to become a member in the near future.

To summarize, EngineM.com is a public e-MP that is closer to private e-MPs at the moment because of its born nature characteristics as the subsidiary of a large manufacturing company.

#### ■ Locations of sellers and buyers

The main buyers in production parts market of the e-MP are STX corporations and its affiliated company by that time. STX (the former Ssangyong Heavy Industries Co.) was founded as a diesel engine manufacturer in December 1976 and has expanded its business range to power generation plants, environmental facilities and alternative energy systems.

The affiliated company was separated from STX corporation in June 2001. The company is focused on producing and selling critical materials and parts of diesel engines, high-performance turbochargers for marine engines, hard-to-make casting materials and parts for industrial machines materials, and parts for the shipbuilding industry. Besides, agents are also buyers in service parts market.

The e-MP is planning to extend their business area into Europe in the near future. However, there are many initiatives to attract potential customers for global sourcing. The two main buyers are located in Changwon-city, Gyeongsangbuk-province and in Daegu-city. About 90% of sellers are located in the southeastern part of the country including Gyeongsangnam-do, Busan, Gyeongsangbuk-do, Daegu-city, and Ulsan-city. This pattern reflects the existing spatial distributions of engine production industries.

## ■ Company location

When EngineM.com was founded in March, 2000, it was located in Changwon, Gyeongsangnam-do. Because the company was originally the computer system department of STX, it was natural to be located inside the parent firms at its inception stage. Then, it moved to Seoul after several months. The company thought that it would be favorable to be located in Seoul, especially Gangnam-gu to push forward with their work. The central area of advanced IT technologies was attractive to the company who would open public B2B e-MP. In addition, because it had the strategic alliance with a firm in Seoul, the location in the region was expected to encourage active exchange of information and communications.

However, it went back to its original place, Changwon city, where most of sellers and buyers were located. It was because the company realized that the close relationship with buyers and sellers was the most essential part for constructing and maintaining e-MPs successfully. The relationship based face-to-face communications was required to give the credibility of the value of public B2B e-MPs. That is to say, the continuous communication with sellers and buyers was considered as an important factor to succeed in business and face-to-face meeting based on physical proximity was viewed as significant in continuous communication. The familiarity with brick and mortar was a top priority in their businesses

## ■ Possibility to break off existing relationship between trading partners

Main and auxiliary marine diesel engines are often considered as the core of machinery industry based on high technology. The engines are composed of various complex parts and highly-skilled workers are needed to produce the parts and the engines. Therefore, parts producers and engine builders have to be close enough to accumulate the high-level of trust between each other.

Because the specifications of the components were well organized and classified from the past, it seemed easy to make e-catalogs, which is the prerequisite for e-MPs. Therefore, the industry was reviewed as one of the industries that can be adapted to e-MPs well. However, unlike the expectation, the importance of trust-based relationship decreases the possibility that buyers choose new sellers in e-MPs. Price condition is not so important as to

give up the existing suppliers. When buyers select new customers, they should send blueprints of components to them and let them know in detail the attributes of the components they want. When buyers continue to trade with existing suppliers, they only have to order the components they need. In this situation, the function of e-MPs as searching for new buyers or sellers based on price condition is weak. Especially in production parts market, RFQ (request for quote) related functions of the e-MP are rarely used at the moment. After sales services and quick parts supply are more significant than price condition. It is another reason why buyers want to continue with existing relationships, instead of taking a risk at searching for new trading partners.

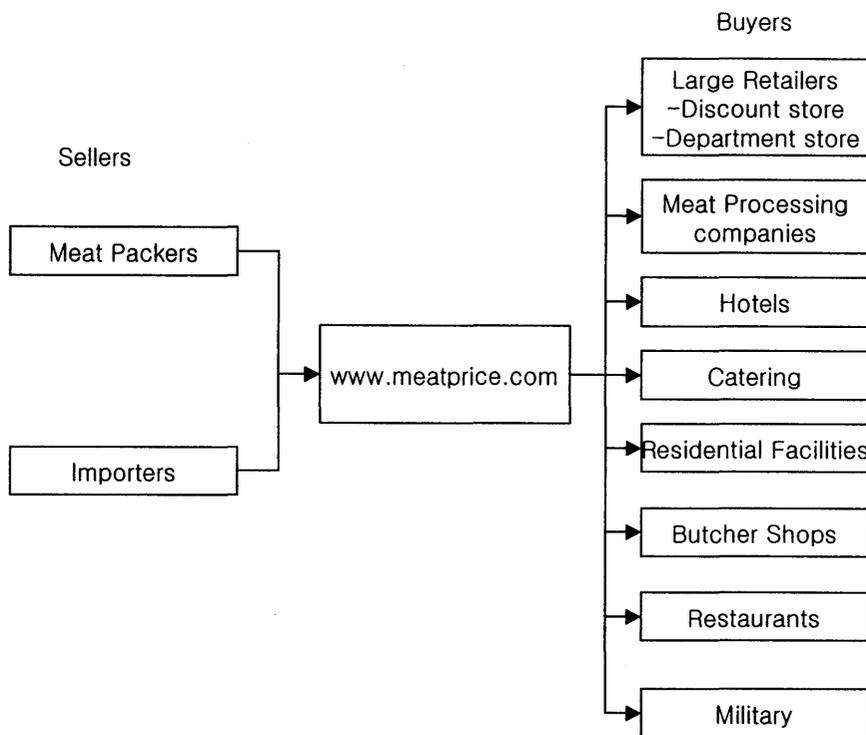
## **(2) Meatprice.com**

### **■ Company profile**

Meatprice.com was founded in 2000 and the public B2B e-MP (<http://www.meatprice.com>) opened in August 2000. Experts who had worked for large retailers started the company. Because they already knew market situations, they could meet the needs of online customers accurately. During the first six months of this year (2002) the transactions through the e-MP amounted to 7.5 billion won. 30% of the amount resulted from general auction and general reverse-auction and the remaining 70% came from special reverse-auction.

### **■ Target market**

Main buyers in Meatprice.com encompass large retailers such as discount stores and department stores, meat processing companies, hotels, residential facilities, butcher shops, restaurants, catering, and military. Sellers are meat importers and meat packers. Many of customers of Meatprice.com work as sellers and buyers depending on products. Target market of the e-MP is summarized in Figure IV-4.



**Figure IV-4 Target market of Meatprice.Com**

Imported meat is more appropriate to be traded in e-MPs than domestic meat. It is because imported meat has well-organized specifications. In other words, it is more standardized than domestic ones. Buyers and sellers are able to communicate with each other easily only by recognizing several conditions—countries from which products are imported, brands, the parts of meat, etc. If they are certain about the qualities of products, they can trade online without looking at products. Meatprice.com provides the service to inspect meat before it is delivered to buyers to guarantee the qualities of meat.

■ **Business model**

The main auction methods that Meatprice.com provides include general auction, general reverse-auction, and special reverse-auction. General auction is controlled by sellers, the bid period of listed products is limited and buyer's highest offered price is accepted automatically.

In comparison, general reverse-auction is controlled by buyers and buyers purchase the products of a seller whose offered price is lowest automatically. In addition, special reverse-auction gives more flexibility to buyers than general counterpart. Whereas traders are automatically decided by the condition of the lowest price in general reverse-auction, buyers can choose traders by considering other personal preferences such as brand, country in special reverse-auction. Special reverse-auction is efficient to the buyers who want to select the sellers by themselves, not completely relying on computer e-trading system.

The method of contracts in Meatprice.com is somewhat different from that of other public B2B e-MPs with exchange models. In general, sellers and buyers can accomplish trading only by making contracts between trading partners once in public B2B e-MPs with exchange models. However, buyers and sellers in Meatprice.com do not make contracts directly. Instead, sellers make contracts with Meatprice.com first and Meatprice.com make contracts with buyers next. The revenue source of Meatprice.com is price-differences. It is more stable revenue source than transaction fees or membership fees most public B2B e-MPs with exchange models about industrial products count on. A double-contract system becomes possible because meat is a VAT (value added tax)-exemption product.

Besides, the company extends business area into making private B2B e-MPs for customers. They take responsibility for maintaining the website and earn profits by getting transaction fees. They expect the growth of private B2B e-MPs in the industry of animal husbandry and try to become competitive in system construction and management as the second business model. The company created private B2B e-MPs for Lotte.com in 2002. Lotte.com purchases most of livestock products in the website and Meatprice.com gets 1% transaction fees.

### ■ Company location

Originally the company was located at Yeoksam-dong, the center of Korean IT industries. The area is so-called Teheran Valley, which is named after Silicon Valley. The company stressed an importance on image as advanced IT based firms. However, before long it moved to Yongin city, Gyeonggi province around Seoul. Currently it is located inside the complexes of storage warehouses. It was due to the realization of the importance of the closeness to

storage warehouses. It results from the attributes of traded products in the e-MPs. The guarantee of product quality is a top priority to attract many buyers to take part in the e-MP. The inspection of the product is indispensable for impressing credibility of buyers. Because major traded product in Meatprice.com is imported meat, it is kept in storage warehouses. It is important to carry out immediate inspections when the products arrive at the storage warehouses. Therefore, the company moved to the center of the complexes of storage warehouses in the Seoul metropolitan area. It is an example that demonstrates that e-MPs are still dependent on some physical location factors.

#### ■ Customer location

When buyers upload the list of products, they fill out the forms to let sellers know accurate product information. There is an optional field to point out the area where storage warehouses of sellers are located. After buyers compare transportation costs by regions, using the calculating function of the system, they can limit the locations of storage warehouses into close areas. However, it is not mandatory and proved that many buyers did not use the function. It is mainly because the quantities that are traded at once are large enough to compensate for the differences in cost by regions.

In many cases, buyers also are sellers and vice versa in the Meatprice.com markets. They are mainly concentrated around the Seoul metropolitan area. 70% of the firms are located in Seoul, followed by Gyeonggi (20%). Chungnam and Gyeongbuk area take the remaining 10%.

#### ■ Limit of global sourcing in Food and beverage e-MPs

Global sourcing is known as the advantage firms take of e-MPs. Some firms use global foreign marketplaces to source low price products. It is not necessarily applied to all the products. The sourcing prices in the global foreign marketplaces can be lower than those in domestic marketplaces. However, the prices of agricultural and livestock products are changed very often by industrial environments. As all the processes are carried out, prices tend to be changed. Then, price reduction can be useless if the price becomes lower at the time when the products are delivered to buyers. It means that e-MPs in those industries are

better equipped to focus on domestic markets, rather than global markets.

Another decisive factor is the attribute of products. The products that can be stored in warehouse for a long time can be purchased in a large amount. There are various products that should be purchased everyday or in short term, however. Delivery time is much important in those products. So, it is not reasonable to purchase the products by foreign global e-MPs, regardless of lower prices.

### **(3) AnySteel.com**

AnySteel.com is another example of relocating the firm from Seoul to provinces, Gyeonggi-province to maintain close contact with their potential customers. AnySteel.com is the case firm of the public B2B e-MPs in steel industry and is introduced in a detail. In this section, only the part of company location is shortly dealt with.

AnySteel.com was located in Mullaedong, Yeongdeungpo-gu, Seoul at the inception stage because the parent firm, Hwanggum Steel & Technology, Co.,Ltd. was located there. Then, when it started businesses independently, AnySteel.com looked for a new location. One of the important location factors was to improve the image of the firm as an IT-based technology company. Therefore, the company seriously considered being located in Gangnam area. However, the firm was finally located in Galwol-dong, Yongsan-gu, Seoul. It was the result of the compromise between increasing the image as an IT firm and maintaining the physical proximity to buyers and sellers that are clustered in Mullaedong.

However, it moved to Sihwa industrial complex in Ansan. The reason the company moved to this location is related to the restructuring process of the parent company, Hwanggum Steel & Technology Ltd. The company closed some of its production plants scattered all over the country and relocated the rest to the industrial complex. The Sihwa industrial complex is one of the biggest industrial complexes close to Seoul. For AnySteel.com, the location was beneficial because other companies in the steel industry who could function as potential sellers and buyers were already there and many related firms were expected to move to this location in the near future.

## **5.2.2. Supporting organizations of public B2B e-MPs**

The second spatial phenomenon related to spatial strategy is an effort to enhance the supporting organizations by the firms operating public B2B e-MPs. During the interviews, many firms emphasized the importance of offline business activities to survive in EC businesses. The recognition of the importance on the offline business activities leads to the effort to strengthen the opportunities to contact potential customers in diverse ways. It is worth observing carefully because such efforts are closely interwoven with the strategic use of the physical spatial dimension. In this section, it is dealt with in terms of establishing and expanding the supporting organizations to help their marketing and logistics related activities. The practical operation of supporting organizations is shown in various ways. The cases of three public e-MPs are introduced based on the results of in-depth interviews.

### **(1) OILPEX**

Like AnySteel.com in steel industry, OILPEX is also a case firm that will be dealt with in petroleum industry in chapter five. In this section, the development of the supporting organizations of OILPEX is briefly introduced.

The company is located in Galwol-dong, Yongsan-gu, Seoul. A regional agency was established in Daegu metropolitan city in February 2001, followed by those in Goyang-city of Gyeonggi-province, in Gwangju metropolitan city, and in Daejeon metropolitan city. Each agency covers wide areas and plays a central role in sourcing buyers. The agencies are not branch offices and they are independent firms. They make contracts with OILPEX and earn profits by getting some parts of the transaction fees of the buyers they sourced. OILPEX recognized the importance of marketing to attract potential buyers and sellers into the e-MP. It expanded regional agencies because the marketing based on face-to-face meeting with continuous communications was essential for the success of public B2B e-MPs. More interestingly, the regional agencies sometimes order over OILPEX for their buyers who are not accustomed to online transaction systems. The interviewee of the company compared OILPEX to the Korea Stock Exchange and regional agencies to security corporations. Security corporations order stocks for their customers even after the online trading with the

Internet was introduced. Because many buyers have difficulty in logging into the system and complete transactions, regional agencies help the customers to conveniently trade over OILPEX. The headquarters in Yongsan-gu, Seoul is only concentrated on sourcing the buyers in the Seoul metropolitan area and sourcing sellers. The selection of the regional centers to cover wide provincial areas is strategically important for regional agencies. It is an example of enhancing offline business activities for the successful operation of public B2B e-MPs.

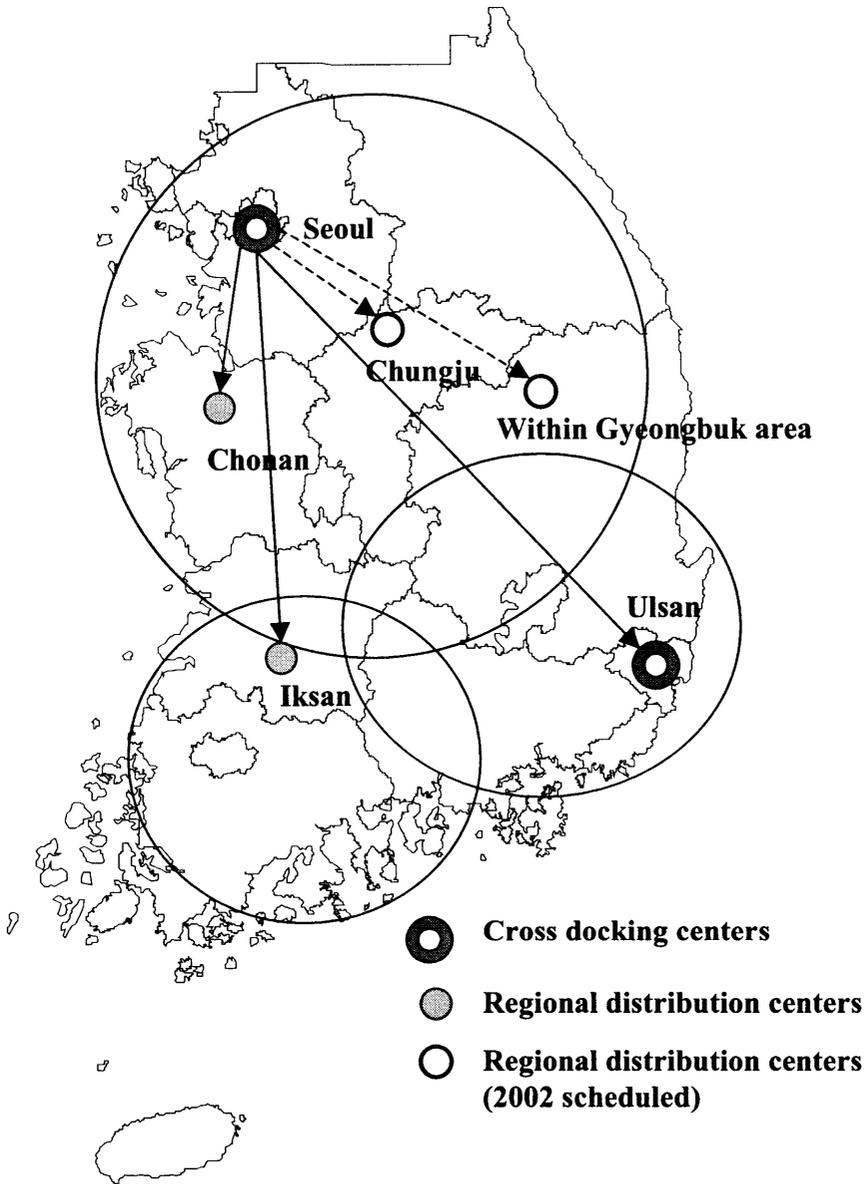
## **(2) MRO KOREA**

MRO Korea is a public B2B e-MP with the agent-model. It was founded in 2000 with the investment of SK Global (51%) and Grainger (49%), one of the biggest MRO companies in the USA. It contracted to SK Corporation and SK Chemicals to in total provide them with MRO products, which was sometimes called as Integrated Supply (IS). In addition, About 125 companies have bought MRO products from MRO Korea and approximately 900 companies have sold their products to MRO Korea since 2001. At the end of June 2000, the spatial locations of buyers are dispersed ranging from Gyeonggi, Seoul through Chungnam/Daejeon, Jeonnam/Gwangju, Jeonbuk to Gyeongbuk/Daegu and Gyeongnam, Busan, Ulsan. By comparison, one out of the two sellers is located in Seoul. The other sellers are located in Gyeonggi, Chungnam, and Gyeongbuk provinces. The proportion of the foreign sellers amounts to 10%.

Buyers get products from the remote suppliers. For example, buyer A purchased MRO products from the suppliers that were located nearby. Now, with the help of MROKOREA, it can get more competitive products from more remote suppliers. In fact, buyer A has potentially more suppliers than before because MROKOREA divided the types of products into more diverse categories to meet buyers' needs. However, the firm does not know where they are provided in many cases. The only supplier they can look at is MROKOREA. On the other side, suppliers also have an opportunity to trade with more buyers. Likewise, they do not know who their buyers are. The only buyer they can look at is also MROKOREA.

MROKOREA operates its own Cross Docking Centers and regional distribution centers (Figure IV-5). Cross Docking Centers are established and managed directly by MROKOREA. It is basically in charge of delivery of products to the customers in provincial areas. Cross

Docking Centers also attempt to source potential regional buyers and support marketing activities. They provide technical support and pay claims. They try to source competitive regional suppliers and manage them. They manage stocks and strategic products. On the other side, there are regional distribution centers that play almost the same role as Cross Docking Centers. They deliver products to regional customers in local areas, source the products that are required emergently, and support after sales services. However, they are not directly managed by MROKOREA. Instead, they cooperate with MROKOREA as strategic alliance partners. By the introduction of Cross Docking Centers and regional distribution centers, suppliers are just responsible for conveying traded products to the centers. Then, MROKOREA transports them to buyers. The prices of products produced in the Seoul metropolitan area tend to be cheaper than those of regional suppliers. Therefore, the introduction of provincial storage warehouses encourages provincial buyers to be supplied the products with lower price and higher quality from the suppliers of the Seoul metropolitan area.



Source: MROKOREA  
 (<http://www.mrokorea.co.kr>)

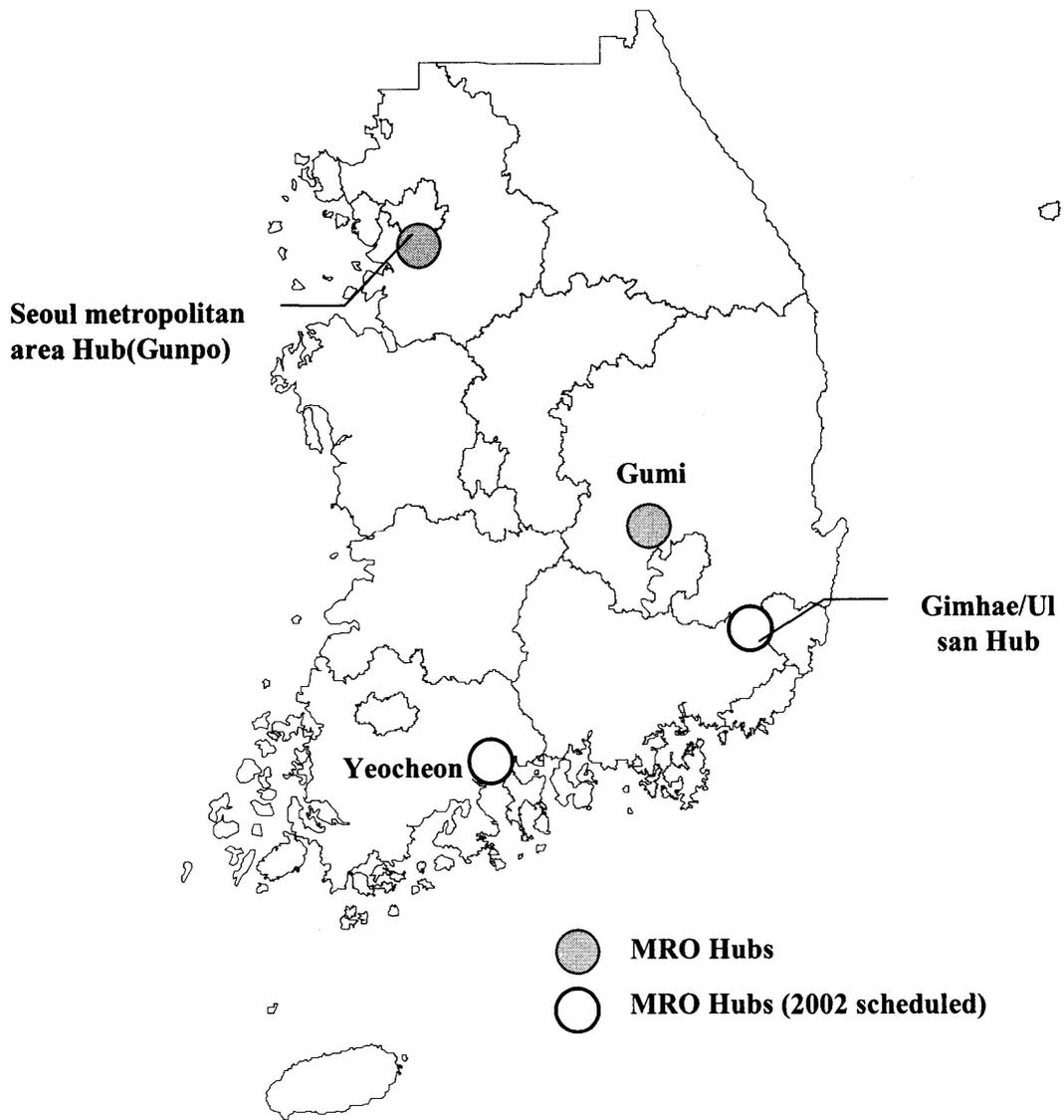
**Figure IV-5 Supporting organizations of MROKOREA**

### **(3) LGMRO**

The business activities of LG MRO go back to 1997. LG Mart Co., one of the largest distributors in retailing industry, started B2B EC in MRO industry. Then, LG MRO was spun off from LG Mart after a five-year experience in 2002.

LGMRO operates FA systems to serve the dispersed customers across the country. FA stands for Find Assistant. Find Assistant is the person who provides customized services to help the online transactions of buyers. They respond to the request of customers and solve the problems related to transactions and check the delivery in time. The FA system of LGMRO is operated based on the areas divided into three such as Seoul/Gyeonggi, Chungcheong/Jeolla, and Gyeongnam/Gyeongbuk areas. Three FAs are in the Seoul/Gyeonggi area, seven in the Chungcheong/Jeolla, and seven in the Gyeongnam/Gyeongbuk. The FAs stay in the offices of major buyer firms by each area and serve the customers of a specific region. The interviewee of LGMRO mentioned that the sales activities to attract potential customers into the e-MP were the most important parts among their various businesses and face-to-face meeting was inevitable in the sales activities. LGMRO chose to make their workers to reside close to main customers rather than the company is located close to them.

LGMRO is also establishing their own storage warehouses called MRO Hubs to help convenient delivery of traded products in the e-MPs (Figure IV-6). Two storage warehouses were already constructed in Gumi, Gyeongsangbuk-province in July, 2001 and in Gunpo, Gyeonggi-province in April, 2002. Additional ones are supposed in Yecheon in Jeollanam-province and Gimhae/Ulsan in Gyeongsangnam-province in the near future. The construction of storage warehouses will accelerate the connection between remote buyers and sellers. The sellers who were reluctant to supply a small amount of products to distant buyers because of transportation cost can relieve the pressure of the cost to some extent. Sellers only have to deliver to the closet regional warehouse to them.



Source: LGMRO (<http://www.lgmro.co.kr>)

**Figure IV-6 Supporting organizations of LGMRO**

#### **(4) Others**

Other major public B2B e-MPs also dispatch their workers to the regional centers where their buyers are clustered. In case of Korea e-Platform Co., as one of the major MRO public e-MPs, a few employees stay in Gumi industrial complex, and Changwon and Gyeongsangnam-provinces, according to interview. It is because their major buyers are agglomerated in the area. The iMarketKorea, the biggest MRO public marketplace, also dispatches their workers to major customers in the provinces. The iMarketKorea is introduced in the next chapter in greater detail.

## 6. Summary: Examination of research hypotheses

The examined results of the two main hypotheses of H1 and H2 are summarized in this section. The main and sub hypotheses are restated first. Then, the results are summed up following the six sub hypotheses. For instance, R1-1 (result 1-1) means the analysis result of H1-1 (sub hypothesis 1-1) and R2-1 (result 2-1) means the analysis result of H2-1 (sub hypothesis 2-1).

H1: Regardless of the origin of public B2B e-MPs from advanced IT technologies compressing time and space, **the operators of public B2B e-MPs are likely to be concentrated in specific regions with favorable physical location factors rather than to be dispersed across the country.**

**H1-1**: The operators of public B2B e-MPs are likely to be concentrated in a few specific regions. The values of the spatial indices such as LQs and the coefficient of localization are likely to represent the high concentration of the firms operating public B2B e-MPs in a few specific regions.

**R1-1 The high concentration of the firms operating public B2B e-MPs in a few specific regions**

■ **High value of LQ in Seoul-si and Gangnam-gu**

① The value of LQ for Seoul about the spatial distribution of the operators of public B2B e-MPs amounts to 3.91 based on the spatial distribution of population, 3.51 based on that of total establishments. The other entire metropolitan cities and provinces showed the values less than one.

② The calculation based on the spatial distribution of the firms in wholesale and commission trade still shows the concentration in Seoul. But, the value is 1.84, which is much lower than those based on population and total establishments.

③ Within Seoul, the value of LQ for Gangnam-gu is remarkably higher than other districts. The value of Gangnam-gu based on the distribution of population is 5.89 and that on

the distribution of total establishment is 4.34. The LQ even based on the distribution of wholesale and commission trade is 3.94 in Gangnam-gu.

■ **High value of the coefficient of localization on the firms operating public B2B e-MPs**

④ The value of the coefficient of localization of public B2B e-MP industry based on population is 0.62 in terms of the whole country. The value based on total establishments is 0.60, which is almost the same as the value based on population. When considering zero means the equal distribution of a given industry with base magnitude, the value of 0.62 and 0.60 means the considerable deviation from the spatial distribution of population and total establishments. Even though the value was lower in the measurement based on total establishment (0.45) within Seoul, the concentration of the firms operating public B2B e-MP in a few districts was still noticeable within Seoul.

⑤ The value of the coefficient of localization based on the Internet users is almost the same as those based on population and total establishments. It is because the users of the Internet are dispersed across the country due to the rapid diffusion of computers and related IT infrastructures over time. By comparison, the value based on the regional registration of .kr domain is 0.27 and lower than those based on the other base magnitudes. When taking into account the fact that about 86% of .kr domain is “.co.kr” domain used for commercial purpose<sup>47</sup>, the spatial distribution of the regional registration of .kr domain is more or less similar to that of the operators of public B2B e-MPs.

**H1-2**: The operators of public B2B e-MPs are more concentrated than the firms of seemingly related industries such as traditional wholesale and commission businesses and B2C e-MPs in terms of the coefficient of geographic association.

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<sup>47</sup> According to Korean Network Information Center, the ratio of .co.kr domain is 85.86%, followed by .pe.kr domain (6.18%) as of October 2002 (<http://isis.nic.or.kr>).

### **R1-2 Comparison with traditional wholesale and commission trade and B2C e-MPs**

⑥ According to the index of geographic association, the spatial distribution of the operators of public B2B e-MPs is considerably different from that of wholesale and commission trade in Seoul (0.43) as well as across the whole country (0.39).

⑦ The spatial distribution of the operators of B2C e-MPs<sup>48</sup> is geographically associated with that of the operators of public B2B e-MPs in terms of the whole country to a considerable extent (0.11). Interestingly however, the degree of the geographic association between the two industries within Seoul is lower (0.25) than that across the whole country.

**H1-3**: The location factors of the operators of public B2B e-MPs are likely to be differentiated by the region they are located in.

### **R1-3 Differentiated location factors by region**

⑧ The high concentration of the firms of public B2B e-MPs in Seoul can be explained by the urbanization economies relevant to abundant physical and social infrastructures that Seoul, the capital of Korea has developed over several decades.

⑨ The high concentration of the firms of public B2B e-MPs in Gangnam-gu is mainly explained as the expectation to enjoy unique place-specific conditions as the center for the most innovative and promising IT firms in Korea, in addition to traditional urbanization economy.

⑩ The firms in the provinces tend to show completely different location factors from those of the firms in Seoul, especially Gangnam-gu. The familiarity of the managers with the regions and the physical closeness to the source areas for raw materials of traded products or the production plants of traded products were considered most important. The spatial proximity to sellers or buyers of traded products was also taken into account seriously. The low rental fees of buildings followed them.

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<sup>48</sup> While the information on the spatial distribution of the operators of B2B e-MPs as a main topic of this study was checked with the phone call survey and questionnaire survey several times, that on the operators of B2C e-MPs relied on the data from KbizBrain.Com. It provides the basic information on the websites where B2C transactions are carried out. There may be some duplicated counts on the spatial distribution of the operators of B2C e-MPs when a firm provides more than one website. Some may not be in operation.

**H1-4:** The differences in the location factors by region are likely associated with the different characteristics of the operated public B2B e-MPs by the firms in different regions.

**R1-4 Regional differences of the attributes of public B2B e-MPs**

⑪ Traded products are differentiated by region. 100% of the public B2B e-MPs in the provinces are the vertical B2B e-MPs that serve specific industries, according to questionnaires as well as phone call survey. By comparison, the e-MPs in Seoul, especially in Gangnam-gu show the high percentage of horizontal marketplaces, especially MRO public B2B e-MPs.

⑫ The high ratio of horizontal, especially MRO public B2B e-MPs in Gangnam-gu results in the differentiated characteristics of their business activities. The differences in the characteristics are summarized in Table IV-37.

**Table IV-37 Differences in some characteristics by region (questionnaire analysis)**

Items	Gangnam-gu	Other Seoul	The provinces
The ratio of MRO public B2B e-MPs	31.3%	25.6%	0.0%
The ratio of the firms that answered that buyers and sellers were dispersed across country to some extent	53.9%	34.2%	30.0%
The ratio of the firms that answered that traded products were standardized to some extent	53.3%	42.1%	16.7%
The ratio of the firms that answered that codified knowledge was exchanged with buyers and sellers to some extent	64.3%	60.5%	18.2%
The ratio of the firms that answered that tacit knowledge was exchanged with buyers and sellers to some extent	35.7%	42.1%	45.5%
The ratio of the firms that answered that trust was a more important factor than other factors such as price in the relationship with buyers and sellers to some extent	64.3%	73.7%	81.8%

Notes) The table is the summary of table IV-21, 29, 22, 23, 25, and 27.

Source: Questionnaire survey

A higher percentage of the operators of public B2B e-MPs in Gangnam-gu answered that

their buyers and sellers were dispersed across the country than those in other areas. The higher percentage of those in Gangnam-gu also responded that the traded products over their e-MPs were standardized to some extent. This trend is more related to the lower percentage of the exchange of tacit knowledge and less to the trust factor in business activities with buyers and sellers.

**H2: The increase in the use of electronic communication channels is not likely to diminish the importance of face-to-face meeting in the businesses related to public B2B e-MPs, irrespective of the high reliance on electronic networks.**

**H2-1:** Face-to-face meeting is not likely to be less important than electronic communication channels in the business activities of the firms operating public B2B e-MPs.

**R2-1 Relationship between electronic communication channels and physical communication channels**

① Electronic communications channels defined as the communications through e-mails, telephone/fax, the Internet, video conferencing play an important role when the firms of public B2B e-MPs conduct online businesses, according to questionnaire survey.

② The questionnaire survey reveals that face-to-face meeting is generally considered more important than electronic communication channels in doing online businesses, regardless of their active use of electronic communication channels.

③ Even if it is hard to make a clear conclusion due to the small size of sample firms and the low differences in the percentage, the regional differentiation on the use of the two communication channels is as follows, according to questionnaire survey.

(i) The firms in Gangnam-gu placed more importance on electronic communication channels than those in the provinces in the relationship with buyers and sellers as well as with cooperative firms.

(ii) The firms in Gangnam-gu also put more importance on face-to-face meeting than those in the provinces in the relationship with cooperative firms. The percentage at which the firms in Gangnam-gu answered that face-to-face meeting was important in the relationship with sellers and buyers was almost the same as those in the provinces.

(iii) Interestingly, the firms in Gangnam-gu placed more importance on face-to-face meeting in the relationship with cooperative firms than with buyers and sellers. Those in the provinces put more importance on face-to-face meeting in the relationship with buyers and sellers than with cooperative firms.

**H2-2**: The importance of the physical communication channel such as face-to-face meetings is likely to be reflected in offline dimension in some ways.

**R2-2 Reflection of the importance of face-to-face meeting on the business organizations in physical space**

⑤ One of the most important location factors of the firms operating vertical public B2B e-MPs in the provinces is to be physically close to their potential buyers and sellers for continuous communications based on face-to-face meeting.

⑥ Some cases are introduced where the firms operating public B2B e-MPs in Seoul moved to the provinces to intensify offline business activities such as continuous physical communications with their buyers and sellers or the easiness of product quality control etc.

⑦ The firms of some MRO (horizontal) public B2B e-MPs in Seoul showed their own ways of maintaining face-to-face meeting with their buyers and sellers. Some created the supporting organizations in the provinces in the form of regional agencies, cross docking centers, and regional distribution centers. Others dispatched their staff to the provincial major customers to help them and source provincial buyers and sellers.

## **V. Firms trading over public B2B e-MPs**

### **1. Introduction**

Five public B2B e-MPs are chosen for the case study of Chapter V. The change of the spatial coverage after the introduction of public B2B e-MPs is investigated. The third main hypothesis is examined. Two sub-themes are verified through the analysis on the participants of the five public B2B e-MPs.

**H3-A: The spatial coverage of the firms that trade over e-MPs is likely to be expanded. H3-B: The impact of public B2B e-MPs on the spatial coverage of buyers and sellers is likely to be differentiated by some attributes of industries and firms.**

H3-1: The degree of the expansion of spatial coverage after the introduction of public B2B e-MPs is likely to be differentiated by industry.

H3-2: Difference in the preference for existing trading partners over public B2B e-MPs is an important reason for the difference in the expansion of the spatial coverage of online buyers and sellers.

### **2. Firms trading over horizontal public B2B e-MPs**

#### **2.1. Case descriptions of eNtoB and iMarketKorea**

Two horizontal MRO public B2B e-MPs are introduced in this chapter. Digital Times<sup>49</sup> reports the sales of major MRO e-MPs for the first half-year of 2002. It can be used as an indication of the status of the MRO public B2B e-MPs in Korea. According to it, the total sales over the MRO division of iMarketKorea (<http://www.imarketkorea.com>) during the period adds up to 160 billion KRW, of which 1.5 billion won are reported as a net gain. The

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<sup>49</sup> 2002-07-08 Digital Times (<http://www.dt.co.kr>)

amount of sales over eNtoB ([http:// www.entob.com](http://www.entob.com)) stands at 76 billion KRW. The total sales of LGMRO (<http://www.lgmro.co.kr>) running three business divisions including MRO e-MPs, building management, and telecommunication businesses amounted to 110 billion KRW. In addition, the amount of the sales over KoreaePlatform (<http://www.koreab2b.com>) is equal to 28 billion KRW and the traded money over MROKorea (<http://www.mro.co.kr>) was 13.8 billion KRW. The two cases of e-MPs take leading positions.

### **2.1.1. eNtoB (<http://www.entob.com>)**

#### **■ Company profile**

eNtoB (<http://www.entob.com>) , the abbreviation for Electronic Network to Business, was established in August, 2000. It opened B2B e-MP in April, 2001. Five large conglomerates participated such as POSCO, Korea Telecom, Hanjin, Hyundai, KCC. In total, 26 affiliated companies of the five conglomerates took part in the company as shareholders. eNtoB is a public e-MP founded by industrial consortium. Because most shareholders took part in the e-MP as customers, the company could kick off their businesses without a special initial difficulty due to the guarantee of the threshold of traded amounts.

#### **■ Position of eNtoB in MRO industry**

The number of transactions stands at 120,490 and the total sales add up to 147,501 million KRW in 2002<sup>50</sup>. According to the internal estimation of the firm, the total sales over its public MRO e-MP amount to about 29% of the total sales of five major public B2B e-MPs in 2002.

#### **■ Target market**

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<sup>50</sup> The value was acquired on January 7, 2003 over the website of eNtoB.

eNtoB is focused on the transactions of MRO products, or maintenance, repair and operating supplies. MRO products are required across all the industries and items are extremely diverse and eNtoB deals with about 250,000 items. Basically, at the infant stage of their business, shareholder firms were major buyers to help the company to successfully start businesses. Suppliers are divided into two types. The first group comprises firms that have already been the suppliers of online buyers over the e-MP. In other words, the suppliers became the members of the e-MP by the recommendation of their existing powerful buyers. The other group is composed of firms which voluntarily participated in the e-MP to search for new customers. Even though the main buyers of eNtoB are still shareholder firms, the proportion of the buyers not related to eNtoB gradually increases over time, as it is known to provide the products of high quality and lower price. Although eNtoB is the e-MP open to all the types of firms, it does not mean that any firm can be a member of the e-MP. eNtoB has the procedure through which it prevents unqualified suppliers or buyers from being members.

#### ■ Company location

eNtoB is located in Yeoksam1-dong, Gangnam-gu in Seoul. The task force team to prepare for the establishment of the company was located in Myeong-dong, Jung-gu that belongs to a traditional central business district. However, the company decided to locate the firm in the Gangnam-gu, taking diverse location factors into account. It is located along the so-called Teheran valley explained in the above Chapter IV. The firms in Gangnam-gu generally put the highest priority on the convenience of transportation and preferable business infrastructures as the location factors of the company. The existence of a pool of skilled labor was also considered important. The agglomerations of IT-related firms, EC related firms, and the firms in the same industry were attractive location factors to the firm. Moreover, the positive reputation of the Teheran valley as the habitat of innovative IT-related firms was viewed to be helpful in doing businesses (Refer IV-11).

In the interview at the beginning of 2002 with a manager, he expected the exchange of information or knowledge with the related firms located nearby. While the document-based or easily codified knowledge can be transferred, without considering the physical distance between business partners, there are still some barriers to exchange all the types of knowledge

or information. The physical closeness to potential business partners was considered one of the best ways to be accustomed to the atmosphere of the industry and to accept the new information formally or informally.

However, interestingly, the interview with another manager about eight months later shows the change of the recognition of the location advantage of Gangnam-gu. The interviewee put less importance on the local cooperation with the involved technical companies within the district. Unlike the IT companies to whom the continuous communication is important not to be left behind in the rapid technological developments, the more important thing to the public B2B e-MP is the capability of sourcing and marketing, not the technological capability. The prevalence of the public B2B e-MPs based on the agent model, not the exchange model encourages the emphasis on the sourcing and marketing competitiveness to survive unstable economic environments. Because the public B2B e-MPs with the exchange mode do not need to intervene in transactions, they only have to be focused to improve the service quality related to technological competitiveness. However, the proliferation of the agent model places the high priority on the capability to attract customers. To look for the new location with lower cost outside Gangnam-gu can be the practical alternative in the future.

#### ■ Business model and transaction tool

eNtoB utilizes both the exchange model and the agent model. There are many types of transaction tools over the e-MP and some main tools are introduced briefly. Two types of transaction tools represent the exchange model. The first one is the e-catalog transaction between buyers and sellers. Buyers directly make contracts with sellers without the intervention of the e-MP. The second one is the reverse auction system where buyers notice required products and choose the seller that suggested the lowest price.

The agent model is a procurement agency service where the e-MP purchases the required products of buyers and resells them to the buyers. Buyers place orders on the e-catalog whenever they need the products. It is the same as the e-catalog transaction with the exchange model in that the buyers search for the e-catalog and place orders. However, the e-catalog transactions with the agent model are intermediated by an e-MP. Transactions are made twice

between buyers and the e-MP and between the e-MP and sellers.

The transaction over eNtoB is described in detail in the next Chapter VI.

### ■ Payment system

The payments of the transactions over eNtoB are mainly carried out in diverse ways including in cash, by purchasing cards, or by postponed checks. eNtoB has a cooperative relationship with a bank and a credit card company. The payment condition is different by trading partners. In terms of eNtoB, it basically pays twice a month or tries to accept the conditions of sellers when they purchase MRO products in place of customers. In case of the direct transactions between buyers and sellers over the e-MP, the payment system relies on the decision of trading partners. Trading partners choose how to pay according to the volume of traded products and the relationship between them.

### ■ Price down effect

Main functions of MRO e-MPs include the improvement of transaction or market transparency and process innovation. In fact, eNtoB puts more importance on process innovation on a long-term basis than immediate cost reduction. However, because process innovation is not easily detected within short time, customers tend to emphasize price down effect. eNtoB usually suggests the cut-down of the total purchasing cost by 5% when they propose the plans for outsourcing for potential customers. Some cases imply the extent of price down effect in public MRO e-MPs. According to eNtoB, even large customers enjoyed the reduction of total purchasing cost by average 5~12%. Some examples are shown in Table V-1.

**Table V-1 Examples of main customers over eNtoB**

Customer	Items	Business models	Price-down rate of outsourcing
A	MR + O	Outsourcing + Auction	5.3%
B	O	Outsourcing + Auction	12%
C	O	Auction	-
D	O	Auction	-
E	O	Outsourcing + Auction	8.7%

Source: eNtoB

■ **Existence of differentiated price**

The enhancement of market transparency does not necessarily mean the same price for the same items for all customers, according to eNtoB. Two situations are set forward in this regard. First, different prices are provided for the same items by the characteristics of contracts or purchasing volume. Because it is easy to negotiate the price of units when total purchasing amounts are large, those customers take advantage of the reduction of price. By comparison, the customers who purchase over the online e-MP from time to time with a small amount do not enjoy as much price reductions.

The second situation is the possibility that suppliers are reluctant to suggest their lowest price. Because most suppliers are small and medium sized ones, transportation cost is a pressure on them. Furthermore, they do not submit to the loss of the margin by lowering prices in online transactions unless they are sure of large profits in the near future. Sometimes, prices are negotiated in advance when they make transactions over online e-MPs. The situation is actually not very different from that in offline transactions. In spite of the improved market transactions based on excluding the inefficient procedures, the ideal expectations for lowest and open prices are not realized at least at this moment.

### **2.1.2. iMarketKorea (<http://www.imarketkorea.com>)**

#### **■ Company profile**

iMarketKorea was established by the joint investments of ten affiliated companies of Samsung conglomerates in December, 2000. They include Samsung electronics, Samsung Electro-Mechanics, Samsung SDI, Samsung Corporation, and Samsung Engineering.

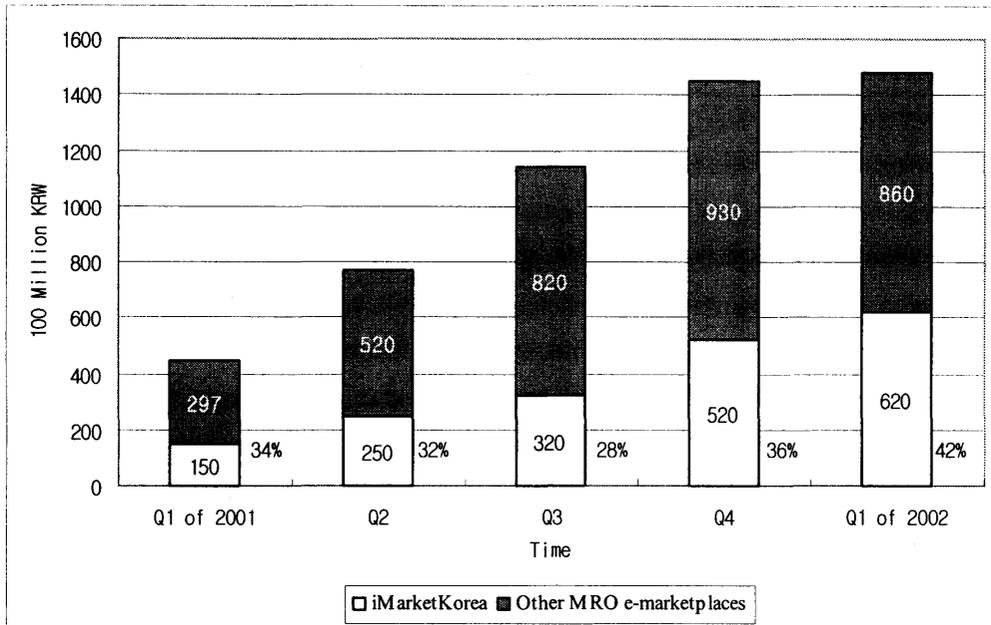
iMarketKorea mainly deals with two different types of products such as MRO products (called MRO division) and Construction raw materials (Matplaza division). This study focuses on MRO products traded over iMarketKorea. The initial client of MRO division of iMarketKorea was Samsung SDI.<sup>51</sup> The e-MP centered on procurement agency service. It purchased MRO products from suppliers in place of their buyers and resold them to the buyers. The company earned profits from price differences. Then, the company opened iMarketAuction in July, 2001.

#### **■ Position of iMarketKorea in MRO industry**

iMarketKorea occupies the first place among MRO public B2B e-MPs. The market share of iMarketKorea is estimated to be about 42% in terms of total traded money over e-MPs. Market share is gradually increasing, according to internal estimation (Figure V-1).

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<sup>51</sup> Samsung Corporation Construction Division, Samsung Corporation Housing Division, and Samsung Engineering started to trade construction materials over the Matplaza division over iMarketKorea from the beginning of the electronic marketplace.



Notes) The value of total sales of MRO e-MPs is based on data from the Korea National Statistical office.

Source: iMarketKorea

**Figure V-1 Estimation of market share by iMarketKorea MRO division**

#### ■ Target market

Basically, iMarketKorea did not have special difficulty in attracting buyers and sellers at the beginning stage. Ten affiliated companies of Samsung conglomerate invested the e-MP and many of them became the buyers of the e-MP for purchasing MRO products. According to an interview in February, 2002, the purchasing from the affiliated companies of Samsung took the proportion of about 70-80% of total traded amounts in the MRO division of iMarketKorea. When the companies began to trade over the e-MP, existing offline suppliers also became the members of iMarketKorea. However, the iMarketKorea is consistently making an effort to diversify their buyers and sellers and to decrease the reliance on their affiliated companies.

#### ■ Company location

iMarketKorea is located in Hoehyun-dong, Jung-gu, a part of central business districts of Seoul. The main location factor was that their affiliated companies were located nearby. Overall business environments were evaluated positively. The interviewee mentioned that face-to-face meeting with customers was very important for their businesses. But, because the production plants of most customers were located in the provinces, the physical closeness to them within Seoul was not possible. Therefore, the importance of face-to-face meeting did not play any important role in selecting the location within Seoul. Rather, the firm adopts the strategy where their employees reside in the provinces for the continuous physical communications with provincial main customers.

#### ■ Business model

The MRO division of iMarketKorea is principally based on the agent model. Procurement agency service for customers represents the agent model. It actively searches for the best suppliers and negotiate the price in place of their buyers. iMarketKorea purchases from sellers and resells to buyers in this service. The service does not only help firms to be provided from more competitive sellers with lower prices, but also contributes to the improvement of inefficiency related to MRO purchasing.

There is the auction service involved with dynamic pricing processes on the other side. The auction service in iMarketKorea includes full bidding service, quick bidding service, and the service for selling idle facilities. iMarketKorea controls the entire procurement processes from RFQ request, sourcing, to bidding completion in place of their buyers in full bidding service. By comparison, buyers and sellers directly communicate and complete the auction processes without the help of iMarketKorea in quick bidding service. The service for selling idle facilities is to search for buyers through bidding for idle facilities that are requested to dispose of by customers. Although iMarketKorea carries out all the related processes in place of customers in the full bidding service and the service for selling idle facilities, the services belong to the exchange model in that contracts are directly made between actual buyers and actual sellers without the intervention of iMarketKorea.

### ■ Sourcing strategy

An essential sourcing strategy of iMarketKorea to choose sellers is to search for competitive sellers and to support them grow. The company basically aims at removing the inefficiency that affects the trading processes. It is one of the most important objectives to discover competitive sellers and provide the opportunity to open up of new market. In the long term, The purchasing from distant competitive suppliers may be common. Competitive sellers in terms of price and quality can be given the chance to extend business area. However, the results of this strategy had not been realized completely. Diverse factors influenced the sourcing strategy at this stage.

### ■ Price down effect

According to iMarketKorea, customers can take advantage of qualitative and quantitative benefits by participating in online transactions over iMarketKorea in diverse ways. The firm reports that customers reduced the total purchasing cost by 10-15% on average in the field of MRO products and construction materials. The improvements in a series of purchasing procedures in terms of MRO division as well as Matplaza division are summed up in Table V-2 and Table V-3.

**Table V-2 Quantitative improvement after the use of iMarketKorea (Construction materials + MRO)**

Type	Improvement	Case
Direct purchasing cost reduction	e-MPs - 10% on average	MRO product – reduction by 27~5% Construction materials – by 8~3%
	Auction (MRO) - 18% on average	Reverse auction/online bidding– by 38~10% Auction (sales of idle facilities) – selling at a high price (120% on average)
Inventory cost reduction	Inventory cost reduction by 50~30% on average	Company A – cost reduction by 1.5 billion KRW (as of 2001, previous inventory cost: 3 billion KRW)
Labor cost reduction	Labor cost reduction by 20% on average (in case of Samsung associated customers)	Company B – by 40% cost reduction Company C – all the MRO purchasing employees are transferred to the work on purchasing other materials
System related cost reduction (about developing and maintaining electronic systems)	- Use of e-procurement system free of charge - Combining the internal ERP system of customers with the system of iMarketKorea	- Purchasing over the website of iMarketKorea
Total purchasing cost reduction by 15~10% on average		Company A – total cost reduction by 13% (of annual purchasing cost 60 billion KRW)

Notes) All the cases excluding those separated as construction materials are related to MRO division within iMarketKorea.  
Source: iMarketKorea

**Table V-3 Qualitative improvement after the use of iMarketKorea (Construction materials + MRO)**

Type	Improvement	Case
Process optimization	Reducing the time required for purchasing by simplifying purchasing processes	Decreasing from 25 steps to 7 steps on average
Reduction of delivery lead time	Reducing by five days on average	MRO product – by 12-2 days Construction materials – by 7 ~2 days
Simplification of purchasing management businesses	Considerable reduction of accounting businesses	Company D – The number of the tax-invoices issued a month decreases from 115 to 4
Combining purchasing processes with electronic authorization system	Substantial reduction of manual work	Samsung affiliated companies – the use of internally unified electronic authorization system Other customers- the use of electronic authorization system provided over the website of iMarketKorea
Effective control of annual budget	Providing the effective electronic tools for lowering expenditure	Company A – End-users in each department being able to purchase within the limit of total budget plans over iMarketKorea
Sharing purchasing DB Sharing major production information	Enabling reasonable demand forecasts and production plans	Sharing information among Samsung affiliated companies
Reducing the time spent for purchasing processes	The reduction of time related to the management of suppliers, the approval of purchasing, and the simplification of accounting and so on.	Time reduction by 35~20% on average
Opening the itemized purchasing account	Enhancing the transparency of transactions	Company E – the use of online bidding system for all purchased products

(Notes) All the cases excluding those separated as construction materials are related to MRO division within iMarketKorea.

Source: iMarketKorea

Some successful examples are outlined in Table V-4 and Table V-5. Customers benefited from cost reduction in terms of MRO product purchasing, according to the tables.

**Table V-4 Examples of success cases of MRO total outsourcing over iMarketKorea**

(Unit: Billion KRW, %)

Customer	Business models	Cost reduction	2001 1 <sup>st</sup> half	2001 2 <sup>nd</sup> half	2002 1 <sup>st</sup> half	Increasing rate*
A	Outsourcing	Purchasing cost	16.1	24.2	25.4	
		Cost reduction	0.3	1.2	1.6	33%
B	Outsourcing	Purchasing cost	3.2	10	17.5	
		Cost reduction	0.1	0.5	1.1	120%

\* Increasing rate from 2001 2<sup>nd</sup> half to 2002 1<sup>st</sup> half

Source: iMarketKorea

**Table V-5 Examples of successful cases of MRO auction over iMarketKorea**

(Unit: Billion KRW, %)

Customer	Business models	Purchasing cost (At a time)	Cost reduction rate	Auction Item
C	Auction	10	10%	Sign boards
D	Auction	0.5	20%	Office copiers

Source: iMarketKorea

## 2.2. Change of the spatial coverage of participants

A questionnaire survey was performed with the help of eNtoB company and iMarketKorea company in August and September 2002. Buyers and sellers were evaluated to answer the change of spatial coverage after they began to trade over e-MPs. The number of the sellers that responded to the questionnaires amounted to 38 firms and that of the buyers amounted to 15 firms from eNtoB<sup>52</sup>. The number of the buyers that responded to the questionnaire was 8 firms from iMarketKorea. Many respondents left some important questions blank and it caused difficulty in analyzing spatial impacts. The cautious

<sup>52</sup> Some respondents used the agent model of the e-MP and others used the exchange model. Some also used the both two types of models. However, because of a lack of the number of sample data, the analysis by business models was not carried out in this study.

interpretation is required because of the insufficient number of respondents.

The answers from seven buyers of eNtoB and eight buyers of iMarketKorea about the questions regarding the change of spatial coverage of the distribution of sellers are summarized. Respondents were asked to compare the spatial distribution of online trading partners with that of offline trading partners in the past in terms of traded amounts.

Most buyers of eNtoB and iMarketKorea answered that the use of public B2B e-MPs increased the amounts from remote suppliers in volume terms. The extent of expansion was not uniform among the responding firms, however. The result is summarized in terms of individual buyers in Table V-6 and Table V-7.

**Table V-6 Change of spatial coverage of the amounts purchased over eNtoB in terms of buyers**

Case*	Types of traded products**	Previous offline trading*** (%)				eNtoB-led trading**** (%)				Purchasing amounts over eNtoB***** (%)
		Within the same city	Within the same province	Other areas within Korea	Overseas	Within the same city	Within the same province	Other areas within Korea	Over Seas	
E1	MR	1	4	95	0	0	0	100	0	0.001
E2	O	80	0	20	0	70	10	20	0	90
E3	O	100	0	0	0	5	0	95	0	95
E4	O	90	10	0	0	60	30	10	0	Missing
E5	O	60	5	35	0	50	5	45	0	30
E6	MR	80	0	20	0	70	0	30	0	20
E7	O	95	1	4	0	90	0	10	0	30

\* Case = the responding firms for questionnaire survey

\*\*MR=maintenance/repair products, O=operating inputs

\*\*\*Previous offline trading is calculated based on the traded volume for a year right before firms introduce online transactions.

\*\*\*\* eNtoB-led trading is calculated based on the traded volume for a year from the time when firms begin the online transaction over eNtoB. 100% is the total traded volume over eNtoB for a year. The firms that do not trade over it for less than a year are asked to estimate the data.

\*\*\*\*\* Purchasing amounts over eNtoB means the eNtoB-led traded amounts out of the total purchasing amounts for a year irrespective of online or offline.

Source: Questionnaire survey

In particular, in case of eNtoB buyers, the buyers dealing with office supplies showed a greater expansion of spatial coverage than those of MR products. But, because such a trend is not clearly shown in the result of iMarketKorea, additional investigation and qualitative

approach are required before any conclusion can be made.

**Table V-7 Change of spatial coverage of the amounts purchased over iMarketKorea in terms of buyers**

Case*	Types of traded products**	Previous offline trading*** (%)				iMarketKorea-led trading****(%)				Purchasing amounts over iMarketKorea ***** (%)
		Within the same city	Within the same province	Other areas within Korea	Overseas	Within the same city	Within the same province	Other areas within Korea	Over Seas	
I1	MR	60	30	15	5	40	5	55	0	93
I2	MR	10	80	10	0	3	60	37	0	98
I3	MR	70	20	10	0	60	30	10	0	80
I4	MR	50	0	50	0	80	0	20	0	80
I5	O	30	70	0	0	30	60	10	0	50
I6	MR	60	40	0	0	40	60	0	0	50
I7	O	20	80	0	0	40	60	0	0	60
I8	MR	30	4	30	0	30	50	15	5	10

\* Case = the responding firms for questionnaire survey

\*\*MR=maintenance/repair products, O=operating inputs

\*\*\*Previous offline trading is calculated based on the traded volume for a year right before firms introduce online transactions.

\*\*\*\* iMarketKorea-led trading is calculated based on the traded volume for a year from the time when firms begin the online transaction over iMarketKorea. 100% is the total traded volume over iMarketKorea for a year. The firms that do not trade over it for less than a year are asked to estimate the data.

\*\*\*\*\* Purchasing amounts over iMarketKorea means the iMarketKorea-led traded amounts out of the total purchasing amounts for a year irrespective of online or offline.

Source: Questionnaire survey

When the result from buyers and sellers are compared, sellers did not seem to experience the effect of geographical expansion related to opening up of new markets after beginning the online transactions over eNtoB. Only one out of the six respondents reported the considerable geographical expansion (Table V-8). It could be a result of a lack of time to trade over the e-MP, or from a systematic difficulty in expanding markets actively because they should only wait to be chosen by buyers.

**Table V-8 Change of spatial coverage of the amounts sold over eNtoB in terms of sellers**

Case*	Types of traded products**	Previous offline trading*** (%)				eNtoB-led trading**** (%)				Purchasing amounts over eNtoB***** (%)
		Within the same city	Within the same province	Other areas within Korea	Over seas	Within the same city	Within the same province	Other areas within Korea	Over Seas	
ES1	MR	90	8	2	0	50	40	10	0	5
ES2	MR	100	0	0	0	100	0	0	0	5
ES3	MR	50	30	20	0	50	20	30	0	0.1
ES4	O	90	10	0	0	90	10	0	0	15
ES5	O	35	0	65	0	35	0	65	0	1
ES6	O	10	30	60	0	10	30	60	0	3

\*Case= the responding firms for questionnaire survey

\*\*MR=maintenance/repair products, O=operating inputs

\*\*\*Previous offline trading is calculated based on the traded volume for a year right before firms introduce online transactions.

\*\*\*\* eNtoB-led trading is calculated based on the traded volume for a year from the time when firms begin the online transaction over eNtoB. 100% is the total traded volume over eNtoB for a year. The firms that do not trade over it for less than a year are asked to estimate the data.

\*\*\*\*\* Purchasing amounts over eNtoB means the eNtoB-led traded amounts out of the total purchasing amounts for a year irrespective of online or offline.

Source: Questionnaire survey

### 2.3. Degree to break off existing relationship in MRO e-MPs

It was expected that the traders of MRO products would place less importance on trust-based relationship with their trading partners than those in other vertical industries dealing with manufacturing products. As expected, about the question about the strategy to select trading partners, 11 firms (85%) of 13 eNtoB buyer firms answered that they did not prefer previous offline trading partners and gave the same opportunity to potential new supplier (Table V-9). 4 firms (67%) of 6 iMarketKorea buyers gave the same answer.

**Table V-9 Strategy to choose trading partners for online transactions by MRO buyers**

Strategy	Value	eNtoB	iMarketKorea
Your firm actively attempts to maintain the relationship with traditional offline trading partners even in online transactions	Count	1	2
	%	7.7%	33.3%
Your firm does not prefer traditional offline trading partners, but give the same opportunity to potential new suppliers as well as traditional ones	Count	11	4
	%	84.6%	66.7%
Your firm actively attempts to make relationships with competitive new suppliers	Count	1	0
	%	7.7%	
Total	Count	13	6
	%	100.0%	100.0%

Source: Questionnaire survey

Ironically, however, to the question that asks the response in a real situation when new sellers suggest better conditions of contracts, 53% of eNtoB buyers answered that they preferred existing trading partners at least to some extent. The firms that answered no preference were 27% and the firms that preferred potential new suppliers to some degree were 20% (Table V-10). Similarly, about 50% of iMarketKorea buyers replied that they preferred existing trading partners to some degree.

**Table V-10 Preference for existing trading partners in MRO transactions by buyers**

Answer choices	Value	eNtoB	iMarketKorea
Strongly prefer existing trading partners	Count	2	1
	%	13.3%	12.5%
A little prefer exiting trading partners	Count	6	3
	%	40.0%	37.5%
No preference	Count	4	3
	%	26.7%	37.5%
A little prefer new trading partners	Count	3	0
	%	20.0%	0.0%
Strongly prefer new trading partners	Count	0	1
	%	0.0%	12.5%
Total	Count	15	8
	%	100.0%	100.0%

Source: Questionnaire survey

The high rate of preferring existing trading partners is in line with the answer of seller firms. According to the survey analysis, while 41% of the sellers of eNtoB answered that price condition was a top priority when buyers chose suppliers, the remaining 59% still answered that credibility such as whether they were existing trading partners or not was a top priority (Table V-11). Even though price condition was considerably important, it proved that trust related factor was still important in making contracts.

**Table V-11 Importance of price condition of sellers over trust-based relationship by eNtoB sellers**

The most important factor	Value	Product types		Total
		MR	O	
Price condition	Count	8	7	15
	%	34.8%	50.0%	40.5%
Credibility (whether they are existing trading partners or not etc.)	Count	15	7	22
	%	65.2%	50.0%	59.5%
Total	Count	23	14	37
	%	100.0%	100.0%	100.0%

Source: Questionnaire survey

The emphasis on face-to-face meeting over electronic communication channels supports their attitude toward the importance of trust related factors. In the survey looking at the buyers of eNtoB, 89% of the firms answered that the face-to-face meeting was important to do their businesses to some extent, while the firms that answered the importance of electronic communication channels was 78% (Table V-12). In case of iMarketKorea buyers, they put more importance on electronic communication channel than on face-to-face meeting. However, the percentage of the firms recognizing the importance of face-to-face meeting amounted to about 63%.

**Table V-12 Importance of two communication channels by MRO buyers**

Importance	Electronic communication channels				Face-to-face meeting			
	eNtoB		iMarketKorea		eNtoB		iMarketKorea	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Strongly important	4	44.4	5	62.5	6	66.7	1	12.5
Important	3	33.3	1	12.5	2	22.2	4	50.0
Neutral	2	22.2	2	25.0	1	11.1	2	25.0
Not important	0	0.0	0	0.0	0	0.0	1	12.5
Not at all important	0	0.0	0	0.0	0	0.0	0	0.0
Total	9	100.0	8	100.0	9	100.0	8	100.0

Source: Questionnaire survey

The difference in the importance between the two communication channels is emphasized in the survey analyzing the sellers of eNtoB. Whereas the importance of electronic communication channels was detected by 67% of the firms, the importance of face-to-face meeting was recognized by 93% of the respondents (Table V-13).

**Table V-13 Importance of two communication channels by eNtoB sellers**

Importance	Electronic communication channels			Face-to-face meeting		
	Frequency	%	Cumulative %	Frequency	%	Cumulative %
Strongly important	8	53.3	53.3	9	60.0	60.0
Important	2	13.3	66.6	5	33.3	93.3
Neutral	3	20.0	86.6	1	6.7	100.0
Not important	2	13.3		0	0.0	
Not at all important	0	0.0		0	0.0	
Total	15	100.0		15	100.0	

Source: Questionnaire survey

About 66% of the sellers of eNtoB answered that most offline buyers were maintained even after the online transactions over eNtoB. The sellers who attracted new buyers in addition to existing buyers through online transactions were 20%. About 14% of the sellers responded that new buyer were their main customers in online transactions (Table V-14).

**Table V-14 Degree of maintaining offline trading partners by eNtoB sellers**

Types of online trading partners	Value	Product types		Total
		MR	O	
Most offline trading partners are maintained in the transactions over eNtoB	Count	16	7	23
	%	72.7%	53.8%	65.7%
New buyers are created in the transactions over eNtoB in addition to maintaining offline trading partners	Count	3	4	7
	%	13.6%	30.8%	20.0%
New buyers are the main customers in the transactions over eNtoB	Count	3	2	5
	%	13.6%	15.4%	14.3%
Total	Count	22	13	35
	%	100.0%	100.0%	100.0%

Source: Questionnaire survey

Maintaining the relationship with offline trading partner is also shown in the motivation to use eNtoB. 62% of eNtoB sellers answered that they began to trade over eNtoB because their offline buyers began to use the eNtoB (Table V-15).

**Table V-15 Motivation to trade over eNtoB on the side of sellers**

Motivation	Value	Product types		Total
		MR	O	
Your firm or the affiliated company is the shareholder of eNtoB	Count	0	1	1
	%	0.0	20.0	7.7
The major existing buyers of your firm were participating in eNtoB	Count	5	3	8
	%	62.5	60.0	61.5
The active marketing of eNtoB	Count	2	1	3
	%	25.0	20.0	23.1
Your firm voluntarily searched for eNtoB that meets your need	Count	1	0	1
	%	12.5	0.0	7.7
Total	Count	8	5	13
	%	100.0%	100.0%	100.0%

Source: Questionnaire survey

MRO product purchasers are prepared to trade with new suppliers only if they are competitive in contract condition. However, they are still worried about the credibility of potential new suppliers. Therefore, some want to continue their existing relationship with reliable suppliers. As a result, the buyers and sellers in MRO e-MPs have both tendencies to search for competitive new partners and to continue existing relationship with credible

partners. However, the active use of MRO e-MPs may lead to the change of spatial coverage of their economic activities as the trust in online transactions is accumulated.

### **3. Firms trading over vertical public B2B e-MPs**

#### **3.1. OILPEX (<http://www.oilpex.com>)**

##### **3.1.1. Case description**

###### **■ Position in Petroleum industry**

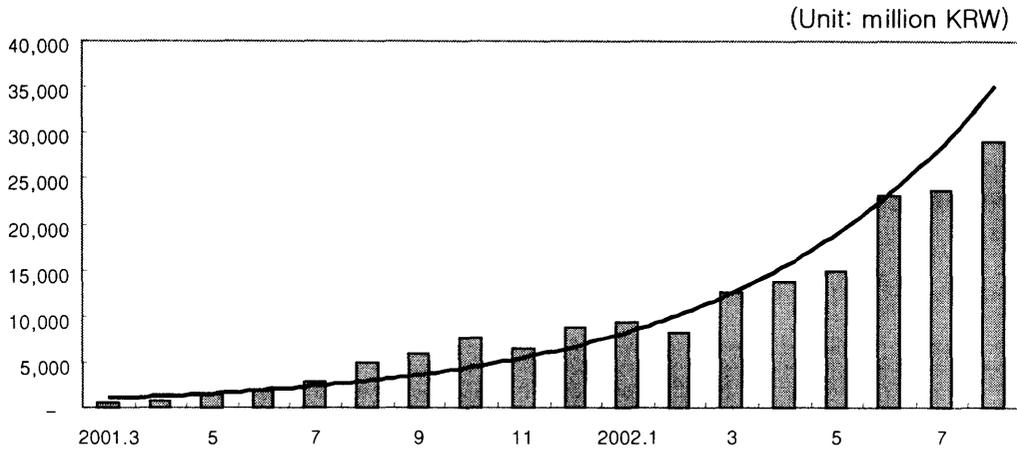
The market size of major five e-MPs in petroleum industry for the first half of the year 2002 adds up to 276 billion KRW, which is increased by one and a half times when comparing with 140 billion KRW of 2001<sup>53</sup>. The business performance of major three B2B e-MPs during the same period is shown in Digital Times<sup>54</sup>. According to it, the traded money over OILCHAIN (<http://www.oilchain.com>) runs to about 80.4 billion KRW for the first half of the year 2002. The traded money over OILPEX (<http://www.oilpex.com>), a case of this study was equal to about 80 billion KRW. The traded money over KO&PEX (<http://www.yesoil.com>) stood at 40 billion KRW.

According to OILPEX, the traded money over OILPEX from the beginning of 2002 amounts to 140 billion KRW at the end of August 2002. It exceeded the total traded money of 50 billion KRW in 2001. Monthly traded money in August 2002 stands at about 30 billion KRW and the traded amounts for the month are 44,000kl, which take approximately 3% of the total traded amount in domestic petroleum market including light oil, gasoline, and kerosene (Figure V-2).

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<sup>53</sup> 2002-08-09 The Electronic Times (<http://www.etimesi.com>)

<sup>54</sup> 2002-07-19 Digital Times (<http://www.dt.co.kr>)



Source: OILPEX

**Figure V-2 Increase in transactions over OILPEX (2001.3~2002.8)**

Maekyung Economy reports that OILPEX managed to breakeven as of June 2002<sup>55</sup>. It also reports that total commission fees of OILPEX amounted to 2 billion KRW at that point. The company is expecting to be in net profit within 2002.

#### ■ Price down effect

The concurrent quotation system as a crucial electronic transaction tool in OILPEX helps buyers to search for the sellers of best conditions on a real time basis. Therefore, the effect of lowering the price in online transactions is clearly revealed in the analysis of online transactions by OILPEX<sup>56</sup>. According to the analysis of the average price of light oil in October 2002, the average price at which it is traded is lower than that of other major offline oil refineries (Table V-16).

<sup>55</sup> 2002-11-01 Maekyung Economy vol. 1178 (<http://economy.mk.co.kr>)

<sup>56</sup> The provision of OILPEX Price Index (OPI) for abroad and domestic market enables the price prediction of oil products that are fluctuated by international environments.

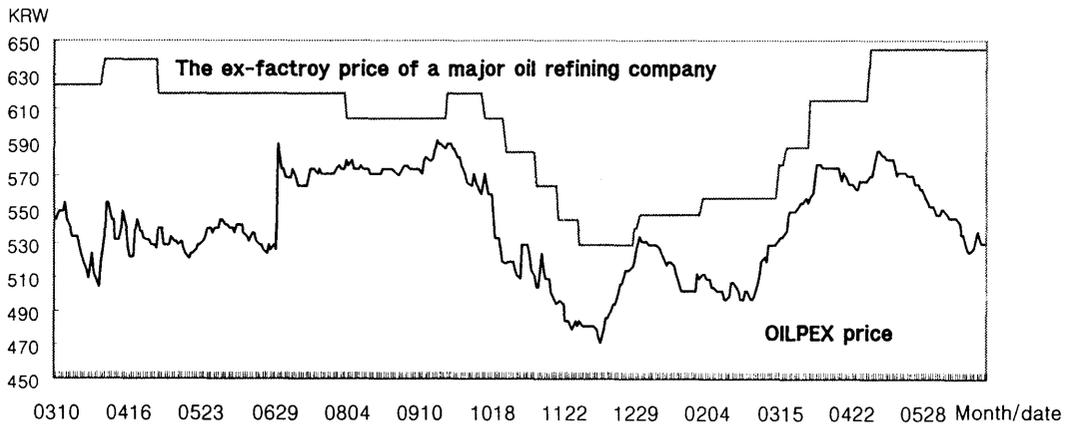
**Table V-16 Comparison of the average price of light oil (2002.10)**

(Unit: KRW/a liter)

Company	Major oil refining company			OILPEX
	A	B	C	
Price of light oil	708.00	710.85	723.00	649.25

Source: OILPEX

Lower prices in online transactions than in offline transactions are also pointed out in the analysis of the data for over a year about the average price of gasoil (Figure V-3).



Source: OILPEX (2002.09)

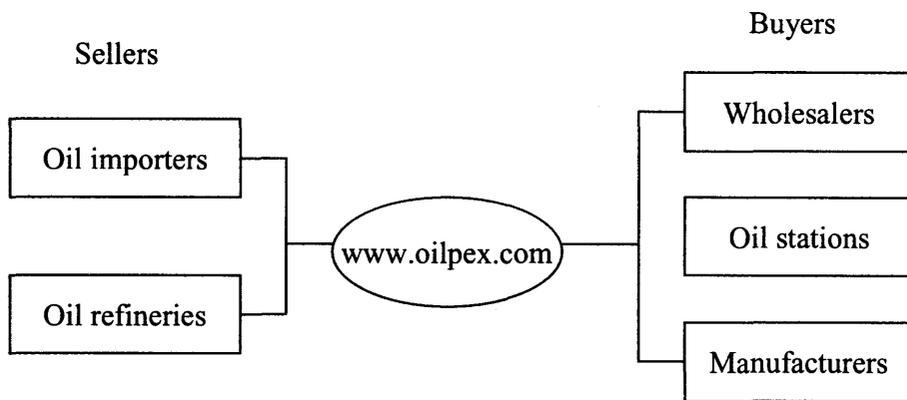
**Figure V-3 OILPEX Price Index vs. Offline ex-factory price (Gasoil: 2001.3.12~7.31)**

### ■ Company profile

Korea National Oil Corporation (KNOC) established OILPEX, an open oil-trading e-MP in August 2000. The firm focuses on operating a public e-MP in petroleum industry. The business partners of the establishment of OILPEX include Samil Accounting Firm, KCC Information & Communication, Korea Productivity Center, Samil VentureDirect, and E-net.

## ■ Target markets

Buyers of OILPEX include wholesalers, oil stations, and manufacturers and sellers encompass oil importers and oil refineries (Figure V-4).



**Figure V-4 Target market of OILPEX**

## ■ Traditional relationship between sellers and buyers in oil distribution markets

Traditionally, petroleum industry is an industry dominated by sellers. Buyers tended to rely on sellers. Because the supply of petroleum was sensitive to global industrial environments and buyers were lack of information, they cannot but help depending on their existing suppliers for the stable provision of petroleum. However, the increase in the information on market situation and on the change of price provides the power to buyers. It helps buyers to choose the sellers on the basis of fast and accurate market information. OILPEX aims at a customer-oriented e-MP. The interviewee mentioned that the introduction of public B2B e-MPs would contribute to the balanced market structure in the relationship between buyers and sellers.

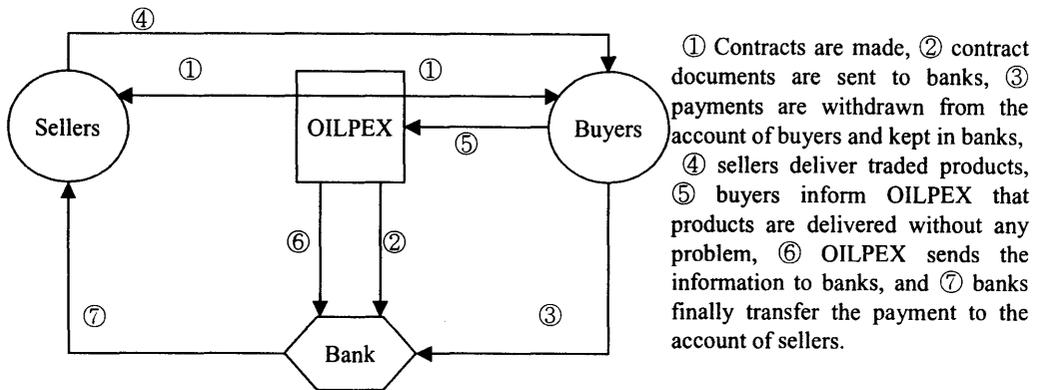
## ■ Business model and transaction tools

OILPEX is based on the exchange model that leads to the direct transactions between buyers and sellers and minimizes the intervention of e-MP operators.

The trading system of OILPEX is mainly divided into four categories. These are concurrent quotation system, auction, reverse auction, and bidding. Concurrent quotation system enables multiple sellers and multiple buyers to participate in electronic trading dynamically. Sellers and buyers place orders at the same time and the system looks for the orders that meet the same condition and complete transactions. Conditions include product name, brand, volume, installment, price, delivery condition, and region. In the auction process, buyers put the prices they can pay for bidding products on the website and the OILPEX e-trading system automatically selects the bidding winner who offers the highest price. In reverse auction, sellers offer the prices for the item buyers want to purchase and the system chooses the winner who places the lowest price. The processes of auction and reverse auction are open to participants and buyers (in auction) and sellers (in reverse auction) can refer to others' offered prices and respond to them spontaneously by changing their prices. On the contrary, bidding is involved with closed tenders. Participants in bidding do not know others' offered prices. Bidding is divided into round bidding and quick bidding. Round bidding is used when authorities make a notice of bidding and quick bidding is used by private firms.

## ■ Payment system

Basically, transactions are mainly made in cash. It is similar with the traditional way of payment in the offline transactions of petroleum industry. While buyers generally pay the bill with postponed checks in manufacturing industries in Korea, buyers pay in cash in petroleum industry. Such practices are continued in the transactions over OILPEX. The payment system of OILPEX makes the use of the concept of escrow by putting the payment into the custody of a third party by the time of the guarantee of the safe delivery and the fulfillment of the conditions specified. The procedure is shown Figure V-5.



**Figure V-5 The payment system of OILPEX**

In the meantime, the OILPEX operates the financial support system of loaning purchasing money. Because buyers are responsible for paying the interest, sellers allow the system to be used in OILPEX. Recently, about 20% of total transactions are made with the help of a purchasing loan system.

■ **Locations of customers**

According to the data from OILPEX, the number of the sellers in Gyeonggi-do is about 40%, followed by those in Seoul (about 20%) and Gyeongsangnam area (about 20%). Besides, Chungcheongnam area and Jeollanam area take the proportion of about 10% respectively. The distributions of buyers are not very different from those of sellers. The ratios of the buyers in Seoul (about 20%) and Gyeonggi (about 40%) are the highest. Gyeongsangbuk area (about 15%) and Gyeongsangnam area (about 10%) follow them, and Chungcheongnam area, Jeollanam area, and Jeollabuk-do stood at about 5% respectively at the end of June 2002.

Even though the locations of sellers are dispersed across the country, the actual delivery of petroleum is made between the facilities for storing oil and the locations of buyers. Because the facilities for storing oil are clustered around major port towns, the places from which petroleum are delivered are limited. They include Incheon, Gunsan, and Ulsan etc. The construction of oil pipelines which connect the port towns and inland areas enables some facilities for storing oil to be located inland including in the Seoul metropolitan area such as

Pyeongtaek city and Seongnam city.

### 3.1.2. Change of the spatial coverage of participants

The questionnaire survey on buyers and sellers that trade over OILPEX was performed with the support of OILPEX. In total, 10 sellers and 41 buyers responded to the questionnaire survey. The staff of OILPEX mainly made phone calls to their sellers and buyers and asked questions listed on the questionnaire. According to the survey result, the spatial coverage did not seem to be changed after the use of OILPEX as much as expected. Although five firms out of nine sellers answered that the use of OILPEX led to the expansion of the market, the extent was not that large (Table V-17).

**Table V-17 Change of spatial coverage of the amounts sold over OILPEX in terms of sellers**

Case*	No. of buyers**	Previous offline trading*** (%)				OILPEX-led trading**** (%)				Purchasing amounts over OILPEX*** ** (%)
		Within the same city	Within the same province	Other areas within Korea	Over seas	Within the same city	Within the same province	Other areas within Korea	Over seas	
O1	20	0	90	10	0	0	70	30	0	30
O2	100	0	100	0	0	0	100	0	0	5
O3	20	0	100	0	0	0	90	10	0	20
O4	50	0	90	10	0	0	90	10	0	40
O5	20	50	40	10	0	55	35	10	0	30
O6	50	0	100	0	0	0	100	0	0	40
O7	40	0	100	0	0	0	70	30	0	20
O8	30	80	20	0	0	70	30	0	0	10
O9	15	60	40	0	0	50	50	0	0	10

\* Case = the responding firms for questionnaire survey

\*\*No. of buyers=the number of firms that purchase petroleum from the respondent

\*\*\*Previous offline trading is calculated based on the traded volume for a year right before firms introduce online transactions.

\*\*\*\* OILPEX-led trading is calculated based on the traded volume for a year from the time when firms begin the online transaction over OILPEX. 100% is the total traded volume over OILPEX for a year. The firms that do not trade over it for less than a year are asked to estimate the data.

\*\*\*\*\* Purchasing amounts over OILPEX means the OILPEX-led traded amounts out of the total purchasing amounts for a year irrespective of online or offline.

Source: Questionnaire survey

The low rate of the geographical expansion in the transactions over OILPEX seems to be related to the emphasis on the delivery distance by sellers. All the sellers answered that they put some importance on the delivery distance when trading over OILPEX (Table V-18).

**Table V-18 Importance of delivery distance by sellers**

Degree	Frequency	Percent
Strongly important	5	50.0
Important	5	50.0
Neutral	0	0.0
Not important	0	0.0
Not at all important	0	0.0
Total	10	100.0

Source: Questionnaire survey

The emphasis on the delivery distance by sellers is mainly related to the high pressure on transportation cost. Transportation cost is one of the most important factors considered when choosing trading partners. In general, 5 KRW per a liter is added to production cost as transportation cost. The payment of transportation cost is made on contract conditions. But, because sellers usually pay transportation cost, they tend to limit delivery zone<sup>57</sup>. In addition to the importance of transportation cost, the need for frequent delivery or the size of products were also chosen as the main reasons for the importance of the delivery distance with locations of buyers by the two out of the ten respondents (Table V-19).

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<sup>57</sup> OILPEX provides logistics service by the alliance with a third-party logistics company. Sellers sometimes make use of the logistics company related to OILPEX. The logistics company may prefer the delivery order through OILPEX because OILPEX pays the bill in cash, unlike in case where sellers directly make contracts with it usually on credit.

**Table V-19 Reasons for the importance of delivery distance by sellers**

Reasons (multiple choices)	The first reason		The second reason	
	Frequency	%	Frequency	%
Need for frequent delivery or large size of products	2	20.0	2	22.2
Need for continuous communication for after sales service	0	0.0	0	0.0
Transactions of customized products	0	0.0	0	0.0
Need for continuous exchange of information	0	0.0	2	22.2
Need for face-to-face meeting	0	0.0	1	11.1
Easiness of trust accumulation	0	0.0	3	33.3
Growth of local economy	0	0.0	0	0.0
Transportation cost	8	80.0	1	11.1
Total	10	100.0	9	100.0

Source: Questionnaire survey

The importance of transportation cost in petroleum industry is also reflected in the limit of delivery area. All the ten suppliers answered that they had experiences to officially limit delivery zone. Most answered that the main reason was transportation cost. Interestingly, the traded amounts through the limit of delivery zone were not reduced so much after trading over OILPEX (Table V-20). Although some firms answered that the use of the limit of delivery zone decreased in the transactions over OILPEX, considerable amounts are still traded with the limit of delivery area even in the transactions over e-MPs.

**Table V-20 Ratio of the traded amounts through the limit of delivery zone**

Case*	Before the use of online marketplaces** (%)	Transactions over OILPEX*** (%)
O1	90	70
O2	100	100
O3	100	90
O4	50	50
O5	80	80
O8	90	70
O9	70	50

\*Case=the responding firms for questionnaire survey. The same number with that of Table V-17 means the same company.

\*\*Percentage of traded amounts that are supplied using the limit of delivery zone for a year right before they traded online.

\*\*\*Percentage of traded amounts that are supplied using the limit of delivery zone in the transactions over OILPEX for a year.

Source: Questionnaire survey

Sellers limited the delivery zones by broader regional units than the provinces. Six suppliers answered that they limited delivery zones into the same provinces they are located in. The remaining four suppliers limited delivery zones into such wide areas as the Seoul metropolitan area, the area including Jeollanam-do and Jeollabuk-do, and the area including Gyeongsangnam-do, Gyeongsangbuk-do, and so on (Table V-21).

**Table V-21 Geographical scope of delivery zones**

Delivery zone	Frequency	Percentage
Within the same city as the departing places of your firm are located in	0	0.0
Within the same province (or near metropolitan cities)	6	60.0
Beyond the same province such as the Seoul metropolitan area, Chungcheong area, Jeolla area, Gyeongsang area and so on	4	40.0
Total	10	100.0

Source: Questionnaire survey

### 3.1.3. Degree to break off existing relationship

According to the questionnaire survey, oil is a completely standardized item in terms of specifications and production technologies. All the respondents answered that the degree of the standardization of the product was very high. Such a high standardization level contributed to the importance of price condition when they chose trading partners. All the ten suppliers answered that price condition is more important than existing trust-based relationship when their buyers decided trading partners. Nine sellers out of ten succeeded in making the transactions with new buyers in addition to maintaining the existing relationships after the participation in the online trading over OILPEX. One of the nine answered that the ratio of new buyers was dominant. The importance of price condition is also reflected by the answers of buyers (Table V-22). About 66% of the 41 buyers answered that they strategically did not give any preference for existing trading partners and sellers were chosen only by the concrete conditions of contracts. Furthermore, 20% of the buyers answered that they actively attempted to search for more competitive new ones than existing trading partners.

**Table V-22 Strategy to choose trading partners for online transactions by buyers**

Strategy	Value	Total
Your firm actively attempts to maintain the relationship with traditional offline trading partners even in online transactions	Count	6
	%	14.6
Your firm does not prefer traditional offline trading partners, but give the same opportunity to potential new suppliers as well as traditional ones	Count	27
	%	65.9
Your firm actively attempts to make relationships with competitive new suppliers	Count	8
	%	19.5
Total	Count	41
	%	100.0

Source: Questionnaire survey

However, somewhat paradoxically, in the question as to the extent of preference for existing sellers when new sellers that buyers have never traded with suggested better contract conditions, about 81% of the buyers answered that they would prefer to continue the relationships with existing sellers through additional negotiations (Table V-23).

**Table V-23 Preference for existing trading partners in OILPEX transactions by buyers**

Answer choices	Frequency	%	Cumulative %
Strongly prefer existing trading partners	28	68.3	68.3
A little prefer existing trading partners	5	12.2	80.5
No preference	6	14.6	95.1
A little prefer new trading partners	1	2.4	97.6
Strongly prefer new trading partners	1	2.4	100.0
Total	41	100.0	

Source: Questionnaire survey

Such a situation reflects the importance of credibility between trading partners. The importance on the credibility is maximized in the industries where buyers and sellers should have long-term relationships due to systematic attributes of the industries represented by product characteristics, traditional practice of the transactions on credit or the need for continuous communications. Although petroleum is considered an appropriate industry for online transactions due to the high standardization level, buyers are still uncertain about trading over e-MPs with the sellers they do not know completely. The stability of transactions is an important condition that all the buyers pursue, according to the interview with a manager of OILPEX.

From the past, the transactions in petroleum industry were carried out in cash. Once products are delivered, buyers pay for the price. However, when products run short, buyers are required to pay the bill in advance before the delivery of products. Sometimes, buyers voluntarily pay in advance to guarantee the stable supply of the products. Such a situation makes buyers take a risk at losing their money unless they are sure of the supply of the pre-paid products.

The situation in the offline environment is also similar to that in the online environment. The transactions in OILPEX are in principle based on the payment in cash. When contracts are completed, buyers deposit the payment in a bank. Then, after they check the quality of delivered products, they allow the money to be paid to sellers. But, sometimes sellers ask buyers to allow the money to be paid to sellers even before products are delivered. In that case,

the credibility of sellers is essential to guarantee the safe delivery of products in online transactions. As a result, even if when the price difference is considerable, buyers still have a tendency to continue transactions with the sellers they already know and can trust.

It is reflected in the question to buyers and sellers as to the factors that hamper the development of online transactions in petroleum industry. Over 70% of the buyers identified the difficulty in the transactions on credit as the first barrier to the vigorous use of e-MPs (Table V-24). The difficulty in breaking off the relationship with existing trading partners was pointed out as another important factor to prevent them from increasing the utilization of the e-MPs. According to a manager of OILPEX, many buyers, especially oil stations are reluctant to trade with existing offline suppliers over the e-MP. Oil stations are usually closely related to large oil refining companies. Some are afraid to pay the penalty when they diversify suppliers. Therefore, even when they purchase oil over OILPEX, they still maintain existing trading relationship with existing offline distributors related to specific oil companies. Regardless of the appropriateness of products for online transactions in terms of standardization, it is not that easy to break off existing relationships due to the above practical reasons.

**Table V-24 Constraints on the development of EC in petroleum industry on the side of buyers**

Barriers (multiple choices)	First reason		Second reason		Third reason	
	Frequency	%	Frequency	%	Frequency	%
No guarantee of product quality	1	2.6	6	15.8	4	10.5
Difficulty in transactions on credit	28	73.7	6	15.8	2	5.3
No guarantee on after sales problems	4	10.5	6	15.8	11	28.9
Difficulty in breaking off the relationship with existing trading partners	5	13.2	15	39.5	10	26.3
Cost increase including transaction fee	0	0.0	2	5.3	6	15.8
Technical difficulty in online connection and transactions	0	0.0	3	7.9	5	13.2
Total	38	100.0	38	100.0	38	100.0

Source: Questionnaire survey

In the case of sellers, no guarantee of product quality and the difficulty in the transactions on credit are the main constraints on the development of EC in petroleum industry (Table V-25).

**Table V-25 Constraints on the development of EC in petroleum industry on the side of sellers**

Barriers (multiple choices)	First reason		Second reason		Third reason	
	Frequency	%	Frequency	%	Frequency	%
No guarantee of product quality	5	50.0	1	10.0	0	0.0
Difficulty in transactions on credit	4	40.0	2	20.0	2	20.0
No guarantee on after sales problems	0	0.0	4	40.0	1	10.0
Difficulty in breaking off the relationship with existing trading partners	0	0.0	2	20.0	3	30.0
Cost increase including transaction fee	1	10.0	0	0.0	4	40.0
Technical difficulty in online connection and transactions	0	0.0	1	10.0	0	0.0
Total	10	100.0	10	100.0	10	100.0

Source: Questionnaire survey

In spite of the constraints, an interviewee of OILPEX said that as buyers became accustomed to the way of doing businesses over the e-MP, they realized that the transactions with new sellers were not as risky as they initially thought. Then, they gradually increased the purchasing amounts from new sellers that suggested better price conditions. Petroleum industry is different from other industries where the relationship based on credibility is not broken down at all. Even though the existing relationship is still influential, the intensity of the relationship is weakened and the active use of e-MPs will encourage the breaking off of the existing relationship in the petroleum industry.

## **3.2. AnySteel.com (<http://www.anysteel.com>)**

### **3.2.1. Case description**

#### **■ Position in industry**

The amount of total sales over AnySteel.com is estimated to reach 65 billion KRW in 2002. The traded money in the exchange market is merely 5 billion KRW and those in the Application Service Provider (ASP)<sup>58</sup> market amounts to 60 billion KRW. Considering the enormous size of the annual domestic steel market, the traded amount over the e-MP is very small. The traditional characteristics of the seller-oriented market in steel industry make the growth of public B2B e-MPs difficult.

Nevertheless, AnySteel.com plans to extend the amount of the total sales into about 1 trillion KRW in 2003. The company considers the period from the beginning of businesses to 2002 as an initial stage. It concentrated on developing the diverse electronic tools indispensable for the successful online businesses in steel industry.

As a venture enterprise, AnySteel.com made an effort to develop the electronic payment system that helped to solve one of the most serious barriers for the online transaction involved with the incredibility of payment between trading partners. It succeeded in co-developing the B2B electronic payment system with the cooperation with Shinhan bank. The company was appointed to the firm to develop the standardized tool for electronic payment system as a common functional area to support B2B EC by MOCIE (Ministry of Commerce, Industry and Energy) in April 2002. The firm considers that it is time to move on the developmental stage, actively expanding market share from 2003.

#### **■ Price down effect**

It was difficult to get the quantitative data on the price down benefit after the use of

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<sup>58</sup> Application service provider (ASP) is defined as a software vendor who allows organizations to lease information systems applications (Turban et al., 2002:663).

AnySteel.com in terms of cost reduction. Instead, an interview was conducted with a manager of AnySteel.com. According to him, the cost reduction by lowering the price of traded products is hard to be achieved in the B2B transactions in steel industry. It is due to the weak buying power of buyers in the traditional seller-oriented market in steel industry for the most part. The pressure on the sellers to lower the price of products to attract buyers is not high. Sellers sometimes cooperate to regulate supplying amounts, rather than compete fiercely in the market. Therefore, the use of public B2B e-MPs is not activated so far.

The main reason to trade over AnySteel.com is not to purchase required products with lower prices, but to take advantage of loaning more purchasing money from Korea Credit Guarantee Fund (KCGF) by making online B2B transactions under B2B e-Guarantee system (Table V-26). When firms make use of B2B e-Guarantee system, the maximum limit of the guaranteed money including all existing guaranteed fund amounts to 10 billion KRW that is increased by 7 billion KRW, comparing the past guarantee system for loaning purchasing money by KCGF. Firms can also get the guarantee of purchasing money within a fifty percentage of the sales for a term in B2B e-Guarantee system. They were only guaranteed within a fourth of the sales for a term in the past. Such visible and practical benefits started to attract sellers and buyers.

**Table V-26 Development of B2B e-Guarantee system with KCGF\***

Previous Guarantee system by KCGF	B2B e-Guarantee system by KCGF
<ul style="list-style-type: none"> <li>- Maximum 3 billion KRW by a firm including all the existing guaranteed money</li> <li>- Within a fourth of the sales for a term</li> </ul>	<ul style="list-style-type: none"> <li>- Maximum 10 billion KRW by a firm including all the existing guaranteed money</li> <li>- Within a half of the sales for a term</li> </ul>

\*KCGF=Korea Credit Guarantee Fund (<http://www.shinbo.com>)

Source: AnySteel.com

### ■ Company profile

AnySteel.com was established in March 2000 and started B2B public e-MPs in November, 2000. Hwanggun Steel & Technology Ltd. founded AnySteel.com as the parent firm. Hwanggun Steel & Technology Ltd. runs a stainless steel service center and processes

stainless steel and produces the customized products for buying firms. AnySteel.com is operated independently of the parent company.

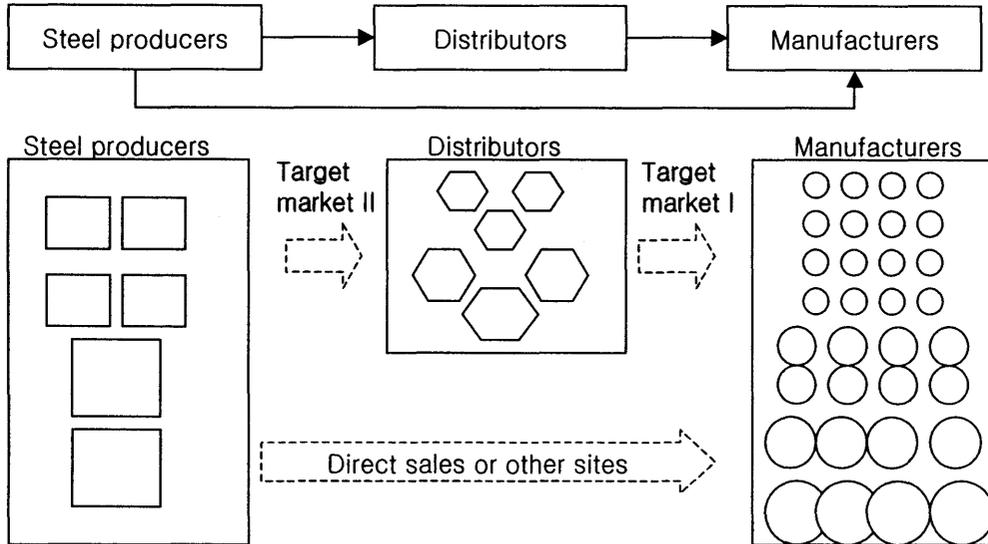
### ■ Industrial structure and target markets

The main players in steel industry include a few large steel makers, distributors, and buyer firms. Distributors purchase steel as raw material, process it and resell the processed products as components or semi-components to industrial manufacturers or buyers. Steel industry is an oligopoly industry because a few large steel makers dominate the industry. It contributed to the growth of a few private B2B e-MPs in steel industry.

The traditional close relationship between steel makers and distributors in the oligopoly market prohibits public e-MPs based on free-trade models from being developed. On the contrary, the relationship between distributors and buyers is based on relatively free and competitive trade. There still exist the close trust based relationships between large distributors and small and medium sized manufacturers. However, the relationship can be broken down by price competitiveness and the guarantee of product quality to some extent.

AnySteel.com essentially targets the market of distributors (sellers) and manufacturers (buyers) where the relationship is relatively loose (Target market I). Distributors or sellers want to extend their markets to attract new buyers. Distributors are maintaining the long-lasting relationship with their existing buyers. However, the relationship is not as strong as that between steel mills and distributors. Therefore, there is a possibility to freely compete in e-MPs. When a distributor started to trade over AnySteel.com, the existing buyers of the distributor also began to use the e-MP. Then, some buyers that have also traded with other distributors asked the e-MP to attempt to attract the distributors into the e-MP.

Moreover, AnySteel.com provides large steel mills with private e-MPs, which is the role of ASP (Target market II). AnySteel.com also supports the direct auction system between large steel mills and end-users as buyers, eliminating the channel of distributors. Even though the amount of the direct transaction is not so enormous, it is worth mentioning in that it puts a possibility to disintermediate traditional offline distributors. The two types of target markets of AnySteel.com are represented in Figure V-6.



Source: AnySteel.com

**Figure V-6 Target markets of AnySteel.com**

### ■ Business model and transaction tools

The target market I between distributors (sellers) and manufacturers (buyers) is principally the e-MP based on the exchange model. Buyers log in to the website of AnySteel.com and send RFQs to selected sellers and negotiate over the e-MP. It is also possible to make contracts online and complete transactions with an electronic payment system. The procedures are called Buy & Sell. The other main tool is Auction in which distributors or sellers upload products and the buyers that suggest the highest price are chosen as trading partners.

The e-MP also earns the profit by commission fee as ASP (application service provider) for providing a series of electronic systems for private e-MPs in target market II between large steel mills (sellers) and distributors (buyers).

### ■ Global expansion of the e-MP

The company opened several global e-MPs for the purpose of global steel trading in

2001. Anysteel.com made a strategic alliance with foreign companies to create and maintain the global e-MPs. First, it founded AnySteel Europe in May 2000, followed by AnySteel Latin America in November 2000, and AnySteel Taiwan in April 2001. It also planned to establish AnySteel North America and AnySteel Southeast Asia. However, all the plans related to the global e-MP are temporarily suspended. The company realized that no potential sellers and buyers tried to trade over its global e-MPs at the moment. The problem came from the difference between the Ideal and the Real. Foreign and domestic participants all were worried about the reliability on online transactions.

AnySteel.com ultimately plans to extend their businesses into global sourcing based on the lessons from the initial failure. Tariffs are decreasing every year and are expected to disappear completely in 2004, according to WTO agreement. Although the purchasing amount of each buyer is small, the e-MP plans to attempt group purchasing. Then, the delivery cost can be overcome. Because main production costs such as labor cost are less competitive in Korea than in other developing countries, the company expects the growth of global sourcing in the near future.

#### ■ Locations of customers

Transportation cost is very important in steel industry because steel industry has a narrow profit margin. Many small and medium sized manufacturers have been agglomerated from the past. Distributors are located close either to large steel mills or a group of buyers.

The number of actual sellers and buyers amounts to about 120 firms out of 941 members on the 10<sup>th</sup> of September, 2002. Approximately 110 firms purchased steel products over AnySteel.com by that time. Their spatial distribution is shown in Table V-27. Major sellers who trade steel products over AnySteel.com are only 5-6 distributors or steel mills.

**Table V-27 Spatial distributions of buyers of AnySteel.com**

Regions	Gu (Districts)	Frequency	Percentage	Seoul percentage
Seoul-city	Yeongdeungpo	18	18.2	50.0
	Geumcheon	6	6.1	16.7
	Gangnam	2	2.0	5.6
	Dongdaemun	2	2.0	5.6
	Mapo	2	2.0	5.6
	Guro	1	1.0	2.8
	Nowon	1	1.0	2.8
	Seocho	1	1.0	2.8
	Seongdong	1	1.0	2.8
	Songpa	1	1.0	2.8
	Eunpyeong	1	1.0	2.8
	Seoul-total	36	36.4	100.0
Gyeonggi-province		16	16.2	
Gyeongsangbuk		11	11.1	
Busan-city		9	9.1	
Gyeongsangnam-province		8	8.1	
Incheon-city		6	6.1	
Gwangju-city		3	3.0	
Ulsan-city		3	3.0	
Jeollanam-province		3	3.0	
Daegu-city		2	2.0	
Jeollabuk-province		1	1.0	
Chungcheongnam		1	1.0	
Total		99	100	

Notes) About 8% of the total firms are excluded in the analysis because the locations were not provided.

Source: Calculated from the data from AnySteel.com

### **3.2.2. Qualitative analysis of buyers and sellers of AnySteel.com**

The in-depth interviews with six buyers and sellers that have experienced online transactions over AnySteel.com were conducted to investigate the characteristics of participating firms. AnySteel.com helped to choose the interviewed buyers and sellers. The six firms were chosen because they were most active in trading over AnySteel.com.

In this section, the results of case interviews are summarized. The focus of the interviews was on what was changed after the use of the e-MP in terms of geography and what the reason for the change was. The information on the interviewed firms is already introduced in Table III-7.

#### **(1) The changes of spatial coverage of sellers**

##### **■ Case 1: Seller A (Target market I)**

###### **General characteristics**

Seller A was established in 1953 in Daegu, Gyeongsangbuk-province. The company produces hot-rolled coils which are used across various manufacturing industries such as cars and ship building. It became the official distributor of POSCO about 22 years ago for Daegu and Gyeongsangbuk-province. The monthly sale of the company stands at 8 billion to 10 billion KRW and the annual sale of the company amounts to about 100 billion KRW. Plants are located in Pohang and Daegu and the company has 150 employees. The company established a local office in Seoul in the late 80's. It purchases almost 95% out of its total purchasing amounts from POSCO and the remaining 5% come from other steel mills or distributors when they urgently need some specific products or their buyers want to buy rarely used products. Then, the company sells processed products to 200 to 400 buyers a month as a distributor.

A manager of AnySteel.com suggested participating in the e-MP. Because he had experience to work in a steel distributing company, he exactly knew how to persuade buyers and explain potential profits that the company would enjoy in the near future. Among many

benefits there is the considerable decrease of the risk of not getting paid and the increase of purchasing power of their buyers. Seller A began to purchase over AnySteel.com using e-payment system in 2002.

**Attitude toward online trading partners over the e-MPs and spatial coverage**

Seller A has sold the products of about 1.5 billion KRW over the e-MP so far. But, there are still many buyers that cannot be supported by B2B e- Guarantee Fund because of their financial status. The company continuously tries to attract many buyers to trade over the e-MP. The company asked AnySteel.com to investigate which buyers are capable of being guaranteed by Korea Credit Guarantee Fund and also got the related information from the Korea Credit Guarantee Fund. In fact, the company does not persuade the buyers that have 100% credibility because they do not result in any problem in offline transactions. Rather, the company strives to persuade the buyers that are qualified to the electronic guarantee but are not trusted completely at the moment.

However, ironically, the way to attract new buyers over AnySteel.com was completely based on the offline business activities with face-to-face meeting. Right after the company gets the information on the list of potential online buyers, managers visit them and persuade them to trade with seller A over AnySteel.com. The company sometimes makes a promise to lower prices when they use the e-MP. Likewise, when potentially new buyers that have never traded with seller A in the past get the electronic guarantee from KCGF and loan out purchasing money, it also visits the companies and promise to give better price conditions and tries to attract them to take part in the e-MP and trade with it. Ideally, firms should take the advantage of e-MPs to search for new buyers or sellers over the e-MPs without the constraint of time and space. However, practically at the moment, the activities of searching for new trading partners for online transactions are conducted in offline dimension.

Seller A is certain of the function of the e-MP to attract new buyers and open up of new market. But, it also acknowledges that steel industry is much conservative in changing existing trading partners. Because steel industry, as mentioned above, is one of the industries where profit margins are so low, it is essential to survive to have stable relationship with reliable trading partners. The interviewee, a marketing manager, emphasized that the

reliability on individual marketing staff of sellers played a significant role in choosing sellers in terms of buyers. He explained the situation like this:

*“As I think, 50% of price condition, 20% of service quality, and 30% of the reliability on private connection with marketing staff of selling firms influence the decision on choosing sellers in conservative steel industry. The effort of marketing managers based on long-lasting continuous face-to-face meeting is still an essential part in digital economy. The conservatism of employees in purchasing or financial department is another barrier to reduce the possibility that buyers trade over the e-MP.”*

#### ■ Case 2: Seller B

Seller B, a large steel maker, recently began to use the e-MP of AnySteel.com. But, they only borrow the system for constructing and maintaining the private e-MP. It is the second business model of AnySteel.com for target market II. Even though the case is somewhat different in that it only focuses on the operation of the private e-MP, the approach toward online transactions as a large steel market is useful to understand the characteristics of the e-MPs in the steel industry.

Seller B as a large steel-maker does not aim at looking for new buyers over their e-MP. Even though the company is planning to provide auction service in addition to other EC tools, it does not try to actively attract new buyers because they are not guaranteed about the credibility. The company decided to create a quasi-private e-MP where buyers can look around products, order, negotiate, and finalize contracts through diverse EC tools. The main reason is to extend the purchasing amount of their existing buyers by encouraging them to use B2B credit guarantee and enlarge the amount they can purchase with only the credit. Interestingly, the company does not consider online EC will substitute existing offline commerce in the future. It just views it as another sales channel as a complementary method.

#### **(2) The changes of spatial coverage of buyers**

Four buyers in target market I were selected by the recommendation of AnySteel.com for

in-depth interviews. They seemed not to experience the change of spatial coverage after the use of the e-MP at current stage. Only two of them (buyer A and buyer B) answered that the number of sellers were expanded after the use of AnySteel.com at least to some extent. But, actually because the purchased amounts from new sellers were tiny or even the new seller was mainly Hwanggum Steel & Technology, the parent firm of AnySteel.com, it was hard to be viewed as the real diversification of sellers. In fact, no one of the four firms answered that the use of the e-MPs led to the expansion of spatial coverage. At first, the short period that the firms have used online transactions was considered as one of the reasons that the firms did not go through any change. However, during a series of the interviews with them, it was found that the inherent characteristics of the steel industry were the reasons for it.

### ■ Case 3: Buyer A

Buyer A was the first mover to use AnySteel.com, as it was the first company to use the B2B e-Guarantee of Korea Credit Guarantee Fund to trade over the e-MP. The company has used the system over a year. However, the diversification of sellers through the e-MP is not much at all. 90% out of the purchasing amount still comes from offline transactions. Only about 10% are purchased over the e-MP of AnySteel.com. 90% of the 10% is purchased from Hwanggum Steel & Technology, Co. The remaining 10% are purchased from a few importing distributors of steel products.

The company said that the e-MP was useful when they tried to buy a small amount of products that were needed urgently or that were not used frequently. However, as other buyers mentioned, buyer A also does not consider the e-MP as the substituting method through which to replace offline business behaviors. Conservative atmosphere of steel industry is a main reason for the situation.

When new buyers attempt to make contracts, sellers are not likely to accept them as buyers unless they pay in cash or they are sure of the credibility of the firms. The pressure not to be paid in time discourages the sellers to actively look for new buyers. On the side of buyers, the most important point is to secure the provision of the products they require. Under the unstable supply condition, buyers put the highest priority on having reliable relationships with their pre-existing trading partners. The interviewee compared the changing of trading

relationships as the behavior of betrayers related to extreme opportunism.

#### ■ Case 4: Buyer B

Buyer B started the relationship with AnySteel.com since it purchased ERP software from it. AnySteel.com actively tried to persuade it to take part in the e-MP of AnySteel.com for about a year and finally the company decided to use the system. The high quality and low price of the traded products over the e-MP was attractive. But, like other buyers, the amount the company purchases over the e-MP is only a tiny percentage out of the total purchasing amounts. Only one new seller was added through the transactions over AnySteel.com at that moment. Therefore, the expansion of spatial coverage was not experienced much at least by that time.

The company still has difficulty in using the system. First of all, online transaction procedures are difficult. Threefold password is required to complete orders. Even though it is absolutely necessary to protect the transactions, it puts pressure on the buyers who are not used to the complex IT system. Especially when they are not satisfied with the first RFQ that they received from potential sellers, they should repeat the same processes several times until they reach a consensus. If they negotiated by telephone or based on face-to-face meeting, they could reduce the time they should waste through the repeated computerized process. Regardless of potential benefits, the complexity of the system prohibits sellers and buyers to use the system actively.

The traditional practice is the most serious barrier that prevents buyers or sellers to get online. They have been accustomed to the transactions on credit over decades. The transactions on credit are only possible when trading partners completely trust each other. Under the situation, the price down is not such an important factor as in other industries. Actually, the price down can be possible on the phone by one call because of the accumulated trust with each other. As was recognized through interview with other firms, the trust-based relationship between sellers and buyer is strong. The behavior to change major trading partners cannot happen easily in online transactions as well as in offline transactions.

## ■ Case 5: Buyer C

Buyer C purchases raw materials such as steel from about thirty suppliers or distributors. It then sells the purchased steel to buyers, end-users. Although when large distributors operate as sellers, they usually are powerful in the relationship with buyers. Buyers try to maintain a good relationship with their existing sellers. The company began to trade with Hwanggum Steel & Technology Co., the parent firm of AnySteel.com in offline dimension. Then, over a period of six months, AnySteel.com managed to persuade the company to use online EC system.

There are still many problems that prevent buyer firms from actively utilizing e-MPs, according to an interviewee. One of the most critical issues is related to the importance of the relationship. The relationship is the fidelity to existing trading partners. The important thing is not the price. Continuous negotiation can lower the price down. But, the credibility of trading partners is not accumulated in one day. The trust is very important on both sides. On the side of buyers, the assurance that sellers will give the required amounts of products when the products run short is essential for stable provision of products. The belief that buyers will pay in time without making any trouble is also critically important on the side of sellers. Because of such issues, it is not common to change the existing trading partners without any critical problems. It leads to the reluctance to look for new sellers or buyers online as well as offline.

In addition, the complexity of trading procedures over e-MPs is another serious barrier that makes people in charge of purchasing hesitant to use e-MPs. One interviewee in his fifties mentioned that he found it difficult when he started to use the e-MP even though he had over a decade's experience in working with computer systems.

Typically, face-to-face meeting is the critical factor to establish trust-based relationship with their trading partners. The long lasting relationship based on physical communication channels is the basis on which to continue their businesses in the steel industry. In that sense, the possibility is reduced that e-MPs are actively accepted by the actors in the industry and become the driving factor to break off the previous relationships. Even in the situation where AnySteel.com provides the same trading conditions in online transactions as in offline transactions, the firms are not be persuaded to actively extend online transactions and look for

new trading partners. In addition, the need for credit guarantee by Korea Credit Guarantee Fund discourages small and medium sized firms that are not capable to acquire the credit guarantee to participate in trading.

#### ■ Case 6: Buyer D

Buyer D was established in 1999 and started to trade over AnySteel.com since May 2002. The main reason that the company started to use the system is for the loan of purchasing money from Korea Credit Guarantee Fund. The company found that B2B e-Guarantee system was of great use to loan purchasing money. Because it was located in a five-minute distance from AnySteel.com, it could acquire much information about the e-MP accurately. The physical proximity to AnySteel.com was one of the important factors that buyer D began to participate in online transactions.

The active intention of the purchasing over AnySteel.com of buyer D resulted in the registration of existing sellers of the company to the e-MP. However, it was not related to the diversification of sellers in terms of buyer D. It was no more than the change of the way of trading with the same existing trading partners.

Like other interviewed firms, the company still has difficulty in trading over the e-MP. As mentioned, when the company purchases some products over the e-MP, sellers of the company should also become members of the e-MP. But, in the situation where sellers have difficulty in expanding market over online marketplaces, sellers do not get any advantage from using the online marketplace and also should pay transaction fees of 0.8% of the total sum of the money of traded products.

According to the interview, in the situation where credibility of trading partners is the most important, the role of the e-MP to give accurate information about the members of the e-MP is required. In addition, the purchasing money from B2B Credit guarantee from the Fund is not enough for small and medium sized buyers.

### **3.2.3. Degree to break off existing relationship**

Some barriers for the development of online transactions over e-MPs were detected

through the interviews with a few directors of AnySteel.com and some managers of participating firms. They are briefly summarized as follows.

The first one is the entry barrier related to learning how to use IT infrastructure that is essential to the use of e-MPs. Unlike the expectation about the diffusion of IT infrastructure, it is very difficult for workers in small and medium sized firms to accept the technology within a short time. There could be some resistance to change their way of doing businesses, especially in case of middle-aged managers.

Second, the transactions based on credit are common in Korea. Generally, promissory notes or post-dated checks are given to sellers and buyers pay the money six months or a year later according to the conditions of the check. Even in case of transactions in cash, the money is not paid immediately after products are delivered. Traditionally, the money is fully paid given after a month. It is not common to pay the bill right after sellers deliver products. In that situation, trading partners should take risks to some extent. Sellers might not get paid at proper time. Buyers should take out a mortgage on houses or land to make sure that they would pay the money in time. Most transactions cannot help having to rely on the trust between trading partners.

Most e-MPs have difficulty in getting over the situations at all. Therefore, many public e-MPs changed their way of doing businesses from third-party mediators to online agents. They began to realize that it was hard to attract sellers and buyers into online businesses unless sellers and buyers were sure of the security of transactions they made over e-MPs. Then, they purchased products directly and resold them to buyers. They earn the profit from price differences. It is actually online version of offline wholesale industries. Nevertheless, many e-MPs prefer the business model because it guarantees profit.

Third, the preference for the existing trading partners is strong in the conservative steel industry. As mentioned earlier, it is expressed as betrayers to change trading partners in extreme cases. The industrial environment of the unstable provision of steel products strengthens the relationship between distributors and buyers. Small and medium sized manufacturers are worried that they could not get required amounts of products if they did not maintain the strong relationship with existing distributors. If they change sellers by price opportunistically, no distributors or sellers would consider providing products at emergent situation.

As a way to overcome the preference for existing trading partners due to the practices on trading on credit, electronic payment system was introduced over AnySteel.com. Only if the payment is guaranteed, many parts of potential benefits of using e-MPs can be realized.

① Above all, buyers can loan more money from Korea Credit Guarantee Fund when they make transaction online in practical term. Such incentive is very much attractive to most potential buyers with small and medium size.

In addition, when many buyers start to trade over the e-MP, buyers also can diversify trading partners, increasing the flexibility in selecting sellers. In the past, sellers held a mortgage to guarantee payments and buyers did not have any choice to change their existing trading partners because of the mortgage. Even after they found the new sellers with better condition, it was almost impossible to change the existing sellers to new ones. However, the introduction of e-MP with electronic payment system enables to do it.

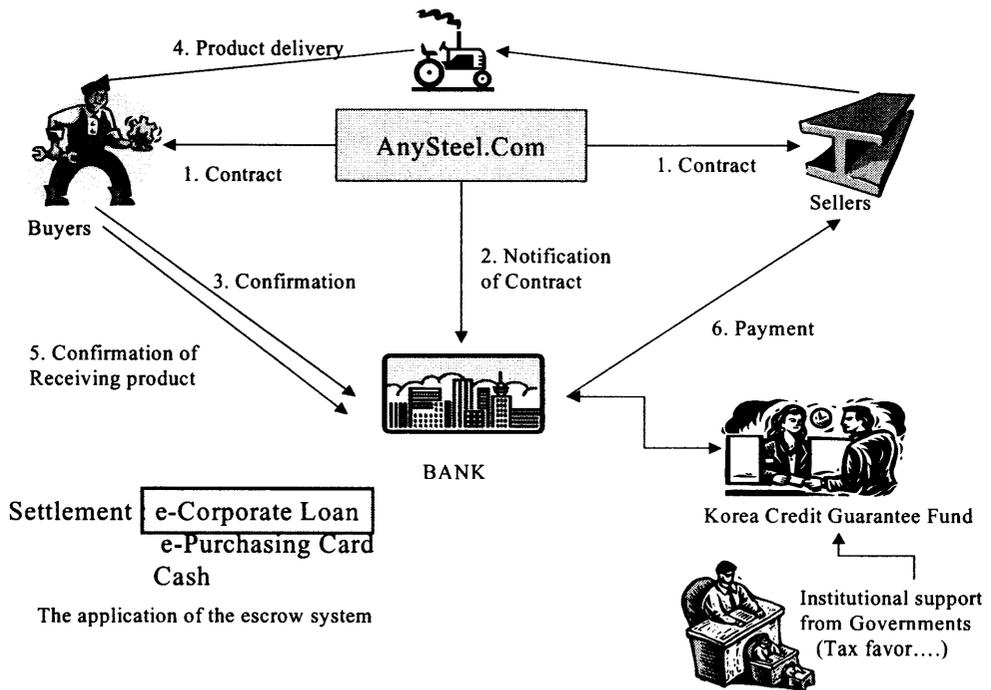
② Sellers also can extend the number of buyers by reducing the risk of not getting paid. The guarantee of the payment by Shinhan Bank and Korea Credit Guarantee Fund encourages sellers to actively trade with new buyers. Because they can discount bills, they do not have any difficulty in trading online. The increase of purchasing power of buyers by increased B2B credit guarantee fund is another benefit that sellers can enjoy.

③ The bank and the Korea Credit Guarantee Fund get some benefits by the introduction of B2B Credit Guarantee Fund for the use of e-MPs. Korea Credit Guarantee Fund can check where firms use industrial loan. Bank also can create new market by getting financial commission fees.

④ On the side of government, online transactions is closely linked to the increase in tax revenues. The reduction of the black market and the enhancement of transaction transparency are the main concern of the government in terms of EC.

The procedures of electronic payment system over AnySteel.com are diagramed in Figure V-7.

■ An example of B2B e-Payment system



Source: AnySteel.com

Figure V-7 Electronic payment system of AnySteel.com

### **3.3. BuildPia.com (<http://www.buildpia.com>)**

#### **3.3.1. Case description**

##### **■ Position in Construction material industry**

As mentioned earlier, according to the annual result of EC by Korea National Statistical Office, the amount of EC transaction in the industry of construction/construction materials added up to 1,006 billion KRW, taking a leading position in the EC mediated by public B2B e-MPs. It amounts to about 26.6% of the total transactions over public B2B e-MPs. However, despite of the high ratio of the amounts of sales through online transactions over public B2B e-MPs in the construction industry, the actual operations of public B2B e-MPs in the industry do not seem to be so much active as expected. The high ratio in terms of traded money partially results from the bigger size of businesses related to the construction industry than that of other industries.

Although it was hard to find the information on the performance of major B2B e-MPs in construction/construction material industry, the basic information was acquired from a manager of BuildPia.com about the general situation of the e-MPs. The leading e-MPs include the Matplaza division of iMarketKorea (<http://www.matplaza.com>), Buildersnet (<http://www.buildersnet.co.kr>), e-KCC (<http://www.buildpia.com>) and so on. The three firms share in common the fact that they were established by the support of the large parent firms in offline construction industry and are in better positions to attract buyers and sellers. iMarketKorea is at the top of the e-MPs and the other two e-MPs follow it.

The amount of the sales over BuildPia.com is estimated to be 60 billion KRW, which is composed of 30 billion KRW in the agent business model and the other 30 billion KRW in the exchange business model. However, the proportion of the online transactions where all the processes are completely conducted over the e-MP is small in 2002. The types of products in the e-catalog are limited to the indirect construction materials or non-durable goods. Even though direct construction materials were initially included in the list for online catalog, the characteristics of the transactions in the industry suspended the online transaction of those direct construction materials temporarily and will be treated importantly in later sections.

## ■ Price down effect

According to the interview with a manager of BuildPia.com, the lower prices over e-MPs are not enough to attract potential buyers into online transactions in construction material industry. The manager explains the situation with some reasons. Above all, the actual users on construction sites prefer the products they are already familiar with because of the trust on the quality of the products. Therefore, they do not easily change the brands of products even in cases where new products are suggested with better price conditions. Another important reason is about the assurance of after-sales problems. Warranty of products is more important than the lower prices in construction materials. In addition, the purchasing staff do not desperately pursue the products with lower prices. Sellers should be responsible when something goes wrong after they change suppliers. Furthermore, under-the-table money issue plays an important role to prevent buyers from active participation in online e-MPs that provides the products with lower prices. Finally, there might be a specific relationship between potential buyers and the parent firms of e-MPs. For example, when the parent construction company outsources a construction to small specialty construction contractors, they feel pressure to purchase required materials from the e-MP that is a subsidiary of the parent construction company even without direct enforcement. Low price is not the first factor to be considered.

## ■ Company profile

Kumgang Co. merged Korea Chemical Co. into a single company of Kumgang Korea Chemical Company (KCC) in April 2000. Kumgang Korea Chemical Company established e-KCC in December, 2000 with the aim of developing EC in construction industry. e-KCC opened two B2B e-MPs including <http://www.buildpia.com> and <http://www.mattrade.com>. BuildPia.com deals with construction materials. Mattrade.com mediates the trades of raw materials to produce construction materials.

KCC is a leading company in construction industry. There are two main reasons why the company established e-KCC. First, as a leading company, KCC did not want to lose its

position in the era of the electronic economy. KCC expected to play a leading role in the market of the future in the construction industry. The other reason is its strong confidence in offline business competencies. It has established powerful offline business marketing competencies. KCC realized that the support by offline business was essential to succeed in online business.

■ Target market

About 500 specialty contractors who operated as the vendors of Kungang construction company became the customers of BuildPia.com. In addition, the official distributors of Kungang Korea Chemical Co. are one of the other main customers at this moment. BuildPia.com tried to encourage reliable construction material producers to become their members. The company enhanced marketing activities to attract potential buyers. With the effort, many specialty contractors not involved with its affiliated companies began to participate in the e-MP. The main sellers and buyers of BuildPia.com are diagrammed in Figure V-8.

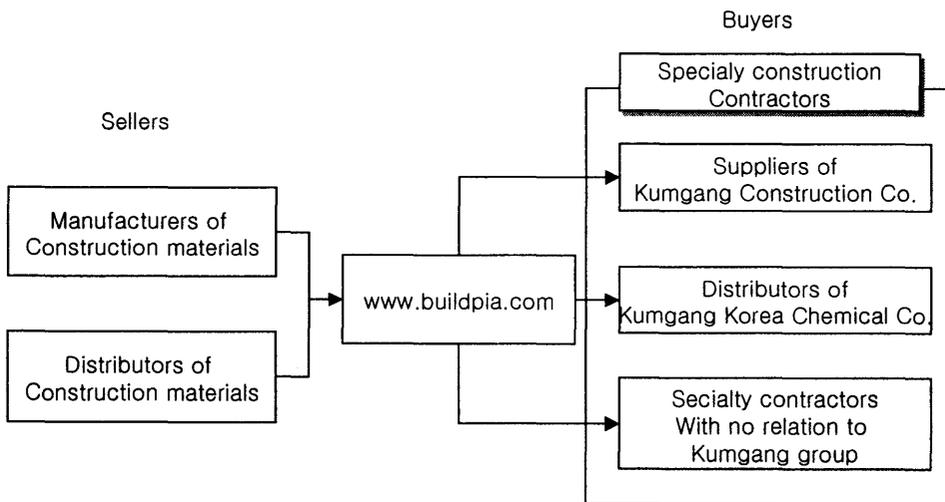


Figure V-8 Target market of BuildPia.com

## ■ Company location

e-KCC is located inside the building of KCC, the parent company in Seocho-dong, Seocho-gu, Seoul. Because e-KCC was established by KCC, it was reasonable to be located in the same building.

## ■ Business model

As for BuildPia.com, it originally planned to mediate between buyers and sellers, leading to reducing complex distribution channels and activating voluntary participation of involved companies. BuildPia.com planned that 90% of the total transactions through the e-MP would happen through the voluntary trading between sellers and buyers without the intervention of BuildPia.com. However, when it comes to the real situation, there was a big difference between the ideal and the real. It was not realistic to wait for voluntary trading over the e-MP.

BuildPia.com decided to focus on service as a procurement agency. BuildPia.com would purchase products from component makers and resell them to buyers, or specialty contractors. Customers finally started to use the e-MP actively because their trading partner was BuildPia.com in the agent model. Therefore, unlike the early intention, the sales from procurement agency service took a considerable portion. The business model of BuildPia.com is mainly summarized as follows:

① Online transactions with e-catalogs: Most transactions on the e-catalog over BuildPia.com are completed with the agent model. Most products on e-catalog are purchased by BuildPia.com and are resold to buyers. Buyers order products over BuildPia.com and sellers get the order information online. The direct transactions between actual sellers and buyers are not common.

② Online bidding : Online bidding is the representative type in which actual sellers and actual buyers trade directly without the intervention of BuildPia.com. Kumgang Construction Co. Ltd., an affiliated company of BuildPia.com is the main user of the online bidding system of BuildPia.com. It prefers the closed bidding with existing offline suppliers.

③ Offline transactions: BuildPia.com mediates the transactions of construction materials in a traditional way with the offline agent model. Buyers select products with paper-

based catalogs as well as online catalogs and contact the staff of BuildPia.com. BuildPia.com provides the products that are purchased from their sellers.

### ■ Locations of customers

The locations of customers mean the locations of their headquarters. e-KCC does not operate its own distributing centers where products are delivered from sellers and are sent to buyers so far. Products are directly delivered to construction sites in the transactions over BuildPia.com. Most buyers are located in the Seoul metropolitan area (about 40%) and Gyeonggi-do (about 50%), followed by Jeollanam area (about 10%). About 70% of the sellers are also located in the Seoul metropolitan area. Besides, Chungcheongnam area, Gyeongsangnam area, and Gyeongsangbuk area also take a proportion of about 10% each.

### 3.3.2. Change of the spatial coverage of participants

#### (1) Quantitative analysis

Five sellers and eight buyers responded to the questionnaire. However, as the respondents were not familiar with the questionnaires, some questions were not answered and unreasonable answers were also detected. Therefore, in this section very limited number of the questions in questionnaires are analyzed and the in-depth interviews with the manager of the e-MP are included to complement the insufficient quantitative data. The interviews with several participating firms are added in the next section.

According to the collected questionnaire survey, the two of three sellers and the two of the three buyers answered that the online transactions tended to help expand the market of new buyers and diversify the geographical dimension of suppliers (Table V-28). It gives the impression that the use of public B2B e-MPs contributes to the geographical expansion of the selection of trading partners to some extent. However, a cautious interpretation is required and a hasty conclusion on the spatial impact in construction material industry should be avoided.

**Table V-28 Change of spatial coverage of online trading partners after the use of BuildPia.com (indirect materials\*)**

Case**	Previous offline trading*** (%)				Buildpia-led trading**** (%)				Purchasing amounts over Buildpia***** (%)
	Within the same city	Within the same province	Other areas within Korea	Over seas	Within the same city	Within the same province	Other areas within Korea	Over seas	
BS1	10	30	60	0	0	30	70	0	-
BS2	44	56	0	0	0	100	0	0	11
BS3	10	50	40	0	60	30	10	0	0.7
BB1	100	0	0	0	0	50	50	0	50
BB2	100	0	0	0	60	40	0	0	80
BB3	70	30	0	0	70	30	0	0	80

\* Indirect materials=Most respondents of the questionnaires deal with the indirect or non-durable construction materials, not the direct construction materials. Such indirect materials are somewhat similar to MRO products. The implication of the limit of the respondents to specific product categories is shown in the paragraphs below

\*\* Case = the responding firms for questionnaire survey. BS=sellers, BB=buyers.

\*\*\*Previous offline trading is calculated based on the traded volume for a year right before firms introduce online transactions.

\*\*\*\* Buildpia-led trading is calculated based on the traded volume for a year from the time when firms begin the online transaction over Buildpia. 100% is the total traded volume over Buildpia for a year. The firms that do not trade over it less than a year are asked to estimate the data.

\*\*\*\*\* Purchasing amounts over Buildpia means the Buildpia-led traded amounts out of the total purchasing amounts for a year irrespective of online or offline. - = missing data.

Source: Questionnaire survey

First of all, the lack of an adequate number of samples makes it difficult to draw up a conclusion about the spatial impact of the public B2B e-MPs on construction material industry. However, a more important reason for a careful interpretation is that the respondents of the questionnaires are limited to the firms dealing with indirect construction materials, or non-durable goods used in construction industry. It is mainly because the product categories traded on the website of BuildPia.com are restricted to those related to the indirect construction materials. The indirect materials are the uncountable number of diverse items required in the process of construction with the direct construction materials and they contain bonds, wires, silicon, tapes, gloves and so on.

Because such indirect construction materials have the similar characteristics with non-durable MRO products, they seem easier to change their trading partners in online transaction than main direct construction materials, according to the interview with a manager of this e-

MP. Nevertheless, the proportion of the indirect construction materials is nothing but 1.5~10% of the total construction materials at best. Therefore, their behavior is not necessarily representative for the whole construction B2B EC.

Rather, the interviewer highlights that most customers in construction material industry are not deeply influenced by the lower prices in terms of direct construction materials unless they are sure of the reliability of their trading partners. Likewise, sellers are also reluctant to sell products to the new buyers on which they do not have enough information unless they are certain that the new buyers will pay on time. Therefore, the function of lowering prices of public B2B e-MPs is not as attractive as expected to the customers that accumulated the trust-based relationship on a long-term basis. Only a small percentage of buyers and sellers are interested in trading online at this moment. Regardless of the spatial expansion of businesses by some participants in questionnaire survey, the in-depth interviews with managers of the e-MPs and participating firms focuses on the barriers of online transactions and the spatial expansion of trading partners.

## **(2) Qualitative analysis**

Two buyers and four sellers of BuildPia.com were interviewed in this section. The interviewed firms were selected with the help of BuildPia.com. They were chosen according to their business activities over BuildPia.com. Basic characteristics of interviewed firms are already introduced in Table III-8.

### **1) Online bidding**

Purchasing managers of Buying firms upload the condition for online bidding over the e-MP. They limit the sellers that are qualified to participate in online bidding in advance. Then, the information on online bidding is automatically sent to the managers of the selected sellers by e-mail or by mobile phone. Purchasing managers choose one of the suppliers that suggest the best condition, usually one with the lowest price. The negotiation process on the Internet is available. Buyer and the selected seller can continue the negotiation process to lower the price after bidding is completed if necessary.

## ■ Case 1: Buyer A

### General characteristics

Buyer A goes back to 1958 when its parent firm was established. The construction department was spun off in 1989. It is one of the major general construction companies in Korea. Its cooperative suppliers amount to about 600 firms. They are all potential online trading partners. To register the e-MP is a prerequisite to continue transaction with buyer A.

Most construction materials are supplied over the e-MP. However, some direct materials such as steel reinforcement, concrete are still traded in traditional offline dimension. The prices of such products are not usually different by suppliers. Therefore, competitive bidding is not meaningful. In addition, the products are easily influenced by unstable supply condition. The company often trades with more than one supplier. Contracts are made on a long-term basis with a unit price contract about those products.

Main reason to trade over the e-MP is that the e-MP is the affiliated company with buyer A. It began to use the e-MP since e-KCC opened BuildPia.com. The company started to trade actively over the e-MP from the fall of 2001. It does not have a plan to create its own private e-MP at this moment.

### Attitude toward online trading partners over the e-MPs and spatial coverage

Importantly, only existing offline suppliers are qualified to trade over the e-MP. The company only uses the closed bidding system where potential participants of online bidding are limited to the existing trading partners. 3~4 suppliers are usually existent about each purchased items.

If the company enables any firm to participate in online bidding, the total cost of purchasing can be reduced. However, more important thing is the quality of products. When it is supplied from new suppliers, the company cannot be sure of the quality of purchased products. The stable relationship with competitive suppliers is one of the most significant sources for competitiveness of the company. Therefore, it does not have a plan to make use of open bidding system within the near future. It cannot even be dreamt of to choose new trading

partners online. As a result, the spatial coverage of suppliers is not changed at all. It is mainly because existing offline suppliers can only take part in an online bidding system.

### **Advantage and disadvantage**

Buyer A actively utilizes online transaction. The e-MP provides diverse useful tools for convenient transactions. For example, the buyer can deliver a complex drawing through electronic network. According to a manager of the company, online transaction enables him to save time and effort. Even though some tasks are irritating at this stage, he thinks that it will disappear over time. More importantly, it helps transparent transactions with suppliers. The company does not worry about the issues of after-sales problems of online purchasing by forcing suppliers insured for warranty securities as it did in the past. It is possible to minimize the danger of online transaction by only trading with existing offline trading partners. It is, however, specific to buyer A that uses closed bidding with competitive existing suppliers.

By contrast, due to the characteristics of construction industry, the effect of cost reduction is not that significant. It is because the online transaction is almost made with the same trading partners as in the past. The company puts more importance on the achievement of transparent transactions and convenience than price down effect, in fact. In addition, because suppliers should pay the transaction fee in each transaction, the cost-reduction is trivial. Because suppliers are not accustomed to online transaction, they sometimes lose the chance to participate in online bidding because they are not informed offline.

### **■ Case 2: Seller A**

#### **General characteristics**

Seller A was established in 1965. The company produces and sells a variety of plumbing fixtures including bath shower-sets, sink taps, lavatory faucets and other bath fixture such as bathroom accessories. Total sales are estimated to be about 25 billion KRW in 2002. The employees amount to 187 people. Buyers stand at about 350 firms including construction companies, distributors, interior companies, and so on. The number of suppliers is about 80.

It has been a supplier of Buyer A since 1993. It participated in the offline bidding system of Buyer A to supply its products. Buyer A began to use BuildPia.com for online bidding at the end of 2000, seller A also became the member of BuildPia.com and took part in online transactions.

The provision of plumbing fixtures is decided when the model houses of new apartments are constructed in advance. Therefore, the bidding system about plumbing fixtures by buyers is not to choose which company to supply the products, but to choose the price for the already decided model of a specific company. It is different from the concept of the general bidding system where various manufacturers producing the similar types of products take part.

#### **Attitude toward online trading partners over the e-MPs and spatial coverage**

The change from offline bidding system to online bidding system did not have a strong influence on the way of doing business according to a manager of Seller A. Total sales to buyer A were not changed. The prices of products also were not changed. Besides, the way of payment was not changed either by that time<sup>59</sup>. In addition, the company did not experience the expansion of buyers by participating in BuildPia.com, because it only participated in the closed online bidding.

More interestingly, the continuous communication with buyer A and the actual users in construction sites is still very important. According to the manager of seller A, while the frequency of meeting each other decreased to some extent, face-to-face meeting is still significant for on-time delivery, warranty of products, and check of the quality of products and so on.

#### **■ Case 3: Seller B**

##### **General characteristics**

The company was established in 1986. It imports measuring devices or surveying

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<sup>59</sup> Buyer A recommends it to use the transactions through banks.

instruments and resells them to the users in construction sites. It also earns profits by the service of maintenance and repair. It is a typical SME with 3 employees. Annual sales are about 0.5 billion KRW. It takes advantage of online sales and offline sales. It also attempts to take part in B2G online transactions.

Seller B was one of the existing suppliers of Buyer A from the past. When Buyer A changed the way to purchase construction materials into online bidding system over BuildPia.com, it reasonably began to make the use of the public e-MP.

#### **Attitude toward online trading partners over the e-MPs and spatial coverage**

According to a manager of the company, the expansion of online transactions is favorable to the company. It looks at the bright side of B2B EC. Because it was a new and small and medium sized company, it has had difficulty in opening new market in offline transaction in spite of high-quality products. It expects that online transaction reduces the reception expenses related to the existing marketing practices to attract buyers and improves the transparency in choosing suppliers. In addition, according to the manager, the company reduced the margin by 5~10 % in some cases and lowered the price in online transactions. It was possible because no need for reception expenses and no chance of meeting competitive suppliers with which to confer on bidding in online transactions. However, the existence of transaction fees was additional pressure preventing the company from lowering the price.

More importantly, The use of BuildPia.com did not bring the increase in the number of buyers and the expansion of the spatial coverage because it only participates in the closed bidding system of buyer A<sup>60</sup>.

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<sup>60</sup> However, the experience of seller B with another e-MP explains a profile of the current situation of the e-MPs in this industry. It succeeded to sell products to a new buyer over another public B2B e-MP in construction material industry. It visited the new buyer before online transaction was made and explained the quality of products. Then, after the buyer decided to purchase the product, it asked the involved public B2B e-MP to upload the products on its e-catalog. Seller B finally registered the e-MP as an online seller. Then, the buyer purchased products over the e-MP. As shown in this case, the online transaction is not completely conducted online. The combination of online and offline marketing activities is important for successful businesses in digital economy. Another case explains the limit of the function of online marketplaces. The case is related to the private e-MP operated by a single major construction company. Seller B has been trying to take part in the online transaction with the construction company for a long time over the private online marketplace. However, it failed to do it because the buyer did not accept it as a new buyer. There is still a

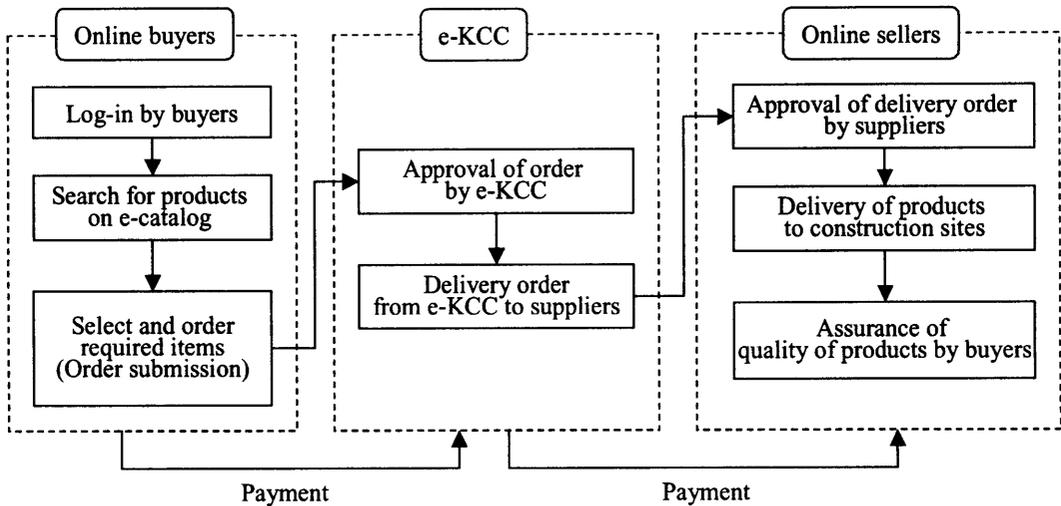
Regardless of the high expectation of the advantage of online transaction, the performance of the company in online transactions is not so high at this moment. However, as a small and medium sized dealer, it has a plan to expand the ratio at which products are sold over the electronic network over time. It attempts to parallel offline marketing activity and online one. The combination is especially important because of the characteristics of the products. Buyers do not purchase the products only by looking at e-catalog. They only check out the specifications in online and negotiate with sellers in offline dimension. Therefore, the importance of offline marketing activity is considered important.

## **2) Online transactions with e-catalogs**

In the online transactions over BuildPia.com with e-catalogs, buyers stop by the e-MP and look around the online catalogs to search for the best products for them. They choose required items and make online order by placing delivery date, the required amount of the items, and so on. The online order is transmitted to the staff of BuildPia.com. After the staff approve the order, delivery order of the items are sent to suppliers. The delivery order is sent in the form of mobile message or e-mail. Then, suppliers deliver the required items to buyers. After buyers check the quality of products, then the information is sent to the staff of BuildPia.com. The payment for goods is sent to online sellers from BuildPia.com usually in cash. BuildPia.com gets the payment for goods from buyers. General procedures are summarized in Figure V-9.

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high entry barrier for newcomers even in online dimension in construction industry. It is in line with the fact that all the online suppliers of Buyer A are also existing offline suppliers.



**Figure V-9 Procedures of the online transactions with e-catalogs over BuildPia.com**

■ **Case 4: Buyer B**

**General characteristics**

It was established in 1998 and is the official distributor of Kumgang Korea Chemical Co, Ltd. in the field of PVC windows and doors. As a small and medium sized company, the number of employees is 6 people. Total sales in 2002 are estimated to 2.6 billion KRW. The purchasing amount over BuildPia.com is about 3% of total purchasing.

All the indirect materials related to install windows and doors in construction sites are purchased over BuildPia.com. The frequency of online ordering over BuildPia.com is 7~8 times a year on average and a monthly purchased amount is about 10 million KRW on average. After products are delivered, it pays for the goods in cash at the end of the next month after products are delivered.

**Attitude toward online trading partners over the e-MPs and spatial coverage**

Because the company was a new start-up, it was not influenced by the strong relationship

with existing trading partners. Although it was purchasing from two existing trading partners, it did not hesitate to change suppliers. As an official distributor of KCC, it trusted the role of e-KCC as a new sourcing partner.

However, the purchasing from e-KCC over BuildPia.com was not a duty to the company. The staff of BuildPia.com continuously carried out marketing activities to suggest better purchasing conditions for them. Besides, because it was a subsidiary of KCC, the company can trust it. Finally it decided to trade over the e-MP.

The past two suppliers were located in Guro-dong, Seoul. The new suppliers over BuildPia.com are also located in Guro-dong, Seoul. In fact, buyer B does not care about the locations of the buyers because they make transactions with BuildPia.com. According to a staff of BuildPia.com in charge of sourcing for buyer B, the new selected suppliers over BuildPia.com are not changed frequently. Unless it causes trouble related to transactions, it is allowed to trade over BuildPia.com on a long-term basis and to make a trust-based relationship with e-KCC. BuildPia.com purchases a product from the most competitive supplier and attempts to increase in the total sales of the suppliers.

#### **Advantage and disadvantage**

The company as a small and medium sized buyer was satisfied with the online transactions over BuildPia.com. The on-time delivery and the purchasing with a small amount, and the transparent transaction were considered as the advantages of using the e-MP. By comparison, the complex online system was a disadvantage for the company. According to the staff of BuildPia.com, the marketing activities based on the face-to-face meeting are of significant importance to make the best use of the advantages of online transactions.

#### **■ Case 5: Seller C**

#### **General characteristics**

The company is founded in 1987 and is composed of a headquarters at Guro-dong in Seoul and a plant in Gimpo-si. It produces a series of products used to install windows and

doors in buildings and houses such as fasteners, anchors, sash, and so on. The number of employee stands at 35 and the total sales of 2002 are estimated to 5.4 billion KRW.

The online buyers that have traded with seller C over BuildPia.com amounts to 20 firms, most of which are the official distributors of Kumgang Korea Chemical Co., Ltd. Seller C is responsible for the provision for high-quality products, delivery and after-sales support, whereas BuildPia.com is responsible for extending the number of buyers and increasing total sales.

The ratio of the sales at which products are sold over BuildPia.com increased from 5~6% to 12% out of total sales. However, total sales did not increased so much. It means that the increase in the ratio of online sale was mainly because existing offline trading partners became online trading partners to a considerable extent. Seller C often persuaded existing buyers to trade with it online, suggesting lower price.

About 80% of the online buyers were already the customers of seller C even before it began to use BuildPia.com. When it got the information that all the transactions related to the KCC or its distributors would be made over e-KCC, a new subsidiary of KCC in 2000, it made efforts to become a member of e-KCC as a way not to lose existing buyers associated to KCC and to open up of new markets with the help of e-KCC. As e-KCC opened BuildPia.com, it automatically started online transactions at the end of 2000.

About 80% of the online buyers over BuildPia.com are regular customers and continuously purchase required items from it. According to an assistant manager of seller C, the difference of price is not so high as to influence the change of existing trading partners. Buyers usually put more importance on credibility and delivery than on price, even though some buyers prefer to maintain more than one seller for the stable supply of required products.

#### **Attitude toward online trading partners over the e-MPs and spatial coverage**

Regardless of types of transactions such as online transactions or offline transactions, the locations of construction sites are the same. It means that the introduction of online transaction did not have a strong influence of the expansion of the spatial coverage of trading partners. In case of seller C, it uses its own delivery system for the buyers in Seoul and Gyeonggi-do and makes use of logistics companies for remote buyers. Because the company

pays for the delivery cost, the delivery for the remote buyers with a small amount is not preferred. In addition, when the third logistics system is used, it does not deliver products to the very remote area and the buyers sometimes should go to logistics centers to get the delivered products. Therefore, seller C recommends remote buyers to purchase from local distributors dealing with its products.

### **Advantage and disadvantage**

The major advantages trading over BuildPia.com include the possibility to increase in sales by the function of the e-MP as a subsidiary of KCC to attract new buyers. The company can manage buyers effectively with the electronic system of the e-MP. The payment in cash by BuildPia.com is one of the important merits where the transactions on credit are common in construction industry.

In contrast, the company has difficulty in lowering the price of products in online transactions. In terms of the e-MP, the low price is one of the important factors to attract buyers even though the price condition is not so much influential as in other industries such as MRO industry. The e-MP should also have some margin to run their company. As a result, suppliers are required to provide products with lower price than it sells offline independently. On a short-term basis, it means the lowering of profits, but the supplier expects that the increase in buyers can make up for the loss of the margin in the future.

In the meantime, the introduction of online transactions did not lead to the removal of the offline meeting with the staff of the e-MP. On the side of the staff of the e-MP, the continuous face-to-face meeting and the communication by telephone is inevitable for successful online businesses. For example, the staff needs to check the on-time delivery when the supplier is very busy. On the side of seller C, the continuous face-to-face meeting is also of great use to accumulate the trust in trading online. It complains about the current system and asks for improvements in the future. It results in the improvement of the e-MPs to meet the needs of buyers and sellers.

In conclusion, the continuous communication among buyers, sellers, the staff of the e-MP is one of the most important factors for successful online transaction in construction material industry.

### **(3) Offline transactions**

An offline seller was interviewed to learn about the reason the company did not use the e-MP, although it was trading with e-KCC in offline dimension.

#### **■ Case 6: Seller D**

##### **General characteristics**

Seller D was recently founded in October 2002. Employees are only 4 people. It is a distributor that purchase construction materials from manufacturers and sell them to specialty construction contractors involved with steel concrete. It deals with various construction materials such as veneer boards, timber, pipes, Styrofoam and so on.

It began to trade with e-KCC in November 2002. As a newcomer in construction industry, it searched for the way to attract buyers and voluntarily contacted e-KCC after checking out the information of BuildPia.com in online. At present, it purchases only veneer boards from e-KCC.

When its buyers place an order of veneer boards on seller D, it puts the order on e-KCC. e-KCC also sends the order to its supplier. In fact, the products are delivered from the supplier of e-KCC to the buyer of seller D directly without the intermediate transaction processes. Therefore, the credibility between trading partners of the transactions is of great importance.

Seller D does not use the online transaction system of BuildPia.com, but uses tradition offline transactions. It hesitates to use the online transaction system because it is not sure about the delivery of online transactions. According to a director of the company, delivery is the most important part for the transactions of construction materials. The continuous communication is inevitable among the staff of e-KCC and seller D through face-to-face meeting or telephone. Besides, when problems happen related to the quality of products, the problems only can be solved through face-to-face negotiation. They are not solved on the Internet. In that regards, electronic communications based on the Internet does not guarantee maximum efficiency at this stage.

### **Possibility to use the online transaction system over BuildPia.com**

Seller D considers the online transactions over e-MPs beneficial for them on a long-term basis. Especially when it is a new start-up, the online transaction is viewed to make up for the weakness in the relationship with buyers and sellers to some extent.

Nevertheless, the company is doubtful about the transactions over e-MPs and the communications on the Internet. The accumulation of the trust should precede online transactions. The role of the staff of the e-MP is important in increasing in credibility. In addition, the various incentives for attracting potential buyers and sellers are required for expanding online transactions.

### **3.3.3. Degree to break off existing relationship**

There are several barriers that should be removed to encourage voluntary trading in the e-MP of construction material industry, according to the in-depth interviews. Many of them are deeply related to the systematic characteristics of construction industry.

Generally, most construction companies put credibility or reliability as the first priority when they make contracts. The warranty on products is the most critical factor. If problems happen when buildings are constructed, the suppliers of the improper products should take the responsibility for the situation. Therefore, the trust-based relationship is critical, and price is less important. It decreases the possibility that firms search for new trading partners in online marketplaces.

Second, payment condition is another barrier. Traditionally, payments are not given to suppliers right after products are delivered in the construction industry. Buyers give promissory notes. That is another reason the reliability of trading partners is at the first rank in deciding transactions.

Third, the motivation to use online marketplaces is not so great in the construction industry. Some are worried about losing their jobs after their companies actively use e-MPs. Additionally, the total reduction of purchasing cost and the increase of transparency in trading might not be important for some workers to some extent due to the disappearance of under-

the-table money.

Finally, even when buyers succeeded in searching for new suppliers and were satisfied with them over the e-MP, they may not continue the next transactions over the e-MP because they should pay commission fee to the e-MP. They can make contracts offline with the help of the e-MP.

Regardless of the leading position of e-KCC in construction industry, it is not easy to attract sellers and buyers into the e-MP. Many parts of businesses are still based on face-to-face meeting and offline distributing businesses. It is deeply involved with the traditional characteristics of construction industry.

Those barriers are supported by the result of the questionnaire survey. They also go with the interview with participating firms and the e-MP. Most buyers pointed out the problems relevant to the no guarantee of product quality, difficulty in transaction online and the after-sales problems etc (Table V-29).

**Table V-29 Constraints on the development of EC in construction industry on the side of buyers**

Barriers (multiple choices)	First reason		Second reason		Third reason	
	Frequency	%	Frequency	%	Frequency	%
No guarantee of product quality	6	85.7	0	0.0	1	14.3
Difficulty in transactions on credit	0	0.0	2	28.6	2	28.6
No guarantee on after sales problems	0	0.0	4	57.1	1	14.3
Difficulty in breaking off the relationship with existing trading partners	0	0.0	1	14.3	2	28.6
Cost increase including transaction fee	0	0.0	0	0.0	0	0.0
Technical difficulty in online connection and transactions	1	14.3	0	0.0	1	14.3
Total	7	100.0	7	100.0	7	100.0

Source: Questionnaire survey

In addition, some sellers mentioned the difficulty in breaking off the relationship with existing trading partners (Table V-30). It seems to reflect the lower position of sellers in comparison with the buyers in construction material industry to some degree.

**Table V-30 Constraints on the development of EC in construction industry on the side of sellers**

Barriers (multiple choices)	First reason		Second reason		Third reason	
	Frequency	%	Frequency	%	Frequency	%
No guarantee of product quality	1	25.0	0	0.0	1	50.0
Difficulty in transactions on credit	1	25.0	1	33.3	0	0.0
No guarantee on after sales problems	0	0.0	2	66.7	0	0.0
Difficulty in breaking off the relationship with existing trading partners	2	50.0	0	0.0	0	0.0
Cost increase including transaction fee	0	0.0	0	0.0	1	50.0
Technical difficulty in online connection and transactions	0	0.0	0	0.0	0	0.0
Total	4	100.0	3	100.0	2	100.0

Source: Questionnaire survey

#### **4. Summary: Examination of research hypotheses**

Chapter five deals with the change of spatial coverage after the introduction of public B2B e-MPs and the limiting factors critical to the expansion of spatial coverage. The third hypothesis (H3) is partially examined based on the findings of this chapter. The H3 is again divided into two parts of H3-A and H3-B.

**H3-A: The spatial coverage of the firms that trade over e-MPs is likely to be expanded. H3-B: The impact of public B2B e-MPs on the spatial coverage of buyers and sellers is likely to be differentiated by some attributes of industries and firms.**

**H3-1:** The degree of the expansion of spatial coverage after the introduction of public B2B e-MPs is likely to be differentiated by industry.

##### **R3-1: Change of spatial coverage after the introduction of public B2B e-MPs within Korea**

① MRO industry: The spatial coverage of business activities in the transactions over MRO public B2B e-MPs were expanding according to questionnaire analyses. The change of spatial coverage over MRO e-MPs was more obviously unveiled on the buyer side than on the supplier side in terms of traded amounts. However, a few buyers reported that the spatial coverage of their purchasing activities decreased after the use of e-MPs.

② Petroleum industry: The answers from some petroleum distributors that sold over OILPEX also verify the use of the e-MPs contributed to the expansion of spatial coverage of transactions to some extent. But, four out of nine respondents answered that they did not experience any change or a slight decrease of spatial coverage. It mainly resulted from the limit of the locations of the facilities for storing oils and the high pressure on transportation cost.

③ Steel industry: The result of in-depth interviews with four buyers and two sellers manifests that the growth of public B2B e-MPs in the industry is not as easy as many experts

expected a couple of years ago. Online transactions are only one complementary method of offline transactions. The existing spatial coverage that has been constructed from the past are not likely to be changed in the near future by the use of public B2B e-MPs.

④ Construction material industry: The analysis of the collected questionnaire shows some buyers and sellers are experiencing the expansion of spatial coverage after the use of e-MPs. However, because the sample size is small and most respondent were involved with indirect construction materials which has similar characteristics to MRO products, a cautious interpretation is required. In-depth interviews with a marketing manager and participating firms (two buyers and four sellers) reveal that there are many difficulties to attract buyers or sellers to trade over public B2B e-MPs in the construction industry.

**H3-2**: Difference in the preference for existing trading partners over public B2B e-MPs is an important reason for the difference in the expansion of the spatial coverage of online buyers and sellers.

### **R3-2: The factors critical to the expansion of spatial coverage of transactions**

Although some participating firms in public B2B e-MPs went through the geographical expansion of the spatial coverage after trading over public B2B e-MPs was discovered to some extent, it did not guarantee that the tendency was applied to all the industries. The in-depth interviews with some buyers and sellers and the managers of the cases of e-MPs accompanied by questionnaire surveys suggest that the effect of geographical expansion is not likely to hold for all the industries. This chapter attempted to figure out the factors that limited the geographical expansion.

### A. Preference for existing trading partners

① Above all, the extent of maintaining existing offline trading partners even after they use e-MPs mainly limits the expansion of spatial coverage. About the question as to the strategy to choose trading partners through e-MPs it was found that the buyers in each industry generally had a positive attitude to make contracts with new suppliers (Table V-31).

**Table V-31 The importance of maintaining existing trading partners on the side of buyers**

Strategy	eNtoB + iMarketKorea (MRO)	OILPEX (Petroleum)	Buildpia (Construction material)
To actively maintain existing trading partners	15.8%	14.6%	14.3%
No preference between existing traders and potential new traders	78.9%	65.9%	71.4%
To actively search for competitive new trading partners	5.3%	19.5%	14.3%
Total (count)	19	41	7

Source: Questionnaire survey

However, somewhat paradoxically, in a concrete question as to their responses when new suppliers<sup>61</sup> suggested better conditions for contracts, they still considerably preferred existing trading partners to new suppliers (Table V-32).

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<sup>61</sup> In this study, new sellers or new buyers mean those that begin to trade with firms for the first time.

**Table V-32 The preference for trading partners when new ones suggest better trading conditions on the side of buyers**

If new traders suggest better conditions?	eNtoB +iMarketKorea (MRO)	OILPEX (Petroleum)	Buildpia (Construction material)
Prefer existing trading partners	52.2%	80.5%	100.0%
No preference	30.4%	14.6%	0.0%
Prefer new trading partners	17.4%	4.9%	0.0%
Total (count)	23	41	7

Notes) Originally asked on a five-scale basis in the questionnaire. Prefer includes strongly prefer and a little prefer.

Source: Questionnaire survey

② There was a difference in the preference for existing trading partners by industry, although it was hard to clearly make a conclusion due to a small sample size. The buyers in MRO industry tended to take a more flexible attitude to change their existing trading partners than those in vertical public e-MPs in a real situation (Table V-32), in spite of no big difference in the strategy about choosing trading partners over public B2B e-MPs (Table V-31).

#### **B. The affecting factors to the preference for existing trading partners**

The degree of the preference for existing trading partners is considered important in this study because it directly influences the possibility of the geographical expansion of the economic activities of online participants. Only after many firms actively utilize public B2B e-MPs and are not reluctant to change existing trading partners, the change of spatial coverage is worth debating. Several reasons that affect the preference for existing trading partners are summarized based on the in-depth interviews and questionnaire surveys. The factors are grouped into four categories.

First of all, unique industrial characteristics have a strong influence on the possibility that players in the industries participate in online transactions over public B2B e-MPs. Such

factors include the traditional practices of credit-based transactions, the strong influence of dominant players, unstable demand and supply conditions, complex formal/informal relationship between existing trading partners and so on. These factors are combined and contribute to the strong need for fidelity of most market players toward existing trading partners. The reliance on powerful existing trading partners sometimes forces firms to use the online marketplaces irrespective of their own preference. However, even in the case, it is hard to expect the active effort to search for new trading partners, which is one of the ideal advantages of trading over public B2B e-MPs. The relationship based on accumulated trust is often continued in online transactions as in offline transactions.

Second, the attributes of traded products essentially influence the adaptability of online transactions and the possibility to make new trading relationship. The products that need quality control, product inspection, and the warranty of products are not usually appropriate for online transactions. Moreover, even after such products are traded online, buyers prefer their offline trading partners due to the issue of credibility of the quality of the products and on potential after-sales problems.

It is also the case that even in the cases where the attributes of products are appropriate for online transactions, those that need high transportation cost and frequent delivery are not traded with remote new suppliers. The limit of the distribution of storage warehouses is another barrier to expand the spatial coverage of online transactions. The change of existing trading partners happen within limited regional area.

The reluctance of people to adapt is another serious problem to be overcome for the prevalence of public B2B e-MPs. Many firms still find it difficult to trade online, using computer and the Internet. Cultural resistance to changing the way of doing business sometimes more seriously affects the decision to become the member of e-MPs. Furthermore, such resistance also results in maintaining the existing relationship with trading partners even in online transactions. The practice related to the under-the-table money between trading partners diminishes the intention to get online.

In addition, the pressure for transaction fees is another barrier that prevents firms from trading online. Even after they succeed in searching for new competitive trading partners, they sometimes make direct offline transactions without using online marketplaces. The lack of the tools with which to guarantee the credibility of online trading partners that are not well known

discourages the will to trade over public B2B e-MPs. The factors are listed in Table V-33.

**Table V-33 The factors affecting the preference for existing trading partners**

<b>① Industry</b>
<ul style="list-style-type: none"> <li>- Traditional practices of the transactions on credit</li> <li>- Traditional market structure; the influence of dominant market players</li> <li>- Unstable supply and demand conditions</li> <li>- Complex formal/informal relationship between existing trading partners</li> <li>- Need for fidelity to existing trading partners</li> </ul>
<b>② Products</b>
<ul style="list-style-type: none"> <li>- Quality control; products inspections</li> <li>- Warranty of products</li> <li>- Transportation cost</li> <li>- Need for frequent delivery</li> <li>- Limited distributions of destinations or storage warehouses</li> </ul>
<b>③ People</b>
<ul style="list-style-type: none"> <li>- Difficulties encountered in using IT infrastructures</li> <li>- Resistance to change of practices and fear of losing jobs</li> <li>- Issues of under-the-table money</li> </ul>
<b>④ Systematic weakness of public B2B e-MPs</b>
<ul style="list-style-type: none"> <li>- Pressure for transaction fees and the possibility of direct transactions</li> <li>- No tools to guarantee the reliability of trading partners over e-MPs</li> </ul>

Source: Summary of in-depth interviews and questionnaire surveys

## **VI. Spatial flows of products over eNtoB e-MP**

### **1. Introduction**

The analysis of the cases of e-MPs in Chapter V shows the possibility that the participants in MRO e-MPs enjoy the spatial effect on the geographical expansion more than those in other industries. Based on the findings in the previous chapter, more specified analysis is carried out on the spatial flows of the traded products over eNtoB MRO e-MP. Furthermore, the detailed analysis on participants is also added.

The main hypothesis to be verified in this chapter is the same one as in the previous Chapter V. However, because it narrowed the focus into the spatial flows of the traded products over an MRO e-MP, related sub hypotheses are set forth and they are expressed as H3-3 and H3-4.

**H3-A: The spatial coverage of the firms that trade over e-MPs is likely to be expanded. H3-B: The impact of public B2B e-MPs on the spatial coverage of buyers and sellers is likely to be differentiated by some attributes of industries and firms.**

H3-3: Differences in business models are likely to cause the differences in the spatial coverage between online buyers and sellers.

H3-4: The differences in spatial coverage and the preference for local suppliers are likely to be influenced by some factors related to strategic sourcing of market operators and the limit of e-MPs as online intermediaries.

### **2. Business models and traded products**

General information on eNtoB e-MPs is provided in the previous chapter. In this section, business models and the characteristics of traded products over eNtoB e-MP are introduced.

## ■ Business model

Public B2B e-MPs by business models are classified into two types in this study. They are the e-MPs with the agent model and those with the exchange model, respectively (Refer to Table II-3 and Figure II-3).

eNtoB makes use of both the agent model and the exchange model. To this end, it mainly provides two online trading tools. First, electronic catalogs are the major source with which online transactions are made. The transactions with electronic catalogs are utilized for the two business models. In the transaction with exchange models, the registered customers visit the online catalog of eNtoB whenever they need some MRO products. They are responsible for choosing trading partners and make direct transactions with the chosen suppliers. On the other side with the agent model, customers stop by the online catalogs of eNtoB and place purchasing orders, based on the contracts that their firms made with eNtoB about unit price, purchasing amounts, and delivery conditions during a specific period.

Besides, eNtoB also operates the auction tool in which companies actively participate in the decision of prices. The auction, more accurately reverse-auction tool, is provided for the customers that attempt to make use of the benefit of the dynamic pricing mechanism by allowing potential suppliers to suggest better contract conditions. As mentioned in the methodology chapter, the online transactions using only e-catalogs are dealt with in this chapter for data analysis.

The transactions on e-catalogs with different business model are called SFS transactions and Markup transactions by eNtoB. SFS transactions are the abbreviation of Store Front Selling and mean the transactions on e-catalogs with exchange model. Markup transactions point out the transactions on e-catalogs with agent model.

☞ **SFS transactions: Store Front Selling (SFS)**

Direct transactions between sellers and buyers over e-MPs searching on electronic catalogs

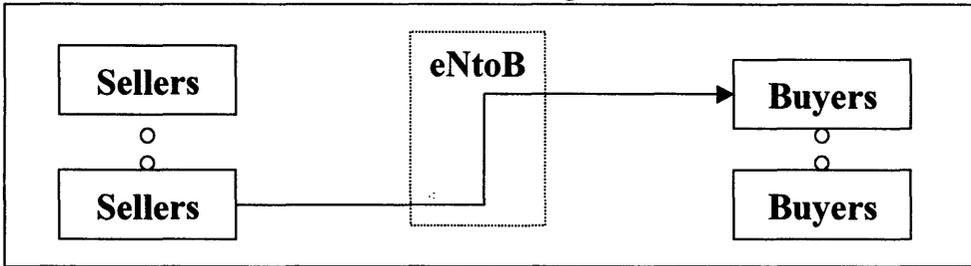
☞ **Markup transactions:**

Outsourcing of purchasing MRO products to Procurement Agency Service of e-MP. Profit source of e-MPs is the price differences (or Markup) between the price of purchasing from suppliers and of reselling to customers.

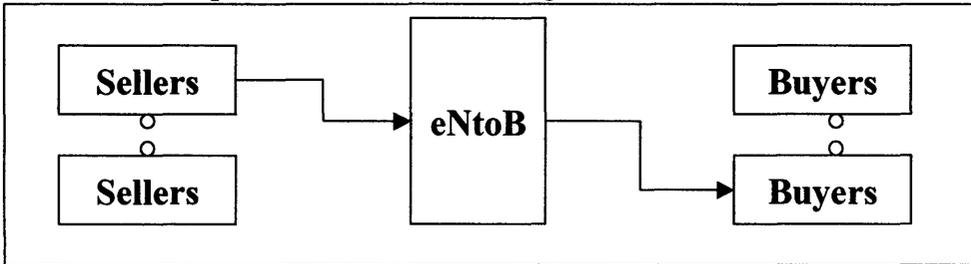
In SFS transactions (with exchange model), buyers choose sellers and sellers deliver products to buyers. The e-MP only supports the both sides for the better conditions for making transactions and never intervene transactions.

By contrast, in Markup transactions (with agent model), buyers usually do not care about the sellers that provide products because they only make transactions with the e-MP. In principle, buyers do not need to know from whom they are supplied. Unlike this, the buyers in Markup transactions over eNtoB e-MPs get the information from which suppliers they are provided in many cases. They attempt not to make barriers between buyers and sellers (Refer to Figure VI-1). It enables buyers to have credit on the service of the online marketplace and helps them acquire some knowledge about the sourcing partners.

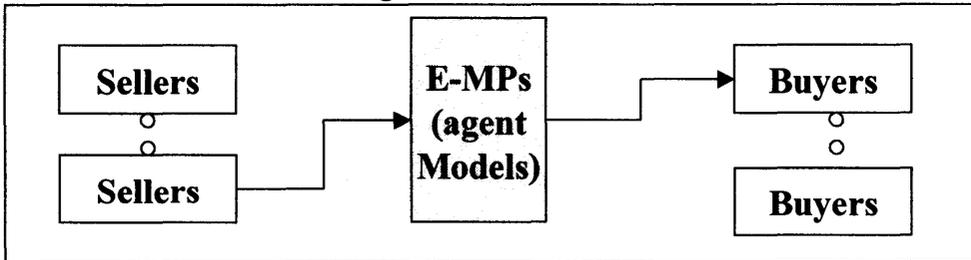
**SFS transactions with the exchange model over eNtoB**



**Markup transactions with the agent model over eNtoB**



**Transactions with the agent model over other E-MPs**



Notes) The first rectangle of eNtoB with dotted lines in the exchange model means sellers and buyers directly contact each other to make contracts without intervention of the eNtoB. The second white rectangle of eNtoB with solid lines in the agent model means that sellers and buyers of eNtoB know the actual trading partners in many cases in spite of the intervention of eNtoB as a sourcing strategy of eNtoB. The third gray rectangle with solid lines in the agent model means that sellers and buyers usually do not care about their trading partners because the e-MPs control the transactions and work as a wall with which to block the interaction between buyers and sellers.

**Figure VI-1 Relationship between buyers and sellers by business models**

## ■ Classification of traded products

Basically, items or products traded over eNtoB e-MP are grouped into fifteen categories. They include machinery parts, tools, maintenance/repair products, electricity/electronics, petrochemical products, office supplies, equipment/daily commodities, transportation-related products, direct/indirect materials, medical goods, computer/IT products, fixture products, printing materials, measurement/control devices, and telecommunication equipment. As of April 2002, eNtoB placed about 250,000 items on e-catalogs. Main items that belong to each category are introduced in Table VI-1.

**Table VI-1 Types of traded MRO products in eNtoB**

(At the end of April 2002)

MR vs. O*	Product classification	Item category	Number of items on eNtoB e-catalogs
MR	Machinery parts	Air compressors, Heat exchangers, Gears, Gearboxes, Drive coupling, Drums, Vibrators, Burners, Boilers, Shafts/Accelerators, Ventilations, Sprocket, Lab-equipment, Compressors, Compressors Accessories, Actuators, Hydraulic Machinery, Clutches/Brakes and Accessories, Tanks, Fans, Pumps, Key/Keystock, Pulley/Sheave, etc.	24,018
MR	Tools	Power Tools, Layout Tools, Retrieving Tools, Hand Tools, Welding Equipment, Fixing Tools, Cutting Tools, Communication Tools, etc.	52,737
MR	Maintenance/Repair products	Gaskets/Packing/Sealing, machinery maintenance/repair related items, Machinery spare /Fittings, Valves and Valve Accessories, Bearings and Bearing Accessories, Pipes/Tubes/Hoses, Pipe/Tube/Hose Fittings, Filters and Filter Accessories, etc.	55,485
MR	Electricity/electronics	Lamps/Lights, Laser Pointers, Batteries, Office Electronics, Audios/Videos, Electricity/electronics, Electric Appliances, Electric Calculators/Dictionarys, Cameras and Camera Accessories, Cables and Cable Accessories, Projectors, etc.	46,741

MR vs. O*	Product classification	Item category	Number of items on eNtoB e-catalogs
MR	Petrochemical products	Paints, Industrial Chemical/Gases materials, Wasting Chemicals, Fuels, Lubricating Devices, etc.	8,505
O	Office supplies	Binding/Laminating Systems, Offices Supplies/Desk Accessories, Draft/Art Outfits, Paper/OHP Film, Files/Binders/Notes, Stationery, etc.	12,969
O	Equipment/daily commodities	Personal Equipment, Lockers, Cash registers, Feeding/Kitchen Appliances, Security Goods, Stationery, Office Board, Office Furniture, Gift certificates, Facility and Management Supplies, Sports Goods, Laboratory Goods, Garbage Bags, Safety Goods, Cleaning/Sanitary Goods, etc.	8,873
MR	Transportation-related products	Power Transmission Products, Material Handling Products, Warehousing Equipment, Car accessories, Packing Materials, etc.	9,009
MR	Direct/indirect materials	Building Materials, Structural Materials, Vinyl Products, Wires, Raw materials, Glasses, Insulating Materials, Canvas, Felt products, etc.	3,071
	Medical goods	Medical Goods, etc.	8

MR vs. O*	Product classification	Item category	Number of items on eNtoB e-catalogs
O	Computer/IT products	Memory/Processor, Duplicators, Software, I/O devices, Storing devices, Computers, Computer Media, Computer Accessories, Computer Board, etc.	9,974
MR	Fixture products	Fixture Products, Screws, Nuts, Rivets, Nails, Bolts, Bolts-Nuts, Brackets, Studs, Spacers, Springs, Sleeve, Anchors, Washers, Clamps, Clips, Turnbuckles, Pins, Handles, Hinges, Hook, Knob, etc.	8,367
O	Printing materials	Books, Papers, Calendar/Diary, etc.	149
MR	Measurement/control devices	Detectors, Surveying Instruments, Optical Measurements, Recorders, Analytical Measurements, experiment/measuring devices, Electronic measurement devices, Controlling devices, Measuring Instruments, Measurement ancillary devices, Telecommunication measurement, Transducers, Transmitters, Environmental measurement devices, etc.	7,381
MR	Telecommunication equipment	Communication Equipment, Network Equipment, Track Materials, Telephone Cards, Communication Facilities, etc.	485
Total			247,772

\*The classification between MR (maintenance/repair) products and O (operating supplies) products is done with the help of the manager of eNtoB  
Source: eNtoB (translated from Korean)

### 3. Spatial distribution of buyers and sellers of eNtoB

The buyer firms that registered with the eNtoB amounted to 71 and the number of the sellers was 2,808 at the end of June 2002. The number of 71 is calculated based on the number of domain firms. Buyers are required to register first at the level of firms as domains. Then the main plants or offices operated in different regions are registered as customers. Each domain firm can have more than one customer. Actual users belong to each customer and are given individual user IDs and purchase MRO products over e-MP.

All the registered buyers and sellers do not necessarily trade over e-MPs. In total 2,501 sellers have sold MRO products over the eNtoB by the end of April 2002. As of June 2002, 427 customers purchased MRO products over eNtoB. The spatial distributions of buyers at the customer level and sellers are shown in Table VI-2. An interviewee evaluates that their buyers and sellers are dispersed across the country. Buyers and sellers are located across all the provinces of the country. However, there exists some regional concentration, more or less.

**Table VI-2 Distribution of the number of purchasing and selling units of eNtoB**

Region	Total	Seoul	Incheon Gyeonggi	Daejeon Chungnam,	Chungbuk	Gangwon	Jeonbuk	Gwangju Jeonnam	Daegu Gyeongbuk	Busan, Ulsan Gyeongnam,	Jeju
Sellers	2,501	978	446	82	25	54	124	171	245	375	1
%	100.0	39.1	17.8	3.3	1.0	2.2	5.0	6.8	9.8	15.0	0.0
Buyers*	427	107	71	33	17	28	17	31	55	58	10
%	100.0	25.1	16.6	7.7	4.0	6.6	4.0	7.3	12.9	13.6	2.3

Notes) \* The number of buyers is calculated based on customer registration data (based on the locations of delivery places), not domain data. Therefore some buyers can belong to the same firms (Reference time: Sellers at the end of April, Buyers at the end of June, 2002)

Source: eNtoB

The Seoul metropolitan area including Seoul and Gyeonggi-do takes a considerable portion of buyers as well as sellers. About 39% of the sellers are located in Seoul and 18% are located in Gyeonggi-do. In total 57% of sellers are located in the Seoul metropolitan area including Seoul, Gyeonggi-do, and Incheon metropolitan city. Besides, the southeastern

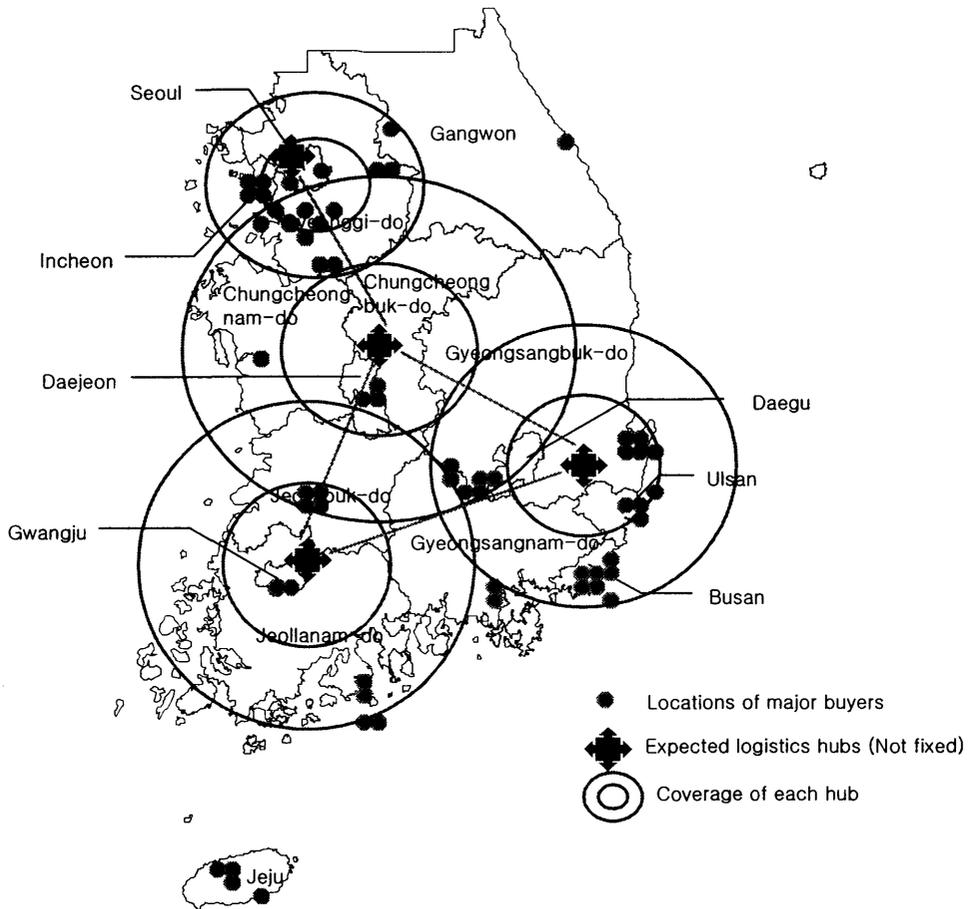
regions including Gyeongsangnam-do, Busan-metropolitan city, Ulsan-metropolitan city, Gyeongsangbuk-do, Daegu-metropolitan city take about 25% of total sellers.

The spatial distribution of buyers at the level of customers is not very different from that of sellers. 25 % of the customers are located in Seoul and 17% of them are in Gyeonggi-do. In total 42% of the customers are located in the Seoul metropolitan area. The customers in the southeastern regions amount to about 26%. While the extent to which customers are agglomerated in the Seoul metropolitan area is lower than that of sellers, the spatial distribution pattern of the customers of eNtoB still shows the importance of the Seoul metropolitan area and the southeastern regions.

Basically, the spatial distributions of buyer and sellers are classified into four groups by their locations. The four regional groups are so-called the Seoul metropolitan area, Youngnam area, Honam area, and Chungcheong area. The Seoul metropolitan area, as mentioned above, includes Seoul Metropolitan City, the capital of Korea, Gyeonggi-do, and Incheon Metropolitan City. Youngnam area includes three Metropolitan Cities such as Busan, Ulsan, Daegu and two provinces such as Gyeongsangnam-do and Gyeongsangbuk-do. Honam area covers the southwestern part of the country including Jeollanam-do, Jeollabuk-do, and Gwangju Metropolitan City. Chungcheong area is composed of Daejeon Metropolitan City, Chungcheongnam-do, and Chungcheongbuk-do.

In the analysis at the level of customers, the Seoul metropolitan area takes the proportion of 41.7%, followed by 26.5% of Youngnam area, 11.7% of Chungcheong area, and 11.3% of Honam area. In comparison, the spatial distribution of sellers by the four groups is respectively 56.9% of the Seoul metropolitan area, 24.8% of Youngnam area, 4.3% of Chungcheong area, and 11.8% of Honam area.

The analysis at the level of firms or domains shows the same pattern as in the analysis at the level of customers. The company is considering logistics hubs in each of the four regional groups for efficient delivery from sellers to buyers (Figure VI-2).



Source: eNtoB

**Figure VI-2 Spatial distribution of eNtoB buyers at firm level (domains)**

#### **4. Analysis of spatial flows by business model**

It is of significance to understand the spatial characteristics of the business activities of the participating firms of B2B e-MPs and to learn the impact of the B2B e-MPs on the spatial coverage of participants. To this end, the data for purchasing and selling over eNtoB e-MPs is acquired and analyzed in this section. The time period of the collected data is from January 2002 to June 2002. The data for the departure places of sellers and the delivery places of

buyers about each transaction is gathered by each transaction. A detailed description on data is made in Chapter III on the methodology for case studies.

#### **4.1. General overview of spatial distribution**

The importance of regions as departure places and delivery places for the trade products over eNtoB is analyzed in terms of traded money and traded volume<sup>62</sup> in Table VI-3 and Table VI-4. The spatial distribution of sellers (departure places) and buyers (delivery places) is different by business model.

The proportion of the sellers located in Seoul and in Gyeongsangbuk-do is about 31.5% and 20.9% in the exchange model in terms of traded money (Table VI-3). The proportion the sellers in Gyeonggi-do also amounts to over 13%. The spatial distribution of buyers is somewhat similar to that of sellers. The portions of Gyeongsangbuk-do, Seoul, and Gyeonggi-do are the highest. Although there are regional differences in percentage terms, the difference between the ratio of sellers and of buyers in each region in SFS transaction is not as big as that in Markup transaction.

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<sup>62</sup> As defined in Chapter III, traded money is calculated by multiplying the price of each item and the number of the items traded together. Traded volume is operationally defined as the total number of products traded and is calculated by adding the required number of each line-item in every purchasing order in this study.

**Table VI-3 Regional ratios of buyers and sellers in SFS transactions**

Measurement	Traded money		Traded volume	
	Buyers	Sellers	Buyers	Sellers
Seoul	25.50%	31.46%	1.92%	24.14%
Incheon	0.88%	0.39%	0.03%	0.27%
Gyeonggi-do	12.26%	13.14%	20.39%	2.78%
Daejeon	-	1.09%	-	6.04%
Chungcheongnam-do	1.44%	0.50%	1.08%	0.20%
Gangwon-do	0.33%	-	0.05%	-
Jeollabuk-do	4.43%	1.54%	20.33%	8.55%
Gwangju	-	0.16%	-	0.01%
Jeollanam-do	9.90%	7.85%	6.38%	5.91%
Gyeongsangbuk-do	27.95%	20.86%	7.72%	6.55%
Busan	12.21%	13.95%	32.16%	26.78%
Ulsan	4.94%	2.10%	9.88%	10.20%
Gyeongsangnam-do	0.14%	6.98%	0.06%	8.58%
Jeju-do	0.02%	-	0.00%	-
Total	100.00%	100.00%	100.00%	100.00%

Source: Calculated from the data from eNtoB

In contrast with the spatial distribution in SFS transactions, that in Markup transactions shows the concentration in a few regions in terms of traded money (Table VI-4). Although the buyers exist in every region in spite of the regional variations, about 96% of the items are provided by the Seoul metropolitan area including Seoul and Gyeonggi-do in terms of traded money. The concentration of sellers is conspicuous in Gyeonggi-do (65%) and that of buyers is noticeable in Gyeongsangbuk-do (37%). Seoul is the only region where the ratios of both buyers and sellers amount to over 30%.

Table VI-4 Regional ratios of buyers and sellers in Markup transactions

Measurement	Traded money		Traded volume	
	Buyers	Sellers	Buyers	Sellers
Seoul	39.49%	30.77%	9.26%	70.96%
Incheon	0.10%	0.51%	4.10%	0.38%
Gyeonggi-do	0.48%	65.20%	1.01%	16.48%
Daejeon	0.02%	0.13%	0.20%	0.76%
Chungcheongnam-do	15.95%	1.13%	78.10%	8.70%
Gangwon-do	0.48%	-	0.72%	-
Jeollabuk-do	0.32%	0.08%	0.39%	0.00%
Gwangju	0.04%	-	0.45%	-
Jeollanam-do	4.67%	-	0.20%	-
Daegu	0.02%	-	0.27%	-
Gyeongsangbuk-do	37.16%	-	4.78%	-
Busan	0.06%	2.19%	0.45%	2.72%
Ulsan	0.05%	-	0.00%	-
Gyeongsangnam-do	1.14%	-	0.07%	-
Jeju-do	0.02%	-	0.00%	-
Total	100.00%	100.00%	100.00%	100.00%

Source: Recalculated from the data provided by eNtoB

The analysis based on traded volume is more or less different from that based on traded money as shown Table VI-3 and Table VI-4. Busan (32%), Gyeonggi-do (20%), and Jeollabuk-do (20%) are crucial regions as the delivery places to which many products are delivered. The roles of Busan (27%) and Seoul (24%) are important as the departure places from which many products pass through. The ratio of the buyers in Seoul in terms of traded volume is considerably lower than in terms of traded money in SFS transactions as well as in Markup transactions. It means that the buyers in Seoul purchase expensive items. At the same time, about 71% of total traded volume for the first-half of 2002 came from Seoul while 78% of total traded volume was delivered to Chungcheongnam-do in terms of Markup transactions.

## **4.2. Spatial analysis of traded products by business model**

The flows from departure places to delivery places of traded products are analyzed for each transaction based on nine provinces and seven metropolitan cities in order to understand the spatial flows of traded products over eNtoB in a detail. Data is aggregated by the two standards such as traded money and traded volume.

In the data analysis based on the money spent on purchasing by customers, the buyers that select suppliers directly prefer the local suppliers within the same region (Table VI-5). Over 88% of the customers in Seoul purchased from the sellers in Seoul metropolitan regions. The ratio at which customers in Gyeonggi-do purchased from the suppliers within the Seoul metropolitan region amounted to about 98%. The buyers in the Seoul metropolitan area purchased most required MRO products from the suppliers within the same regional zone. Such a tendency to prefer the suppliers that are located physically closely is also strongly detected from the customers in Southeastern regions. The customers in Gyeongsangnam (Gyeongnam)-do spent about 94% of the purchasing money to the suppliers within the same province. Likewise, the buyers in Busan, and Ulsan purchased most MRO products from the suppliers in the same region. The buyers in Gyeongsangbuk-do and Jeollanam-do also have the similar tendency. Although the buyers in Chungcheongnam-do show the considerably low reliance on the suppliers within the same province and mainly buy from the suppliers in the Seoul metropolitan area, it is not surprising in that Chungcheongnam-do is recently considered as a region within the extended Seoul metropolitan area. Such preference for the local suppliers is more noticeable in the analysis based on traded volume than in that based on traded money. (Table VI-6).

The buyers in Markup transactions outsource the function of purchasing MRO products to the e-MP. They tend to be supplied by the sellers mainly from the Seoul metropolitan area in terms of traded money, no matter where they are located, according the data analysis (Table VI-7). Not to mention the buyers in the Seoul metropolitan area, the buyers in all the other regions ranging from Gangwon-do to Gyeongsangnam-do were mainly provided from the suppliers in the Seoul metropolitan area. The analysis based on traded volume also manifests the role of the Seoul metropolitan area as the central location where many competitive MRO suppliers are located (Table VI-8).

**Table VI-5 Intra- and inter-regional flows of the traded products in Storefront selling with e-catalogs (by traded money)**

Buyer's seller	Seoul	Incheon	Gyeonggi	Daejeon	Chungnam	Chungbuk	Gangwon	Jeonbuk	Gwangju	Jeonnam	Daegu	Gyeongbuk	Busan	Ulsan	Gyeongnam	Jeju	Total
Seoul	67.57%	72.14%	50.23%	59.38%	52.24%	27.42%	3.31%	16.16%	1.85%	2.42%	0.26%	0.86%	2.82%	0.39%	-	-	31.46%
Incheon	-0.18%	-	0.10%	-	-	0.43%	-	-	-	-	-	-	-	-	-	-	0.39%
Gyeonggi	20.33%	27.86%	48.01%	25.70%	47.38%	5.21%	0.74%	1.31%	4.28%	1.62%	1.31%	5.76%	100.00%	13.14%	-	-	13.14%
Daejeon	-	-	-	10.63%	-	21.11%	-	-	-	-	-	-	-	-	-	-	1.09%
Chungnam	-	-	-	4.29%	-	0.17%	0.39%	1.31%	-	0.45%	-	-	-	-	-	-	0.50%
Chungbuk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gangwon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jeonbuk	-	-	-	-	-	34.59%	-	-	-	0.14%	-	-	-	-	-	-	1.54%
Gwangju	-	-	0.72%	-	-	0.20%	0.64%	-	-	-	-	-	-	-	-	-	0.16%
Jeonnam	-	-	-	-	0.02%	0.45%	77.62%	0.52%	-	-	-	-	-	-	-	-	7.85%
Daegu	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gyeongbuk	-	-	0.66%	-	-	-	0.07%	74.30%	-	-	-	-	-	-	-	-	20.86%
Busan	11.93%	-	0.29%	-	0.36%	0.26%	16.71%	5.84%	55.53%	16.06%	-	-	-	-	-	-	13.95%
Ulsan	-	-	-	-	-	10.17%	-	-	0.52%	32.03%	-	-	-	-	-	-	2.10%
Gyeongnam	-	-	-	-	-	-	0.52%	0.32%	36.96%	44.47%	-	-	-	-	-	-	6.98%
Jeju	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Notes) Gray-colored cells present the intra-regional flow  
Source: Recalculated from the data provided by eNtoB

Table VI-6 Intra- and inter-regional flows of the traded products in Storefront selling with e-catalogs (by traded volume)

Regions Seller	Seoul	Incheon	Gyeonggi	Daejeon	Chungnam	Chungbuk	Gangwon	Jeonbuk	Gwangju	Jeonnam	Daegu	Gyeongbuk	Busan	Ulsan	Gyeongnam	Jeju	Total
Seoul	52.32%	70.36%	98.79%		48.72%		54.35%	6.65%		0.33%		10.64%	0.42%	0.89%			24.14%
Incheon	0.02%	-	0.00%*		-		-	0.01%		-		0.10%	0.17%	2.04%			0.27%
Gyeonggi	47.66%	29.64%	1.13%		30.53%		45.59%	0.15%		3.16%		2.90%	2.40%	0.44%		100.00%	2.78%
Daejeon	-	-	-		20.73%		-	28.60%		-		-	-	-			6.04%
Chungbuk	-	-	-		0.01%		-	0.00%		0.57%		2.04%	-	0.01%			0.20%
Chungnam																	
Gangwon																	
Jeonbuk	-	-	-		-		-	42.02%		-		-	-	0.05%			8.55%
Gyeongbuk	-	-	0.04%		-		-	0.01%		0.02%		-	-	-			0.01%
Jeonnam	-	-	-		-		0.03%	0.10%		92.30%		0.02%	-	-			5.91%
Daegu																	
Gyeongnam	-	-	0.03%		-		-	-		2.10%		82.95%	-	-			6.55%
Busan	0.00%	-	0.01%		-		0.03%	0.50%		1.44%		1.28%	78.88%	11.35%			26.78%
Ulsan	-	-	-		-		-	21.96%		-		-	0.26%	57.22%			10.20%
Gyeongju	-	-	-		-		-	-		0.08%		0.07%	17.88%	27.99%			8.58%
Jeju																	
Total	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%		100.00%		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

\*The percentage was rounded off to two decimal places and that is the reason for the value of 0.00%

Gray-colored cells present the intra-regional flow

Source: Recalculated from the data provided by eNitoB

Table VI-7 Intra- and inter-regional flows of the traded products in Markup transactions (by traded money)

Region	Seoul	Incheon	Gyeonggi	Daejeon	Chungnam	Chungbuk	Changwon	Jeonbuk	Gwangju	Jeonnam	Daegu	Gyeongbuk	Busan	Ulsan	Gyeongnam	Jeju	Total
Seoul	53.16%	48.76%	85.78%	73.57%	72.93%		98.82%	72.40%	51.88%	4.55%	74.16%	12.23%	35.10%	36.49%	0.95%	100.00%	30.77%
Incheon	8.03%				3.02%							0.03%					0.51%
Gyeonggi	66.86%	51.24%	14.22%	19.63%	15.15%		1.18%	3.41%	48.12%	95.07%	25.84%	82.35%	64.90%	63.51%	99.05%		65.20%
Daejeon				6.79%	0.79%												0.13%
Chungnam					7.07%												1.13%
Chungbuk																	
Changwon																	
Jeonbuk								24.18%									0.08%
Gwangju																	
Jeonnam																	
Daegu																	
Gyeongbuk																	
Busan					1.03%					0.38%		5.39%					2.19%
Ulsan																	
Gyeongnam																	
Jeju																	
Total	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Gray-colored cells present the intra-regional flow  
 Source: Recalculated from the data provided by eNtoB

Table VI-8 Intra- and inter-regional flows of the traded products in Markup transactions (by traded volume)

Source Region	Seoul	Incheon	Gyeonggi	Daejeon	Chungnam	Chungbuk	Gangwon	Jeonbuk	Gwangju	Jeonnam	Daegu	Gyeongbuk	Busan	Ulsan	Gyeongnam	Jeju	Total
Seoul	84.03%	99.97%	79.87%	94.70%	70.39%		99.28%	98.66%	96.81%	3.28%	95.18%	17.21%	94.41%	33.33%	5.88%	100.00%	70.96%
Incheon	0.01%	-	-	-	0.48%		-	-	-	-	-	0.01%	-	-	-	-	0.38%
Gyeonggi	15.36%	0.03%	20.13%	3.64%	17.00%		0.72%	1.17%	3.19%	83.61%	4.82%	26.64%	5.59%	66.67%	94.12%	-	16.48%
Daejeon	-	-	-	1.66%	0.97%		-	-	-	-	-	-	-	-	-	-	0.76%
Chungnam	-	-	-	-	11.14%		-	-	-	-	-	-	-	-	-	-	8.70%
Chungbuk																	
Gangwon																	
Jeonbuk	-	-	-	-	-		-	0.17%	-	-	-	-	-	-	-	-	0.00%
Gwangju																	
Jeonnam																	
Daegu																	
Gyeongbuk																	
Busan	-	-	-	-	0.02%		-	-	-	13.11%	-	56.13%	-	-	-	-	2.72%
Ulsan																	
Gyeongnam																	
Jeju																	
Total	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Gray-colored cells present the intra-regional flow  
Source: Recalculated from the data provided by eNtoB

### 4.3. Analysis of intra- and inter-regional flows of traded products

After the investigation of the spatial flows of traded products over eNtoB among nine provinces and six metropolitan cities, the ratios of the intra- and inter-regional flows are calculated. The intra-regional flow is defined as the spatial flow within each of nine regional units. The inter-regional flow means the spatial flows between two regional units. A regional unit is composed of a province and its neighboring metropolitan cities<sup>63</sup>. The definition of the nine regional units is described in detail in Figure III-3. The results of the analysis are summarized in Table VI-9.

**Table VI-9 Intra- and inter-regional product flows by business model**

Measurement	Traded money		Traded volume	
	SFS	Markup	SFS	Markup
<b>Intra-regional flow</b>	81.72%	41.40%	84.20%	23.84%
<b>Inter-regional flow</b>	18.28%	58.60%	15.80%	76.16%
<b>Total</b>	100.00%	100.00%	100.00%	100.00%

Source: Recalculated from the data provided by eNtoB

Above all, the completely differentiated pattern between intra- and inter-regional flows is remarkable because of the way customers use the B2B e-MP. In SFS transactions where customers directly make contracts with suppliers, most transactions are made with the suppliers located physically close to customers. In the analyses with the two measurement including total sales and total traded volume, the intra-regional transactions take the proportion of over 80%. Intra-regional transactions beyond the regional units amounted to only 16% in terms of traded volume<sup>64</sup>.

Such extreme preference for making transactions with physically close suppliers is

<sup>63</sup> Nine regional unit includes ① Seoul, Incheon, Gyeonggi-do, ② Daejeon, Chungcheongnam-do, ③ Chungcheongbuk-do, ④ Gangwon-do, ⑤ Jeollabuk-do, ⑥ Gwangju, Jeollanam-do, ⑦ Daegu, Gyeongsangbuk-do, ⑧ Busan, Ulsan, Gyeongsangnam-do, and ⑨ Jeju-do.

<sup>64</sup> The original data from the electronic marketplace is recalculated applying the boundary of regional units of Figure III-3.

reported clearly with the interviews with the managers of the e-MP:

*“When eNtoB opened the B2B e-MP, it attracted many competitive suppliers for online catalogs. However, when customers began to purchase over the e-catalog, many of them wanted to purchase from their existing offline trading partners. They asked for the efforts to encourage their offline suppliers to become the members of the e-MP. At the initial stage of business of eNtoB, most buyers relied on their existing trading partners. Because customers were not sure about the functions of public B2B e-MPs as the mediators to source MRO products on behalf of them, they tried to maintain their existing offline trading partners in online transactions. However, as they became accustomed to the way of doing business over the e-MP and they learnt to trust the e-MP, customers gradually began to increase the amounts of the outsourced amounts from the eNtoB. Only if delivery is guaranteed, then they accept the replacement of the existing trading partners with new competitive ones that are chosen by eNtoB.”*

In contrast with the case with SFS transactions, Markup transactions manifest completely different spatial flows of traded products. The volume of the traded products within regional units only amounts to about 24%, compared to 84% of SFS transactions. While the difference is reduced when calculated by traded money, the purchasing money that is paid to inter-regional suppliers in Markup transactions is twice that in SFS transactions. Considering that the B2B e-MP is in charge of searching for the best suppliers in Markup transactions, the higher ratio of inter-regional flows of traded products reflects the sourcing strategy of the e-MP. Because the elimination of the inefficiency related to purchasing MRO products is one of the main goals for online transactions, the MRO e-MP attempts to attract the competitive suppliers within wider physical area unless delivery related problems happen.

#### **4.4. Influence of differences in product types on spatial flows**

#### 4.4.1. Differences in product types by business model

There was a big difference in the preference of local suppliers by business model in the analysis of the spatial flows of traded products. Is there any significant difference in product types purchased over online network by business model? The spatial analysis by the product category is performed to learn the characteristics of products by business model (Table VI-10). Data is accrued in terms of the number of line-items and traded money.

**Table VI-10 Ratio of the traded items by product category and business model**

Business models	SFS transactions		Markup transactions	
Measurement Product type*	Line-items	Traded money	Line-items	Traded money
Tools (MR)	15.72%	12.98%	9.25%	2.41%
Maintenance/repair products (MR)	15.38%	5.35%	3.82%	0.43%
Office supplies (O)	14.83%	7.09%	26.29%	0.90%
Fixture products (MR)	13.56%	1.50%	4.27%	0.54%
Equipment/daily commodities (O)	11.69%	14.51%	8.56%	1.10%
Computer/IT products (O)	8.12%	15.12%	15.80%	81.30%
Electricity/electronics (MR)	7.28%	6.79%	17.11%	8.31%
Transportation related products (MR)	5.13%	15.85%	2.24%	0.70%
Petrochemical products (MR)	3.28%	2.23%	1.99%	0.30%
Direct/indirect materials (MR)	2.02%	3.58%	0.87%	0.19%
Machinery parts (MR)	1.07%	1.44%	2.49%	0.64%
Measurement/control devices (MR)	0.99%	0.77%	6.12%	2.26%
Telecommunication equipment (MR)	0.54%	11.42%	1.06%	0.91%
Printing materials (O)	0.40%	1.37%	0.15%	0.01%
Total**	100.01%	100.00%	100.02%	100.00%

\*(MR)=maintenance/repair products, (O)=operating inputs

\*\*The sum of column may not be 100.00% due to the rounding error.

Source: Recalculated from the data provided by eNtoB

In the storefront selling (SFS transactions), the portions of maintenance/repair products and tools are over 15% by the number of line-items, respectively. The percentage of office supplies almost stands at 15%. Fixture products (13.6%) and equipment/daily commodities (11.7%) follow the first three categories. By comparison, the category that takes the highest proportion is office supplies in the Markup transactions by the measurement of the number of line-items. Its proportion amounts to over 26%, followed by electricity/electronics (17.1%), Computer/IT products (15.8%). Office supplies and computer/IT products belong to O products, or operating supplies. When summing up all the items belonging to operating supplies including office supplies, computer/IT products, equipment/daily commodities, and printing materials<sup>65</sup>, their proportion in the outsourced Markup transactions with the agent model amounts to about 51%, compared with about 35% in the storefront selling transactions using the exchange model. It is revealed that the share of operating products is higher in the outsourced transactions with the agent model.

The high ratio of operating products in the Markup transactions with the agent model is remarkably noticed when measuring based on traded money. The proportion of operating products almost amounted to over 83% in the transactions with the agent model, while that only stood at about 38% in the SFS transactions with the exchange model. The high purchasing rate of computer/IT products (81.3%) contributed to the high proportion of operating products in the outsourced transactions. It is because the prices of computer/IT products are significantly higher than those of other products. The major items in computer/IT product category encompass desktop computers, notebook computers, and beam projectors etc.

Operating products are generally viewed as completely standardized products. Price condition is the most important factor in choosing suppliers, as product quality is not very different between suppliers. Such characteristics of operating products are revealed in the spatial flows of traded products in Markup transactions. The emphasis on the price condition and product quality leads to the selection of the suppliers within the Seoul metropolitan area as the center of Korean industrial complexes where a pool of competitive

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<sup>65</sup> Refer to Table VI-1 on the classification between MR products and O products.

suppliers in the field are located.

Another interesting point is that the buyers that outsource MRO purchasing function tend to hand over the items relevant to standardized operating products at first. The main purpose is to reduce the purchasing cost with the help of the sourcing experts. Unlike the SFS transactions where diverse types of items are traded, the items in the outsourced Markup transactions are mainly to standardized products. The products encompass the operating products and some maintenance/repair products.

#### **4.4.2. Intra- and inter-regional analysis by product category in each business model**

The difference in mainly traded product types by business model was indicated in the previous section. At first glance, the high ratio of standardized operating products in Markup transactions seemed to encourage the provision from remote suppliers, usually from those within the Seoul metropolitan area. In this regard, can the high percentage of inter-regional flow of traded products in the Markup transactions be explained only by the difference of the items traded online by business model? To answer the question, the locations of the suppliers dealing with the items in the same category are investigated by business model. If some differences exist in the locations of the suppliers providing the same types of items by business model, the tendencies towards the preference for local suppliers in SFS transactions and for inter-regional suppliers in Markup transactions are understood, as controlling the influence of the systematic difference in the characteristics of traded items. The result of the analysis is summarized in Table VI-11 in terms of traded money.

Local suppliers were preferred in storefront selling with the exchange model in most product categories. Except for electricity/electronics having the intra-regional supply with 41%, over 70% of the purchased products in all the other categories were supplied from the sellers within the same regional units. Furthermore, machinery parts (90%), fixture products (91%), tools (93%), transportation related products (93%), printing materials (94%), direct/indirect materials (97%), and telecommunication equipment (98%) took the proportion of over 90%. The proportion of being delivered from the suppliers with the same

regional units is also high even for standardized operating products such as printing materials (97%), equipment/daily commodities (79%), office supplies (75%), and computer/IT products (71%).

In contrast with the case of the storefront selling, the buyers that outsourced MRO products to the e-MP were mainly provided from inter-regional suppliers. The proportion delivered from the suppliers beyond local regions in Markup transactions was larger than in storefront selling transactions in all the categories. Transportation related products with the lowest proportion of inter-regional flow amounts to about 31%. The percentages at which operating products including equipment/daily commodities, printing materials, office supplies, and computer/IT products were delivered from the suppliers beyond local area ranged from 78%, 57%, 57%, and 56%, respectively in Markup transactions.

**Table VI-11 Ratio of the delivery to the buyers located within the same provinces as sellers by traded money**

Business model	SFS			Markup		
	Total sales	Intra-regional	Inter-regional	Total price	Intra-regional	Inter-regional
Telecommunication equipment (MR)*	11.42%	98.0%	2.0%	0.91%	23.9%	76.1%
Direct/indirect materials (MR)	3.58%	97.4%	2.6%	0.19%	45.6%	54.4%
Printing materials (O)	1.37%	93.5%	6.5%	0.01%	43.3%	56.7%
Transportation related products (MR)	15.85%	93.1%	6.9%	0.70%	69.1%	30.9%
Tools (MR)	12.98%	92.7%	7.3%	2.41%	6.6%	93.4%
Fixture products (MR)	1.50%	90.8%	9.2%	0.54%	8.4%	91.6%
Machinery parts (MR)	1.44%	89.7%	10.3%	0.64%	40.1%	59.9%
Equipment/daily commodities (O)	14.51%	79.1%	20.9%	1.10%	22.5%	77.5%
Maintenance/repair products (MR)	5.35%	75.4%	24.6%	0.43%	32.1%	67.9%
Office supplies (O)	7.09%	75.2%	24.8%	0.90%	43.4%	56.6%
Measurement/control devices (MR)	0.77%	74.3%	25.7%	2.26%	1.4%	98.6%
Computer/IT products (O)	15.12%	71.2%	28.8%	81.30%	44.4%	55.6%
Petrochemical products (MR)	2.23%	69.8%	30.2%	0.30%	45.9%	54.1%
Electricity/electronics (MR)	6.79%	41.0%	59.0%	8.31%	37.1%	62.9%

\*(MR)=maintenance/repair products, (O)=operating products

Notes) Incorrect data due to the mismatching of some transaction data to intra-and inter-flow is included by 1~2%. However, because raw data is not acquired and the value is tiny, data was used in this analysis without special process for data correction.

Source: restructured and recalculated from the materials from eNtoB

The proportion of intra-regional supply in Markup transactions is mainly explained with the supply of sellers located in the Seoul metropolitan area to buyers within the same area. For example, the proportions of intra-regional supply in such four operating products are also involved with the supply from the sellers within the Seoul metropolitan area including Seoul, Incheon, and Gyeonggi-do.

In terms of the number of line-items in Markup transactions as shown Table VI-13, the proportions of the sellers in Seoul, Incheon, and Gyeonggi-do in the four operating items are 95.4% in equipment/daily commodities, 100% in printing materials, 97.0% in office supplies, and 96.8% in computer/IT products. It contrasts with 8.4% in equipment/daily commodities, 23.7% in printing materials, 18.7% in office supplies, and 62.2% in computer/IT products in SFS transactions (Table VI-12).

The locations of the suppliers of MR or maintenance/repair products are also diversified in SFS transactions. Whereas most suppliers of the MR products in Markup transactions are located in the extended Seoul metropolitan area including Seoul, Incheon, Gyeonggi-do, and Chungcheongnam-do, those in SFS transactions are dispersed across the country. Although the proportion of telecommunication equipment delivered from Seoul is high (52%) as one of the standardized product category within MR products, the locations of the suppliers in other categories involved with MR products, except telecommunication equipment, are scattered across the country. Especially the southeastern end of the country including Gyeongbuk area and Gyeongnam area play a crucial role as the places from which many MR products as well as O products are delivered.

As a conclusion, to say nothing of maintenance/repair products, even operating products are delivered from the diverse parts of the country in SFS transactions. To be combined with the result of the remarkably high percentage of intra-regional flow of traded products in SFS transactions, a strong preference for local suppliers by the buyers that choose their trading partners directly happen across all the product categories of MRO items, even in the transactions of operating products. It is the contrasting result of the analysis of Markup transactions where operating products are mainly traded and most of them are delivered from the suppliers within the Seoul metropolitan area.

**Table VI-12 Locations of sellers by product types in SFS transactions by the number of line-items**

Sellers Product type*	Seoul	Incheon	Gyeonggi	Daejeon	Chungnam	Jeonbuk	Gwangju	Jeonnam	Gyeongbuk	Busan	Ulsan	Gyeongnam	Total
Fixture products (MR)	11.0%	-	0.4%	-	-	1.4%	-	1.5%	0.5%	70.9%	14.3%	-	100.0%
Equipment/daily commodities (O)	5.1%	-	3.3%	30.6%	0.6%	2.3%	-	17.6%	32.8%	7.2%	0.4%	0.2%	100.0%
Printing materials (O)	23.7%	-	-	-	-	14.4%	6.2%	2.1%	53.6%	-	-	-	100.0%
Direct/indirect materials (MR)	3.4%	0.2%	5.1%	1.5%	-	1.9%	-	15.3%	17.5%	36.4%	1.5%	17.2%	100.0%
Tools (MR)	6.8%	-	4.5%	0.7%	0.1%	2.0%	-	14.3%	6.8%	59.2%	2.5%	3.2%	100.0%
Machinery parts (MR)	9.3%	-	8.9%	2.3%	-	5.0%	-	4.6%	16.2%	31.3%	2.7%	19.7%	100.0%
Maintenance/repair products (MR)	19.0%	0.2%	1.5%	0.4%	0.3%	2.3%	-	4.8%	4.4%	47.9%	4.9%	14.4%	100.0%
Transportation related products (MR)	27.2%	-	23.7%	2.0%	-	9.2%	-	14.8%	11.4%	9.2%	2.6%	-	100.0%
Telecommunication equipment (MR)	52.2%	-	9.7%	-	-	3.5%	-	-	33.6%	0.9%	-	-	100.0%
Petrochemical products (MR)	0.6%	-	3.8%	4.8%	-	16.4%	0.5%	16.3%	6.4%	47.5%	3.7%	-	100.0%
Electricity/electronics (MR)	13.4%	-	5.5%	2.8%	-	5.0%	-	7.9%	17.3%	44.2%	3.9%	-	100.0%
Office supplies (O)	16.9%	-	1.8%	1.5%	-	4.0%	0.1%	19.7%	50.9%	4.8%	0.3%	-	100.0%
Measurement/control devices (MR)	21.8%	-	8.0%	-	-	10.9%	-	22.7%	6.3%	28.2%	2.1%	-	100.0%
Computer/IT products (O)	53.2%	0.2%	8.8%	0.2%	-	0.5%	0.4%	8.4%	8.9%	18.9%	0.2%	-	100.0%
Missing data	18.1%	0.2%	2.7%	3.0%	-	5.0%	0.0%	8.8%	13.5%	39.1%	8.3%	1.3%	100.0%
Total	16.6%	0.1%	4.4%	4.1%	0.1%	3.8%	0.1%	11.2%	16.7%	35.6%	4.2%	3.2%	100.0%
Total-Missing data**	16.3%	0.1%	4.7%	4.3%	0.1%	3.5%	0.1%	11.6%	17.3%	34.9%	3.4%	3.6%	100.0%

\*(MR)=maintenance/repair products, (O)=operating inputs

\*\*Total-Missing data=Total - Missing data

Source: Recalculated from the data provided by eNtoB

Table VI-13 Locations of sellers by product types in Markup transactions by the number of line-items

Products*	Sellers	Seoul	Incheon	Gyeonggi	Daejeon	Chungnam	Jeonbuk	Busan	Total
Fixture products (MR)		84.5%	-	9.2%	0.5%	5.8%	-	-	100.0%
Equipment/daily commodities (O)		70.7%	0.2%	24.5%	-	4.6%	-	-	100.0%
Printing materials (O)		100.0%	-	-	-	-	-	-	100.0%
Direct/indirect materials (MR)		23.8%	-	31.0%	-	45.2%	-	-	100.0%
Tools (MR)		53.4%	3.1%	35.9%	-	7.6%	-	-	100.0%
Machinery parts (MR)		24.2%	-	13.3%	48.3%	13.3%	0.8%	-	100.0%
Maintenance/repair products (MR)		43.5%	-	21.2%	-	35.3%	-	-	100.0%
Transportation related products (MR)		25.0%	-	30.6%	32.4%	12.0%	-	-	100.0%
Telecommunication equipment (MR)		86.3%	-	13.7%	-	-	-	-	100.0%
Petrochemical products (MR)		31.3%	-	26.0%	3.1%	39.6%	-	-	100.0%
Electricity/electronics (MR)		93.7%	0.4%	2.9%	-	1.6%	-	1.5%	100.0%
Office supplies (O)		89.5%	-	7.5%	0.1%	2.4%	-	0.5%	100.0%
Measurement/control devices (MR)		70.5%	-	25.4%	-	4.1%	-	-	100.0%
Computer/IT products (O)		78.2%	-	18.6%	-	-	-	3.1%	100.0%
Total		75.5%	0.4%	15.5%	2.0%	5.6%	0.0%	0.9%	100.0%

(MR)=maintenance/repair products, (O)=operating inputs

Source: Recalculated from the data provided by eNtoB

## **5. Analyses of eNtoB customers**

### **5.1. Firms using exchange models – Buyer A**

#### **5.1.1. General overview**

Buyer A is located in Pohang-city, Gyeongsangbuk-do<sup>66</sup>. The ratio of MRO products only stands at roughly 10% out of the total external purchasing of buyer A. That 10% is again divided into the materials to maintain and repair machines and facilities, the so-call MR products and the materials to support the businesses of offices and plants such as office supplies, computer/IT products, or signboards, the so-called O products (operating products). MR products constitute 97~98% of total MRO purchasing. O products are not as important as MR products in terms of total purchasing amounts. However, because they are purchased frequently in small amounts, it is difficult to manage to purchase O products efficiently. From that point of view, buyer A started to purchase the O products through the online catalog system since April 2001 when eNtoB opened business as a major shareholder. Buyer A also began to operate its own e-procurement system since July 2001 in addition to existing e-sales system. All the external materials were procured through the e-procurement system except the O products from the eNtoB online catalog. The MR products were also purchased by its e-procurement system. However, the MR products have been outsourced to the eNtoB since October 2002. It is related to the effort of buyer A to focus on the major purchasing materials by outsourcing the standardized purchasing materials to an outside provider.

In this section, the result of online e-catalog purchasing of O products in Buyer A through the public B2B e-MP for one and a half year is analyzed in terms of the relationship with suppliers and the change of spatial coverage of purchasing activities. The analysis is mainly based on the in-depth interviews with the members of administration supporting department and materials purchasing department in Buyer A, Pohang city, Gyeongsangbuk-do.

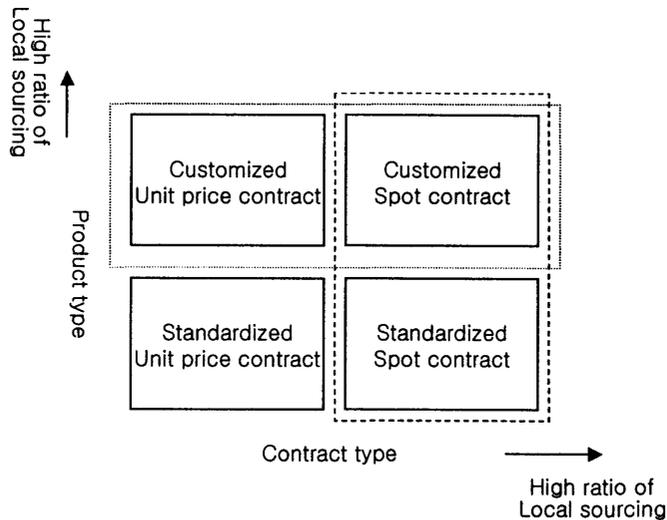
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<sup>66</sup> The general introduction of the company is intentionally omitted in this section to prevent readers from identifying the interviewed company.

Statistical data is also analyzed to demonstrate the in-depth interviews.

As mentioned, operating products are defined as the items in the category of office supplies, computer/IT products, equipment/daily commodities, and printing materials, etc in this study. The operating products that are purchased over the online marketplace are classified into standardized ones and customized ones by buyer A, in spite of the relatively high degree of standardization of operating products. Standardized ones are the items that have common specifications and that theoretically can be purchased from any suppliers without big differences in quality. In contrast, customized ones are the items that are produced by the request of buyers. The other way to classify MRO products by buyer A is between products of unit price contracts and of spot contracts. Unit price contracts are made for the items that are bought frequently and emergently and that need stable and fixed relationship with suppliers. By comparison, the spot contracts are common for the items that are rarely purchased whenever the items are required.

Generally speaking, the customized items were purchased from local suppliers in many cases from the past. The purchasing from local suppliers was encouraged because of the need for the assurance of product quality and the satisfactory delivery system. It was also related to the effort to grow the regional economy by giving opportunities to local suppliers. Moreover, when they made contracts with local suppliers based on long-term relationships, they had flexibility to negotiate contract conditions including price reduction than with new ones. The situation was also true for the spot purchasing items. Before the use of the online catalog, local suppliers in Pohang city provided most spot purchasing items. At present, even though the possibility to be purchased from remote suppliers is increased, the ratio at which the spot purchasing items are bought from remote suppliers is speculated to be only 10-15%. In case of the standardized items, some were purchased from remote suppliers especially in Seoul from the past. After the introduction of the public B2B e-MP, the percentage of the remote suppliers that provide standardized items increased to some extent. The relationship of the preference for local suppliers with the characteristics of purchased products is illustrated according to the in-depth interview in Figure VI-3.



Notes) customized products – the products that are tailored to meet the need of buyers.  
 Standardized products – the products that can be purchased from any supplier due to normalized specifications. Spot contract products – the products that are purchased whenever needed. Unit price contract products- the products that are purchased based on the price of a unit usually on a long-term basis.

**Figure VI-3 the preference for local sourcing by product types**

### 5.1.2. Changes of spatial coverage

In previous offline transactions, the locations of suppliers were differentiated by the attributes of products. The standardized items where price was the most important factor to consider were possible to be purchased from remote suppliers. However, most customized products and spot purchasing items were sourced from local suppliers. Theoretically, the introduction of the online purchasing system on the e-catalog opened the possibility for those locally purchased items to be provided from remote competitive ones. In terms of standardized items which were already supplied from remote trading partners to some degree, the percentage from remote sourcing were expected to increase considerably.

However, the result was not exactly the same as initially expected. Although the increase in purchasing from remote suppliers was detected, the rate of increase was low. The ratio of products purchased from local suppliers was still much higher, at that stage.

■ The ratio of new suppliers and their locations

The purchasing pattern of the administration team of Buyer A from the beginning of 2002 to the end of October is analyzed in Table VI-14, Table VI-15, and Table VI-16. According to the data, 11 firms out of the total 23 suppliers were new trading partners that made contracts with buyer A for the first time. Even though the percentage of new trading partners in terms of the number of firms and traded volume was considerably high, the percentage of the purchasing from the new suppliers only amounted to about 17.5 % in terms of traded money.

The reliance on local suppliers was extremely high in terms of traded money (Table VI-14). The percentage of the suppliers located in Pohang city amounted to about 84%. Especially as for the existing suppliers from the past, the percentage of the suppliers within the same city was over 97% in terms of traded money. It was different from the analysis based on traded volume and number of firms where the supply from Seoul represented a considerable proportion (Table VI-14, Table VI-15). The extremely high proportion of the supply from local sellers in terms of traded money was understood as the actual importance of local suppliers.

**Table VI-14 Regional distributions of new and existing suppliers by the number of firms**

Region Suppliers	Gyeongbuk area			Gyeongnam area		Seoul**	Total	%
	Pohang	Pohang*	Daegu**	Masan	Busan**			
New ones	18.2%	18.2%	-	9.1%	9.1%	45.5%	100.0%	47.8%
Existing ones	66.7%	-	8.3%	-	-	25.0%	100.0%	52.2%
Total	43.5%	8.7%	4.3%	4.3%	4.3%	34.8%	100.0%	100.0%

\* Their headquarters are located in Seoul but they have local distribution centers in Pohang.

\*\* Metropolitan city

Source: Calculated from the data from buyer A

**Table VI-15 Regional distributions of new and existing suppliers by traded volume\***

Region Suppliers	Gyeongbuk area			Gyeongnam area		Seoul***	Total	%
	Pohang	Pohang**	Daegu***	Masan	Busan***			
New ones	0.42%	0.98%	-	0.00%	0.11%	98.49%	100.00%	51.13%
Existing ones	58.00%	-	0.01%	-	-	41.98%	100.00%	48.87%
Total	28.56%	0.50%	0.01%	0.00%	0.05%	70.88%	100.00%	100.0%

\* Traded volume is defined as the total number of products traded.

\*\* Their headquarters are located in Seoul but they have local distribution centers in Pohang.

\*\*\* Metropolitan city

Source: Calculated from the data from buyer A

**Table VI-16 Regional distributions of new and existing suppliers by traded money**

Region Suppliers	Gyeongbuk area			Gyeongnam area		Seoul**	Total	%
	Pohang	Pohang*	Daegu**	Masan	Busan**			
New ones	12.8%	7.2%	-	11.0%	13.1%	55.8%	100.0%	17.5%
Existing ones	97.2%	-	0.4%	-	-	2.4%	100.0%	82.5%
Total	82.4%	1.3%	0.4%	1.9%	2.3%	11.7%	100.0%	100.0%

\* Their headquarters are located in Seoul but they have local distribution centers in Pohang.

\*\* Metropolitan city

Source: Calculated from the data from buyer A

### ■ Characteristics of suppliers by product types

New suppliers all dealt with the standardized items that can be purchased without any special procedures with which to meet the unique needs of buyers. While the proportion of customized items was very low in terms of traded volume and number of firms, its percentage amounted to over one-third in terms of traded money (Table VI-17).

**Table VI-17 Ratio of new suppliers by product type**

Measurement Product type Supplier type	By traded money		By traded volume		By the number of firms		Total
	Customized	Standardized	Customized	Standardized	Customized	Standardized	
New ones	-	100.00%	-	100.00%	-	100.00%	100.00%
Existing ones	35.04%	64.96%	14.33%	85.67%	16.67%	83.33%	100.00%
Total	28.92%	71.08%	7.00%	93.00%	8.70%	91.30%	100.00%

Source: Calculated from the data from buyer A

The spatial analysis on the locations of suppliers demonstrates the importance of physical closeness in trading customized products. All the suppliers that provide customized products are located within the same city as the buyer A is located. As mentioned, they are all the existing trading partners that have maintained the trading relationship on a long-term basis. In terms of traded money, the buyer tended to mainly purchase even standardized products from the suppliers in Pohang. The percentage of the supply from local sellers was about 77% by the standard of traded money, whereas the proportion of local supply decreased to about 24% by traded volume (Table VI-18, Table VI-19). More expensive and important items were purchased from local suppliers in case of standardized products.

**Table VI-18 Regional distributions of new and existing suppliers by traded money**

Region Product	Gyeongbuk area			Gyeongnam area		Seoul**	Total	%
	Pohang	Pohang*	Daegu**	Masan	Busan**			
Customized ones	100.00%	-	-	-	-	-	100.00%	28.92%
Standardized ones	75.31%	1.77%	0.52%	2.70%	3.23%	16.47%	100.00%	71.08%
Total	82.45%	1.26%	0.37%	1.92%	2.30%	11.71%	100.00%	100.00%

\* Their headquarters of are located in Seoul but they have local distribution centers in Pohang.

\*\* Metropolitan city

Source: Calculated from the data from buyer A

**Table VI-19 Regional distributions of new and existing suppliers by traded volume**

Region Product	Gyeongbuk area			Gyeongnam area		Seoul**	Total	%
	Pohang	Pohang*	Daegu**	Masan	Busan**			
Customized ones	100.00%	-	-	-	-	-	100.00%	7.00%
Standardized ones	23.18%	0.54%	0.01%	0.00%	0.06%	76.21%	100.00%	93.00%
Total	28.56%	0.50%	0.01%	0.00%	0.05%	70.88%	100.00%	100.00%

\* Their headquarters are located in Seoul but they have local distribution centers in Pohang.

\*\* Metropolitan city

Source: Calculated from the data from buyer A

### ■ Reasons for the preference for local suppliers

There are several reasons for the preference for local suppliers. First, it is related to the difficulty in attracting competitive suppliers at infant stage of public B2B e-MPs. Public B2B e-MP initially asked their buyers to give the recommendation about potential suppliers that can be listed on the online catalog. Most buyers reasonably recommended their existing trading partners. The interviewed firm also handed over the list of their exiting suppliers, who were chosen after open bidding procedures and were already competitive in terms of price as well as quality of product. Suppliers desperately strove to have the right to supply for buyer A and it was considered as a symbol for competitiveness. It often led to underselling competition. Price and quality of the products from existing offline suppliers were already satisfactory. When the public B2B e-MP attracted new suppliers, their competitiveness usually was not as high as that of existing offline trading partners. Therefore, the use of the online catalog over the e-MP did not result in the radical change of existing suppliers.

Second, there was rare use of group purchasing procedure, which can increase the possibility that existing trading partners were changed. At the situation where large buyers have difficulty in finding out more competitive suppliers than their existing trading partners, group purchasing can be a good way to search for the better suppliers with lower price. Unfortunately, however, some competitive suppliers are reluctant to suggest the lowest price to new buyers because continuous trading is not guaranteed and delivery is not convenient.

Large buyers reasonably maintained existing trading partners.

Third, one of the most important factors that encourage buyers to select their existing trading partners is involved with delivery. The suppliers that get on e-catalogs can limit the delivery zone into a specific regional boundary and many suppliers use it. Because transportation cost is principally in charge of suppliers, they are not likely to deliver to remote regions unless the amount is enough to make compensation for transportation cost. On the side of buyers, they prefer the closely located suppliers unless the price difference is large. The delivery from remote suppliers often causes inconvenience. When they purchase from existing trading partners usually located nearby, suppliers deliver products to the exact place within a short time. In comparison, when they purchase remote suppliers, suppliers often do not deliver to the places where actual users work, but to such central places as main gates due to the use of third logistics service. In terms of large companies as buyer A, it is inconvenient because the people that need the products are scattered over many plants and office buildings.

Fourth, the existence of the unique items used by buyer A discourages the participation of various competitive suppliers because of a small market size. Because they do not have the opportunity to expand market by making transactions with many buyers in online transactions, they are not likely to take part as the member of public B2B e-MP. As a result, the existing offline trading partners only list their products on the online catalog and the buyer maintains the trading relationship with existing suppliers.

In addition, suppliers do not fully enjoy the advantage of trading over online public B2B e-MP. It is partially because they are responsible for paying for transaction fees and they have less chances of increasing the number of buyers. Such a situation prevents many competitive suppliers from getting online.

## **5.2. Firms using agent models – Buyer B**

### **5.2.1. General overview**

Buyer B is located in Asan-city, Chungcheongnam-do<sup>67</sup>. Buyer B began to outsource the purchasing part of MRO products since October 2001. Each division including automotive division, air conditioner division, and administrative division purchased MRO products independently. It often resulted in purchasing the same products from different suppliers with different prices in the past. To eliminate such inefficiency, the company attempted to systematically integrate MRO purchasing processes and considered to in total outsource the processes related MRO products. The company decided to take advantage of Internet-based agent model for effective purchasing of MRO products.

According to an interviewee, the purchasing items of buyer B are mainly divided into two types. The first type is the direct material used to produce final products. It is again classified into customized ones and standardized ones. Customized items are produced by the request of buyer B. In general, buyer B provides detailed designs or drawings to suppliers and the suppliers only strive to meet what their buyer needs. In this regard, the close relationship with suppliers is essential. Therefore, when a new company tries to become a supplier, the buyer B compares the new company with existing suppliers and evaluates it carefully through the committee for choosing suppliers. Standardized items are purchased with the strategy of open and fair purchasing. Because those items are standardized, price competitiveness is important. To change existing suppliers with new ones is more frequent in the standardized items than in customized items.

The second type is indirect material, the so-called MRO products. Although those products are not directly incorporated as final products, they are still important in running machines and operating offices. While the direct materials including the customized items and the standardized items constitute proportions of 70% and 28-29% of total purchasing, respectively, MRO products only have a proportion of 1-2%. The purchased materials through the evaluation of committee amounted to 400 billion KRW in 2000.

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<sup>67</sup> The general introduction of the company is intentionally omitted in this section to prevent readers from identifying the interviewed company.

The company attempts to develop the e-procurement system about purchasing the main customized and standardized products. However, because the percentage of MRO products is so small but the purchasing processes are complex, the company decided to outsource the purchasing of MRO products to a public B2B e-MP. Purchasing procedures over eNtoB are:

- ① users in each department enter purchasing requests (PRs) logging into eNtoB website
- ② PRs are automatically sent to the ERP system of buyer B and users can check accountings and other related factors
- ③ when PRs are finally fixed by users, they are sent to the purchasing team of the company through ERP system of the company.
- ④ purchasing team gathers all the PRs of the company and put purchasing orders (POs) on the system of eNtoB.

### **5.2.2. Changes of spatial coverage**

MRO products in buyer B are again classified into standardized ones and customized ones. Customized MRO products contain measurement and control devices, machinery parts, and some repair products. Many of them are originally produced as standardized products but are customized to meet the need of buyer B. Standardized MRO products include computer/IT products, office supplies, and equipment/daily commodities and so on.

The exact statistical number of the geographical change of the suppliers after the outsourcing of MRO products to the B2B e-MP is not calculated. Under the system of the outsourced purchasing with the agent model, the buyer does not need to know the information about the suppliers of provided items because they only make contracts with the e-MP, instead of doing direct contacts with actual suppliers. However, because suppliers directly deliver all the outsourced items to buyer B at present, the manager in purchasing team of buyer B had some information about the change of suppliers after the outsourcing to some extent.

According to the in-depth interview with the manager of the purchasing team, after outsourcing the purchase of MRO products to eNtoB, some new suppliers replaced existing ones. However, the extent of the change is different by product types. The interviewee indicated that the suppliers involved with standardized ones have all nearly been replaced after the outsourcing. For example, the new suppliers in Seoul substituted many of the

existing trading partners in Cheonan-si.

In contrast, most suppliers of customized MRO products have been maintained, according to the interviewee. It results from the need for close relationship with the suppliers providing customized products. Because the continuous communications between buyers and sellers based on accumulated trust are required to produce customized ones, the change of existing suppliers is not easy even after the purchase over online outsourcing system. To search for the new suppliers of customized products that meet the need of the buyer is difficult. The location patterns of the suppliers dealing with customized products were not to be changed after the online outsourcing.

More importantly, buyer B did not outsource all the standardized MRO products to eNtoB despite the expected decrease in cost of outsourcing the standardized items. Two suppliers are still maintained. The two suppliers are located in Cheonan-si within striking distance to buyer B. The items from the two suppliers are those related to maintenance/ repair and they directly affect the operations of machines. The items should be delivered at any time when they are in need. That is a reason the suppliers are still considered important.

Sometimes, the direct communications with the suppliers providing even standardized MRO products are essentially important. It is because specialized knowledge is sometimes needed to understand the specifications of the products. The outsourcing agent does not have a perfect knowledge about all the items they provide for the buyer. In this situation, buyers directly contact the suppliers of specific products and completely negotiate about the provision of the products in advance. Then, suppliers upload the products to the e-catalog list of eNtoB. Although it is different from the ideal of the agent model of public B2B e-MPs, it is an example of the difference between the ideal and the reality.

According to the interview with the manager of the purchasing team, the company experienced several benefits after outsourcing the purchase of MRO products, or indirect materials. First of all, the cost of purchasing MRO products was reduced by about 6.5% for a year. The number of the employees related to purchasing MRO products was also reduced. In addition, the purchasing processes became simple by taking advantage of online purchasing systems of eNtoB. In contrast with the advantages, there are still some problems involved with using online purchasing systems. Some suppliers that provide MRO products to buyer B over the eNtoB system still do not completely understand the Internet-based online system.

The delivery schedule on the Internet purchasing system is sometimes not abided by. The replacement of existing less competitive suppliers with new competitive ones are not carried out completely at once.

## **6. Summary: Examination of research hypotheses**

The analysis of the previous Chapter V unveiled that the participants of MRO e-MPs had more possibilities to expand their spatial coverage than those in other industries, in spite of some barriers. This chapter aims at uncovering the spatial flows of traded products over an MRO e-MP through detailed data analysis.

All the transaction data for the first half-year was collected and was processed to reveal the characteristics of spatial flows by business model and product type. The continuous meeting and interviews with the managers of eNtoB helped to understand the overall situation of the public B2B e-MP and to interpret the analyzed statistical data. The representatives of the customers that use each business model were selected and the in-depth interviews were conducted. In this section, the analysis result of this chapter is summarized.

This chapter centers on the differentiated characteristics of the expansion of the spatial coverage after the introduction of public B2B e-MPs by business model. The focus is related to the hypothesis H3-B.

**H3-A: The spatial coverage of the firms that trade over e-MPs is likely to be expanded. H3-B: The impact of public B2B e-MPs on the spatial coverage of buyers and sellers is likely to be differentiated by some attributes of industries and firms.**

Business model is an important factor to influence the geographical expansion of customers' business activities, according to empirical data analysis. As mentioned in the literature review, one way to classify the B2B e-MPs is by business models. In fact, however, the standard has not come from literature, but from the interviews with the managers of several B2B e-MPs. Because of the lack of related literature, the study was not sure that the difference in business models would have a serious effect on the spatial coverage of the customers that purchased over e-MPs. However, the comprehensive analysis of the spatial

flows of the traded products over eNtoB based on concrete quantitative data was enough to show the differences in the spatial impact on the spatial coverage of participants' economic activities by business models. The result is summed up here.

**H3-3**: Differences in business models are likely to cause the differences in the spatial coverage between online buyers and sellers.

**R3-3: The extent of the preference for local suppliers is different by business model.**

① **The customers that directly choose suppliers with the exchange model (SFS transactions) strongly prefer local suppliers.** The buyers that select suppliers directly over public e-MPs (with exchange models) have a strong tendency towards purchasing from local suppliers even in online transactions. **Such a strong preference for local suppliers (intra-regional suppliers) by the buyers that directly select suppliers online does not go with the general assumption that the introduction of online marketplaces will contribute to increase in remote competitive suppliers and eliminate the importance of the physical closeness between trading partners to some degree.**

② **By comparison, the customers that outsource MRO product purchasing (Markup transactions) tend to be provided from inter-regional suppliers, mainly located in the Seoul metropolitan area.** The buyers that outsource the purchasing functions to the e-MP (with agent models) showed more reliance on the remote suppliers, suppliers from the Seoul metropolitan area, to be precise.

③ **There are some differences in the composition of the categories of products traded over the e-MP by business model.**

(i) **The proportion of operating products (O products)<sup>68</sup> in the outsourced Markup transactions with the agent model amounts to about 51%, compared with about 35% in the storefront selling transactions using the exchange model. The high ratio of operating**

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<sup>68</sup> Operating products, compared MR products, include office supplies, computer/IT products, equipment/daily commodities, and printing materials in this study.

**products in the Markup transactions with the agent model** is remarkably uncovered when measuring based on traded money. The proportion of operating products almost amounted to over 83% in the transactions with the agent model, while it only stood at about 38% in the SFS transactions with the exchange model.

(ii) **The items traded in Markup transactions are mainly limited to specific categories.** The items that are purchased through the direct selection of suppliers with the exchange model are various, covering all the product categories.

④ A strong preference for local suppliers in SFS transactions with the exchange model is found to be **without a big difference by product category.** Except for electricity/electronics having the intra-regional supply with 41%, over 70% of the purchased products in all the other categories were supplied from intra-regional suppliers in terms of traded money.

⑤ In contrast with the case of the storefront selling, the buyers that outsourced MRO products to the e-MP were mainly provided from inter-regional suppliers. The proportion of being delivered from the suppliers beyond local regions in Markup transactions was larger than in storefront selling transactions in all the categories.

⑥ A strong preference for local suppliers in SFS transactions with the exchange model is found to occur **irrespective of the locations of customers.** Especially, the buyers in the Seoul metropolitan area and Gyeongnam area strongly preferred local suppliers within the same regional area. Although the extent was a little lower, the buyers in other areas also showed a strong preference for local suppliers when they make contracts through the online marketplace.

⑦ The high ratio of inter-regional supply in Markup transactions is transformed as **the considerable reliance on the suppliers within the Seoul metropolitan area** encompassing Seoul metropolitan city and Gyeonggi-do. It is very interesting that most buyers even in Gyeongnam are provided from the suppliers in the Seoul metropolitan area.

**H3-4:** The differences in spatial coverage and the preference for local suppliers are likely to be influenced by some factors related to strategic sourcing of market operators and the limit of e-MPs as online intermediaries.

**R3-4: There are some reasons for the differentiated spatial coverage by business models**

**① Reasons for the high proportion of inter-regional supply in Markup transactions (with agent models) : Strategic sourcing of public B2B e-MPs**

The sourcing strategy of e-MPs has a far-reaching effect on the locations of suppliers, changing the spatial coverage of customers. Basically, main focus is on searching for the best suppliers with low price and high quality, only if delivery conditions are satisfied. The strategy is differentiated by the types of products, according to the interviews with the sourcing managers of eNtoB. The differences in sourcing strategy by product types are briefly summarized in Table VI-20.

**Table VI-20 Sourcing strategy in Markup transactions with agent model by eNtoB**

<p>■ <i>Maintenance/repair supplies</i> <i>(in a broad definition, not as a specific product category)</i></p> <p>- <i>Sourcing from local suppliers</i></p> <ul style="list-style-type: none"><li>● <i>Customized products that should be produced by the request of customers</i></li><li>● <i>Frequently ordered products with a small amount</i></li></ul> <p>- <i>Sourcing from remote suppliers (or often the suppliers in the Seoul metropolitan area)</i></p> <ul style="list-style-type: none"><li>● <i>Relatively completely standardized products that do not usually need a close relationship with the suppliers of the products</i></li><li>● <i>The products that do not need to be delivered immediately (or within a 24 hour)</i></li></ul> <p>■ <i>Operating supplies</i></p> <p>- <i>Sourcing from remote suppliers (or often the suppliers in the Seoul metropolitan area)</i></p> <ul style="list-style-type: none"><li>● <i>Generally most operating supplies represented by office supplies are considered completely standardized products that do not usually need a close relationship with the suppliers of the products. Therefore, in principle, the most decisive factor in making contracts is the price factor. It leads to the increase in the sourcing amounts from the suppliers in the Seoul metropolitan area.</i></li></ul>
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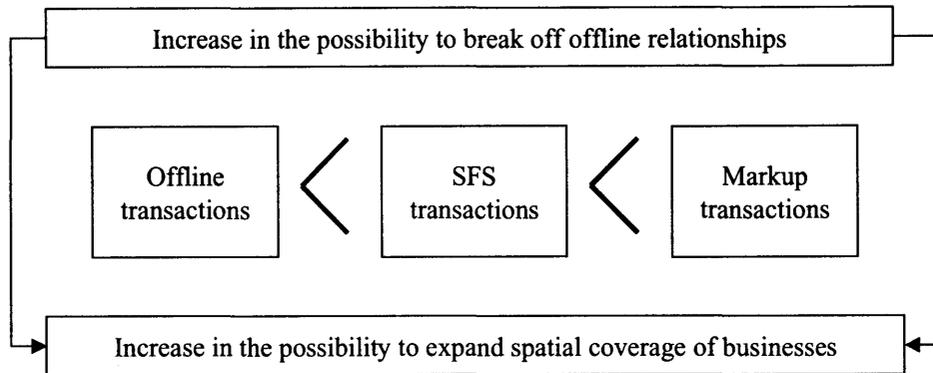
**② Reasons for a high preference for intra-regional suppliers in SFS transactions (with exchange model)**

A strong preference for intra-regional suppliers in SFS transactions does not go with the general belief that online marketplaces will provide opportunities to trade with more competitive intra-regional suppliers, at least for the moment. It is too early to draw

conclusions about the influence of the introduction of public B2B e-MPs on economic spaces. Public B2B e-MPs are at the infant stage. However, several reasons are detected that weaken the chances to expand the spatial coverage and to search for new suppliers.

- ◆ The high credibility of existing trading partners even in online transactions
- ◆ Difficulty in searching for more competitive suppliers at the initial stage of trading over e-MPs
- ◆ The low chance of group-buying
- ◆ Reluctance of providing the lowest prices at which suppliers can sell products in online transactions
- ◆ The limit of the delivery zone by suppliers
- ◆ The lack of the suppliers that deal with specific items for specific customers
- ◆ Low advantage of the online transactions on the side of suppliers etc.

③ **The possibility of expanding spatial coverage of business partners involved with transactions is differentiated by business model.** While customers are considerably provided from inter-regional suppliers in Markup transactions, those in SFS transactions manifested a strong preference for intra-regional suppliers within the same regional unit. A strong preference for intra-regional suppliers is viewed as the maintenance of the offline trading practices even after they begin online transactions. Considering that the customers in SFS transactions choose their trading partners by themselves, the voluntarily geographical expansion of the trading partners in online transactions is not likely to be achieved at as high speed as was expected. Figure VI-4 represents this situation.



Notes) < compares the degree of increase in the possibility to break off offline relationships and to expand spatial coverage of businesses by business model.

**Figure VI-4 Possibility to expand spatial coverage by business model**

④ Even though a hasty conclusion should be avoided in this study due to the lack of supporting data, **trust-based relationships are considered important in Markup transactions as well as SFS transactions over public B2B e-MPs at least to some extent**, according to the in-depth interviews. The possibility of continuous radical changes of the spatial coverage is not high in both business models over public B2B e-MPs.

In SFS transactions with exchange model, a strong preference for intra-regional suppliers often implies the preference for the stable relationship with existing trading partners on the accumulated trust. In the meantime, as a sourcing expert, the staff of public B2B e-MPs attempts to search for the best suppliers in each item in Markup transactions. But, once satisfactory suppliers are found, it attempts to maintain the stable relationship with them and help the growth of them. The growth of a small number of suppliers in each item is related to enjoying the economies of scale by lowering the unit price. The customers that use the agent service over public B2B e-MPs are likely to be supplied from the same sellers for a long time, even though they might not recognize it.

Therefore, once they are satisfied with the new trading partners, the relationship is continued as it was in offline transactions. Such a tendency was revealed from the interviews with the managers of some case companies. However, future research is required, based on quantitative and qualitative analyses, for generalizing the overall tendency.

## **VII. Conclusions**

### **1. Summary**

When this study was proposed, it placed a series of questions concerning whether geographical perspective would be still valuable in discussing the digital economy. The questions originated from the hot debates about the impact of the unprecedented development of information and communication technologies on the economic spaces in which firms performed businesses on a daily basis. The purpose of this study was to search for the evidences with which to reveal the answers.

This study attempted to figure out the geographical impact of the introduction of public B2B e-MPs in Korea in terms of operators and participants. Because public B2B e-MPs were considered as one of the most evolving forms of combining commerce with technology, this study expected to contribute to revealing the spatial impact of the digital economy.

This study approached the topic of public B2B e-MPs in two ways from the point of economic geography. The first one was to unveil the characteristics of spatial distribution of the firms operating public B2B e-MPs. The other one was to understand the impact of the use of public B2B e-MPs on the change of the spatial coverage of trading partners in terms of participating firms. This study mainly put forward three hypotheses and attempted to prove them with empirical works. The first and the second hypotheses were examined in Chapter IV, and the third one in Chapter V and Chapter VI.

The questionnaire surveys and in-depth interviews to the firms operating public B2B e-MPs and their participating firms were carried out. Especially, five public B2B e-MPs in four industries were selected to learn the differences in the spatial impact of the introduction of public B2B e-MPs by industry. In addition, the spatial flow of the products traded over an MRO e-MP was analyzed based on the transaction data for six months by business models such as exchange model and agent model.

**The first hypothesis** is that regardless of the origin of public B2B e-MPs from advanced IT technologies compressing time and space, the operators of public B2B e-MPs are likely to be concentrated in specific regions with favorable physical location factors rather than to be dispersed across the country in physical space.

The analysis of location quotients showed the extreme deviation of the distribution of the operators of public B2B e-MPs in Seoul and especially Gangnam-gu within Seoul. The value of the coefficient of localization revealed how much different the spatial distribution of the operators of public B2B e-MPs was from the base magnitudes such as population, total establishments, the Internet users, and the regional registration of the .kr domain. In addition, based on the coefficient of the geographic association, the spatial distribution of the operators of public B2B e-MPs was not closely related to that of wholesale and commission trade. On the contrary, the spatial distribution of the operators of B2C e-MPs was geographically associated with that of the operators of public B2B e-MPs in the country. Nevertheless, the degree of the geographic association between the two industries was lower in Seoul than across the whole country.

The location factors of the firms with public B2B e-MPs were differentiated by the regions they were rooted in. The agglomeration within Seoul could be explained as being the result of the effort to pursue urbanization economy. The location factors of firms in Gangnam-gu included the prestige or pride effect that they were located in the most innovative area in Korea. The physical proximity to potentially cooperative firms was also significant together with other traditional location factors of urbanization economy. On the contrary, the firms in the provinces showed completely different location factors from those of the firms in Gangnam-gu or other Seoul areas. The familiarity of the managers with the regions was one of the most important factors in choosing locations. The physical proximity to raw materials and to the production places of traded products and the spatial closeness to potential buyers or sellers were also top priorities.

Such differentiated location factors were closely related to the characteristics of the public B2B e-MPs. All the public B2B e-MPs in the provinces were 100% vertical e-MPs such as machinery and industrial materials, food and beverage, steel, chemicals, textile and clothing, and so on. Public B2B e-MPs in Gangnam-gu were mixed with vertical ones and horizontal ones. But, the ratio of horizontal ones was higher than that of vertical ones.

Therefore, it proved that in Gangnam-gu, more standardized products were traded, the exchange of tacit knowledge with customers was lower, and the importance of trust-based relationships was lower than in other Seoul areas, and more importantly, than in the provinces. In addition, the buyers and sellers of public B2B e-MPs in Gangnam-gu were relatively dispersed across the country, compared to those in other regions.

**The second hypothesis** is that the increase in the use of electronic communication channels is not likely to diminish the importance of face-to-face meeting in the businesses related to public B2B e-MPs, irrespective of the high reliance on electronic networks.

According to the survey analysis, the face-to-face meeting was still considered very important in the businesses of the operators of public B2B e-MPs, although electronic communication channels also played important roles in conducting their businesses. Interestingly, the importance of communication channels was differentiated by region. The firms in Gangnam-gu considered both types of communication channels were very important almost to the same degree. By comparison, the firms in the provinces placed more stress on face-to-face communication, while they also recognized the importance of electronic communication channels to some extent.

In the regard that the physical closeness to potential buyers and sellers was considered one of their critical location factors, the importance of face-to-face meeting to the firms in the provinces was easily understood. Then, how can the importance of face-to-face meeting by the firms in Gangnam-gu be understood in their relative distant locations from their buyers and sellers? Some answers came from in-depth interviews. They were summarized into two types in this study.

The first one was the creation of the supporting organizations that enhanced physical communication channels. Some firms dispatched their workers to the provinces where their major buyers or sellers were located. Other firms made branch offices in the provinces. The branch offices took a role to attract provincial buyers or sellers, sometimes functioning as regional storage warehouses or distribution centers. In some cases, regional agents or regional distribution centers replaced the branch offices. Regional distribution centers were operated by independent firms, which strategically allied with the operators of public B2B e-MPs.

The other solution was to relocate to the provinces to run after their potential buyers and sellers. Even though it could not be said as a trend because of the insufficient number of

sample cases, some firms in Seoul realized that important reasons of relocation were the continuous communication with their buyers and sellers or the quality control of their products for the success in their businesses. These resulted from the recognition of face-to-face meeting in their businesses.

**The third hypothesis** is that the spatial coverage of the firms that traded over e-MPs is likely to be expanded and the impact of public B2B e-MPs on the spatial coverage of buyers and sellers is likely to be differentiated by some attributes of industries and firms.

Chapter Five was composed of the case analyses related to five public B2B e-MPs in four industries. It was found that the use of public B2B e-MPs contributed to the expansion of the spatial coverage of their business area to some extent. Importantly, however, the impact was different by the types of industries.

The extent of the geographical expansion of the participants of MRO e-MPs was more or less larger than those in other case industries. Although some answered that they still preferred the existing trading partners in a practical situation, it was clear that the MRO e-MPs had better conditions for attracting buyers and sellers into their online trading in terms of product characteristics.

The sellers (traditional dominant players) in the petroleum e-MP did not experience such spatial expansion as the buyers in MRO e-MPs, regardless of the active use of public B2B e-MPs. The fact was mainly explained as being a consequence of their continuous use of limiting delivery zones due to transportation cost and the limited distributions of the facilities for storing oils. They were also showing considerable reliance on existing trading partners partially resulted from industrial characteristics.

The participants of construction material industry and steel industry had difficulty even in adapting themselves to the electronic environments. The questionnaire survey for several firms in construction materials showed some expansion of their spatial coverage. However, in-depth interviews with the participating firms and a manager of the e-MP revealed there were several barriers that delayed the active use of the e-MP. The interviews with the participating firms in the e-MP of steel industry manifested the same tendency.

The active use of e-MPs was an essential prerequisite before discussing the expansion of the spatial coverage within which trading partners were selected. The interviews with some managers of the participating firms and the operators of public B2B e-MPs unveiled several

factors that affect the use of public B2B e-MPs. They are the difficulties encountered in using IT infrastructures, resistance to change of practices and fear of losing jobs. Other issues encompass under-the-table money, the pressure for transactions fees, and so on. The situation was more related to the traditional manufacturing industries such as steel and construction material industries in the case study.

Even after they began to trade over public B2B e-MPs, some factors lowered the possibility to change the existing spatial coverage of their business areas. According to the in-depth interviews, several factors that encouraged participating firms to choose existing offline trading partners were detected. In terms of industrial structures, the long lasting practices of the trust-based transactions, the existence of dominant market places and the need for the fidelity to them, and unstable supply and demand conditions were included. In terms of products, the need for quality control and product inspections and warranty of products were the main factors for preference of existing offline trading partners. In addition, the high rates of transportation cost and the limits of delivery areas, departing places, and storage warehouses were diminishing the possibilities of spatial changes.

The important parts of a series of transaction processes of the traders over e-MPs were carried out in offline dimensions, sometimes based on face-to-face meeting. The physical communication channels were still considered very important between online trading partners in some industries such as construction material and steel industry.

Chapter VI treated the detailed analysis of the spatial flows of the products traded over an MRO e-MP. The analysis revealed the differentiated spatial impact by business model. The customers that chose suppliers on e-catalogs directly (the exchange model) showed a strong preference for local suppliers. However, those that outsourced MRO product purchasing to the e-MP (the agent model) showed the high level of inter-regional supply from remote suppliers. Even though the items of outsourced purchasing were mainly the standardized operating inputs, the high ratios from inter-regional suppliers in the agent model were shown irrespective of the types of traded products. Furthermore, the tendency towards maintaining close relations with satisfactory suppliers and the result of the interviews with participating firms suggested the low possibility of complete transformation into the governance structure based on market coordination even in the era of the prevalence of public B2B e-MPs.

## **2. Implications**

Although the research on public B2B e-MPs cannot completely answer the questions raised in this study, it was expected to give an insight into understanding the association of the digital economy with physical spatial dimension and building the spatial strategies for successful online businesses.

In the previous section, the result of this study was summarized around the suggested hypotheses. While it needed a cautious interpretation due to a lack of sufficient data, the result of the analysis showed the possibility of the importance of the spatial strategy to successfully operate their online businesses in offline dimension. Furthermore, it also demonstrated the limits of the expansion of spatial coverage related to the selection of online trading partners. These results did not completely go with the untested general belief about the benefits of electronic economy where buyers and sellers could find the best trading partners only with just one click of mouse button.

It is dangerous to make hasty conclusions regarding the development path of public B2B e-MPs when considering they just moved on from an infant stage and many of them were still at a beginning stage. However, the current situation is enough to suggest some important points that should be kept in mind in order to conduct online businesses successfully over public B2B e-MPs in terms of managers, policy-makers, as well as academic researchers.

### **2.1. For academic researchers**

As it is emphasized several times through this study, it is too early to draw up a conclusion on the direction of the development of B2B EC. Likewise, it is not ripe for evaluating the spatial implications of the development of EC from the point of economic geography. Nevertheless, this study intended to pick out the meaningful issues through the empirical analyses although they deserved to be refined in the future. Most issues of this study were not touched on for the first time at all. However, most of them were not supported by empirical evidences, but relied on theoretical or verbal speculations. This study endeavored to approach the issues with the empirical analyses of Korean public B2B e-MPs and their

participating firms. The seemingly important academic issues are summarized based on the findings of this study in the form of questions for future research.

The first question is “Is there any relevance between the development of public B2B e-MPs and the enhancement of offline business activities?” The question can be expanded into that as to whether local areas will still play an important role in the digital economy or not. It is generally believed that the digital economy based on advanced ICTs minimizes physical business activities by enabling the full use of electronic networks. However, this study implies the possibility of the development of offline business organizations for the successful operation of public B2B e-MPs. The importance of the traditional provincial centers providing convenient logistics and easy contact to major buyers or sellers is not decreased at all. It leads to the complementary relationship between electronic space and physical space. Further research on whether such situations can be generalized as a trend in the digital economy is required.

The second question is “Will the importance of physical communication mode last as a valuable business communication method in the digital economy?” This study proves that the face-to-face meeting is not less important than electronic communication channels for successful online businesses from the cases of the public B2B e-MPs operators. However, the reason for the importance of face-to-face meeting needs to be investigated in a more detailed way. The importance of face-to-face meeting may result from the antiquated trading practices, which means that the improvement of industrial structures can lead to the decrease in the significance of physical communication mode. Research on whether the face-to-face communication mode will still be important even when the digital economy is well established in the future is necessary.

The third question is “How should we understand the concentration of B2B e-MPs in specific local area, such as Gangnam-gu and Seoul in this study?” “Does the concentration of public B2B e-MPs generate the agglomeration economy?” The questionnaire on location factors demonstrated the considerable expectations of the operators of public B2B e-MPs located in such local area for the diverse types of agglomeration economy. However, this study also partially showed the limit of the spatial synergy effects expected when they were located there at first, through the interviews with some operators. As firms become aware of the fact that public B2B e-MPs are closer to offline wholesale or commission trade than to

online IT businesses, they begin to put stress on offline marketing activities. Nonetheless, it cannot be easily answered whether the recognition is transitional at the time when they accept new business practices or a general trend. Therefore, the research on the effect of the cluster of the operators of public B2B e-MPs is inevitable as the operators are at the stable growth stage.

The fourth question is “How much do the online buyers or sellers over public B2B e-MPs expand the spatial coverage of businesses?” This study revealed that the effect of expanding the spatial coverage of participating firms was limited by some factors that prevented firms from actively choosing new trading partners. However, in spite of the tendency to prefer existing trading partners in a real situation, firms’ strategy was not to give any preference for existing offline trading partners. Such strategy appears to lead to the expansion of the spatial coverage in the future when the reliability of online transactions is improved. Therefore, the effect of the spatial coverage after the introduction of public B2B e-MPs needs to be checked continuously.

The final question is “Do public B2B e-MPs enable price transparency?” In fact, the question is more or less beside the focus of spatial perspective and is also not treated as important in this study. However, the case study of public B2B e-MPs showed an interesting situation related to the price decision of online transactions. It is introduced here to show evidence of the gap between the ideal and the reality of the myth of B2B EC. On the one hand, the result of the interview manifests the differentiated prices by the types of buyers and the types of contracts. Buyers that made the contracts based on the price of a unit with a large purchasing amount can buy required items with low prices. In contrast, the buyers that visit the sites from time to time with the need for a small amount are provided the same items with higher prices. However, the buyers do not recognize the situations at all because buyers only see the price that is customized to them. On the other hand, sellers sometimes do not open the lowest prices at which they can supply products. A manager of the buyers participating an MRO e-MP mentions the experience like this:

*“When we purchase products with group-buying, we can save considerable money based on enhanced bargaining power. Unfortunately, however, major buyers are not likely to participate in the group-buying. Most major buyers already have the reliable existing trading partners that provide*

*required items at the special lowest price with satisfactory delivery system. The price does not hold for all the buyers, though. The price was decided, considering the various factors such as the long-term based reliable relationship with a specific buyer and the expectation of a large amount of traded volume, and the delivery cost etc.”*

As a result, the price transparency is not completely realized as it was expected at first. The increase in the buyers and sellers of public B2B e-MPs will reduce such non-transparency in prices. It is also an interesting research topic.

## **2.2. For business managers**

Whereas researchers usually make a start on the issues from a theoretical view, managers expect the practical strategies that can be applied in business practices immediately. It is also the case for the managers involved with B2B EC or public B2B e-MPs. Most interviewees were not sure of the future of their businesses excluding very few firms that had clear and concrete strategies. They conversely threw back a question as to what they should do to survive online businesses and what would happen to their businesses in the future. At that time, an immediate answer was not given to their questions because the author of the study was just learning from the situations they were in. Although the first step is still taken, the seemingly consequential implications are outlined in the section, especially to help build the practical strategies for successful online businesses in the related fields. The implications are suggested in terms of the operators of B2B e-MPs and the buyers and sellers of public B2B e-MPs.

### **2.2.1. For the operators of B2B e-MPs**

First of all, the importance of offline business activities for successful online businesses should be understood. Public B2B e-MPs are not so much the same as the innovative venture businesses mainly relying on information and communication technologies. Rather, they are more connected to offline businesses. As it is shown in the case analyses through in-depth interviews, many operators of public B2B e-MPs were dotcom companies established in 2000

or 2001 during the boom period of venture firms. They approached doing online businesses from a technical perspective. They attempted to show off their technological capability. Some firms opened more than one e-MP at once in different industries. Over time, some closed their businesses because they failed to attract buyers and sellers who would trade over their marketplaces. Now, successful public B2B e-MPs are focusing on marketing activities. They visit potential customers with the paper-based catalogs to attract them into their online marketplaces. The explanation about the situation by a manager implies the way to approach public B2B e-MP businesses:

*“Even though we were the leading company in offline businesses, when we opened online marketplaces, no firms tried to become members of our companies. Then, we decided to strengthen marketing activities. First, we e-mailed to potential buyers but most of them did not give any reaction. Then, we made phone calls and sent them by fax and some were interested in our suggestions. Finally, we began to visit all of them for face-to-face meeting and we achieved our goal to attract online buyers to some extent.”*

Second, when the importance of offline business activities is recognized, location factors become more valuable. Entrepreneurs need to give a deep thought on the physical location factors suitable for the characteristics of their e-MPs when they decide the initial locations of firms or plan to relocate firms. This study analyzed the current locational trend of the firms operating public B2B e-MPs in Korea. It implies a reference for the best locational decisions for new comers in this field.

According to the analysis of current locations, the firms operating the horizontal e-MPs represented by standardized MRO items and those with the buyers or sellers dispersed across the country preferred to be located in Seoul, especially Gangnam-gu. In contrast, the firms operating the vertical e-MPs dealing with relatively less standardized items and those with the participants concentrated in the provinces put more importance on the physical proximity with buyers and sellers. Such firms showed a tendency to be located in the provinces to pursue their potential buyers and sellers.

Firms in Gangnam-gu put more stress on the potential advantages that are rooted in the unique characteristics of Gangnam-gu as the IT-intensive habitat for the most innovative and promising venture firms in Korea. In contrast, the physical closeness to potential buyers or

sellers was a prime concern for the firms operating vertical public B2B e-MPs in the provinces together with the familiarity of managers with specific regions.

Of course, the locational decision is one thing and whether firms achieved the original goal for choosing the locations is another. Therefore, some firms may regret their locational decisions. In this regard, this study witnessed that there were some firms that moved out from Gangnam to other area to look for customers or other location factors. Some firms were considering moving out from Gangnam-gu in the future. Once again, while it cannot be generalized, it is obvious that such consideration comes from the realization of the importance of offline activities in their online business. Various factors such as product characteristics traded over their public B2B e-MPs, the locations of potential customers, and the importance to communicate with online buyers and sellers should be taken into account for choosing the best locations for their firms.

Third, more importantly, once firms are located somewhere, they need a spatial strategy for making up for the weak point of their locations. Situations may be primarily divided into two folds. The firms in Gangnam-gu or Seoul following urbanization economy or the regional prestige effect of Gangnam are required to strengthen the communications with potential buyers and sellers. On the other hand, the firms in the provinces following potential buyers and sellers may confront the difficulty in conducting their businesses by being isolated from their potential cooperators. The firms remote from potential buyers and sellers are often likely to be at bigger disadvantage than those remote from cooperative firms, considering it is a top priority to enhance marketing activities and to attract buyers and sellers. It is partially because the number of buyers and sellers are generally much larger than that of cooperative firms and firms need more efforts to communicate with them.

According to the experiences of some public B2B e-MPs, when the operators of public B2B e-MPs are located in Seoul or Gangnam to enjoy regional prestige effect or physical and social favorable business environments, they should also be prepared for the appropriate spatial strategy for attracting and managing buyers and sellers in offline physical space. Firms can construct the spatial organizations with which to enhance the physical communications with buyers and sellers in the provinces on the one hand. Some dispatch their workers to major customers. Others build branch offices, distribution centers, or storage warehouses in some places of strategic importance.

In the meanwhile, some firms relocated from Seoul to the provinces where their potential buyers and sellers are agglomerated or their business behaviors such as quality control and management are convenient. It did not mean the electronic communications based on advanced computer networks were not valuable, but it highlighted that the physical communications should support the electronic communications in effective and efficient ways for successful online businesses.

Fourth, the importance of communicating with potential buyers and sellers raises the need for reconsidering the advantages they can take from being located in Gangnam-gu. Even though it is not supported by statistical analysis in this study, the in-depth interviews with some managers of the public B2B e-MPs in Gangnam-gu implied that they were not enjoying the advantage they had expected at the beginning. A manager of a leading firm in Gangnam-gu expressed the situation like this:

*“Most operators of public B2B e-MPs in Gangnam were established since the second half of 1999. At that time, the firms operating public B2B e-MPs were considered as IT-firms without any doubt. For that reason, many flocked together in Gangnam known as the Silicon Valley of Korea. As time goes on, however, the first movers realized that the firms operating public B2B e-MPs were not IT-firms. Rather, they are similar to offline business firms and therefore the offline marketing activities and the effective operation of marketing organizations are the most important factors for the success in online businesses. IT firms are forced to communicate with related firms in informal as well as formal ways. It is mainly because the life cycles of related crucial IT technologies are very short and the dispersion of the important knowledge and information is not easy beyond the local boundary. Such characteristics reasonably helped firms to be agglomerated in specific local area. The emphasis on the marketing activities to attract buyers and sellers lessens the need to be stubborn about being located in Gangnam. Some firms move from Gangnam following other offline business factors. Our company is also considering moving to another area in Seoul in the future. ”*

### **2.2.2. For potential buyers and sellers of public B2B e-MPs**

Firms essentially pursue the maximization of profits with all means. It is not surprising that the main reason to trade online over public B2B e-MPs is that they expect the use of public B2B e-MPs will give some benefits in direct and indirect ways. To maximize the benefits, the firms planning to trade online need to consider what they should do in the offline dimension to make full use of potential advantages from online transactions. The most important function of public B2B e-MPs, in terms of buyers or sellers, is to provide the opportunity for their buyers to search for the best suppliers or buyers within a short time. However, it should be kept in mind that the benefit is not completely achieved at least so far.

In this regard, the firms that attempt online purchasing or selling should not lose their sense of reality. The ideal situation where buyers can search for new competitive suppliers regardless of their locations may not be realized in time. Likewise, sellers may not be able to easily open up of easily new markets over online marketplaces as expected at the beginning. This partially results from the characteristics of traded products, the incredibility of online market operators, or the systematic characteristics of industries. Whatever the reasons are, the online customers and sellers are recommended to begin the online transactions step by step without idealistic expectations for online transactions and to mix online transactions with their offline transaction activities properly.

Especially on the side of sellers, it did not guarantee the expansion of market only to list up products on the e-catalogs of cyber marketplaces. The interviews with some sellers through this study implied that the offline marketing activities were inevitable to expand buyers online. A manager of the sellers of public B2B e-MP in steel industry said as follows:

*“As soon as we get the information on which firms will purchase online in the near future, our marketing staff visit the firms and persuade them to trade online with my company. Sometimes we suggest lower price conditions. It does not matter whether the buyers are chosen in online or offline dimension. The face-to-face meeting with potential buyers is the only and the best marketing strategy to expand market even in the online transaction over public B2B e-MPs at least at this moment.”*

In terms of buyers, they also need to spare no effort to enjoy the potential benefits of

online transactions in physical offline dimension at least at the moment. As empirically analyzed in earlier sections, the introduction of purchasing with online catalogs did not immediately cause the expansion of the spatial coverage accompanied by the increase in trading with new trading partners by far. While there were some differences in the preference for existing trading partners by industry, buyers still preferred to trade with the trading partners within local area in online transactions.

There were various factors that hindered the active use of public B2B e-MPs and the expansion of spatial coverage of the locations of trading partners from the point of buyers. One of the main reasons was the passive attitude of online buyers to enjoy potential benefits. Some major buyers already had stable relationships with the most competitive sellers with the lowest prices and satisfactory delivery systems before they used public B2B e-MPs. It discouraged the intention to search for the best suppliers. Instead, the focus was mainly on the improvement of transaction transparency.

However, such a passive use of public B2B e-MPs by buyers subsequently is one of the reasons for the low participation of competitive sellers, which again negatively affect the participation of buyers. It is a kind of vicious circle. Even though it is a chicken-and-egg problem, the active participation of the buyers that has usually the right to choose sellers will contribute to the development of public B2B e-MPs on the whole.

### **2.3. For policy makers**

This study attempted to reveal the spatial characteristics of public B2B e-MPs and the change of spatial coverage of participating firms in Korea. Furthermore, it aimed at suggesting the useful bases on which the practical policies for the growth of EC are made. So far, it is true that policy makers have not paid attention to the spatial strategy for growing EC. However, the recognition of the importance of spatial dimension in online transactions will be of use in building more practical policies that meet the current requirements. The policy recommendations in this study are twofold. The first point is focused on a direct spatial policy and the other one is an indirect policy to increase in the use of public B2B e-MPs and subsequently to raise the possibility to expand new markets and improve the efficiency of transactions.

The first point is that there is need for a policy to attract the firms operating public B2B e-MPs into provincial areas. This is also related to the effort to bridge the digital divide, which means that a gap exists in the opportunities to access advanced information and communication technologies between geographic areas or by individuals at different socio-economic levels (OECD, 2001b: 4). The regional digital divide by the difference in the access to the Internet was the unexpected dark side of the development of information and communication technologies.

The concentration of public B2B e-MPs in specific central regions might not appear to be a big deal, at first glance. Because they provide the electronic markets where buyers and sellers can conduct online transactions regardless of locations, the locations of the operators of electronic markets are not important at all. The agglomeration of the operators in specific areas favorable to business environments seems reasonable.

Nevertheless, the extreme concentration of the operators of e-MPs gives rise to two serious problems in a real world. On the one hand, it strengthens the control function of some specific regions that were already known as the centers in a networked or digital society. As a matter of fact, the most important expected benefit of the development of computer network industries was the realization of the equalized society where the inequality in diverse dimensions was minimized. However, such extreme concentration of online marketplaces in specific regions may lead to the acceleration of the unbalanced regional development from social as well as economic perspectives.

Moreover, on the other hand, it should be reconsidered whether the concentration of such public B2B e-MPs and B2C e-MPs in a specific core region is as fruitful as they originally presumed. According to the result of this study, the importance of offline business activities for successful online businesses is gaining ground. The best locations for some operators may not be the central regions. As they recognize the importance of the offline business functions such as marketing activities or product quality inspection, the need to be located in a core region decreases. When firms insist on the locations in such a core area, they need to contemplate on the means to intensify offline business functions in the form of branch offices, storage warehouses, or distribution centers. In that regard, the policies to provide favorable business conditions for those firms operating public B2B e-MPs in the provinces can not only grow the provincial bases on which the electronic economy is developed but also mitigate the

concentration of the operators of e-MPs in a few specific regional areas. The localization of the operators is seemingly paradoxical but it is a trend of the electronic economy. The active efforts to make the best use of the situation are desperately required for policy makers.

The second point is the need for the policies pinpointing the qualitative growth of EC, not the outward quantitative growth pursuing visible and short-term achievement. One of the main reasons for the low rate of expansion of the spatial coverage in the selection of online trading partners was the high degree of maintaining existing trading partners for credibility.

The effort for the qualitative growth starts from understanding the unique characteristics of each industry. It needs the effort to remove the inefficiency inherent in the inappropriate industrial practices for the B2B EC over public e-MPs.

A report from MOCIE (Ministry of Commerce, Industry and Energy) (2002: 31) reveals that the Korean government recognizes the importance of the qualitative approaches for the development of B2B EC in Korea to some extent. According to the report, five categories of the barriers are detected and these are: ① inefficiency and lack of awareness in business operation processes, ② unreasonable and nontransparent trading practices, ③ inefficiency in manufacturing industry structure, ④ immature IT environment of SMEs, and ⑤ inadequate regulatory framework (See Table II-11)<sup>69</sup>. Unfortunately, however, in spite of the recognition of the impediments, the focus of the policies to develop B2B EC in Korea seems to have been on the reinforcement of technological infrastructures and the quantitative visible increase in the traded amount through EC more or less. The Korean government plans to raise the ratio of EC out of national total commercial activities from 8.8% to 30.0% by the year of 2005 (<http://www.korea.net>). The list of the major tasks of EC policy in 2002 (Table II-9) shows where the focus of policies is regarding EC in Korea<sup>70</sup>. The Korean government is encouraged by the fact that the policy of IT support to 30,000 SMEs was completed more than a year ahead of schedule and it actively propels the policy for the post-IT support to 30,000

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<sup>69</sup> More specifically, they include the absence of the improvement in business processes supporting the transformation to online transactions, lack of information sharing between businesses, overlapping in electronic and paper documents, non-transparent market practices, preference for face-to-face transactions due to outdated trading practices, monopolistic industrial structure, lack of open cooperation, inferior IT environment, and poor regulatory frame work.

<sup>70</sup> The major tasks contain preparing regulatory framework, expanding operational base for electronic commerce, promoting electronic commerce in public sector, building e-business network for all industries, and globalization of electronic commerce.

SMEs. However, the original goal is not guaranteed in that the support was only limited to the support of some business softwares, not total systematic IT infrastructures, according to material from the parliamentary investigation by Small and Medium Business Administration<sup>71</sup>.

The in-depth interviews of this study indicated that regardless of the rosy expectation of the development of EC by statistical figures, some interviewees still took skeptical views of the active development of B2B EC in their industries. The reasons are grouped into three categories. The first reason results from the characteristics of industrial structures. Skeptical views are more serious in industries where small market players are required to have fidelity to existing trading partners due to the traditional practices of the transaction on credit, the market structure dominated by a few large players, and unstable supply and demand conditions of traded products. Surprisingly, the atmosphere of some industries known for the high figures of the total amounts of EC transactions by B2B e-MP as of 2001 was not very different, according to the interviews. Second reason comes from the characteristic of traded products. For example, the products that need the high level of quality control, product inspection, and the after sales warranty of products discourages the intention of trading over e-MPs. Third reason is the reluctance of the people who are afraid of the change of business practices. Moreover, the issues of the under-the-table money in some industries were considered as an informal barrier. In addition, the reluctance to pay commission fee to market operators leads to the preference for the direct transactions excluding online B2B public B2B e-MPs.

Such issues are not solved within a short period of time. Concrete government policies are required on a long-term basis. The differentiated approaches by different industries are absolutely needed. The customized polices that meet the requirement of each industry will be more effective than the normalized ones. Especially, the effort to change the unsuitable industrial structures for online transactions is a top priority. For instance, the policies to improve the reliability of online transactions as well as online marketplaces themselves are pressing. To appraise potential buyers and sellers and to open the results over e-MPs can be a good way to improve the reliability of potential trading partners and to raise the possibility to

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<sup>71</sup> 2002-09-17 <http://www.kbizbrain.com> (e-News)

trade with new trading partners actively. The support of the governmental institutions to provide reliable information for each firm is necessary. Second, the duties of trading partners and the operators of e-MPs about after sales problems should be enhanced. Moreover, the effort to remove non-transparent industrial practices based on under-the-table money should be paralleled. Likewise, the active support for the IT training for senior managers of SMEs firms is also helpful to take out the reluctance of potential participants.

### **3. Limitations**

In this final section, the limitations of this study are treated briefly for the benefit of future research. The study has many weaknesses in its approach to the issue.

This study was concentrated on only one element of B2B EC, which is public B2B e-MP. As mentioned, the rate of the transactions over public B2B e-MPs constituted a small percentage of the total B2B EC in Korea, at the end of 2001. However, the study paid attention to the fact that public B2B e-MPs were seen as the most advanced form of B2B e-MPs. To understand public B2B EC was expected to become a key in enabling one to speculate on the future landscape of B2B EC. In spite of the intention, because this study excluded the private B2B e-MPs as current dominant form of online B2B e-MPs, it should be researched comprehensively to figure out the status of B2B EC in Korea.

First, a small size of the population of public B2B e-MPs resulted in an insufficient number of sample data for statistical analysis in spite of the high response ratio in Chapter IV. It caused difficulties in the statistical analysis. For instance, the test of Pearson chi-square was inappropriate due to the high proportion of the cells that have expected count less than 5 in the analysis for regional differences. Simple descriptive analysis was mainly used to understand spatial characteristics. Therefore, a cautious interpretation is required when evaluating the results of the analysis.

Second, even though the study was originally planned to demonstrate the spatial characteristics with quantitative methods, in fact, it mainly relied on the in-depth interviews, especially in the Chapter V where the spatial coverage of customers' economic activities are analyzed. As a matter of a fact, several ways were attempted in carrying out the questionnaire surveys, with the help of the cases of e-MPs. An e-MP uploaded the questionnaire on their

official website and others directly visited their customers and asked them to answer it in place of the author. Others utilized phone calls and fax. Unfortunately, however, the result was not satisfactory because the reliability of the answers was not guaranteed completely and some questions were not answered. Therefore, only a part of the questions in the questionnaire surveys are used for the analysis in this study. Rather, in-depth interviews compensated for the limitations of the use of statistical methods.

Third, the spatial characteristics of public B2B e-MPs in Chapter IV and their impact on the spatial coverage of customers' economic activities in Chapter V and Chapter VI can be dealt with from different perspectives. The study initially intended to treat the diverse spatial perspectives around public B2B e-MPs. Therefore, the selection of the sub-themes of the Chapter IV, V and VI seemed reasonable. As the study progressed, however, it was realized that each chapter deserved more refined and detailed approaches individually.

Fourth, more importantly, it has been only a few years since B2B EC has come to the center of discussion. When the study was planned, the theoretical and empirical background information was not enough. Therefore, the study began from a broad framework, which prevented the author from narrowing themes down to a level on which themes can be handled appropriately from a geographical perspective. It influenced the depth of the study. As a result, although one of its strong points is to cover diverse situations relevant to public B2B e-MPs, one of the fatal weak points comes from it.

Even at this moment, some public e-MPs are being established while others are being closed down. In fact, some respondents of the questionnaire survey stopped operations two months after the survey. The development of public B2B e-MPs is, thus, not guaranteed at present. Unlike the initial optimistic expectations, the collapses of the bubbled growth of venture firms relevant to IT technologies and EC lead to pessimistic speculation. Despite the current unstable situation, however, nobody doubts the dominance of the digital economy in the future. The study is expected to be a cornerstone on which more refined future research is performed.

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## ■ STATISTICAL SOURCES

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※ Raw data on a five-digit level of the Census on Basic Characteristics of Establishments in a digital format was acquired from Seoul metropolitan government.

※ The websites of KNSO (<http://kosis.nso.go.kr/>, <http://www.nso.go.kr>), and of KNIC (<http://isis.nic.or.kr>) and of KbizBrain.com (<http://www.kbizbrain.com>) are often visited for acquiring useful data.

※ In addition, the valuable background information related to EC was collected from diverse domestic and foreign institutes

## APPENDIX A: TABLES

**Table Appendix A-1 Matching public B2B e-MP types by industry with the KSIC five-digit industrial classification in wholesale trade**

Industry	Wholesale trade
Chemicals	Wholesale of Industrial Basic Chemicals (51721)*, Wholesale of Dyes, Pigments and Related Products (51722), Wholesale of Fertilizers and Agricultural Chemicals (51723), Wholesale of Synthetic Rubber and Plastics Materials (51724)
Construction/Construction materials	Wholesale of Wood, Builders' Joinery Wood (51511), Wholesale of Gravel, Bricks and Cement (51512), Wholesale of Glass and Doors (51513), Wholesale of Paints (51591), Wholesale of Wallpaper and Floor Coverings (51592), Wholesale of Other Construction Materials n.e.c.(51599)
Food and Beverages	Wholesale of Fruit and Vegetables (51311), Wholesale of Meat (51312), Wholesale of Fishes (51313), Wholesale of Other Food (51319), Wholesale of Meat Products (51321), Wholesale of Fishery Products (51322), Wholesale of Sugar, Flour Confectionery and Bakery Products (51323), Wholesale of Dairy Products (51324), Wholesale of Other Prepared Food (51329), Wholesale of Alcoholic Beverages (51331), Wholesale of Nonalcoholic Beverages (51332)
Steel (Iron)	Wholesale of Reinforced Steel (51601), Wholesale of Metal Plates, Bars, Pipes, and Basic Metals (51602)
MRO	<b>Operating materials:</b> Wholesale of Paper Products (51461), Wholesale of Stationery (51462), Wholesale of Office Appliances (51892) + α (diverse types of maintenance and repair materials)**
Textiles, Clothing	Wholesale of Textiles and Threads (51411), Wholesale of Shirts and Outer Garments (51413), Wholesale of Infant Wearing Apparel (51414), Wholesale of Spun Fibers and Yarns (51732), Wholesale of Fibers and Yarns and Textiles (51733)
Foreign trade, Non-specialized trade	Wholesale of Non-Specialized Goods (51910)
Medicines	Wholesale of Medicine and Medical Goods (51451), Wholesale of Medical, Professional and Scientific Instruments and Equipment (51894)
Petroleum	Wholesale of Liquid Fuel and Related Products (51712)
Machinery and Industrial materials	Wholesale of Agricultural Machinery and Equipment (51811), Wholesale of Construction and Mining Machinery and Equipment (51812), Wholesale of Machine-Tools (51813), Wholesale of Other Industrial Machinery and Equipment (51819)
Electronics	Wholesale of Computers and Non-Customized Software (51891), Wholesale of Navigating and Telecommunication Equipment (51893), Wholesale of Electrical Machinery and Related Materials (51896)

\* ( )=Korea Standard Industrial Classification code

\*\*MRO products contain various types of products and many industries in the other cells of the table can be included in MRO categories  
Source: Restructured from Korea Standard Industrial Classification

**Table APPENDIX A-2 Spatial distributions of B2C e-MPs in Korea by product types**

Product Region	Electronic appliances	Household goods	Health goods	Others	Flower delivery /gift	Agricultural, fishery, livestock	Books	Stationery/ Office supplies	Jewelry	Adult goods	Sports and Leisure appliances	Food and Beverage	Goods for infant and children	Travel arrangement service	Music, movie, art	Motor vehicle parts and accessories	Non-specialized goods	Second hand goods	Computer	Fashions/ cosmetics/ miscellaneous goods	Total
Total (Count)	100% (39)	100% (69)	100% (24)	100% (74)	100% (49)	100% (17)	100% (39)	100% (24)	100% (5)	100% (13)	100% (39)	100% (32)	100% (28)	100% (2)	100% (12)	100% (7)	100% (190)	100% (1)	100% (154)	100% (61)	100% (899)
Gangwon	-	1.45%	-	-	-	5.88%	-	-	-	-	-	3.13%	-	-	-	-	0.53%	-	-	1.64%	0.56%
Gyeonggi	13.56%	15.94%	12.50%	12.16%	4.08%	5.88%	7.69%	4.17%	-	17.95%	21.88%	28.57%	-	-	8.33%	-	5.79%	-	6.49%	1.64%	9.34%
Gyeongnam	-	4.35%	20.83%	-	2.04%	-	-	-	-	-	-	-	-	-	-	-	1.05%	-	0.65%	-	1.33%
Gyeongbuk	-	-	8.33%	-	-	11.76%	-	-	-	-	3.13%	-	-	-	-	-	-	-	-	-	0.56%
Gwangju	3.39%	4.35%	-	4.05%	-	-	-	-	-	-	-	-	-	-	-	-	1.05%	-	-	1.64%	1.22%
Daegu	3.39%	13.04%	4.17%	1.35%	2.04%	-	7.69%	-	20.00%	-	5.13%	3.13%	-	-	-	-	3.68%	100.00%	1.30%	1.64%	3.67%
Daejeon	3.39%	-	4.17%	-	-	-	-	4.17%	-	-	-	3.13%	3.57%	-	8.33%	-	2.11%	-	0.65%	1.64%	1.45%
Busan	3.39%	5.80%	-	4.05%	6.12%	-	5.13%	8.33%	-	7.69%	6.25%	3.57%	-	-	-	-	2.63%	-	1.95%	3.28%	3.56%
Seoul	67.80%	49.28%	37.50%	70.27%	79.59%	35.29%	76.92%	79.17%	80.00%	100.00%	69.23%	50.00%	60.71%	100.00%	75.00%	-	80.53%	-	85.06%	86.89%	73.19%
Ulsan	1.69%	-	4.17%	-	-	-	-	-	-	-	-	-	-	-	-	-	0.53%	-	1.30%	-	0.56%
Incheon	3.39%	2.90%	4.17%	5.41%	2.04%	-	2.56%	4.17%	-	-	3.13%	3.57%	-	-	-	-	1.58%	-	1.95%	1.64%	2.45%
Jeonnam	-	-	-	-	-	5.88%	-	-	-	-	-	-	-	-	-	-	-	-	0.65%	-	0.22%
Jeonbuk	-	1.45%	-	1.35%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22%
Jeju	-	-	-	-	-	11.76%	-	-	-	-	-	3.13%	-	-	8.33%	-	-	-	-	-	0.44%
Chungnam	-	-	4.17%	-	4.08%	11.76%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.56%
Chungbuk	-	1.45%	-	1.35%	-	11.76%	-	-	-	-	-	3.13%	-	-	-	-	0.33%	-	-	-	0.67%
Overseas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22%

The list of B2C e-MPs was acquired from KbizBrain and their basic information including location data was entered in an Excel spreadsheet and recalculated. (Data collection period: Oct.12~19, 2002)

Source: Recalculated from the list by KbizBrain.Com (<http://www.kbizbrain.com>)

**Table APPENDIX A- 3 Spatial distributions of B2C e-MPs in Seoul by product types**

Product Region	Electronic appliances	Household goods	Health goods	Others	Flower delivery/gift	Agricultural, fishery, livestock	Books	Stationery/ Office supplies	Jewelry	Adult goods	Sports and Leisure appliances	Food and Beverage	Goods for infant and children	Travel arrangement service	Music, movie, art	Motor vehicle parts and accessories	Non- specialized goods	Compute r	Fashions/ cosmetics/ miscellaneous goods	Total
Seoul total (Count)	100% (40)	100% (34)	100% (9)	100% (52)	100% (39)	100% (6)	100% (30)	100% (19)	100% (4)	100% (13)	100% (27)	100% (16)	100% (17)	100% (2)	100% (9)	100% (4)	100% (153)	100% (131)	100% (53)	100% (658)
Gangnam	17.50%	38.24%	11.11%	21.15%	15.38%	50.00%	20.00%	21.05%	25.00%	-	25.93%	18.75%	23.53%	50.00%	22.22%	25.00%	30.07%	15.27%	15.09%	21.88%
Gangdong	-	-	-	3.85%	2.56%	-	-	-	-	-	7.41%	-	-	-	-	-	-	-	3.77%	1.06%
Gangbuk	-	-	-	-	-	-	-	-	-	7.69%	-	-	5.88%	-	-	-	0.65%	0.76%	-	0.61%
Gangseo	5.00%	5.88%	11.11%	1.92%	2.56%	-	-	5.26%	-	-	-	-	5.88%	-	11.11%	-	1.96%	-	5.66%	2.43%
Gwanak	-	5.88%	-	1.92%	-	-	3.33%	-	-	7.69%	-	6.25%	5.88%	-	-	-	2.61%	0.76%	-	1.82%
Gwangjin	7.50%	-	-	9.62%	5.13%	-	3.33%	-	-	7.69%	3.70%	-	-	-	-	-	0.65%	6.11%	3.77%	3.50%
Guro	-	-	-	-	-	-	-	-	-	-	-	-	5.88%	-	-	-	3.27%	0.76%	-	1.22%
Geumcheon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76%	3.77%	0.46%
Nowon	-	-	-	-	2.56%	-	-	-	-	-	3.70%	6.25%	-	-	-	-	0.65%	-	1.89%	0.76%
Dobong	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.65%	-	-	0.15%
Dongdaemun	2.50%	-	22.22%	-	2.56%	16.67%	3.33%	5.26%	-	-	-	-	-	-	-	25.00%	0.65%	-	3.77%	1.67%
Dongjak	2.50%	2.94%	-	-	2.56%	-	6.67%	5.26%	-	3.70%	-	-	-	-	-	-	1.31%	1.53%	1.89%	1.82%
Mapo	2.50%	5.88%	-	1.92%	-	-13.33%	-	-	-23.08%	7.41%	7.41%	6.25%	-	-	22.22%	25.00%	3.27%	1.53%	3.77%	3.95%
Seodaemun	-	-	11.11%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15%
Seocho	12.50%	11.76%	11.11%	17.31%	33.33%	16.67%	16.67%	42.11%	-	18.52%	25.00%	17.65%	17.65%	-	22.22%	25.00%	15.03%	8.40%	16.98%	15.81%

Product Region	Electronic appliances	Household goods	Health goods	Others	Flower delivery/gift	Agricultural, fishery, livestock	Books	Stationery/ Office supplies	Jewelry	Adult goods	Sports and Leisure appliances	Food and Beverage	Goods for infant and children	Travel arrangement service	Music, movie, art	Motor vehicle parts and accessories	Non- specialized goods	Computer	Fashions/ cosmetics/ miscellaneous goods	Total
Seongdong	-	2.94%	-	-	-	-	-	5.26%	-	7.69%	7.41%	-	-	-	-	-	3.92%	-	1.89%	1.82%
Seongbuk	-	2.94%	-	-	-	-	3.33%	-	-	-	-	6.25%	5.88%	-	-	-	1.31%	-	1.89%	1.06%
Songpa	-	5.88%	11.11%	7.69%	7.69%	16.67%	-	-	-	-	3.70%	6.25%	5.88%	-	-	-	2.61%	0.76%	5.66%	3.34%
Yangcheon	2.50%	-	-	7.69%	5.13%	-	-	-	-	23.08%	-	-	-	-	-	-	1.31%	-	-	1.82%
Yeongdeungpo	2.50%	11.76%	-	3.85%	2.56%	-	3.33%	10.53%	-	7.69%	7.41%	6.25%	5.88%	50.00%	22.22%	-	12.42%	3.05%	5.66%	6.84%
Yongsan	27.50%	-	11.11%	5.77%	2.56%	-	-	5.26%	25.00%	-	3.70%	-	-	-	-	-	3.92%	58.78%	1.89%	15.65%
Eunpyeong	2.50%	-	-	3.85%	5.13%	-	-	-	-	15.38%	-	-	-	-	-	-	1.31%	-	-	1.37%
Jongno	2.50%	5.88%	-	7.69%	2.56%	-	16.67%	-	25.00%	-	-	6.25%	17.65%	-	-	-	3.27%	-	11.32%	4.41%
Jung	10.00%	-	-	5.77%	5.13%	-	6.67%	-	25.00%	-	3.70%	12.50%	-	-	-	-	9.15%	1.53%	11.32%	5.62%
Jungnang	2.50%	-	11.11%	-	2.56%	-	3.33%	-	-	-	3.70%	-	-	-	-	-	-	-	-	0.76%

Source: Recalculated from the list by KbizBrain.Com (<http://www.kbizbrain.com>)

The list of B2C e-MPs was acquired from KbizBrain and their basic information including location data was entered in an Excel spreadsheet and recalculated. (Data collection period: Oct.12~19, 2002)

## APPENDIX B: Questionnaires (in English)

Only a part of the questions in the three types of questionnaires were used directly for the analysis in this dissertation. The remaining questions were utilized as background information to figure out the current situation of public B2B e-MPs in Korea.

### ■ For the operators of Public B2B electronic marketplaces (e-MPs)

Establishment year		Public B2B e-MP opening year		Employees (2002/06)		e-MP total sales* (during the 1 <sup>st</sup> half-year of 2002)*	(10 thou. KRW)
Industry	1.Chemicals 2.Construction/(construction) materials 3.Food and beverage 4.Steel(Iron) 5.MRO 6.Textiles · Clothing 7.Foreign trade 8.Non-specialized trade 9.Medicines 10.Petroleum 11.Machinery and industrial materials 12.Electronics 13.Others:( ) Choose the number: ( )						
Name		Position		E-mail		Tel	

\*Total sales: the amount of the total traded money over your e-MP for the period. The transactions over e-MPs mean the transactions where at least one of the three processes such as bidding, ordering, contracting is made with electronic networks over e-MP.

In this questionnaire, **customer firms** include online sellers and online buyers. Online sellers and buyers mean those that carry out at least one of the three processes such as bidding, ordering, and contracting over e-MPs with electronic network. **Sellers** are those that sell their products over e-MPs to online buyers, while **buyers** are those that purchase required products from online sellers over e-MPs.

※ Please type the address of your public B2B e-MP. If more than one, choose the representative one. (http:// )

**Keep in mind that all the questions of this survey are about the operation of the representative public B2B e-MP of your firms selected in above.**

### I . Classification of e-MPs

#### 1. [Characteristics of products]

(1) (Types of e-MPs) What types of products are traded over your e-MP? ( )

① **Manufacturing inputs:** Raw materials or components that directly become the part of products in specific industries (related to vertical e-MP)

② **Operating inputs:** Maintenance, repair, and operating (MRO) products used in various industries (related to horizontal market)

③ **Digital goods:** Product delivered online such as invisible intellectual property and software

(2) (Standardization of products) Please evaluate the extent to which you agree to each statement about the main products traded over your e-MP. **※ Even in case main products are invisible digital goods, please answer this questions.**

Statements	Evaluation					Choose
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
1. The producers or manufacturers of the products are limited to some specific area.	1	2	3	4	5	
2. The product has certain features that are only used in your firms.	1	2	3	4	5	
3. The number of companies that use (or produce) the same types of products is low.	1	2	3	4	5	
4. The product is fairly standardized for the industry.	1	2	3	4	5	
5. The number of firms which has the technology to produce the product is limited.	1	2	3	4	5	

2. [Characteristics of firms]

(1) (Brick & mortar/dotcom) Please choose the characteristics of your firm. ( )

① Department of existing manufacturing firms ② Department of existing distributing firms ③ Dotcom companies established for online businesses

(2) (Characteristics of establishment) **※ Only those selected ③(Dotcom companies established for online businesses) on the above question are allowed to answer this question.** How was your firm established? ( )

- ① Established by industrial consortium with joint-investment of more than one firm
- ② Established by individuals in the form of **independent start-ups**
- ③ Established by parent firms in the form of subsidiaries or spin-offs

(3) (Main customers) Whom do you operate e-MP for? ( )

- ① Your firm is main seller or main buyer
- ② Brokering or wholesaling mainly for shareholders or a few associated firms
- ③ Brokering or wholesaling for unspecified buyers or sellers

3. [Profit source]

(1) What is the business model of your e-MP? ( )

① Exchange: your firm do not interfere in transactions between trading partners, but only make efforts to support diverse technical system and to provide useful information for convenient transactions over your e-MP. Transaction fees or registration fees are main sources for profits.

② Agent (purchasing): Your firm directly choose the best suppliers on behalf of buyers. The price differences or markups are the main source of profits.

③ Agent (supplying): Your firm directly choose the best buyers on behalf of suppliers. The price differences or markups are the main source of profits.

④ Both of exchange and agent

⑤ Others: \_\_\_\_\_

(2) (Business model) **※ Only those selected ④(Both of exchange and agent) on the above question are allowed to answer this question.** Please type the percentage of the amount of products traded with the exchange model over your e-MP? About ( ) %

4. [Characteristics of transactions] The characteristics of transactions are operationally defined as follows:  
**Spot sourcing**- Online buyers or sellers stop by your e-MP and make new contracts whenever they require products. **Systematic sourcing**- Contracts are made on a long-term basis usually in the form of the contracts about the price of a unit.

(1) How many percentage of the total amount of the products traded over your e-MP are made based on **spot sourcing**? ( ) ① 0% ② -20% ③ 20-40% ④ 40-60% ⑤ 60-80% ⑥ 80-100% ⑦ No data

## II. Location characteristics and distribution of customers

1. [Locations] (1) Please type of the address of the department (or firm) responsible for the businesses associated with operating public B2B e-MP and managing buyers and sellers?

\_\_\_\_\_ Province \_\_\_\_\_ City \_\_\_\_\_ Gu \_\_\_\_\_ Dong \_\_\_\_\_

(2) Who are mainly responsible for constructing and maintaining the IT system involved with the operation of your e-MP? ( )

① Only your firm ② Outsourced to external IT firms ③ Both (your firm and IT firm) are sharing the role ④ Others: \_\_\_\_\_

(3) If there is associated external IT firm, please type the location of the firm.

\_\_\_\_\_ Province \_\_\_\_\_ City \_\_\_\_\_ Gu \_\_\_\_\_ Dong \_\_\_\_\_

2. [Location factors] Please evaluate the importance of each location factor when your firm chose the current location. 1 means your firm put the strong importance on the location factor and 5 means your firm never considered the factor. \* **The importance should be evaluated based on the actual experience of your firm about the choice of current location. For example, if your firm chose locations regardless of high rental fees of buildings, the importance of the rental fees of buildings should be checked on 4 or 5, even in case you usually put the importance on the rental fees of buildings.**

No	Location factors	Rating					Rate
		Strongly important	Important	Neutral	Not important	Strongly not important	
1	The rent of buildings is low.	1	2	3	4	5	
2	The cost of using information and telecommunications infrastructure is low.	1	2	3	4	5	
3	The cost of operating offices such as parking and utilities is low.	1	2	3	4	5	
4	A pool of skilled labor exists around the area.	1	2	3	4	5	
5	The turnover of the labor force is flexible in the area.	1	2	3	4	5	
6	The raw materials of the transacted products are produced nearby.	1	2	3	4	5	
7	The manufacturing plant in which the transacted products are produced is located nearby.	1	2	3	4	5	
8	Buyers (potential customers) are located nearby.	1	2	3	4	5	
9	Sellers (potential customers) are located nearby.	1	2	3	4	5	
10	Potential cooperating firms such as IT-solution or IT-consulting firms are located nearby.	1	2	3	4	5	
11	Logistics firms involved with your firm are located nearby.	1	2	3	4	5	
12	Financial firms including banks and venture capital are located nearby.	1	2	3	4	5	
13	Advanced service firms in the fields of law, accounting, or advertising are located nearby.	1	2	3	4	5	
14	The firms connected to electronic commerce are located nearby.	1	2	3	4	5	
15	Firms in the same industry are located nearby.	1	2	3	4	5	
16	The public authorities helping businesses are located nearby.	1	2	3	4	5	

17	Your firm uses venture buildings or venture-incubating facilities in the region.	1	2	3	4	5	
18	The building your firm has possessed in the past is used.	1	2	3	4	5	
19	The parent company of your firm is located nearby.	1	2	3	4	5	
20	The shareholder firms of your firm are located nearby.	1	2	3	4	5	
21	The headquarters of your firm is located nearby.	1	2	3	4	5	
22	The distributing stores of your firm are located nearby.	1	2	3	4	5	
23	The manufacturing plants of your firm are located nearby.	1	2	3	4	5	
24	The research and development laboratories of your firm are located nearby.	1	2	3	4	5	
25	Transportation is very convenient.	1	2	3	4	5	
26	Business infrastructures are preferable.	1	2	3	4	5	
27	Environmental amenities are attractive.	1	2	3	4	5	
28	The expectations for the growth of the region are very high.	1	2	3	4	5	
29	To be located in the region makes you feel some prestige or pride.	1	2	3	4	5	
30	Your firm prevents competing firms from occupying that area.	1	2	3	4	5	
31	The managers of your firm are familiar with the location because they have some experience to live or carry out businesses in the place in the past.	1	2	3	4	5	

### 3. [Locations of customers]

In this questionnaire, **customer firms** include online sellers and online buyers. Online sellers and buyers mean those that carry out at least one of the three processes such as bidding, ordering, and contracting over e-MPs with electronic network. **Sellers** are those that sell their products over e-MPs to online buyers, while **buyers** are those that purchase required products from online sellers over e-MPs.

(1) Please type the number of sellers and buyers that have traded at least once over your e-MP. (As of the end of June 2002) ① Online sellers \_\_\_\_\_ ② Online buyers \_\_\_\_\_

(2) Please fill in the percentage of the number of firms that have traded at least once over your e-MP by region. (As of the end of June 2002)

Region	Total	Seoul	Gyeonggi	Gangwon	Chungnam Daejeon	Chungbuk	Jeonnam Gwangju	Jeonbuk	Gyeongnam Busan, Ulsan	Gyeongbuk Daegu	Jeju	Over seas
Sellers (%)												
Buyers (%)												

(3) Do you agree to the statement that the buyers and sellers of your e-MP are dispersed across the country? ( ) ① Strongly agree ② Agree ③ Neutral ④ Disagree ⑤ Strongly disagree

(4) \*Only those selected ③(Neutral), ④(Disagree) or ⑤(Strongly disagree) on the above question are allowed to answer this question. What do you think is the main reason why the buyers and sellers of your e-MP are concentrated in specific regions, instead of being dispersed across the country? (Please select the reasons in order of importance, multiple choices available)

- ( > > > > > )
- ① Potential buyers and sellers are concentrated in specific regions instead of being dispersed across the country.
  - ② The buyers and sellers within specific regional areas uses the e-MP for the convenience of the delivery of products.
  - ③ Because traded products need the continuous after-sales services, buyers chose the sellers located nearby.
  - ④ Your firm strategically conducts marketing activities for potential buyers and sellers in specific regional areas.
  - ⑤ Because of the lack of marketing activities, only buyers and sellers within specific areas are using your e-MP.

⑥ Others: \_\_\_\_\_

(5) Please type the major buyers and sellers of your e-MP, if possible (As of the end of June 2002)

Type	Firm	e-mail	Websites	Tel	Staff	Industry
Buyers						
Sellers						

### III. Characteristics of the relationship with other firms

1. [Importance of communication channels]

(1) (Electronic communication channels)

1-1. How much important do you think the electronic communication channels defined as the communication through electronic mails, telephone/fax, video conferencing, VAN-based EDI, and the Internet are **in the relationship with the online buyers and sellers** trading over your e-MP? ( )

1-2. How much important do you think the electronic communication channels defined as the communication through electronic mails, telephone/fax, video conferencing, VAN-based EDI, and the Internet are **in the relationship with the cooperative firms** that have formal or informal alliance with your e-MP? ( )

1-1, 1-2 Choose one of the below item

- ① Strongly important: the most confidential information that influences the decision of crucial business activities can be transmitted with electronic communication channels
- ② Important: A little confidential information can be transmitted with electronic communication channels
- ③ Neutral: Normal and routine information can be transmitted over electronic communication channels
- ④ Not important: the basic information and notice can be transmitted with electronic communication channels
- ⑤ Not at all important: Any information is not transmitted with electronic communication channels

(2) (Physical communication channels: face-to-face meeting)

2-1. How much important do you think face-to-face meeting (physical communication channel) is **in the relationship with the online buyers and sellers** trading over your e-MP? ( )

2-2. How much important do you think face-to-face meeting (physical communication channel) is **in the relationship with the cooperative firms** that have formal or informal alliance with your e-MP? ( )

2-1, 2-2 ① Strongly important ② Important ③ Neutral ④ Not important ⑤ Not at all important

(3) (Relative importance of the two communication channels)

3-1. How do you evaluate the relative importance of electronic communication channels and face-to-face meeting **in the relationship with the online buyers and sellers**? ( )

3-2. How do you evaluate the relative importance of electronic communication channels and face-to-face meeting in the relationship with the cooperative firms?( )

- 3-1, 3-2 Choose one of the below items
- ① Face-to-face meeting is much more important
  - ② Face-to-face meeting is more important, and electronic communication channels are supporting
  - ③ Face-to-face meeting is equally important as electronic communication channels
  - ④ Electronic communication channels are more important, and face-to-face meeting is supporting
  - ⑤ Electronic communication channels are much more important

2. [Characteristics of exchanged knowledge/information] The below statements are made to understand the characteristics of the knowledge/information exchanged in the business activities with other firms including online buyers and sellers (customers) and cooperative firms. Please give your rating from 1 to 5 about the degree at which you agree to each statement. Please type in the number in below cells.

**1: Strongly agree. 2: Agree. 3: Neutral. 4: Not agree. 5: Strongly not agree (Be careful not to be confused with the rating)**

Statements	The extent of agreement*	
	In the relationship with <u>online buyers and sellers of your e-MP</u>	In the relationship with <u>cooperative firms of your firm</u>
1. The communication of information or knowledge with the trading partner is important.		
2. The exchange of information or knowledge with the trading partner is carried out continuously.		
3. Concrete know-how, crafts, skills, personal, practical, context-specific knowledge, or knowledge acquired from experiences, are exchanged with the trading partners.		
4. Routine (easily codified or public, context-free) knowledge or information is mainly exchanged.		
5. Physical face-to-face meetings to exchange knowledge or information are important		
6. Electronic communication channels are enough to exchange required knowledge or information.		

3. [Characteristics of the level of trust] The below statements are created to evaluate the importance of trust accumulation in the business activities with other firms including online buyers and sellers (customers) and cooperative firms. Please give your rating from 1 to 5 about the degree at which you agree to each statement. Please type in the number in below cells. **1: Strongly agree. 2: Agree. 3: Neutral. 4: Not agree. 5: Strongly not agree (Be careful not to be confused with the rating)**

Statements	The extent of agreement*	
	In the relationship with <u>online buyers and sellers of your e-MP</u>	In the relationship with <u>cooperative firms of your firm</u>
1. Your firm prefers the firms that have existing relationship or that have high reputation when making contracts.		
2. Trust is considered to be a more important factor to making contracts than other conditions such as price.		
3. When your firm renews existing contracts, your firm makes efforts to continue the relationship with existing trading partners through additional negotiation, even in case you are not satisfied with contract condition		
4. The firms that make contracts with your firm once are usually considered to become partners on a long-term basis.		
5. Your firm considers the trust accumulation with trading partners as the most important factor for successful online businesses.		

- Thanks for your help!! -

■ For the online buyers that purchase products over OOO e-MP

Date		Company Name		*Industry	
*Establishment year		*Employees		Total sales (2001)	(0.1 billion KRW)
*Beginning year of trading over e-MPs (including any other e-MPs)				*Beginning year of trading over OOO e-MP	
*Locations of the headquarters of your firm (Province/city/Gu/Dong)					
** Locations of all the destinations of products (Province/city/Gu/Dong)			① ② ③		
*Name		Position		E-mail	*TEL

\* indicates required field. \*\* Destinations of products: The locations of the plants or storage warehouses to which purchased products are delivered.

**A. Characteristics of products, Knowledge/information exchange, and trust**

1-1 (Online purchased products) What products does your firm mainly purchase over OOO e-MP? ( ) Notes: Please refer to the classification of OOO e-catalog.

1-2 (Method of purchasing) How many percentages of products purchased over OOO e-MP are bought with the outsourcing service (the agent model), compared to the direct purchasing over the e-MP (the exchange model)? About ( )%

1-3 (Type of products) Do the purchased products belong to MR (maintenance/repair) products or O (operating) products? ( )  
① MR(Maintenance, Repair) products ② O(Operating) products such as office supplies

1-4 (Standardization of the products for e-catalog) The standardization of the classification of products are of great importance for online transactions. How do you evaluate the standardization of the online catalog for purchased products over OOO e-MP? ( )  
① Completely standardized(over 80%) ② standardized(60-80%) ③ Neutral(40-60%)  
④ Not standardized(20-40%) ⑤ Not at all standardized(less than 20%)

1-5 (Standardization of the products) Standardized products usually refer to the products that are produced with the commonly-used technologies by many firms and that are not specialized or customized. How do you evaluate the extent of the standardization of purchased products?( )  
① Completely standardized(over 80%) ② standardized(60-80%) ③ Neutral(40-60%)  
④ Not standardized(20-40%) ⑤ Not at all standardized(less than 20%)

2-1 (Importance of knowledge exchange) How do you evaluate the importance of the exchange of knowledge or information with trading partners when you purchase products over OOO e-MP? ( )  
① Strongly important ② Important ③ Neutral ④ Not important ⑤ Not at all important

2-2 (**Exchange of tacit knowledge**) How often do you exchange the tacit knowledge such as concrete know-how, crafts, skills, personal, practical, context-specific knowledge, or knowledge acquired from experiences with trading partners? ( )

- ① almost everyday ② once a week ③ 2-3 times a month ④ once a month ⑤ Rarely

3-1 (**Importance of trust**) When the firms that you do not know well suggest better conditions such as lower price over OOO e-MP, do you usually prefer the firms or existing trading partners through additional negotiations? ( )

- ① Strongly prefer existing trading partners ② Prefer existing trading partners ③ No preference ④ Prefer new trading partners ⑤ Strongly prefer new trading partners

3-2 (**Strategy of choosing trading partners**) What is your main strategy about choosing suppliers over OOO e-MP? ( )

- ① Your firm actively attempts to maintain the relationship with traditional offline trading partners even in online transactions  
 ② Your firm does not prefer traditional offline trading partners, but gives the same opportunity to potential new suppliers as well as traditional ones  
 ③ Your firm actively attempts to make relationships with competitive new suppliers  
 ④ Others \_\_\_\_\_

**B. Change of the number of suppliers and the purchasing amounts over OOO e-MP**

1-1 (**Reference time**) Please enter the number of suppliers and the purchasing amounts of the products for the year before your firm begins to trade over e-MPs. **Number of suppliers** ( ), **Purchasing amounts over OOO e-MP** ( ) 0.1 billion KRW

1-2 (**Ratio of purchasing over OOO e-MP**) For a year after the use of OOO e-MP, how many percentages did you purchase the products over OOO e-MP out of the total purchasing amount of the products (including offline purchasing) (Please estimate in case it has not been a year since your firm started to use OOO e-MP)? About ( )%

1-3 (**Ratio of purchasing over all the e-MPs**) For a year after the use of OOO e-MP, how many percentages did you purchase the products over e-MPs including OOO e-MP out of the total purchasing amount of the products (Please estimate in case it has not been a year since your firm started to use e-MPs)? About ( )%

1-4 (**Change after the use of OOO e-MP**) When you compare the year right before the use of OOO e-MP and the year after the use of OOO e-MP, were the number of suppliers and the total purchasing amounts of the products changed? (Please estimate the purchasing amount for a year in case it has not been a year since your firm started to use OOO e-MP)

▶ Please circle among increase, no change, and decrease, enter the rate of increase. (Examples: when the number of suppliers increased from 5 to 10, the rate of increase equals 100%)

	Increase	No change	Decrease	The rate of increase
① total number of suppliers of the products				( )%
② total purchasing amounts				( )%

1-5 (Reasons for change) **\*Only those answered with "increase" or "decrease" on the above 1-4 question are allowed to answer this question.** How much do you think the use of OOO e-MP influenced the change of the number of suppliers and the purchasing amounts of the products, compared to other internal/external business environments? Choose the number. ( )

Strongly influenced by the use of OOO e-MP      <--①-----②-----③-----④-----⑤-->      Not at all influenced by the use of OOO e-MP

### C. Spatial coverage of the suppliers over OOO e-MP

**\* Below questions are mainly composed of those that compare the situation before (the past) and after (the present) the use of OOO e-MP. Please be careful not to misunderstand the definition of each period.**

- **The past:** a year right before your firm begins to trade over e-MPs (including not only OOO e-MP, but also other e-MPs).  
 - **The present:** a year after your firm begins to trade over OOO e-MP.  
 (Estimation is used for firms that have used OOO e-MP less than a year)

#### 1. Change of the spatial distribution of suppliers

1-1 (Regional distribution of purchased amounts) Please enter the proportion of the purchased amounts by the locations of suppliers during "the past" and "the present". **Notes** The locations of suppliers mean the locations of the actual places from which products are delivered to the destinations of your firm. In case the destinations are more than one, please consider all of them to calculate the percentages.

Reference time \ Locations of suppliers	Total	① Within the same city	② Within the same province	③ Other areas within Korea	④ Overseas
Total purchased amounts of the products during "the past"	100%				
Total purchased amounts of the products over OOO e-MP during "the present"	100%				

Notes: ① Within the same city: the purchased amounts from the suppliers located in the same city as the destinations (plants or storage warehouses) of your firm are ② Within the same province: the purchased amounts from the suppliers in the same provinces in which the destination (plants or storage warehouses) of your firm are or in the metropolitan cities next to your firm. Ex) When a destination of your firm is Changwon-si, the same province includes the Gyeongsangnam-do excluding Changwon-si, Ulsan metropolitan city, and Busan metropolitan city.

1-2 (Importance of physical distance) How much important do you think the distance between the destinations of your firm and the departing places of suppliers when you trade over OOO e-MP? ( )

① Strongly important ② Important ③ Neutral ④ Not important ⑤ Not at all important

1-3 (Reasons for the importance of physical distance) **\*Only those answered with ①, ②, ③ on the above 1-2 question.** What are the main reasons why the physical distance between the destinations of your firm and the departing places of suppliers is considered important? Please choose the most important three reasons in decreasing order of the importance. (     >     >     )

- ① Need for frequent delivery or large size of products
- ② Need for continuous communication for after sales service
- ③ Transactions of customized products
- ④ Need for continuous exchange of information
- ⑤ Need for face-to-face meeting
- ⑥ Easiness of trust accumulation due to physical proximity
- ⑦ For the growth of local economy
- ⑧ Others \_\_\_\_\_

## 2. Change of the number and the spatial distribution of new suppliers

**\* New suppliers mean those that had not traded with your firm in the past and began to make contracts for the first time in this questionnaire.**

2-1 (Ratio of the number of new suppliers) Please fill in the table with the percentage of the number of new suppliers and the percentage of the purchased amounts from new suppliers during the above defined "the past" and "the present", respectively.

Reference time	① Percentage of the number of new suppliers	② Percentage of the purchased amounts from new suppliers
during "the past" (offline transactions)	%	%
during "the present" (transactions over OOO e-MP)	%	%

2-2 (Ratio of the purchased amounts from new suppliers) Please write in the percentage of the purchased amounts from new suppliers by their locations during "the past" and "the present". (☞ Notes) **The locations of new suppliers mean the locations of the actual places from which products are delivered to the destinations of your firm. In case the destinations are more than one, please consider all of them to calculate the percentages.**

Reference time	Locations of new suppliers				
	Total	① Within the same city	② Within the same province	③ Other areas within Korea	④ Overseas
Total purchased amounts of the products during "the past" from new suppliers	100%				
Total purchased amounts of the products over OOO e-MP during "the present" from new suppliers	100%				

Notes: Refer to the definition of ① Within the same city and ② Within the same province on the question C 1-1.

2-3 (Regular suppliers) How many percentages of new suppliers continue to trade with your firm since the first transaction over OOO e-MP (in terms of the number of suppliers)? (     )%

### 3. Regional limit of bidding firms

※ **Regional limit of bidding firms is that buyers allow only the suppliers within specific spatial coverage to participate in the processes related to making bidding or contracts.**

3-1 (**Regional limit**) Has your firm ever limited the locations of suppliers in advance when you purchase required items through bidding? (        ) ① No ② Yes

※ Below questions including 3-2,3,4,5 are asked to only the respondents that answered ② Yes about the above 3-1 question.

3-2 (**Change of the use of the regional limit**) Please write in the percentage of the purchased amount using the regional limit of bidding firms during “the past” and “the present” defined above.

The past (a year right before the use of e-MPs)		The present (for a year after the use of OOO e-MP)	
About	%	About	%

3-3 (**Scope of limited regions**) When you limit the region where potential suppliers are located, how wide coverage of areas is usually included? (        )

- ① Within the same city as the delivered places of your firm are located in
- ② Within the same province (or near metropolitan cities)
- ③ Beyond the same province such as Seoul metropolitan area, Chungcheong area, Jeolla area, Gyeongsang area and so on
- ④ Others \_\_\_\_\_

3-4 (**Reasons for regional limit**) What are the main reasons for limiting the spatial locations of potential bidders? Please choose the most important three reasons in the decreasing order of importance. (        >        >        )

- ① Need for frequent delivery or large size of products
- ② Need for continuous communication for after sales service
- ③ Transactions of customized products
- ④ Need for continuous exchange of information
- ⑤ Need for face-to-face meeting
- ⑥ Easiness of trust accumulation due to physical proximity
- ⑦ For the growth of local economy
- ⑧ Others \_\_\_\_\_

### D. General characteristics of the use of e-MPs

1. (**Number of e-MPs**) How many e-MPs do you usually use to purchased required products? (        )

- ① Only use OOO e-MP continuously
- ② Use two or three e-MPs including OOO e-MP continuously
- ③ Search for the e-MP that meets your need whenever you purchase them

2. **(Motivation to use OOO e-MP)** What are the main reasons for trading over OOO e-MP (multiple choices)? ( )

- ① Your firm or the affiliated company is the shareholder of OOO e-MP
- ② The major existing suppliers of your firm were participating in OOO e-MP
- ③ The active marketing of OOO e-MP
- ④ The companies in the same industry were the member of OOO e-MP
- ⑤ Your firm voluntarily searched for OOO e-MP that meet your need
- ⑥ Other \_\_\_\_\_

3. **(Characteristics of communication channels)** Below questions are about the relationship of your firm with online suppliers over OOO e-MP through a series of business activities.

3-1 **(Electronic communication channels)** How much important do you think the electronic communication channels defined as the communication through electronic mails, telephone/fax, video conferencing, VAN-based EDI, and the Internet are in the relationship with online suppliers trading over OOO e-MP? ( )

- ① Strongly important: the most confidential information that influences the decision of crucial business activities can be transmitted with electronic communication channels
- ② Important: A little confidential information can be transmitted with electronic communication channels
- ③ Neutral: Normal and routine information can be transmitted over electronic communication channels
- ④ Not important: the basic information and notice can be transmitted with electronic communication channels
- ⑤ Not at all important: Any information is not transmitted with electronic communication channels

3-2 **(Physical communication channels)** How much important do you think face-to-face meeting (physical communication channel) is in the relationship with online suppliers trading over OOO e-MP? ( ) ① Strongly important ② Important ③ Neutral ④ Not important ⑤ Not at all important

4 **(Barriers)** Considering the situation of OO industry, What are the main barriers for developing electronic commerce in the industry? Please choose all the reasons in decreasing order of the importance (multiple choices). ( > > > )

- ① No guarantee of product quality
- ② Difficulty in transactions on credit
- ③ No guarantee on after sales problems
- ④ Difficulty in breaking off the relationship with existing trading partners
- ⑤ Cost increase due to paying for transaction fees
- ⑥ Technical difficulty in online connection and transactions
- ⑦ Others \_\_\_\_\_

■ For the online sellers that sell products over OOO e-MP

Date		Company		*Industry	
*Establishment year		*Employees		Total sales (2001)	(0.1 billion KRW)
*Beginning year of trading over e-MPs (including any other e-MPs)				*Beginning year of trading over OOO e-MP	
*Locations of the headquarters of your firm (Province/city/Gu/Dong)					
** Locations of all the departing places of the sold products of your firm (Province/city/Gu/Dong)			① ② ③ ...		
*Name		Position		E-mail	*TEL

\* indicates required field. \*\* Locations of departing places: The locations of the plants or storage warehouses from which sold products are delivered.

**A. Characteristics of products, Knowledge/information exchange, and trust**

1-1 (Online sold products) What products does your firm mainly sell over OOO e-MP?  
( ) Notes: Please refer to the classification of OOO e-catalog.

1-2 (Method of selling) How many percentages of products sold over OOO e-MP are related to the contracts with the operator of OOO e-MP, not with the actual purchasers of products?  
About ( ) %

1-3 (Type of products) Do the sold products belong to MR (maintenance/repair) products or O (operating) products? ( )  
① MR(Maintenance, Repair) products ② O(Operating) products such as office supplies

1-4 (Standardization of the products for e-catalog) The standardization of the classification of products are of great importance for online transactions. How do you evaluate the standardization of the online catalog for sold products over OOO e-MP? ( )  
① Completely standardized(over 80%) ② standardized(60-80%) ③ Neutral(40-60%)  
④ Not standardized(20-40%) ⑤ Not at all standardized(less than 20%)

1-5 (Standardization of the products) Standardized products usually refer to the products that are produced with the commonly-used technologies by many firms and that are not specialized or customized. How do you evaluate the extent of the standardization of sold products?( )  
① Completely standardized(over 80%) ② standardized(60-80%) ③ Neutral(40-60%)  
④ Not standardized(20-40%) ⑤ Not at all standardized(less than 20%)

2-1 (Importance of knowledge exchange) How do you evaluate the importance of the exchange of knowledge or information with trading partners when you sell products over OOO e-MP? ( )  
① Strongly important ② Important ③ Neutral ④ Not important ⑤ Not at all important

2-2 (**Exchange of tacit knowledge**) How often do you exchange the tacit knowledge such as concrete know-how, crafts, skills, personal, practical, context-specific knowledge, or knowledge acquired from experiences with trading partners? ( )

- ① almost everyday ② once a week ③ 2-3 times a month ④ once a month ⑤ Rarely

3-1 (**Importance of trust**) When buyers make contracts with your firm over OOO e-MP, which one of below conditions is usually considered most important? ( )

- ① Price condition ② Credibility (whether they are existing trading partners or not etc.) ③

Others \_\_\_\_\_

3-2 (**Relationship with online buyers**) What is the main characteristic of the relationship between your firm and the online buyers over OOO e-MP? ( )

- ① Most offline trading partners are maintained in the transactions over OOO e-MP  
 ② New buyers are created in the transactions over e-MP in addition to maintaining offline trading partners  
 ③ New buyers are the main customers in the transactions over OOO e-MP  
 ④ Others \_\_\_\_\_

## B. Change of the number of buyers and the sales over OOO e-MP

1-1 (**Reference time**) Please enter the number of buyers and the online sales of the products for the year before your firm begins to trade over e-MPs. Number of buyers ( ), online sales over OOO e-MP ( ) 0.1 billion KRW

1-2 (**Ratio of selling over OOO e-MP**) For a year after the use of OOO e-MP, how many percentages did you sell the products over OOO e-MP out of the total sales (including offline sales) (Please estimate in case it has not been a year since your firm started to use OOO e-MP)? About ( )%

1-3 (**Ratio of selling over all the e-MPs**) For a year after the use of OOO e-MP, how many percentages did you sell the products over e-MPs including OOO e-MP out of the total sales of the products (Please estimate in case it has not been a year since your firm started to use e-MPs)? About ( )%

1-4 (**Change after the use of OOO e-MP**) When you compare a year right before the use of OOO e-MP and a year after the use of OOO e-MP, were the number of buyers and the total sales of the products changed? (Please estimate in case it has not been a year since your firm started to use OOO e-MP)

▶ Please circle among increase, no change, and decrease, enter the rate of increase. (Examples: when the number of buyers increased from 5 to 10, the rate of increase equals 100%)

	Increase	No change	Decrease	The rate of increase
① total number of buyers of the products				( )%
② total sales				( )%

1-5 (**Reasons for change**) ※ Only those answered with “increase” or “decrease” on the above 1-4 question are allowed to answer this question. How much do you think the use of OOO e-MP influenced the change of the number of buyers and the total sales of the products, compared to other internal/external business environments? Choose the number. ( )

Strongly influenced by the use of OOO e-MP

<---①-----②-----③-----④-----⑤-->

Not at all influenced by the use of OOO e-MP

### C. Spatial coverage of the buyers over OOO e-MP

※ Below questions are mainly composed of those that compare the situation before (the past) and after (the present) the use of OOO e-MP. Please be careful not to misunderstand the definition of each period.

- **The past:** a year right before your firm begins to trade over e-MPs (including not only OOO e-MP, but also other e-MPs).  
 - **The present:** a year after your firm begins to trade over OOO e-MP.  
 (Estimation is used for firms that have used OOO e-MP less than a year)

#### 1. Change of the spatial distribution of buyers

1-1 (Regional distribution of sold amounts) Please enter the proportion of the sold amounts by the locations of buyers during "the past" and "the present". **Notes) The locations of buyers mean the locations of the actual places to which products are delivered from your firm. In case the delivered places are more than one, please consider all of them to calculate the percentages.**

Reference time \ Locations of buyers	Total	① Within the same city	② Within the same province	③ Other areas within Korea	④ Overseas
Total sales of the products during "the past"	100%				
Total sales of the products over OOO e-MP during "the present"	100%				

Notes: ① Within the same city: the sales to buyers located in the same city as the departing places (plants or storage warehouses) of your firm are ② Within the same province: the sales to buyers in the same provinces in which the departing places (plants or storage warehouses) of your firm are or in the metropolitan cities next to your firm. Ex) When a departing place of your firm is Changwon-si, the same province includes the Gyeongsangnam-do excluding Changwon-si, Ulsan metropolitan city, and Busan metropolitan city.

1-2 (Importance of physical distance) How much important do you think the distance between the destinations of buyers and the departing places of your firm when you trade over OOO e-MP? ( )

- ① Strongly important ② Important ③ Neutral ④ Not important ⑤ Not at all important

1-3 (Reasons for the importance of physical distance) **※Only those answered with ①, ②, ③ on the above 1-2 question.** What are the main reasons why the physical distance between the destinations of buyers and the departing places of your firm is considered important? Please choose the most important three reasons in decreasing order of the importance. ( > > )

- ① Need for frequent delivery or large size of products
- ② Need for continuous communication for after sales service
- ③ Transactions of customized products
- ④ Need for continuous exchange of information
- ⑤ Need for face-to-face meeting
- ⑥ Easiness of trust accumulation due to physical proximity
- ⑦ For the growth of local economy
- ⑧ Others \_\_\_\_\_

## 2. Change of the number and the spatial distribution of new buyers

※ New buyers mean those that had not traded with your firm in the past and began to make contracts for the first time, in this questionnaire.

2-1 (Ratio of the number of new buyers) Please fill in the table with the percentage of the number of new buyers and the percentage of the sales to new buyers during the above defined "the past" and "the present", respectively.

Reference time	① Percentage of the number of new buyers	② Percentage of the sales to new buyers
during "the past" (offline transactions)	%	%
during "the present" (transactions over OOO e-MP)	%	%

2-2 (Ratio of the sales to new buyers) Please write in the percentage of the sales to new buyers by their locations during "the past" and "the present". <sup>※</sup> Notes) The locations of new buyers mean the locations of the actual places to which products are delivered from the departing places of your firm. In case the departing places are more than one, please consider all of them to calculate the percentages.

Reference time	Locations of new buyers				
	Total	① Within the same city	② Within the same province	③ Other areas within Korea	④ Overseas
Total sales of the products during "the past" to new buyers	100%				
Total sales of the products over OOO e-MP during "the present" to new buyers	100%				

Notes: Refer to the definition of ① Within the same city and ② Within the same province on the question C 1-1.

2-3 (Regular buyers) How many percentages of new buyers continue to trade with your firm since the first transaction over OOO e-MP (in terms of the number of buyers)? ( )%

## 3. Regional limit of delivery area

※ Regional limit of delivery area is that when your firm uploads products on e-catalog or participate in online bidding, your firm limit the area within which your firm deliver the products.

3-1 (Regional limit) Has your firm ever limited delivery areas when you sell products? ( )

① No ② Yes



3. **(Characteristics of communication channels)** Below questions are about the relationship of your firm with online buyers over OOO e-MP through a series of business activities.

3-1 **(Electronic communication channels)** How much important do you think the electronic communication channels defined as the communication through electronic mails, telephone/fax, video conferencing, VAN-based EDI, and the Internet are in the relationship with online buyers trading over OOO e-MP? (      )

- ① Strongly important: the most confidential information that influences the decision of crucial business activities can be transmitted with electronic communication channels
- ② Important: A little confidential information can be transmitted with electronic communication channels
- ③ Neutral: Normal and routine information can be transmitted over electronic communication channels
- ④ Not important: the basic information and notice can be transmitted with electronic communication channels
- ⑤ Not at all important: Any information is not transmitted with electronic communication channels

3-2 **(Physical communication channels)** How much important do you think face-to-face meeting (physical communication channel) is in the relationship with online buyers trading over OOO e-MP? (      ) ① Strongly important ② Important ③ Neutral ④ Not important ⑤ Not at all important

4 **(Barriers)** Considering the situation of OO industry, What are the main barriers for developing electronic commerce in the industry? Please choose all the reasons in decreasing order of the importance (multiple choices). (      >      >      >      )

- ① No guarantee of product quality
- ② Difficulty in transactions on credit
- ③ No guarantee on after sales problems
- ④ Difficulty in breaking off the relationship with existing trading partners
- ⑤ Cost increase due to paying for transaction fees
- ⑥ Technical difficulty in online connection and transactions
- ⑦ Others \_\_\_\_\_

## APPENDIX C: Questionnaires (in Korean)

☞ 세 종류의 설문 내용 가운데 주요한 항목만이 본 연구에 직접적으로 인용되었다. 나머지 문항들은 전반적인 상황을 이해하기 위한 간접 자료로 본 연구에서 활용되었음을 밝혀둔다.

### ■ 설문 대상: 공개형 전자마켓플레이스 운영기업

법인설립 시기	년 월	B2B 거래시작일	년 월	종업원수(2002-6월말기준)	명	거래액* (2002.1월-6월말기준)*	만원
업종구분	1.화학 2.건설/전자재 3.식음료 4.철강 5.MRO 6.섬유·의류 7.무역 8.종합 9.의료 10.석유 11.기계 및 산업용자재 12.전자 13.기타:( ) 해당번호를 써주세요: ( )						
작성자		직위		전자우편		전화	

\*거래액: 입찰, 주문, 계약 중 최소한 하나의 과정이 귀사의 온라인 전자장터를 통해 이루어진 전체 거래물량을 의미합니다. (매출액과는 다른 의미입니다.)

본 설문에서 고객기업은 입찰, 주문, 계약 중 최소한 하나의 과정을 귀사의 온라인 전자장터를 통해 수행하는 기업을 의미하며, 구매기업과 판매기업을 통칭합니다. 여기에서, 구매기업은 귀 업체의 전자장터(E-MPs)를 통해 필요한 물품을 조달받는 기업을, 판매기업은 귀 업체의 전자장터를 통해서 생산제품을 필요한 기업에 납품하는 기업을 뜻합니다.

※ 귀 업체가 운영하는 대표적인 기업간 전자상거래(B-to-B)마켓플레이스의 주소를 적어주세요. (http:// )

이하 본 설문은 위에 적으신 웹사이트의 운영에 관해 답해주시는 것입니다.

### I. E-MPs의 유형 구분

1. [거래 제품 특성에 따른 구분] 귀사의 사이트를 통해 주로 거래되는 제품의 특징에 관한 물음입니다.

(1) (마켓유형) 귀 사이트를 통해 거래되는 제품들은 일반적으로 다음 보기중 어떤 범주에 해당되니까? ( )

- ① 생산자재(manufacturing inputs): 특정 산업내 제품생산에 직접 사용되는 원·부자재 (vertical market)
- ② 일반자재(operating inputs): 여러 산업에 걸쳐서 기업의 생산활동을 지원(유지, 보수, 운영)하는데 사용되는 각종 소모성 공장용품과 사무용품을 포함하는 MRO제품 (horizontal market)
- ③ 디지털 재화(digital goods): 지식·기술 등 보이지 않는 지적 재산과 소프트웨어 등 순수하게 온라인을 통해서 거래가능한 제품군을 통칭

(2) (주거래제품 표준화정도) 귀사를 통해 거래되는 제품 중 거래물량이 가장 많은 제품군(주거래제품)의 표준화 정도에 관련된 특성을 알기 위한 문항입니다. 각 문장에 대해 동의하는 정도를 표기하여 주십시오. 동의의 정도는 5단계로 구성되어 있습니다. 해당 숫자에 O표를 하시거나, 표기란에 숫자를 써주시면 됩니다.

※ 유형의 재화뿐 아니라 지식 등 무형의 재화를 거래하시는 경우에도 아래의 항목에 대해 답해주세요.

항 목	동의 정도					표기
	매우 동의함	약간 동의함	보통	약간 동의하지 않음	전혀 동의하지 않음	
1. 본 제품의 생산업체(또는 생산처)는 특정 업체 또는 지역으로 제한되어 있다.	1	2	3	4	5	
2. 본 제품은 특정 업체에서만 사용되는 고유하고 특징적인 부분을 포함한다.	1	2	3	4	5	
3. 동일한 유형의 제품을 사용(또는 생산)하는 업체의 수가 매우 적다.	1	2	3	4	5	
4. 본 제품은 표준화 정도가 높은 제품이라고 할 수 있다.	1	2	3	4	5	
5. 본 제품을 생산할 수 있는 기술을 보유한 업체의 수가 제한적이다.	1	2	3	4	5	

2. [회사설립 특성에 따른 구분] 전자장터를 운영하는 주체의 기본 속성을 알기 위한 문항입니다.

- (1) (오프라인기업/닷컴기업) 전자장터의 운영주체는 누구입니까? ( )  
 ① 기존 제조업체내 특정 부서 ② 기존 유통업체내 특정 부서 ③ 전자상거래를 포함한 온라인기업활동을 전문으로 하는 독립 법인화된 기업
- (2) (설립유형) (1)질문에 ③(전자상거래를 포함한 온라인기업활동을 전문으로 하는 독립 법인화된 기업)으로 답하신 기업들만 답해주세요. 귀 업체는 어떤 유형으로 설립되었습니까?( )  
 ① 둘 이상의 (동일 또는 관련)업종 기업의 출자에 의해 설립된 컨소시엄형태의 기업(industrial consortium)  
 ② 개인에 의해 독자적으로 설립된 기업(independent start-ups)  
 ③ 모기업의 지원을 통해 설립된 독립계열사 또는 분사 형태의 기업
- (3) (주요고객) 귀 업체에서는 주로 어떤 고객을 대상으로 기업활동을 수행하십니까? ( )  
 ① 귀사 또는 모기업에서 직접 생산한 제품을 판매하거나, 직접 사용하게 될 제품을 구매  
 ② 주로 주주사(출자사)를 비롯한 소수의 구매/판매 기업을 고객으로 구매/판매 중개  
 ③ 불특정 다수의 기업들을 대상으로 구매 또는 판매 중개

3. [수익창출원천] 귀 업체의 수익창출원천에 관한 물음입니다.

(1) 귀 전자장터의 거래 유형은 다음 중 어떤 것입니까? ( )

- ① **중개형**: 거래성립에 직접 관여하지는 않지만, 구매업체와 판매업체가 자유롭게 거래를 수행하도록 시스템보완 및 유용한 정보 제공을 위해 노력하며, 수익은 회원가입비 또는 거래성사시 수수료 등으로 얻어진다.
- ② **구매대행형**: 최적의 공급업체를 찾아내어 고객(구매업체)에게 연결시키는 업무를 직접 수행하며, 수익은 마진율로서 결정된다.
- ③ **공급대행형**: 최적의 구매업체를 찾아내어 고객(공급업체)에게 연결시키는 업무를 직접 수행하며, 수익은 마진율로서 결정된다.
- ④ **대행형과 중개형 모두 활용**
- ⑤ 기타: \_\_\_\_\_

(2) (수익모형구성) **대행형과 중개형을 모두 활용하시는 경우(위의 질문에 ④로 답한 경우)에만 답해주세요.** 귀 사의 전자장터를 통해 거래되는 전체거래물량 중 **중개형 서비스**를 활용하여 제품이 거래되는 비율은 얼마나 됩니까? 약 ( ) %

4. [거래방식의 특징] 귀 업체가 운영하는 기업간 전자상거래 사이트의 거래방식에 관한 물음입니다. 용어의 정의는 다음과 같습니다:**단기적 소싱(spot sourcing)**: 필요한 물품이 있을 때마다 업체들이 귀 사이트를 방문하여 **전혀 새로운 거래조건**에 따라 거래를 수행합니다. **장기적 소싱(systematic sourcing)**: 단가계약 등의 일정 기간 단위 계약을 맺어놓은 상태에서 업체간에 주기적으로 거래가 이루어지는 경우를 말합니다.

(1) 귀 업체를 통해 거래되는 전체 거래물량 가운데, **단기적 소싱(spot sourcing)**을 통한 거래는 약 몇 % 정도 차지하신다고 판단하고 계십니까? ( )%

- ① 전혀 없다 ② 20%미만 ③ 20-40% ④ 40-60% ⑤ 60-80% ⑥ 80-100% ⑦ 파악할 수 없다.

## II. 업체 입지의 특성 및 고객업체의 분포

1. [업체입지] 귀 사 전자상거래 기능의 위치에 관한 질문입니다.

(1) 귀 사의 기업간(B2B) 전자상거래 관련 일반 업무(회원사 관리 및 서비스 제공 및 관리 등)를 담당하는 팀은 어디에 위치하고 있습니까?

위치: \_\_\_\_\_ 도 \_\_\_\_\_ 시 \_\_\_\_\_ 구 \_\_\_\_\_ 동 \_\_\_\_\_ 번지 \_\_\_\_\_

(2) 귀 업체의 전자상거래업무와 관련된 컴퓨터 서버 등의 IT장비는 어디에 위치하여 있습니까? ( )

- ① 회사내 자체 관리 ② 외부 전문 IT기업과 계약을 맺고 외부기업이 담당 ③ 외부업체와 공동관리 ④ 기타: \_\_\_\_\_

(3) 위 (2) 의 질문에 ②(외부 전문 IT기업과 계약을 맺고 외부기업이 담당), ③(외부업체와 공동관리)으로 답하신 경우, 관련 외부업체의 회사명 및 위치를 적어주세요.

회사명: \_\_\_\_\_ 위치: \_\_\_\_\_ 도 \_\_\_\_\_ 시 \_\_\_\_\_ 구 \_\_\_\_\_ 동 \_\_\_\_\_ 번지 \_\_\_\_\_

2. [업체입지요인] 귀 업체(전자상거래 기능이 위치한 오피스 기준)의 입지동기에 관한 질문입니다. 현재의 입지를 택하게 된 동기에 관해 각 항목별 중요도를 표기하여 주십시오. 해당 숫자에 0표를 하시거나, 표기란에 숫자를 써주세요. \* 입지요인은 실제 귀 업체가 현재 입지지역을 선택하게 된 동기를 묻는 질문으로, 가령 “사무실 임대비용이 저렴한 것” 이 일반적으로 중요하게 고려되기는 하지만, 현재의 입지는 비싼 임대료에도 불구하고 다른 장점 때문에 입지한 것이라면, 1번 항목: “사무실 임대비용이 저렴하다” 에 대한 중요도는 5(전혀 고려치 않음)이나 4(별로 고려치 않음) 가운데 선택해 주시면 됩니다.

번호	입 지 요 인	중 요 도					표기
		매우 중요하 게고려	약간 중요 하게 고려	보통	별로 고려치 않음	전혀 고려치 않음	
1	사무실 임대비용이 저렴하다.	1	2	3	4	5	
2	통신하부구조설비(랜 및 네트워크 등)가 저렴하다.	1	2	3	4	5	
3	주차료 및 공공요금을 포함한 기타 사무실 운영비용이 저렴하다.	1	2	3	4	5	
4	기업활동에 필요한 전문기술인력을 구하기 쉽다.	1	2	3	4	5	
5	이 지역내에서의 인력 이동(이직)이 유연하게 이루어지는 것으로 알려져 있다.	1	2	3	4	5	
6	귀 사이트를 통해 거래되는 제품의 생산(제조) 공장이 인근에 있다.	1	2	3	4	5	
7	귀 사이트를 통해 거래되는 제품의 원료 또는 원부자재 산지가 인근에 있다.	1	2	3	4	5	
8	귀 사이트에 참여할 수 있는 잠재적 구매기업들이 인근에 위치하고 있다.	1	2	3	4	5	
9	귀 사이트에 참여할 수 있는 잠재적 판매기업들(공급사)이 인근에 입지해 있다.	1	2	3	4	5	
10	사이트의 구축 및 운영에 도움이 되는 기술관련 IT 솔루션 및 컨설팅 기업들이 인근에 위치해 있다.	1	2	3	4	5	
11	기업활동과 관련된 물류업체가 근처에 입지해 있다.	1	2	3	4	5	
12	은행, 창업투자사(벤처캐피탈) 등 기업활동에 도움이 되는 금융관련기업이 인접해 있다.	1	2	3	4	5	
13	기업활동에 도움이 되는 법률, 회계, 광고 등 사업서비스 기업이 근처에 입지해 있다.	1	2	3	4	5	
14	잠재적으로 협력가능한 각종 전자상거래 관련 기업들이 근처에 많이 입지해 있다.	1	2	3	4	5	
15	잠재적 협력자로서 동종업체들이 이 지역에 기입지하고 있었거나 또는 입주예정이다.	1	2	3	4	5	
16	기업활동과 관련된 협회 및 관공서가 인근에 입지하고 있다.	1	2	3	4	5	
17	이 지역의 벤처집적시설 또는 창업보육센터에 입주하고자 하였다.	1	2	3	4	5	
18	귀 사가 기존에 보유하고 있던 사무실(또는 본사 건물)을 그대로 활용하였다.	1	2	3	4	5	
19	귀 사의 모기업이 근처에 입지해 있다.	1	2	3	4	5	
20	귀 사의 자본출자회사(주주사)들이 근처에 입지해 있다.	1	2	3	4	5	
21	귀 사의 본사가 인근에 위치하고 있다.	1	2	3	4	5	
22	귀 사의 기존 점포(도매/유통 등)가 인근에 위치하고 있다.	1	2	3	4	5	
23	귀 사의 기존 생산라인이 근처에 입지하고 있다.	1	2	3	4	5	
24	귀 사의 기존 연구소가 근처에 입지하고 있다.	1	2	3	4	5	
25	교통이 매우 편리하다.	1	2	3	4	5	
26	일반적인 업무환경(기업종사자들을 위한 식당, 업무 편의시설, 기반시설 등)이 좋다.	1	2	3	4	5	
27	자연적인 환경조건(가령: 깨끗한 공기 등)이 쾌적하여 업무에 적합하다.	1	2	3	4	5	
28	지역의 성장 잠재력(성장가능성)에 대한 기대감이 있었다.	1	2	3	4	5	
29	그 지역에 입지하는 것이 귀 사의 기업이미지에 도움이 되며 자부심(또는 prestige)을 느끼게 한다.	1	2	3	4	5	
30	경쟁관계에 있는 업체들에게 입지를 선점당하지 않기 위해 먼저 이 지역을 선택했다.	1	2	3	4	5	
31	회사 경영진이 과거에 이 지역(또는 인접 지역)에서 거주하거나 업무활동을 수행한 적이 있어서 이 지역에 대해 잘 알고 있다.	1	2	3	4	5	

3. [고객업체 입지분포] 귀 사의 사이트를 통해 구매 또는 판매를 수행하는 고객 업체들에 관한 질문입니다.

본 설문에서 고객기업은 입찰, 주문, 계약 중 최소한 하나의 과정을 귀 사의 온라인 전자장터를 통해 수행하는 기업을 의미합니다. 구매기업: 전자장터에서 물품구매, 판매기업: 전자장터에서 물품판매

(1) 회원으로 등록한 기업가운데 실제 귀 사이트를 통해 거래를 수행한 업체는 각각 몇 개입니까? (2002년 6월말 기준)

① 실제 판매수행 업체 \_\_\_\_\_ 개    ② 실제 구매수행 업체 \_\_\_\_\_ 개

(2) 귀 업체의 B2B 전자상거래 사이트를 통해 거래를 수행한 업체의 대략적인 지역별 비중을 기록해 주세요. (2002년 6월말 기준)

지역	합계(개)	서울	경기	강원	충남 대전	충북	전남 광주	전북	경남 부산, 울산	경북 대구	제주	해외
판매업체(%)												
구매업체(%)												

(3) 귀 사의 전자장터를 활용하는 고객업체(구매업체+판매업체)는 전국적으로 고르게 분포되어 있다고 평가하십니까? (      )

① 매우 그렇다    ② 약간 그렇다    ③ 보통이다    ④ 별로 그렇지 않다    ⑤ 전혀 그렇지 않다

(4) 위 (3)의 질문에 ③(보통이다), ④(별로 그렇지 않다) 또는 ⑤(전혀 그렇지 않다)를 선택하신 경우에만 답해주세요. 귀 사의 전자장터를 활용하는 기업이 전국적으로 고르게 분포되어 있지 않은 이유는 무엇이라고 생각하십니까? (가장 중요하게 작용한다고 생각되는 이유에서부터 모두 골라주세요, 둘 이상 복수응답가능)

(      >      >      >      >      >      )

- ① 귀 사의 서비스를 활용할 수 있는 잠재적인 고객기업군 자체가 특정 지역에 편중되어 분포되어 있다.
- ② 거래제품의 배송 편의를 위해 자연스럽게 특정 지역내 업체들만 주로 활용하게 되었다.
- ③ 거래되는 제품의 특성상 거래쌍방기업의 지속적인 교류(A/S 문제등)가 필요하므로 자연스럽게 특정 지역내 업체들이 주로 활용하게 되었다.
- ④ 귀 사가 암묵적으로 특정 지역의 기업들을 대상으로 주로 마케팅활동을 벌이고 있다.
- ⑤ 아직은 홍보가 부족하여 부득이 특정 지역의 업체들만 주로 활용하였다.
- ⑥ 기타: \_\_\_\_\_

(5) 귀 업체의 전자장터를 활용하는 고객기업 중 귀 업체를 통한 거래물량이 가장 높은 업체순으로 구매기업과 판매기업 각각 2개 업체씩 적어주십시오.(2002년 6월말 기준)

유형	업체명	전자우편주소	업체홈페이지	전화	담당자	업종
구매기업						
판매기업						

### III. 타기업과의 교류에 나타난 특성

※ 이하 모든 질문에 대해 고객기업 및 제휴기업과의 관계를 각각 독립적으로 답해주시기 부탁드립니다.

\*\*고객기업 - 귀 업체의 전자장터를 통해 물건을 구매하거나 물건을 판매하는 기업들을 통칭합니다.

\*\*\*전략적 제휴/협력기업 - 물류업무제휴, 금융서비스 제휴 등 기타 귀 업체의 기업활동전반에 걸쳐 공식적/비공식적 협력관계를 맺고 있는 기업을 통칭합니다. 착오없으시기 바랍니다.

1. [통신수단 활용의 중요도] 귀 업체가 기업활동을 하는 전과정을 통해 전자적인 통신수단의 활용 정도를 알기 위한 물음입니다.

(1) (전자통신매체활용도) 귀 업체의 전자통신매체의 활용도에 관한 물음입니다.

1-1. 귀 업체의 경우, 고객기업과의 교류과정에서 전자적인 통신수단(전자우편, 전화/팩스, 화상회의, 인터넷, 전용선 등 포함)을 통해 수행 가능한 기업활동은 어느 정도 수준이십니까? 아래의 보기 중 하나를 택해 주세요. ( )

1-2. 귀 업체의 경우, 전략적 제휴/협력기업과의 교류과정에서 전자적인 통신수단(전자우편, 전화/팩스, 화상회의, 인터넷, 전용선 등 포함)을 통해 수행 가능한 기업활동은 어느 정도 수준이십니까? 아래의 보기 중 하나를 택해 주세요. ( )

1-1, 1-2 문항의 <보기>

① 매우 중요: 기업의사결정에 직접적인 영향을 미치는 최고 수준의 보안을 필요로 하는 기업활동에 관한 문서송수신 및 업무협의를 전자적인 통신수단을 통해 가능하다.

② 약간 중요: 상대적으로 높은 보안수준이 요구되는 문서 및 업무협의를 전자적인 통신수단을 통해 전송/협약가능하다.

③ 보통: 일반업무내용의 협의 및 문서송수신에 사용된다.

④ 별로 중요하지 않음: 기초적인 수준의 연락 및 공지사항 전달등을 위해서만 사용하다.

⑤ 전혀 중요하지 않음: 전혀 사용되지 않고 있다.

(2) (대면접촉활용도) 귀 업체의 기업활동에서 직접 만남(face-to-face meeting)의 활용도에 관한 물음입니다.

2-1. 귀 업체의 경우, 기업활동과정에서 고객기업과의 “직접 만남”이 갖는 중요도가 어느 정도라고 평가하십니까? 아래의 보기 중 하나를 택해 주세요. ( )

2-2. 귀 업체의 경우, 기업활동과정에서 전략적 제휴/협력기업과의 “직접 만남”이 갖는 중요도가 어느 정도라고 평가하십니까? 아래의 보기 중 하나를 택해 주세요. ( )

2-1, 2-2 문항의 <보기> ① 매우 중요 ② 약간 중요 ③ 보통 ④ 별로 중요하지 않음 ⑤ 전혀 중요하지 않음

(3) (대면접촉과 전자통신매체의 관계) 전자통신수단의 활용과 직접만남의 활용정도에 대한 비교입니다.

3-1. **고객기업**과의 관계에 비추어 볼 때, 전자적인 통신수단을 통한 교류와 직접만남을 통한 교류는 어떤 관계에 있다고 평가하십니까? 다음 페이지의 보기 중 하나를 택해 주세요. ( )

3-2. **전략적 제휴/협력기업**과의 관계에 비추어 볼 때, 전자적인 통신수단을 통한 교류와 직접만남을 통한 교류는 어떤 관계에 있다고 평가하십니까? 다음 페이지의 보기 중 하나를 택해 주세요. ( )

- 3-1, 3-2 문항의 <보기>
- ① 직접 만남이 훨씬 중요하다.
  - ② 직접 만남이 주로 중요하며, 전자적 통신수단은 보조 매체이다.
  - ③ 직접 만남과 전자적통신수단과 동일한 정도의 중요도를 지닌다.
  - ④ 전자적 통신수단이 주로 중요하며, 직접 만남은 보조 수단일 뿐이다.
  - ⑤ 전자적 통신수단이 훨씬 중요하다.

2. [교환되는 지식/정보의 특성] 귀 사가 기업활동을 수행하는 과정에서 타기업(고객기업 또는 전략적 제휴업체 등)과 주고 받는 지식 및 정보의 특성을 이해하고자 하는 물음입니다. 각 문장에 대해 동의하는 정도를 표기하여 주십시오. 동의의 정도는 5단계로 구성되어 있습니다. 아래의 각 항목별 표기란에 해당되는 숫자를 써주시면 됩니다. 1: 매우 동의함. 2: 약간 동의함. 3: 보통. 4: 약간 동의하지 않음. 5: 전혀 동의하지 않음 \*매우 동의함이 1이며, 전혀 동의하지 않음은 5입니다. 착오없으시기 바랍니다.

항 목	동의 정도 표기*	
	고객기업과의 관계	전략적 제휴/협력업체와의 관계
1. 타업체와 귀 사의 정보 및 지식의 교류가 중요하다.		
2. 타업체와 귀 사의 정보 및 지식교류는 지속적으로 이루어진다(또는 이루어질 것이다).		
3. 구체적인 노하우/기술에 관한 지식, 또는 비공식적이거나 문서화되기 어려운, 경험을 통해 얻어진 지식 등이 타업체와 교환되기도 한다.		
4. 교환되는 정보나 지식은 주로 루틴한 것(쉽게 문서화될 수 있는 지식, 공개된 지식)이다.		
5. 타업체와의 지식 및 정보의 교류에 있어서 직접 만남이 꼭 필요한 경우도 있다.		
6. 타업체와 필요한 정보 및 지식을 교환하는데에는 전자적인 통신수단이면 충분하다.		

3. [요구되는 신뢰수준의 특성] 귀사가 기업활동을 수행하는 과정에서 타기업(고객기업 또는 전략적 제휴업체 등)과 맺고 있는 관계의 특성을 이해하고자 하는 항목입니다. 각 문장에 대해 동의하는 정도를 표기하여 주십시오. 동의의 정도는 5단계로 구성되어 있습니다. 아래의 각 항목별 표기란에 해당되는 숫자를 써주시면 됩니다. 1: 매우 동의함. 2: 약간 동의함. 3: 보통. 4: 약간 동의하지 않음. 5: 전혀 동의하지 않음  
 \*매우 동의함이 1이며, 전혀 동의하지 않음은 5입니다. 착오없으시기 바랍니다.

항 목	동의 정도 표기*	
	고객기업과의 관계	전략적 제휴/협력 업체와의 관계
1. 고객업체의 선정 또는 새로운 거래관계 및 협력관계를 맺는 과정에서 가급적 기존에 협력/거래의 경험이 있거나 공식적/비공식적 인지도가 있는 업체를 선호한다.		
2. 고객업체의 선정 또는 새로운 거래관계 및 협력관계를 맺는 과정에서 신뢰수준이 최우선적으로 고려된다(가격 및 다른 조건보다 우선적으로 고려된다).		
3. 거래업체와의 재계약시 가격 및 다른 조건에 불만이 있더라도 지속적인 협상을 통해 문제를 해결하도록 하며, 가급적 거래관계를 지속하고자 한다.		
4. 한번 관련을 맺은 업체는 일반적으로 지속적이고 장기적인 관계가 성립된 것으로 간주된다.		
5. 고객업체의 선정 또는 새로운 거래관계 및 협력관계를 맺는 과정에서 신뢰구축은 귀사의 성공적인 기업활동에 가장 중요한 요소로 평가한다.		

- 귀한 시간을 내주셔서 진심으로 감사드립니다. -

■ 설문 대상: 000 마켓플레이스를 통해 제품을 "구매"하는 기업

작성일자	월 일	회사명		*업종	
*설립연도	년	*종업원수	명	매출액(2001년기준)	억원
*온라인거래(타전자장터포함) 시작시기		년	월	*000 거래 시작시기	년 월
*회사 본사 위치(도/시/군구)					
*주거래 제품군 도착지** 위치(도/시/군구) 모두					
*작성자		직위		전자우편	
				*전화	

\*표시항목은 반드시 기입해주세요. \*\* 도착지: 실제 귀사에서 구매한 주거래 제품군이 납품되는 귀사의 공장 또는 창고의 위치를 의미합니다. 둘 이상인 경우 반드시 모두 기입해주세요.

A. 제품, 지식/정보 교류, 신뢰의 특성

1-1 (주거래제품군) 귀사가 000를 통해 구매하는 주요한 제품(군)은 무엇입니까?  
( ) 참고: 000 카탈로그 분류 중 해당 카테고리를 적어주세요.

1-2 (주거래제품군 구매방식) 이 제품(군)의 000를 통한 연간구매물량을 100%로 보았을 때, 000마켓플레이스의 구매대행서비스를 통해 구매하는 물량(000마켓플레이스와 직접 계약)은 어느 정도입니까? 약 ( ) %

1-3 (제품군 유형구분) 주거래제품군은 MR 자재에 해당합니까, 아니면 O 자재에 해당합니까? ( )

① MR(Maintenance, Repair) 자재: 유지, 보수관련 부품 등 ② O(Operating)자재: 일반사무용품

1-4 (주거래제품군의 온라인거래적합도) 전자카탈로그작성 및 온라인거래를 위해 SPEC 균질화(품목분류 및 제품의 코드화 및 표준화 등)가 중요합니다. 일반적으로 주거래제품(군)은 온라인거래를 위한 SPEC 균질화가 잘 되어 있다고 평가하십니까?  
( )

① 매우 잘되어 있다(80%이상) ②약간 잘되어 있다(60-80%) ③ 보통이다(40-60%)  
④ 별로 되어 있지 않다(20-40%) ⑤전혀 되어 있지 않다(20%미만)

1-5 (주거래제품군 생산의 표준화정도) 제품생산과정이 루틴하며, 높은 기술 수준을 필요로 하지 않고, 여러 업체에서 특별한 맞춤기술없이 동일하게 생산가능한 범용제품을 표준화정도가 높은 제품으로 간주할 때, 주거래 제품(군)의 표준화정도를 어떻게 평가하십니까?( )

①표준화정도가 매우 높다(80%이상) ②약간 높다(60-80%) ③ 보통이다(40-60%)  
④ 약간 낮다(20-40%) ⑤표준화정도가 매우 낮다(20%미만)

2-1 (지식교류의 중요성) 귀 사가 000마켓플레이스를 통해 "주거래제품(군)"의 구매와 관련된 일련의 기업활동을 수행하는 과정에서, 거래 상대방 기업과의 정보 및 지식의 교류가 중요하다고 평가하십니까? ( )

- ①매우 중요 ②약간 중요 ③ 보통 ④ 별로 중요하지 않음 ⑤전혀 중요하지 않음

2-2 (비공식적 지식의 교환여부) 귀 사가 000마켓플레이스를 통해 "주거래제품(군)"의 구매와 관련된 일련의 기업활동을 수행하는 과정에서, 거래 상대방 업체와, 구체적인 노하우/기술에 관한 지식 또는 경험을 통해 얻어진 지식으로 비공식적이거나 문서화하기 어려운 지식 및 정보의 교환이 자주 이루어집니까? ( )

- ① 거의 매일 ②주1회 이상 ③월 2-3회 ④월 1회 정도 ⑤거의 없음

3-1 (신뢰의 중요성) 000마켓플레이스를 통해 거래할 때, 한 번도 거래를 해본 적이 없는 신규 업체가 더 나은 조건(가격 등)을 제시하는 경우, 일반적으로 귀 사는 신규업체를 선택하십니까 아니면 신뢰를 중시하여 기존의 거래 업체와의 지속적인 협상을 통해서라도 기존 업체와의 거래를 계속 유지하고자 하십니까? ( )

- ①기존업체를 매우 선호한다 ② 기존업체를 약간 선호한다 ③ 선호의 차이가 없다 ④ 신규업체를 약간 선호한다 ⑤신규업체를 매우 선호한다

3-2 (업체선정전략) 귀 사가 "이 전자장터"를 통해 거래업체를 선정할 때 전략은 무엇입니까? ( )

- ① 오프라인상에서 거래하던 기존 공급업체와의 거래관계를 적극 유지한다.  
② 기존 업체와 신규 업체를 동일한 조건에 놓고 더 나은 거래 조건을 제시한 쪽을 선정한다.  
③ 기존 업체보다는 적극적으로 역량 있는 신규 거래업체를 확보하기 위해 노력한다.  
④ 기타\_\_\_\_\_

## B. 전체거래업체 수/거래물량 변화

1-1 (기준시점) 온라인활용직전연도를 기준으로 주거래제품(군)의 연간 구매업체수 및 구매물량을 적어주세요. 업체수( )개, 물량( )억원

1-2 (000마켓플레이스활용비중) 000마켓플레이스를 통해 거래를 시작한 이후 일 년 동안, 주거래제품(군)의 총구매물량 가운데 000마켓플레이스를 통한 구매물량은 약 몇 %입니까(000마켓플레이스활용 1년미만업체는 연간추정치 사용)? 약 ( )%

1-3 (전자마켓플레이스 활용비중) 000마켓플레이스를 통해 거래를 시작한 이후 일 년 동안을 기준으로, 주거래제품(군)의 총구매물량 가운데 000마켓플레이스 및 다른 전자마켓플레이스를 활용한 경우를 포함한, 온라인을 통한 전체구매물량은 약 몇%입니까(전자마켓활용 1년미만 업체는 연간추정치 사용)? 약 ( )%

1-4 (현재변화) 오프라인을 통해서만 거래하던 온라인 활용직전 일년간과 000마켓플레이스활용 일년을 비교하였을 때, 주거래제품(군)의 연간 공급업체 수 및 구매물량에 변화가 생겼다고 평가하십니까(000마켓플레이스활용 일년 미만 업체는 연간추정치를 사용하여 답해주세요)?

▶ 업체수와 물량 각각을 기준으로 증가, 변화없음, 감소 중 해당란에 O표 해주시고, 증감율을 %로 기입해주세요.(예: 과거 5개 공급업체수가 10개로 늘었으면, 증가에 O표하시고, 증감율에 100% 라고 적어주시면 됩니다)

	증가	변화없음	감소	증감율
① 업체수 기준				약 ( )%
② 구매물량 기준				약 ( )%

1-5 (변화요인) 1-4 질문중 적어도 하나에 증가, 또는 감소로 답하신 경우, 그 변화가 주로 000마켓플레이스 활용에 따른 것으로 평가하십니까, 아니면 기업활동 변화 및 산업환경 변화 등 다른 내/외부적 요인이 더 크게 작용한 것으로 평가하십니까? 해당 번호를 골라주세요. ( )

000마켓플레이스활용이 결정적 영향을 미침<--①-----②-----③-----④-----⑤--> 전혀 영향을 미치지 않음

### C. 000마켓플레이스를 통해 거래한 업체의 공간적 분포

※ 이하 본 설문은 000마켓플레이스 활용 이전 (과거)과 활용 이후 (현재)를 비교하여 답하시는 질문이 많습니니다. 다음의 정의를 숙지하시어, 답변에 착오없으시기 부탁드립니다.

<p>- 과거: 어떤 유형의 전자 마켓플레이스도 활용하지 않고 거래를 수행하던 시기, 즉, 온라인사용(타전자장터 포함)직전 연도의 한 해 주거래 제품(군) 거래물량 및 거래업체분포를 100%로 기준</p> <p>- 현재: 000마켓플레이스에서 최초로 거래를 시작하신 시점을 기준으로 일 년 동안 “000마켓플레이스를 통해 거래된” 주거래제품(군) 거래물량 및 거래업체분포(동 기간 오프라인거래 제외) 를 100%로 기준</p> <p>※ 000마켓플레이스 활용 1년 미만의 업체는 연간 추정치를 기준으로 답해주세요</p>
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## 1. 전체거래업체 분포 변화

1-1 (구매물량분포) 앞에서 정의한 “과거” 일 년과 “현재” 일 년의 기간 동안, 지역별 주거래제품(군)의 구매물량 분포를 %로 기입해주세요. (※ 주의) 공급사의 위치는 실제 제품의 “출고지” 위치를 기준으로 합니다. 주거래제품 도착지 및 출고지가 두 곳 이상인 경우, 이들을 “모두” 고려하여 답해주세요.

공급사 출고지 위치	합계	① 동일 시/군내	② 동일 도내	③ 기타 국내	④ 해외
과거(오프라인 거래물량기준)	100%				
현재 (OOO마켓플레이스를 통한 거래물량기준)	100%				

참고: ① 동일 시/군내: 귀 사 도착지가 위치한 시/군내에 위치한 공급업체(출고지)로부터의 구매물량 ② 동일 도내: 귀 사 도착지가 위치한 도내(인접광역시 포함)에 위치한 공급업체(출고지)로부터의 구매물량 예: 도착지가 창원시인 경우, 동일 도내란 창원시를 제외한 경남, 울산, 부산지역을 포함하며, 도착지가 대구인 경우, 동일 도내란 대구시를 제외한 경북지역에서 공급된 물량을 의미합니다.

1-2 (물리적 인접성 중요도) 도착지와 출고지 간의 거리(배송거리)는 OOO마켓플레이스를 통한 거래업체선정시 중요하게 고려되니까? ( )

- ① 매우 중요 ② 약간 중요 ③ 보통 ④ 별로 고려안됨 ⑤ 전혀 고려안됨

1-3 (그 이유는?) 1-2의 질문에 ①, ②, ③ 중 하나로 답하신 분들만 답해 주세요, 물리적 인접성이 중요한 이유는 무엇입니까? 가장 중요한 세가지 요인을 중요한 것부터 택해 주세요. ( > > )

- ① 잦은 납품이 요구되거나 제품의 부피가 큼
- ② A/S 등 문제 등 업체와 빈번한 교류가 필요한 제품군
- ③ 제품이 귀 사의 요구에 맞추어 생산됨 (customized products)
- ④ 거래업체와 지속적인 정보교환 및 교류가 필요
- ⑤ 업체관계자와 수시로 만날 필요가 있음
- ⑥ 가까이 있으면 신뢰 구축이 쉬움
- ⑦ 지역내 산업 발전을 지원하는 차원에서 가급적 인접 지역 업체 선호
- ⑧ 기타 \_\_\_\_\_

## 2. 신규공급업체 변화 + 분포변화

※ 신규공급업체는 공급업체 중 이전에 귀사와 한 번도 거래한 적이 없는 업체를 의미합니다.

2-1 (신규공급업체 비중) 앞에서 정의한 “과거”와 “현재” 각각의 기간 동안 주거래제품(군) 공급업체 중 신규거래업체가 차지한 비중을 업체수와 거래물량을 기준으로 적어주세요.

	① 신규공급업체 비중	② 신규구매물량 비중
과거(오프라인 거래물량기준)	%	%
현재(000마켓플레이스를 통한 거래물량기준)	%	%

2-2 (신규공급물량 지역 분포) 앞에서 정의한 “과거”와 “현재” 각각의 기간 동안 신규거래업체로부터의 공급물량의 지역별 분포를 %로 기입해주세요. (※ 주의) 신규공급사의 위치는 실제 제품의 “출고지” 위치를 기준으로 합니다. 주거래제품 도착지 및 출고지가 두 곳 이상인 경우, 이들을 “모두” 고려하여 답해주세요.

신규공급사 출고지 위치	① 동일 시/군내	② 동일 도내	③ 기타 국내	④ 해외	합계
과거(오프라인 거래물량기준)					100%
현재 (000마켓플레이스를 통한거래물량기준)					100%

참고: 지역의 정의는 앞의 C 1-1의 내용과 같습니다.

2-3 (고정거래선) 000마켓플레이스를 활용한 이후 일 년간 000마켓플레이스를 통해 귀사에 주거래 제품을 공급한 신규공급업체가 이후의 거래과정에서 반복판매를 하거나 고정거래선이 되는 경우는 대략 몇 %입니까(업체수기준)? 000마켓플레이스 활용 일 년 미만 업체는 연간추정치를 사용해서 답해주세요. 약 ( )%

### 3. 지역제한 활용 여부

※ 지역제한이란 귀 업체가 공급업체를 결정하는 과정에서 공급업체의 공간적 범위를 미리 규정하여 특정 지역내의 업체만 참여가능하도록 미리 제한하는 방식을 의미합니다.

3-1 (활용 여부) 오프라인 거래 및 온라인 거래를 통틀어서 주거래제품(군)을 구매하는 과정에서 지역제한을 사용해 본 적이 있습니까? (      ) ① 없다 ② 있다

※이하 3-2,3,4,5 의 질문은 지역제한을 한 번이라도 활용한 적이 있는 업체만 답해주세요.

3-2 (활용 비증변화) 앞에서 정의한 “과거”와 “현재” 각각의 기간동안, 지역제한을 활용하여 거래된 물량의 비중을 적어주세요(주거래제품군기준).

과거(오프라인 거래물량기준)		현재(OOO마켓플레이스를 통한 거래물량기준)	
약	%	약	%

3-3 (제한 권역) 지역제한을 시행하는 경우 주로 어떤 지역으로 제한하십니까? (      )

- ① 귀사가 위치한(이하 물품도착지 기준) 시/군
- ② 귀사가 위치한 도/인접광역시(귀사가 광역시에 위치한 경우는 인접 도가 해당됨)
- ③ 도 이상의 권역 (수도권, 충청권 등)
- ④ 기타\_\_\_\_\_

3-4 (활용 이유) 귀 업체가 지역제한을 사용하는 경우 그 주된 이유는 무엇입니까? 가장 중요한 세가지 요인을 중요한 것부터 택해 주세요. (      >      >      )

- ① 잦은 납품이 요구되거나 제품의 부피가 큼
- ② A/S 등 문제 등 업체와 빈번한 교류가 필요한 제품군
- ③ 제품이 귀사의 요구에 맞추어 생산됨(customized products)
- ④ 거래업체와 지속적인 정보교환 및 교류가 필요
- ⑤ 업체관계자와 수시로 만날 필요가 있음
- ⑥ 가까이 있으면 신뢰 구축이 쉬움
- ⑦ 지역내 산업 발전을 지원하는 차원에서 가급적 인접 지역 업체 선호
- ⑧ 기타\_\_\_\_\_

**D. 온라인 전자상거래 관련 일반 특성**

1. (전자장터 활용전략) 귀사가 주거래제품(군)을 온라인을 통해 구매할 때, 다음 중 어떤 방식을 활용하십니까? ( )

- ① 000마켓플레이스 한 곳에서만 지속적 구매
- ② 000마켓플레이스를 포함 두서너 곳 정도를 정해 놓고 지속적으로 구매
- ③ 특별히 정해 놓지 않고 구매시마다 가장 적절한 곳을 찾아 구매

2. (000마켓플레이스 참여계기) 귀사가 000마켓플레이스를 활용하게 된 가장 주된 계기는 무엇입니까? ( ) (복수응답가능)

- ① 귀사(또는 계열사)가 000마켓플레이스의 주주로 참여
- ② 오프라인의 주요 공급사가 000마켓플레이스에 참여
- ③ 000마켓플레이스의 적극적인 홍보
- ④ 동종 업종의 회사들이 기참여하고 있었음
- ⑤ 스스로 귀사에 적합한 전자마켓플레이스를 찾아냄
- ⑥ 기타\_\_\_\_\_

3. (통신수단활용특성) 000마켓플레이스를 통해 계약을 체결하고 기업활동을 수행하는 전과정에 걸쳐 거래대상기업과의 관계를 묻는 질문입니다.

3-1 "전자적인 통신수단(전자우편, 전화/팩스, 화상회의, 인터넷, 전용선 등 포함)"을 통해 수행 가능한 기업활동은 어느 정도 수준입니까? ( )

- ① 매우 중요(최고수준 의사결정가능)
- ② 약간 중요(상대적으로 높은 보안수준이 요구되는 업무협의 및 중요문서 송수신 가능)
- ③ 보통(일반업무내용 협의 및 일반자료 송수신)
- ④ 별로 중요하지 않음(기초적인 연락/공지사항 전달 등에만 사용)
- ⑤ 전혀 중요하지 않음(전혀 사용되지 않음)

3-2 업체관계자와의 "직접 만남" 이 갖는 중요도가 어느 정도라고 평가하십니까? ( )

- ① 매우 중요 ② 약간 중요 ③ 보통 ④ 별로 중요하지 않음 ⑤ 전혀 중요하지 않음

4 (전자마켓플레이스의 활성화조건) 국내 00업계의 현실에 비추어, 00산업분야의 전자상거래가 활성화되는데, 가장 큰 제약요인은 무엇이라고 평가하십니까? 해당되는 모든 요인을 중요도가 높은 것부터 골라주세요. ( > > > )

- ① 거래전 제품의 품질 확인 불가
- ② 어음 및 외상 결제 활용의 어려움
- ③ 문제가 발생했을 때 하자 보증의 어려움
- ④ 기존에 오프라인상의 거래업체와의 관계를 끊기가 어려움
- ⑤ 전자마켓플레이스에 지불하는 수수료 등의 비용 문제
- ⑥ 사이트 접속 및 온라인 거래과정의 복잡성
- ⑦ 기타\_\_\_\_\_

■ 설문 대상: 000 마켓플레이스를 통해 제품을 "판매"하는 기업

작성일자	월	일	회사명		*업종	
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\*표시항목은 반드시 기입해주세요.\*\* 출고지: 귀사에서 판매한 주거래제품(군)이 생산되는 귀사의 공장 또는 저장되어 있는 창고의 위치로 판매시 물건이 출고되는 곳의 위치입니다. 둘 이상인 경우 반드시 모두 기입해 주세요.

A. 제품, 지식/정보 교류, 신뢰의 특성

1-1 (주거래제품군) 귀사가 000마켓플레이스를 통해 판매하는 주요한 제품(군)은 무엇입니까? ( ) 참고: 000마켓플레이스 카탈로그 분류 중 해당 카테고리를 적어주세요.

1-2 (주거래제품군 판매방식) 이 제품(군)의 000마켓플레이스를 통한 판매물량을 100%로 보았을 때, 000마켓플레이스와 직접 계약(실수요자와 직접 계약이 아니라)을 체결하여 판매하는 물량은 어느 정도입니까? 약 ( ) %

1-3 (제품군 유형구분) 주거래제품군은 사양제품입니까, 아니면 맞춤제품에 해당합니까? ( ) ① 사양제품: 규격화된 제품 등 ② 맞춤제품: 고객의 요구에 따라 사양을 변경하여야 하는 제품

1-4 (주거래제품군의 온라인거래적합도) 전자카탈로그작성 및 온라인거래를 위해 SPEC 균질화(품목분류 및 제품의 코드화 및 표준화 등)가 중요합니다. 일반적으로 주거래제품(군)은 온라인거래를 위한 SPEC 균질화가 잘 되어 있다고 평가하십니까? ( ) ① 매우 잘되어 있다(80%이상) ②약간 잘되어 있다(60-80%) ③ 보통이다(40-60%) ④ 별로 되어 있지 않다(20-40%) ⑤전혀 되어 있지 않다(20%미만)

1-5 (주거래제품군 생산의 표준화정도) 제품생산과정이 루틴하며, 높은 기술 수준을 필요로 하지 않고, 여러 업체에서 특별한 맞춤기술없이 동일하게 생산가능한 범용제품을 표준화정도가 높은 제품으로 간주할 때, 주거래 제품(군)의 표준화정도를 어떻게 평가하십니까?( ) ①표준화정도가 매우 높다(80%이상) ②약간 높다(60-80%) ③ 보통이다(40-60%) ④ 약간 낮다(20-40%) ⑤표준화정도가 매우 낮다(20%미만)

2-1 (지식교류의 중요성) 귀 사가 000마켓플레이스를 통해 "주거래제품(군)"의 판매와 관련된 일련의 기업활동을 수행하는 과정에서, 거래 상대방 기업과의 정보 및 지식의 교류가 중요하다고 평가하십니까? ( )

- ①매우 중요 ②약간 중요 ③ 보통 ④ 별로 중요하지 않음 ⑤전혀 중요하지 않음

2-2 (비공식적 지식의 교환여부) 귀 사가 000마켓플레이스를 통해 "주거래제품(군)"의 판매와 관련된 일련의 기업활동을 수행하는 과정에서, 거래 상대방 업체와, 구체적인 노하우/기술에 관한 지식 또는 경험을 통해 얻어진 지식으로 비공식적이거나 문서화하기 어려운 지식 및 정보의 교환이 자주 이루어집니까? ( )

- ① 거의 매일 ②주1회 이상 ③월 2-3회 ④월 1회 정도 ⑤거의 없음

3-1 (신뢰의 중요성) 구매업체가 000마켓플레이스를 통해 귀사를 거래업체로 선정할 경우, 일반적으로 귀사의 어떤 조건을 가장 중요하게 고려한다고 생각하십니까?( )

- ①가격 조건 ② 신뢰 조건(기존 거래업체인지 여부 등) ③기타\_\_\_\_\_

3-2 (구매업체와의 관계) 000마켓플레이스를 통한 거래에서, 구매업체와 귀사와의 관계는 어떠합니까? ( )

- ① 오프라인상에서 거래하던 고객업체가 000마켓플레이스 활용이후에도 거의 그대로 유지되고 있다.  
② 오프라인상의 고객업체와 함께 새로운 고객 업체도 확보하였다.  
③ 이전에 거래한 적 없는 신규 고객업체가 주를 이룬다.  
④ 기타\_\_\_\_\_

## B. 전체거래업체 수/거래물량 변화

1-1 (기준시점)온라인활용직전연도를 기준으로 주거래제품(군)의 연간 판매업체수 및 판매물량을 적어주세요. 업체수( )개, 물량( )억원

1-2 (000마켓플레이스활용비중) 000마켓플레이스를 통해 거래를 시작한 이후 일 년 동안, 주거래제품(군)의 총판매물량 가운데 000마켓플레이스를 통한 판매물량은 약 몇 %입니까(000마켓플레이스활용 1년미만업체는 연간추정치 사용)? 약 ( )%

1-3 (전자마켓플레이스 활용비중) 000마켓플레이스를 통해 거래를 시작한 이후 일 년 동안을 기준으로, 주거래제품(군)의 총판매물량 가운데 000마켓플레이스 및 다른 전자마켓플레이스를 활용한 경우를 포함한, 온라인을 통한 전체판매물량은 약 몇%입니까(전자마켓활용 1년미만 업체는 연간추정치 사용)? 약 ( )%

1-4 (현재변화) 오프라인을 통해서만 거래하던 온라인 활용직전 일년간과 000마켓플레이스활용 일년을 비교하였을 때, 주거래제품(군)의 연간 판매업체 수 및 판매물량에 변화가 생겼다고 평가하십니까(000마켓플레이스활용 일년 미만업체는 연간추정치를 사용하여 답해주세요)?

▶업체수와 물량 각각을 기준으로 증가, 변화없음, 감소 중 해당란에 O표 해주시고, 증감율을 %로 기입해주세요.(예: 과거 5개 고객업체수가 10개로 늘었으면, 증가에 O표하시고, 증감율에 100% 라고 적어주시면 됩니다)

	증가	변화없음	감소	증감율
① 업체수 기준				약 ( )%
② 판매물량 기준				약 ( )%

1-5 (변화요인) 1-4 질문 중 적어도 하나에 증가 또는 감소로 답하신 경우, 그 변화가 주로 000마켓플레이스의 활용에 기인한 것으로 평가하십니까, 아니면 기업활동 변화 및 산업환경 변화 등 다른 내/외부적 요인이 더 크게 작용한 것으로 평가하십니까? 해당 번호를 골라주세요. ( )

000마켓플레이스 활용이 결정적 영향을 미침<--①-----②-----③-----④-----⑤-->전혀 영향을 미치지 않음

1-6 (기준고객) 000마켓플레이스활용 이후 일 년간 귀 사가 000마켓플레이스를 통해 판매한 주거래제품 중 오프라인상에서 거래하던 기존 고객업체가 000마켓플레이스를 통해 구매한 물량은 얼마나 됩니까(판매물량기준)? 000마켓플레이스 활용 일 년 미만 업체는 연간추정치를 사용해서 답해주세요. 약 ( )%

### C. 000마켓플레이스를 통해 거래한 업체의 공간적 분포

※ 이하 본 설문은 000마켓플레이스 활용 이전(과거)와 000마켓플레이스 활용 이후(현재)를 비교하여 답하시는 질문이 많습니다. 다음의 정의를 숙지하시어, 답변에 착오 없으시기 부탁드립니다.

<p>- 과거: 어떤 유형의 전자 마켓플레이스도 활용하지 않고 거래를 수행하던 시기, 즉, <u>온라인사용(타전자장터 포함)직전 연도의 한 해</u> 주거래 제품(군) 거래물량 및 거래업체분포를 100%로 기준</p> <p>- 현재: <u>000마켓플레이스에서 최초로 거래를 시작하신 시점을 기준으로 일 년 동안 “000마켓플레이스를 통해 거래된” 주거래제품(군) 거래물량 및 거래업체분포(동 기간 오프라인거래 제외)</u> 를 100%로 기준</p> <p>※ 000마켓플레이스 활용 1년 미만의 업체는 연간 추정치를 기준으로 답해주세요</p>
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## 1. 전체거래업체 분포 변화

1-1 (판매물량분포) 앞에서 정의한 “과거” 일 년과 “현재” 일 년의 기간 동안, 지역별 주거래제품(군)의 판매물량 분포를 %로 기입해주세요. (주의)고객사의 위치는 제품의 “도착지” 위치를 기준으로 합니다. 주거래제품의 출고지 및 도착지가 각각 두 곳 이상인 경우 이들을 “모두” 고려하여 답해주세요.

고객사 도착지 위치	합계	① 동일 시/군내	② 동일 도내	③ 기타 국내	④ 해외
과거(오프라인 거래물량기준)	100%				
현재(OOO마켓플레이스를 통한 거래물량기준)	100%				

참고: ① 동일 시/군내: 귀 사 출고지가 위치한 시/군내에 위치한 고객업체(도착지)로의 판매물량 ② 동일 도내: 귀 사 출고지가 위치한 도내(인접광역시 포함)에 위치한 고객업체(도착지)로의 판매물량 예: 출고지가 창원시인 경우, 동일 도내란 창원시를 제외한 경남, 울산, 부산지역을 포함하며, 출고지가 대구인 경우, 동일 도내란 대구시를 제외한 경북지역으로 판매된 물량을 의미합니다.

1-2 (물리적 인접성 중요도) 출고지와 도착지간의 거리(배송거리)는 OOO마켓플레이스를 통한 거래업체 선정시 중요하게 고려되니까? ( )

- ① 매우 중요 ② 약간 중요 ③ 보통 ④ 별로 고려안됨 ⑤ 전혀 고려안됨

1-3 (그 이유는?) 1-2의 질문에 ①, ②, ③ 중 하나로 답하신 분들만 답해 주세요, 물리적 인접성이 중요한 이유는 무엇입니까? 가장 중요한 세가지 요인을 중요한 것부터 택해 주세요. ( > > )

- ① 잦은 납품이 요구되거나 제품의 부피가 큼
- ② A/S 등 문제 등 업체와 빈번한 교류가 필요한 제품군
- ③ 제품이 고객업체의 요구에 맞추어 생산됨(customized products)
- ④ 고객업체와 지속적인 정보교환 및 교류가 필요
- ⑤ 고객업체관계자와 수시로 만날 필요가 있음
- ⑥ 가까이 있으면 신뢰 구축이 쉬움
- ⑦ 지역내 산업 발전을 지원하는 차원에서 가급적 인접 지역 업체 선호
- ⑧기타\_\_\_\_\_

## 2. 신규고객업체 변화 + 분포변화

※ 신규고객업체는 고객업체 중 이전에 귀사와 한 번도 거래한 적이 없는 업체를 의미합니다.

2-1 (신규고객업체 비중) 앞에서 정의한 “과거”와 “현재” 각각의 기간 동안 주거래제품(군) 고객업체 중 신규고객업체가 차지한 비중을 업체수와 거래물량을 기준으로 적어주세요.

	① 신규고객업체 비중	② 신규판매물량 비중
과거(오프라인 거래물량기준)	%	%
현재 (000마켓플레이스를 통한 거래물량기준)	%	%

2-2 (신규판매물량 지역 분포) 앞에서 정의한 “과거”와 “현재” 각각의 기간 동안 신규고객업체로의 판매물량의 지역별 분포를 %로 기입해주세요. (주의)신규고객사의 위치는 제품의 “도착지” 위치를 기준으로 합니다. 주거래제품의 출고지 및 도착지가 각각 두 곳 이상인 경우 이들을 “모두” 고려하여 답해주세요.

신규고객사 도착지 위치	합계	① 동일 시/군내	② 동일 도내	③ 기타 국내	④ 해외
과거(오프라인 거래물량기준)	100%				
현재 (000마켓플레이스를 통한 거래물량기준)	100%				

참고: 지역의 정의는 앞의 C 1-1의 내용과 같습니다.

2-3 (고정거래선) 000마켓플레이스를 활용한 이후 일 년간 000마켓플레이스를 통해 귀사의 주거래 제품을 구매한 신규고객업체가 이후의 거래과정에서 반복구매를 하거나 고정거래선이 되는 경우는 대략 몇 %입니까(업체수기준)? 000마켓플레이스 활용 일 년 미만 업체는 연간추정치를 사용해서 답해주세요. 약 ( )%

### 3. 배송지역제한 여부

※ 배송지역제한이란 귀 업체가 전자카탈로그에 판매제품을 올리거나 경매 등 여러 방식으로 전자마켓플레이스에 참여할 때 제품의 배송 가능지역을 특정 지역으로 미리 제한하는 것을 의미합니다.

3-1 (활용 여부) 오프라인 거래 및 온라인 거래를 통틀어서 주거래제품(군)을 판매하는 과정에서 배송가능 지역을 명기한 적이 있습니까? ( ) ① 없다 ② 있다

※이하 3-2,3,4,5 의 질문은 배송지역제한을 한 번이라도 활용한 적이 있는 업체만 답해주세요.

3-2 (활용 비중변화) 앞에서 정의한 “과거”와 “현재” 각각의 기간동안, 배송지역을 제한하는 방식을 사용하여 거래된 물량의 비중을 적어주세요(주거래제품군기준).

기준	과거(오프라인 거래물량기준)	현재(OO마켓플레이스를 통한 거래물량기준)
	약 %	약 %

3-3 (제한 권역) 배송가능지역이 제한되는 경우 주로 어떤 지역으로 제한하십니까? ( )

- ① 귀사가 위치한(이하 출고지기준) 시/군
- ② 귀사가 위치한 도/인접광역시(귀사가 광역시에 위치한 경우는 인접 도가 해당됨)
- ③ 도 이상의 권역 (수도권, 충청권, 전라권, 경상권 등)
- ④ 기타\_\_\_\_\_

3-4 (활용 이유) 귀 업체가 배송지역제한을 사용하는 경우 그 주된 이유는 무엇입니까? 가장 중요한 세가지 요인을 중요한 것부터 택해 주세요.

- ( > > )
- ① 잦은 납품이 요구되거나 제품의 부피가 큼
  - ② A/S 등 문제 등 업체와 빈번한 교류가 필요한 제품군
  - ③ 제품이 고객업체의 요구에 맞추어 생산됨(customized products)
  - ④ 고객업체와 지속적인 정보교환 및 교류가 필요
  - ⑤ 고객업체관계자와 수시로 만날 필요가 있음
  - ⑥ 가까이 있으면 신뢰 구축이 쉬움
  - ⑦ 지역내 산업 발전을 지원하는 차원에서 가급적 인접 지역 업체 선호
  - ⑧기타\_\_\_\_\_

#### D. 온라인 전자상거래 관련 일반 특성

1. (활용전자장터의수) 현재 귀사는 몇 개의 온라인 마켓플레이스를 통해 주거래제품(군)을 판매하고 계십니까? ( )

- ① 000마켓플레이스 한 곳에서만 지속적 판매
- ② 000마켓플레이스를 포함 두서너 곳 정도를 정해 놓고 지속적으로 판매
- ③ 특별히 정해 놓지 않고 여러 온라인 마켓플레이스를 수시로 확인하여 제품판매

2. (000마켓플레이스 참여계기) 귀사가 000마켓플레이스를 통해 거래하게 된 가장 주된 계기는 무엇입니까? ( ) (복수응답가능)

- ① 귀사(또는 계열사)가 000마켓플레이스의 주주로 참여
- ② 오프라인의 주요 고객사가 000마켓플레이스에 참여
- ③ 000마켓플레이스의 적극적인 홍보
- ④ 동종 업종의 회사들이 기참여하고 있었음
- ⑤ 스스로 귀사에 적합한 전자마켓플레이스를 찾아냄
- ⑥ 기타\_\_\_\_\_

3. (통신수단활용특성) 000마켓플레이스를 통해 기업활동을 수행하는 전과정에서 거래대상기업과의 관계를 묻는 질문입니다.

3-1 "전자적인 통신수단(전자우편, 전화/팩스, 화상회의, 인터넷, 전용선 등 포함)"을 통해 수행 가능한 기업활동은 어느 정도 수준입니까? ( )

- ① 매우 중요(최고수준 의사결정가능)
- ② 약간 중요(상대적으로 높은 보안수준이 요구되는 업무협의 및 중요문서 송수신 가능)
- ③ 보통(일반업무내용 협의 및 일반자료 송수신)
- ④ 별로 중요하지 않음(기초적인 연락/공지사항 전달 등에만 사용)
- ⑤ 전혀 중요하지 않음(전혀 사용되지 않음)

3-2 업체관계자와의 "직접 만남" 이 갖는 중요도가 어느 정도라고 평가하십니까? ( )

- ① 매우 중요 ② 약간 중요 ③ 보통 ④ 별로 중요하지 않음 ⑤ 전혀 중요하지 않음

4 (전자마켓플레이스의 활성화조건) 국내 00업계의 현실에 비추어, 00산업분야의 전자상거래가 활성화되는데, 가장 큰 제약요인은 무엇이라고 평가하십니까? 해당되는 모든 요인을 중요도가 높은 것부터 골라주세요. ( > > > )

- ① 거래전 제품의 품질 확인 불가
- ② 어음 및 외상 결제 활용의 어려움
- ③ 문제가 발생했을 때 하자 보증의 어려움
- ④ 기존에 오프라인상의 거래업체와의 관계를 끊기가 어려움
- ⑤ 전자마켓플레이스에 지불하는 수수료 등의 비용 문제
- ⑥ 사이트 접속 및 온라인 거래과정의 복잡성
- ⑦ 기타\_\_\_\_\_



## ABSTRACT in Korean

### 국 문 초 록

#### 공개형 기업간 전자마켓플레이스: 공간적 관점

최 지 선

본 논문은 공개형 기업간 전자마켓플레이스(Public B2B electronic marketplaces)를 운영하는 기업 및 그에 참여하는 기업의 특성을 경제지리적 관점에서 이해하고자 하였다. 정보통신기술과 경제활동이 결합되어 탄생한 전자상거래의 가장 발전된 형태 가운데 하나로 인식되고 있는 공개형 기업간 전자마켓플레이스는 다수의 구매자와 다수의 판매자가 컴퓨터네트워크를 통해 전자적 공간에서 거래를 수행하는 온라인 거래의 한 형태를 일컫는다.

사전에 수행한 심층면접을 토대로 공개형 기업간 전자마켓플레이스를 운영하는 기업에 대한 설문조사 및 면접조사를 실시하였다. 이어서, 네 개 산업에서 다섯 개의 전자마켓플레이스를 사례로 선정하였으며, 이들 전자마켓플레이스를 통해 거래를 수행하는 기업들에 대한 조사를 수행하였다. 조사는 설문조사와 심층면접을 병행하였다. 끝으로, 한 MRO 전자마켓플레이스의 6개월간 거래자료를 토대로 비즈니스모델에 따른 거래제품의 공간적 흐름에 나타난 특성을 분석하고자 하였다.

이렇게 얻어진 자료를 토대로 본 논문은 우선 공개형 기업간 전자마켓플레이스를 운영하는 기업의 공간적 특성을 파악하고자 하였다. 그리고, 공개형 기업간 전자마켓플레이스를 통해 거래를 수행하는 기업이 겪게 되는 변화를 공간적 관점에서 이해하고자 하였다. 본 연구에서 설정된 세 가지 가설을 중심으로 그 결과를 정리하면 다음과 같다.

첫 번째로, 공개형 기업간 전자마켓플레이스를 운영하는 기업의 공간적 분포와 관련된 가설을 검증하고자 하였다. 공개형 기업간 전자마켓플레이스 운영기업은 서울시에 집중적으로 분포하고 있었다. 특히, 강남구는 서울시 내부에서도 많은 기업들이 입지하고 있는 지역으로 나타났다.

응인 업체도 눈에 띈다.

이유로 들었다. 또한, 강남에 위치하고 있으나 강남 이외의 지역으로 이전을 고려 지속적인 접촉의 필요성 또는 제품의 품질 확인 절차의 편의성 등을 이전의 주요 이유로 위치한 지역으로 기업을 이전하기도 하였다. 이들은 잠재적 고객기업과의 태의 물품 센터를 운영하는 경우도 있었다. 별첨 기업은 잠재적 구매 및 판매기업 설립하는 경우도 있었다. 경우에 따라서는 지방 기업과 협력관계를 맺고 대리점 설립하여 상주하도록 하는 경우도 있었으며, 지방에 직접 물류센터 겸 지사를 설립 한 조치를 취하는 경우도 있었다. 자사 직원을 지방에 위치할 주요고객의 회사에 고객기업과 물리적으로 떨어져 있는 기업의 경우 물리적 접촉을 강화하기 위

다.

다. 물리적 동선수단, 즉 대면접촉 역시 여전히 중요하게 고려되는 것으로 나타났다. 수단이 공개된 기업간 전자마켓플레이스의 운영에 있어서 중요하게 고려됨과 함 수단의 중요성에 관한 가설을 검증하고자 하였다. 설문결과에 따르면 전자적 동선 두 번째로, 전자마켓플레이스의 운영에 있어 전자적 동선수단과 물리적 동선

였으며, 신뢰에 기반한 관계의 중요성이 다소 떨어진 것으로 나타났다.

비해 상대적으로 거래체계의 표준화정도가 높았고, 암묵적 지식의 교환정도가 낮 대적으로 매우 높았다. 특히, 강남지역에 위치한 전자마켓플레이스의 경우 지방에 (MPS)가 존재하고 있었는데, 강남 지역은 수평적 전자마켓플레이스의 비중이 상 의 경우 수직적 전자마켓플레이스와 수평적 전자마켓플레이스(horizontal e-마켓플레이스의 경우 모두 수직적 전자마켓플레이스(vertical e-MPS)였으며, 서로 다른 특징을 나타내는 것으로 파악되었다. 지방에 위치한 기업이 운영하는 전자마

업지요인의 지역별 차이와 함께, 운영되는 전자마켓플레이스 역시 지역별로 관계자가 지역에 대해 친숙하다는 사실 또한 중요한 인지요인으로 꼽혔다. 그리고, 기업 잠재력을 높이 평가한 것으로 나타났다. 이에 반해 지방에 위치한 기업의 경우 전 인접성과 함께, 한국의 대표적 벤처기업 집적지로서 이 지역의 이미지 및 성장 업지한 기업의 경우, 교통 및 기업활동의 편의성 그리고 잠재적 협력 기업들과의 지방에 위치한 기업간에는 분명하게 대비되는 인지요인이 존재하였다. 강남구에 화 되는 인지요인이 존재함이 밝혀졌다. 특히, 서울시의 강남구에 위치한 기업과 한편, 공개된 전자마켓플레이스를 운영하는 기업들의 경우에도 지역별로 차별

세 번째로, 산업별로 공개형 기업간 전자마켓플레이스에 참여하는 정도 및 참여기업이 누리는 효과에 차이가 나타나는지에 대해 검증하고자 하였다. 사례 산업 중 MRO 전자마켓플레이스 참여 기업은 온라인 거래기업의 공간적 범위의 확장이 상대적으로 용이한 것으로 드러났다. 이에 반해 석유 전자마켓플레이스의 경우 제품의 높은 표준화정도로 인해 온라인 거래의 제약요건은 타 산업에 비해 적었으나 배송지역제한 및 저유소 입지의 제한으로 오프라인 거래에 비해 거래대상기업의 공간적 범위는 그다지 확장되지 않은 것으로 파악되었다. 한편, 철강산업과 건설자재산업의 경우 산업의 고유한 특성에서 기인한 여러 제약요인이 존재하였으며, 공개형 기업간 전자마켓플레이스의 활성화를 위해 해결해야 할 과제들이 많은 것으로 드러났다.

이와 관련하여 공개형 기업간 전자마켓플레이스의 적극적 활용을 저해하는 요인에는 정보통신매체 활용의 복잡성, 기존 거래관행 변경에 대한 저항, 인력감축에 대한 두려움, 관행적인 접대문화의 상존, 전자마켓플레이스 지불수수료의 부담 등이 있었다.

한편, 일단 전자마켓플레이스를 활용하여 거래를 시작한 이후에도 오프라인상의 기존 거래선을 계속 유지하도록 하여, 기업활동의 공간적 범위 확장 및 진정한 의미의 온라인 거래의 편익을 실현할 수 있는 여지를 감소시키는 요인들이 존재하였다. 산업구조적 측면에서, 신용거래의 오랜 관행, 거래주도 기업의 존재 및 거래상대방에 높은 충성도 요구, 불완전한 제품 수급현실 등이 지적되었다. 또한, 제품의 특성과 관련해서는, 품질 확인 및 제품보증 그리고 하자보수 등의 문제가 기업으로 하여금 전자마켓플레이스에서 새로운 거래대상을 찾기 보다는 기존의 신뢰할만한 거래선을 온라인 거래에서도 유지하도록 하는 중요한 이유로 작용하고 있었다.

다음 단계로 한 MRO 전자마켓플레이스를 대상으로 거래제품의 출고지와 배송지를 중심으로 한 제품의 공간적 흐름을 분석하였다. 분석결과에 따르면, 고객기업이 채택한 비즈니스 모델에 따라 거래제품의 공간적 흐름에는 차별화된 특성이 나타나는 것으로 확인되었다.

전자마켓플레이스에 등록된 전자카탈로그를 통해 필요한 제품 및 판매자를 직접 선택하고 계약하는(중개형 모형, exchange model) 고객의 경우, 인접한 지역의 판매자로부터 구매하는 경향이 뚜렷했다. 하지만, 필요한 제품의 구매를 전자마켓플레이스에 일임하는(대행형 모형, agent model) 고객의 경우, 수도권에

위치한 판매기업으로부터 제품을 공급 받는 경향이 두드러졌다. 이는 지방에 위치한 구매기업의 원거리 구매 비중을 높이는 계기가 되었다. 대행형 모형을 통해 주로 구매되는 제품의 경우, 0 자재로 분류되는 표준화된 규격제품의 비중이 상대적으로 높았지만, 비즈니스모델별 차이는 제품군의 종류에 관계없이 나타났다.

본 연구는 데이터 수집의 제약 및 그에 따른 정량적 분석의 한계를 보완하기 위해 심층면접을 적극 활용하였다. 이에 따라, 본 연구에서 밝혀진 결론의 일부는 확정적이고 일반화된 것이라기보다는 현시점의 한 단면을 보여주는 것이다. 이러한 한계에도 불구하고, 본 연구는 전자적 경제공간과 물리적 경제공간 사이의 보완적 관계에 대한 인식과 조화로운 활용이 디지털 경제 시대의 성공적인 기업 활동의 초석이 될 것이라는 점을 강조하고자 하였다. 부족하지만 본 연구를 시작으로 전자상거래를 공간적 관점에서 이해하고자 하는 많은 후속연구가 진행될 수 있기를 바란다.

**키워드:** 기업간 전자상거래, 공개형 기업간 전자마켓플레이스, 공간적 관점, 오프라인 기업활동의 중요성, 마케팅전략, 대면접촉, 지원 조직, 지역 대리점, 물류거점 확보, 온라인 거래 공간범위의 확장, 중개형 모형, 대행형 모형

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