Electronic-Marketplaces And Their Evolving Benefits Over Time
Part 1: Market Types and Research Questions ©

Professor Chris Rowley, City University, UK
Professor Hee-Dong Yang, Ewha Womans University, Korea
Professor Sora Kang, Hoseo University, Korea
Professor Sun-Dong Kwon, Chungbuk National University, Korea

Cass Knowledge
February 2009

Introduction
An electronic-marketplace (e-Marketplace) is a virtual marketplace based on the internet where companies execute economic transactions. Such e-Marketplaces can be used to purchase materials that are direct or indirect and can be further categorized as vertical or horizontal e-Marketplaces. The major reasons behind companies’ using e-Marketplaces are for purchasers to lower purchasing price or run more efficient purchasing operations, and for suppliers to establish new markets or reduce sales risks. This article examines such phenomena with the following questions. How does the relationship between an e-Marketplace and purchasing company change as transactions continue over time? As the relationship evolves, how do the benefits from e-Marketplaces change? In other words, as the e-Marketplace industry evolves to a more mature status, what kind of benefits were realized and given that an e-Marketplace functions as a market connecting vendors and buyers, do the benefits of using multiple e-Marketplaces differ from using a single e-Marketplace?

We discuss the area of e-Marketplaces in two consecutive parts. Here in Part 1, we look at definitions, categories and benefits of e-Marketplaces. We also outline the research questions and how our data for this was collected. In the next installment, Part 2, we build in this and test our research questions and examine if benefits flowing from e-Marketplaces change over time and as the sector matures. We finally present some conclusions.

What are e-Marketplaces?
The e-Marketplace has a variety of names, including web or virtual marketplace, market space, market maker, electronic intermediary, exchange and E-hub, with diverse definitions [1, 6].
this paper an e-Marketplace is defined as a virtual marketplace based on the internet where numerous companies execute economic transactions. E-Marketplaces have been launched by private firms and industry consortia. For example, Cisco and Dell run their own private e-Marketplaces to sell their products, while Harley-Davidson invites multiple vendors’ bids on its private e-Marketplace. Industry consortia include Covisint (auto industry, led by GM, Ford and Chrysler) and Exostar (airline industry, led by Boeing). Independent industry marketplaces, such as ChemConnect, maintain a more neutral position (for neither buyer nor seller) to facilitate transactions on their own sites.

These e-Marketplaces can be used to purchase materials that are direct or indirect, such as MRO (Maintenance, Repair, and Operations) items. Even though about 80% of total purchasing cost involves direct goods, indirect goods frequently purchased involve labour intensive information processing tasks [8]. Furthermore, for most organizations MRO purchasing is irregular and ad hoc (i.e., spot purchasing), so strategic purchasing planning by demand forecasting is not possible. The amount of each MRO order may be small, but purchasing frequency is high.

MRO goods make up 30%-40% of the total cost of manufacturing companies. However, the standardization of MRO goods has not reached the generally expected level compared to production goods. In MRO goods, the ‘O’ goods satisfy such general expectations, but the ‘MR’ goods are not well standardized because they need to be specialized for the purchasing company. Thus, due to inefficient purchasing processes, MRO products are very costly. Eventually, most companies have difficulties in controlling MRO spending from centralized procurement offices [11]. Indeed, e-Marketplaces have been particularly effective for commodity products such as MRO items [2]. Two of the largest MRO suppliers in the world are McMaster-Carr and W.W. Grainger. The W.W. Grainger website offers over 220,000 different products [11: p.223]. Office Depot and Staples are the market leaders in office equipment. Digi-Key, InOne, and Global Computer Supplies sell electronic and computer parts.

Additionally, e-Marketplaces can also be further categorized as vertical or horizontal. Vertical e-Marketplaces are specialized in particular industries, such as computers, electronics, automobiles, chemicals or steel and provide vertically integrated services unique to each industry. For example, E-Steel, PaperExchange and PlasticsNet.com are vertical e-
Marketplaces. Horizontal e-Marketplaces deal with various kinds of items not confined to a particular industry. For example, TradeOut.com helps clear surplus inventories by aggregating vendors and buyers more effectively than off-line brokers. VerticalNet and MRO.com are other examples horizontal e-Marketplaces.

Combining these different dimensions of e-Marketplace produces a simplex matrix. This can be seen in Table 1.

**Table 1: Types of e-Marketplaces**

<table>
<thead>
<tr>
<th>Materials Level</th>
<th>Vertical</th>
<th>Horizontal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 summarizes recent e-Marketplace business in Korea. While the total number of e-Marketplaces has remained steady, transaction volume doubled. As can be seen, the numbers of MRO e-Marketplaces decreased, from 31 to 24, but transaction volumes increased sevenfold. Between 2001 and 2004 MRO e-Marketplaces accounted for 10% of total numbers while transaction volumes increased from one tenth to one-third of the total. This increase was dominated by a small number of leading organizations (Interview, CEO of a leading MRO e-Marketplace in Korea). Both 2001 and 2004 have special relevance in the history of e-Marketplaces. In U.S., the number of e-Marketplaces was at the peak in 2001 (more than 1,500 e-Marketplaces), and then declined (to less than 200) due to bubble explosion in 2004 [4]. Therefore, comparative investigation of e-Marketplaces between these periods can provide information about the qualitative change between the boom and bust eras in this industry.

**Table 2: e-Marketplace Businesses and Transaction Volume in Korea (Unit: Billion Won)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of e-Marketplaces</td>
<td>260</td>
<td>270</td>
<td>267</td>
<td>258</td>
</tr>
<tr>
<td>Transaction volume on e-Marketplaces</td>
<td>1,150</td>
<td>1,141</td>
<td>1,864</td>
<td>2,434</td>
</tr>
<tr>
<td>Number of MRO e-Marketplaces</td>
<td>31 (12%)</td>
<td>27 (10%)</td>
<td>23 (8.6%)</td>
<td>24 (9.3%)</td>
</tr>
<tr>
<td>Transaction volume on MRO e-Marketplaces</td>
<td>114 (10%)</td>
<td>148 (13%)</td>
<td>576 (31%)</td>
<td>706 (29%)</td>
</tr>
</tbody>
</table>

E-Marketplace Benefits

The major reasons behind companies’ using e-Marketplaces are for purchasers to lower purchasing price or run more efficient purchasing operations, and for suppliers to establish new markets or reduce sales risks [3]. The benefits buyers obtain are three-fold. First, improved purchasing operations, for example, helping reduce search costs that occur steadily until the transaction is completed. Second, a purchasing community is established, for example, through competitive bids companies can reduce prices by obtaining detailed information on suppliers and through enhanced negotiation skills. Third, through information systems (IS) integration suppliers can satisfy the demands of customers in more integrated ways, for example, such facilitating functions relate to approval, financial accounts reporting, sales and customer management and information providing. These benefits can converge into two when the purchasing company aims at either reducing purchasing unit cost or improving purchasing operations.

Purchasing companies initially compare different e-Marketplaces and start transactions with the most appropriate ones. When a level of trust has built-up, the transaction with that e-Marketplace is continued. Trust is formed when the purchaser feels the supplier has the ability to give them their desired quality of products and service [5]. Trust improves the quality of the mutual transaction as well as raises the level of the cooperative relationship, thereby buttressing the ongoing relationship in electronic transactions [10].

Even after a particular e-Marketplace is chosen, an e-Marketplace can function like an intermediary or as a purchasing partner. In an intermediary model, when there is a need for products at a purchasing company, an e-Marketplace is visited and an electronic catalogue searched, followed by the selection of an appropriate supplier and finalized by a contract. In the purchasing partner model, an e-Marketplace bridges the relationship between purchaser and supplier. The purchasing company forms a contract with the e-Marketplace and in place of the purchasing company the e-Marketplace selects the best supplier and forms a contract directly with them.

Intermediary and partnership models influence performance through supply externality and system integration, respectively. Supply externality means that as the number of e-Marketplace participant increases, the value of the network increases [7]. As the number of
suppliers increases, purchasers using e-Marketplaces benefit from price reductions. Meanwhile, system integration influences purchasing performance as it reduces waste in purchasing operations and lowers inventory costs [3]. Through the standard and openness of the internet, IS integration between companies becomes increasingly easy. In order to improve purchasing operation efficiency, companies can integrate their systems with e-Marketplaces. System integration can be divided into two types [12]: first, interface integration, between IOS and the internal system; and second, internal integration, between internal systems through enterprise resource planning (ERP) or enterprise application integration.

With the intermediary model, bargaining constantly occurs and the supplier can change each time, thus increasing the inconsistency of quality and delivery. Meanwhile, convenience, trustworthiness in product quality and risks are undertaken by e-Marketplaces in the purchasing partner model. Korean MRO management has an especially high ratio of purchases that are emergencies (40%-50%), with complex stages and non-standard processes [9]. In the purchasing partner model it is more likely that ad hoc purchase at work sites can be controlled, the purchasing cycle shortened and the overall efficiency of purchasing operations enhanced. Therefore, if companies select the purchasing partner model (which is expected as purchasing companies use more of e-Marketpalces), system integration with e-Marketplaces increases, and the aforementioned benefits of increased system integration (i.e., paperless, automatic approval, precise account settlement, streamlined work process, etc.), are more likely to be realized.

**Research Questions**

Given such two proto-typical benefits of e-Marketplaces, this study asks the following questions: 1) How does the relationship between e-Marketplace and purchasing company change as their transactions continue over time? 2) As the relationship evolves, how do the benefits from e-Marketplaces change? In other words, our interests are twofold. First, as the e-Marketplace industry undergoes its evolution from the internet burble to a more mature status, what kind of promised benefits were actually realized between the period? Second, given that an e-Marketplace functions as a market connecting between vendors and buyers, do the benefits of using multiple markets (i.e., multiple e-Marketplaces) differ from using a single market (i.e., a single e-Marketplace)?

Our discussion so far can be summarized as in Figure 1. As purchasing companies come to
use e-Marketplaces more they end up solidifying the relationship with a particular e-Marketplace (path A). As they continue the transactions on this particular e-Marketplace, the benefits from the partnership model (path A → B’ → C’ or path D’) would be stronger than the benefits from the intermediary model (path A → B → C or path D).

**Figure 1: Research Model**

How Data Was Collected
We conducted more than ten interviews with managers of e-Marketplaces and user companies. All interviewees were in management positions and had more than five years experience of purchasing and e-Marketplaces. Through this process the survey questionnaire was created, corrected and finalized. The survey subjects are the managers in charge of purchasing operations in organizations with experience of e-Marketplaces. The first survey was conducted between September and October 2001 (the evolutionary and initial stage of MRO e-Marketplaces in Korea). To find companies that used e-Marketplaces we searched daily newspapers (such as The Electronic Newspaper, Korean Economic Daily, Maeil Economy) and related publications. We also requested the references of consulting firms and e-Marketplaces to obtain more information about purchasing companies. Information on 2,500 purchasing departments was obtained from this search. We contacted all of the departments through telephone calls, faxes, e-mails and website bulletin boards to distribute our survey.

© Professor Rowley et al
Some 209 surveys were returned, with 173 of these judged appropriate for analysis as seven marked the same choices, eight missed some answers, 15 responded for individual, rather than organisational, use of e-Marketplaces and seven did not have e-Marketplace experience.

The second, repeated, survey was in March to May 2004 (the more mature stage of e-Marketplaces in Korea). During the interim three years there had been substantial change in both the e-Marketplace industry and user companies. Some companies that had participated earlier were no longer using e-Marketplaces and some new user companies were available in the published materials mentioned above. Therefore, we obtained a list of 1,200 user companies of e-Marketplaces and asked them to reply to our survey in the same way as in the first survey. Some 112 surveys were returned, with 91 used for analysis as 11 responded for individual, instead of organizational, e-Marketplace use and ten left many survey items blank.

The industry profiles of the samples are similar in both surveys. Companies in the first and second surveys had the following sectoral distribution, respectively: manufacturing (48, 31), education (15, 9), service (25, 14), public administration (13, 9), finance and insurance (9, 6), wholesale and retail (7, 3), communications (8, 7), health and welfare (5, 0), entertainment (3, 0), utilities (3, 2), transportation (2, 2), real estate and machinery (1, 0). The sample also included 33 and 18 companies that did not specify their industry in the first and second survey, respectively. It is worth noting the following caveats here. While we contacted the same department of the same companies in 2004 that replied to our survey in 2001, of course the respondent who actually replied to our survey the second time may not be the same person as earlier. Also, some of the companies did not reply to us the second time.

Here in Part 1, we have looked at definitions, categories and benefits of e-Marketplaces. We have also outlined the research questions and how our data for this was collected. In the next installment, Part 2, we build in this and test our research questions and examine if benefits flowing from e-Marketplaces change over time and as the sector matures. We finally present come conclusions.
References


