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Small Buyers' Adoption of Reverse Aggregation Electronic Markets: A Case Study on the Korean Auto Repair Industry

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Ⅰ. INTRODUCTION

In spite of economic setbacks in 2000, explosive growth in the B2B EM (Business to Business Electronic Market) has become a global trend. For example, the B2B market is

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expected to account for 88 percent of online sales in 2006 (Grant, 2002). To capitalize on this growing marketplace, various market initiators, including buyers, suppliers, and third parties, are building e-marketplaces and participating in electronic markets (EM). Despite their popularity and potential for extensive growth, many B2B EMs are struggling to survive because they have failed to attract enough participants (Whitaker, Stephens, & Traham, 2001). Therefore, an investigation of factors which can increase the number of participants in EMs is needed.

From the many types of EMs, this study focused on the reverse aggregation electronic market (RAEM) model in which the third party, the aggregator, forms a group of small buyers within specific markets and amasses buying power for them (Kaplan & Sawhney, 2000). Thus, the main purpose of this study is to investigate factors which can lead buyers to participate in a RAEM. A survey was used to collect data from auto repair shops (ARS) in Korea.

This article consists of five sections. First, the paper introduces the RAEM, the main domain of the study. Second, the literature review summarizes related IT and transaction cost, benefits of EMs, and EDI adoption issues. Third, the market environment for the third party aggregator is analyzed. Fourth, hypotheses are developed. Finally, the results of the data analysis and implications are presented.

1.1 The Reverse Aggregation Electronic Market (RAEM)

Kaplan and Sawhney (2000) classified the basis of EMs according to two different aggregation models. They introduced "forward aggregation" as a supplier-oriented EM and "reverse aggregation" as a buyer-oriented EM. In their definition "forward" means the process following the traditional supply chain model, and "reverse" means the e-hubs which attract a larger number of buyers and bargains with suppliers.

One of the prominent examples of "reverse aggregation" is the RAEM in which the third party, the aggregator, forms a group of small buyers within a specific market and amasses buying power for them (Kaplan & Sawhney, 2000). By aggregating the purchasing power from many small buyers, the aggregator can negotiate price reduction and reduce transaction cost for them. Thus, aggregators can endow small buyers with benefits which have been previously enjoyed only by larger buyers. The RAEM has huge potential since it is expected to support small- and medium-sized firms, the portion of which is about 90 percent of the total number of businesses in the U.S.; and these businesses account for more than 35 percent of all maintenance, repair, and operating (MRO) business volume (Turban, King, Lee, &

Viehland, 2003).

This study focused on the "reverse aggregation model" introduced by Kaplan and Sawhney (2000) for two reasons: (1) it is expected to be a major type of EM and (2) previous studies about EM adoption only focused on the "forward aggregation model", where suppliers' participation in the market is a critical success factor.

Ⅱ. LITERATURE REVIEW

2.1 IT and Transaction Cost

According to transaction cost theory, firms exist because they can reduce the transaction cost that is incurred in a series of exchange transactions on the market (Coase, 1937). Transaction cost is associated with obtaining products and market information, negotiating a deal, monitoring opportunistic behaviors, and communicating with distant suppliers. Advanced IT has reduced the unit cost of market transactions in various ways and leads the overall shift toward more market coordination rather than vertical integration (Malone, Yates, & Benjamin, 1987). Thus previous studies explained the effect of advanced IT on the organization and market structure based on transaction cost theory.

Gurbaxani and Whang (1991) introduced hierarchical coordination cost and market coordination cost as the costs which are influenced by advanced IT. They showed that considerable cost is related to the acquisition and processing of information and that these costs can be reduced by applying IT. They maintained that a firm increases its use of markets because of reduced external coordinating cost, which traditionally means the transaction cost. Hess and Kemerer (1994) maintained that IT will provide opportunities for cost reduction and revenue expansion that entail either changing the structure of markets or the boundaries separating the firms in those markets by decreasing many of the coordination costs associated with doing business both within and outside the firm.

Tapscott, Ticoll, and Lowy (2000) introduced searching, contracting, and coordination cost as the components of transaction cost and maintained that firms can create value through disaggregated business architecture, rather than vertically integrated architecture. Benjamin and Wigand (1995) emphasized the role of IT as an enabler of ever decreasing transaction cost. They stated that "As information technology continues its rapid cost performance improvement, the unit cost of coordination, transactions will approach zero, thus enabling the design of innovative coordination transactions to fit new business needs" (Benjamin &

Wigand, p. 64).

As previous studies explained, advanced IT has reduced the transaction cost, and this reduction has resulted in the overall shift to market coordination. Emergence of Internet-based EMs has expedited this trend by reducing the cost of market transactions to almost zero (Tapscott et al., 2000).

2.2 Benefits from Electronic Markets

Previous studies suggested building and joining dynamic and collaborative EMs as one of the best ways to maximize the benefit of ever decreasing transaction cost. Since the RAEM is a web-based collaboration EM between buyers and suppliers and the benefits from the EM could be incentives for attracting more participants to the EM, it would be meaningful to identify benefits offered by EMs for participants based on the previous literature.

Malone et al. (1987) introduced an electronic communication effect, electronic brokerage effect, and electronic integration effect as the benefits of EMs. The brokerage effect, which includes increasing the number of alternatives that can be considered, increasing the quality of alternatives that can be considered, and decreasing the cost of the entire product selection process, covered most of the expected benefits for buyers who join a RAEM.

Focusing on the role of IT as an enabler of EMs on the buyer-supplier relationship, Bakos (1991) introduced the reduced search cost for buyers as a main impact of EMs. Also, he maintained that this change would result in direct efficiency gain from reduced intermediation cost and indirect efficiency in terms of allocation efficiency from better informed buyers. From a similar perspective, Malone, Yates, and Benjamin (1989) suggested selection, information acquisition, and cost saving as the main benefits for buyers joining EMs. Choudhury, Hartzel, and Konsynski (1998) also suggested identification, selection, and execution as three main functions supported by EMs in terms of buyer and supplier relationships.

On the other hand, Dewan et al. (2000) insisted that the Internet technology has dramatically reduced sellers' cost of collecting buyers' preference information and managing multiple prices, and advanced manufacturing technologies have improved sellers' manufacturing flexibility. By combining these changes, online sellers can make greater market share and profit than conventional seller not only by charging seller more for customized products, but also charges more for standard products than in a conventional market.

Although EMs give many clear benefits to both buyers and suppliers, some studies viewed EMs as a buyer-oriented marketplace. Bakos (1991) argued that the introduction of a market

system, which provides price information, could dramatically reduce sellers' profits and increase buyers' welfare. Choudhury et al. (1998) also maintained that an EM reduces sellers' monopolistic profits, increases competition, and lowers prices by helping buyers search the market more extensively.

This study partially agrees with the above view since buyers, especially in spot exchanging markets, have enjoyed more benefits than suppliers by the virtue of strong price competition among suppliers. However, the benefit has been enjoyed only by large-sized buyers with strong bargaining power. Furthermore, suppliers sacrifice other important factors like quality, delivery, and flexibility to bid for cheaper prices. Thus, it would be very important to suggest a way to help small buyers in the supplier-dominant market enjoy the benefits without sacrificing other important factors such as quality, speed, and flexibility. This study viewed the RAEM as one of the potential solutions for solving this problem.

2.3 Electronic Data Interchange (EDI) Adoption

The main domain of this study is the RAEM, which is an Internet-based EM. Since the RAEM is an emerging type of EM, it is difficult to find previous studies on the subject. Consequently, this study focused on previous studies on EDI adoption issues that are related to the current research.

Although many well-known EDI adoption models have been introduced and validated by previous studies, none has emerged as a unified model for EDI adoption due to the complexity of the issues involved. For example, possible combination of factors can have different levels of influence on the adopter's decision according to its specific context.

This study focused on the previous studies of EDI adoptions addressing buyers' adoption of EDI, as summarized in Table 1. Previous studies suggested perceived direct benefits, support from the partner, and improved relationships with partners as main factors influencing buyers' adoption of EDI.

This study assumes that there are many similarities between EDI adoption and RAEM adoption, as both deal with organizations' participation in EMs. However, this research also suggests that many differences exist between them since basic assumptions for EDI adoption have been changed as a result of advanced Internet technology. For example, huge asset specificity is no longer a major concern for the potential participant in an EM as it is in EDI, because the remarkable development of the Internet technology has dramatically decreased the cost of implementing and maintaining an EM (Clemons, Peddi, & Row, 1993). Furthermore, high compatibility among Internet technologies hedges the risk of asset specific investment.

Table 1. Factors Influencing Buyers' EDI Adoption

Studies	Adopter	Factors Identified
Chau and Hui (2001)	Buyers	• perceived direct benefits • government influence • business partner influence • prior EDI experience • perceived support from vendor • perceived cost
Maingot and Quon (2001)	buyer and supplier	• improved customer service • improved supplier relationships • reduced clerical error • competitive advantage
Vijayasarathy and Tyler (1997)	Retailer	• reduction of inventory and operation cost • improved vendor relationship • competitive advantage
Premkumar and Ramamurthy (1995)	buyer and supplier	• inter-organizational factor (competitive pressure and exercised power • organizational factor (internal needs and top management support)
O'Callaghan, Kaufmann, and Konsynski (1992)	firms in marketing channel	• perceived relative advantage of EDI over existing systems.

Additionally, the type of inter-organizational relationships in RAEMs is not as hierarchical as that of EDI, since the third party aggregator with very limited bargaining power is trying to attract buyers to join the market in the RAEM model.

Ⅲ. ANALYSES OF THE BUSINESS ENVIRONMENT

3.1 Potential of the Korean Auto Industry for a B2B Electronic Marketplace

This study focused on the South Korea Auto Industry, since South Korea has huge market size in the automotive industry and strong physical and human IT infrastructure. The Korean automotive industry has the seventh highest production capacity in the world. As of

December, 2003, there were 5 major vehicle manufacturers in South Korea, and 3,177,860 vehicles were manufactured by the major manufacturers in 2003 (KAMA, 2003). One in every 4.8 persons owned a passenger car in the domestic market. Therefore, every household had an average of 1.7 passenger cars. There were 14,584,000 registered vehicles and 32,240 registered auto repair shops for the huge domestic markets (MCT, 2003).

The Korean automotive industry has the strongest IT infrastructure in the world. For example, 73 percent of Korean households enjoy broadband Internet access (Moon, 2004). According to the Ministry of Information and Communication (MIC), 66.4 percent (30.6 million) of the Korean population were using the Internet at the end of 2004. Furthermore, in terms of the data transmission speed, Korean broadband (20 megabits per second) is about five times faster than American high speed cable modem (Lewis, 2004). According to the results of a survey of Korean Internet users, 40 percent of the users have purchased at least one item from an EM in the last six months. Twenty-four percent of on-line shoppers specified auto parts as one of the main items they were purchasing from EMs (MIC, 2004). These results suggest that many potential customers of ARS are purchasing auto parts directly from EM for a cheaper price by bypassing ARS in virtue of Internet technology. This result implies that ARS also can create a new opportunity if they can create a new business model based on Internet technology.

Based on the huge market size of the automotive industry and the strong physical and human IT infrastructure of South Korea, the South Korean auto repair industry can be expected to have a high potential for growth on the collaborative EM, which can reduce the complexity of unorganized marketing channels and provide better prices by saving transaction costs. By doing so, the EM will increase cost savings and promote price reduction. Despite these advantages, introducing Internet networking environments in the automobile repair industry has been difficult because most of the Korean ARS are small- and medium-sized, and most of the employees have limited computer skills.

3.2 The Aggregator and Its Business Model

Founded in 1993, the aggregator, located in Seoul, South Korea, gets automobile parts from automobile parts manufacturers or suppliers and resells them to ARS on the off-line retailing environments. In short, the aggregator has been an automobile parts broker between parts manufacturers and ARS and now is trying to transfer its off-line relationships with buyers to an on-line transaction environment by creating a RAEM. The aggregator intends to provide an online e-procurement environment by utilizing Internet technology.

The number of Korean ARS is approximately 60,000 businesses, including registered and unregistered businesses. For the past 6 years, the aggregator has established a solid position in the market as an automobile parts broker and is trying to build a RAEM by attracting as many buyers as possible. Thus, it is one of the few early movers in this market. According to Porter's competitive strategy (2001), the aggregator tries to be the market leader with a high entry barrier by attracting a number of current and potential buyers. This barrier cannot be easily overcome by competitors.

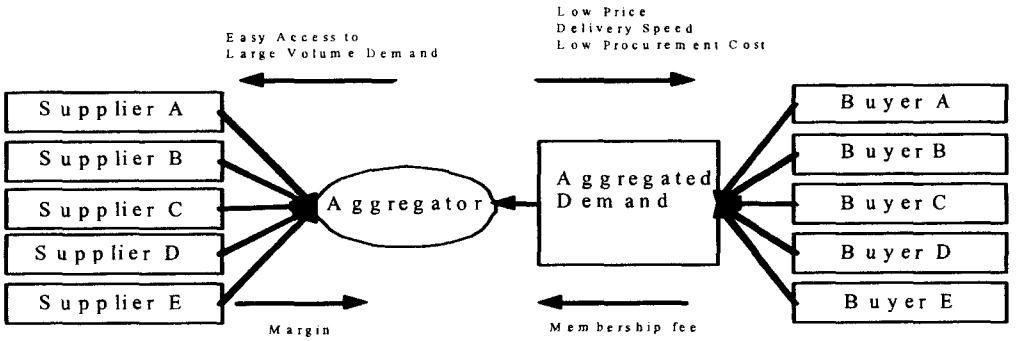

Figure. 1 Business Model of the Aggregator

Figure 1 shows the business model of the aggregator. As seen in the figure, buyers pay a membership fee for getting low price, high delivery speed, and low procurement cost through the RAEM. Also, the aggregator makes additional revenue from the price margins. In this business model attaining a critical mass of buyers is essential both to increase the amount of membership fees and to enlarge the total volume of price margin.

Ⅳ. HYPOTHESIS DEVELOPMENT

The main purpose of this study is to investigate factors which can lead buyers to participate in a RAEM. Thus, based on the previous studies of EMs and EDI adoption and interviews with the CEO of the aggregator and sample organizations, this study selected (1) search, (2) selection, (3) price, and (4) delivery as main functions supported by a RAEM. This study hypothesized that these functions would influence buyers' participation in a RAEM as the source of main benefits from the market. These functions are summarized as follows.

(1) Search: A buyer's ability to find potential trading partners for a transaction.
(2) Selection: A buyer's ability to compare the price of each supplier individually without any direct contact.
(3) Product price: Price of the product offered by main off-line suppliers.
(4) Delivery: Speed and reliability of delivery service from main off-line suppliers.

This study assumed that buyers who have problems supplying these functions, which can be provided by a RAEM, are more likely to join a RAEM. Also, this study assumed that the level of influence of each function will vary according to the specific domain of each industry. Thus, the empirical study is intended to investigate functions which are important to ARS and identify the weight of each function in terms of its influence on buyers' decision making. The following hypotheses were developed:

H1. Buyers which have a lower level of search function are more likely to join a RAEM.
H2. Buyers which have a lower level of selection function are more likely to join a RAEM.
H3. Buyers which are not satisfied with the product price from main off-line suppliers are more likely to join a RAEM.
H4. Buyers which are not satisfied with speed and reliability of the delivery service from main off-line suppliers are more likely to join a RAEM

Most sample organizations are small-sized ARS with limited human IT resources; joining a RAEM means conducting Internet-based business transactions. Thus, this study hypothesized that the level of Internet literacy has a significant impact on the buyers' decision to join a RAEM. Thus, the fifth hypothesis was developed as follows:

H5. Buyers which have higher levels of Internet literacy are more likely to join a RAEM.

V. RESEARCH METHOD

5.1 Sample Groups and Statistical Tools

Data were collected from the following two groups from May to July, 2002.

Group A: ARS which had been encouraged to join the RAEM by the aggregator and joined it.

Group B: ARS which had been encouraged to join the RAEM by the aggregator and did not join it.

To launch the RAEM, the aggregator contacted about 2000 ARS in the Seoul Metropolitan

Area in South Korea from January to December, 2001. Among them 500 ARS joined the RAEM. Questionnaires were collected through direct interviews: 31 ARS from the joined group and 42 ARS from the not-joined group. Discriminant analysis was employed to investigate which functions discriminate between the two groups. Thus, this paper identifies which EM functions are more attractive to buyers as an incentive. SPSS 11.5 was used to analyze the data.

5.2 Development of the Measurement

Discriminant analysis was conducted to test the hypotheses by determining the variables that differentiate between group A and group B. The dependent variable, joining the RAEM, was measured as a dichotomous variable (joined organization and not joined organization). Five independent variables which are directly related to the hypotheses of this study were used. The item which was used to measure each independent variable is shown in Table 2. A five-point Likert scale was used to measure each variable.

Table 2. Item Used to Measure Each Variable

Variable	Measurement
Search	We spend a lot of time and cost to find suppliers
Selection	We have a large enough number of suppliers and can compare the price of individual suppliers without any direct contact
Product Price	We are satisfied with the product price offered by the main suppliers
Delivery	We are satisfied with the speed of product delivery by the main suppliers
Internet Literacy	We have employees with good Internet skills

Ⅵ. RESULTS OF DATA ANALYSIS AND IMPLICATIONS

6.1 Demographic Characteristics of the Organizations

Table 3 and Table 4 show the demographic characteristics of responding organizations. The size of the organization is illustrated by the number of employees. Table 3 shows the

average number of employees for total responding organizations, in Group A and Group B. As seen in the table, organizations in group A (3.4 mean number of employees) were larger than those in group B (1.9 mean score).

Table 3. Average Number of Employees in Each Group

Group	Mean	N	Std. Deviation
A (joined)	3.4194	31	1.02548
B (not joined)	1.9762	42	.84068
Total	2.5890	73	1.16471

Table 4 shows the average age of businesses for total responding organizations in Group A and Group B. As shown, no large difference existed between group A (8.3 mean years) and group B (8.0 mean years).

Table 4. Average Age of Businesses in Each Group

Group	Mean	N	Std. Deviation
A (joined)	8.3077	26	4.31527
B (not joined)	8.0263	38	5.06971
Total	8.1406	64	4.74381

6.2 Results of the Hypotheses Tests

Discriminant analysis was used to determine if major differences existed between the two groups. A dependent variable (joining a RAEM) and five independent variables (search, selection, price, delivery, and Internet literacy) were selected based on the review of literature and interviews with practitioners.

Table 5 shows group statistics, including group means and standard deviations. A significant difference was found between the two groups in terms of delivery and Internet literacy at the 0.05 level of α value. The results showed that the buyers in group B (not joined group) were more satisfied with the delivery service from their off-line suppliers. Although the results were not significant (P = .280), the buyers in group B (not joined group) also showed a higher level of satisfaction than group A (joined group) in terms of selection. Thus, it can be assumed that buyers who are not satisfied with the current situation in terms of the selection and delivery service from current off-line suppliers are more likely to join a

RAEM to fix these problems.

Table 5. Group Statistics and Significance of Mean Differences

Group	Variable	Mean	Standard Deviation	P Value
A	Search	3.0000	.77460	.522
B		3.1220	.81225	
A	Selection	2.3871	.49514	.280
B		2.5610	.77617	
A	Price	2.7097	.58842	.520
B		2.8049	.64107	
A	Delivery	2.6129	.55842	.033*
B		2.9756	.79018	
A	Internet literacy	3.2258	.76200	.000**
B		2.4878	.63726	

* The result is significant at the 0.05 level of α value
** The result is significant at the 0.01 level of α value

Another significant difference was observed in terms of the level of Internet literacy. The results showed group A had a much higher level of Internet literacy than group B. This finding implies that Internet literacy might be the most important factor influencing the buyers' decision to join a RAEM.

The stepwise method was used for the analysis, and the Wilks' Lambda Method was selected to enter each variable according to the order of importance. To check the equality of covariance, Box's M was calculated, and the null hypothesis was accepted at the α level of 0.05. As seen in Table 6, F statistics for both Internet literacy and delivery were significant (< .000).

Table 6. Stepwise Statistics

Step	Entered	Wilks' Lambda							
		Statistic	df1	df2	df2	Exact F			
						Statistic	df1	df2	Sig.
1	Internet literacy	.778	1	1	70.000	19.993	1	70.000	.000**
2	Delivery	.676	2	1	70.000	16.554	2	69.000	.000**

**The result is significant at the 0.01 level of α value

The discriminant function including two variables was significant at the α level of 0.00. As

seen in Table 7, Eigenvalue of discriminant function was 0.480, which explains 100 percent of total variance. A canonical correlation was .569.

Table 7. Eigen Value

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.480	100.0	100.0	.569

The extracted standardized canonical discriminant function shows "Internet literacy" as the most important variable to differentiate the two groups as follows.

D = -0.667 * Delivery + 0.972 Internet literacy

Based on centroids for group A (0.785) and group B (-0.594), each case was classified into one of two groups. The mean score of two centroid values (0.0955) was used as a cutting point. As seen in Table 8, 77.4 percent of group A members were classified correctly and 66.7 percent of group B members were classified correctly. Thus, 71.2 percent of original cases were correctly classified by the discrimination function.

Table 8. Classification Results

		Group	Predicted Group Membership		Total
			A	B	
Original	Count	A	24	7	31
		B	14	28	42
	%	A	77.4	22.6	100.0
		B	33.3	66.7	100.0

In summary, the results of the hypothesis testing is shown in Table 9.

Table 9. Result of Hypothesis Test

Hypothesis	Description of Hypothesis	Result
H1	Ability to search suppliers	Rejected
H2	Ability to compare the price of individual suppliers without any direct contact	Rejected
H3	Level of satisfaction with product price offered from suppliers	Rejected
H4	Level of satisfaction with delivery service from suppliers	Accepted
H5	Level of Buyers' Internet literacy	Accepted

6.3 Discussion

The results of discriminant analysis showed that (1) the Internet literacy of the buyers and (2) delivery speed from off-line suppliers are important factors which influence the buyers' decision for joining a RAEM. The other variables of search, selection, and price were not found to be significant.

The significant result relating to Internet literacy indicates that the higher the Internet literacy is the higher the possibility of joining a RAEM. This result indicated that buyers consider whether or not they have a certain level of human IT infrastructure as the most important factor in joining a RAEM. As descriptive statistics in Table 3 show, the average number of employees of the sample groups was just 2.5, and their business processes were based on off-line relationships with parts suppliers. Thus, most ARS have poor physical and human IT infrastructure and cannot afford to hire additional employees for IT functions. Although the aggregator offered a subsidy for the physical IT infrastructure as an incentive for joining the RAEM to solve the problem, whether an ARS has available human IT infrastructure was still a very important issue. This finding implies that not only subsidy for physical IT infrastructure but also support for Internet literacy are very critical in attracting small organizations to join electronic markets.

Another significant finding relating to delivery was that the more buyers are satisfied with delivery service the less the possibility of joining a RAEM. This result shows that buyers who are not satisfied with the delivery service from existing off-line suppliers are more likely to join a RAEM. As the group statistics in Table 5 show, group B (not joined) organizations are much more satisfied than group A (joined) organizations in terms of delivery service from off-line suppliers. According to the interview results, fixing customers' cars faster than competitors is one of the most critical success factors for ARS. Thus the time taken to get ordered parts is very important in shortening the lead-time to deliver fixed cars to customers. This result implies that ARS would have been more effectively persuaded to join a RAEM if the aggregator had emphasized that RAEM could provide better delivery service than their off-line suppliers.

Although group B (not joined) showed a higher level of satisfaction than group A (joined) in terms of search, selection, and price, the results of t-Tests in Table 5 were not significant, and the result of the hypothesis tests also showed non-significant results. These results can be explained by unique characteristics of Korean auto markets. Korean auto markets are strongly dominated by a couple of Korean domestic automakers. For example, their market share combined is 98.2 percent of the domestic market (KAIDA, 2004). This fact indicates

that the Korean auto-part industry is highly standardized only for the domestic automakers in terms of types of parts, quality, and price. Under this situation, finding suppliers for specific parts, selecting qualified suppliers, and getting parts for a lower price are not important issues since there is a limited level of variances among off-line suppliers in terms of these three factors. However, price may have been a significant factor if the aggregator had persuaded ARS more effectively by putting more emphasis on the fact that a RAEM can lower the price by amassing buying power for buyers.

Ⅶ. CONCLUSION

This study was designed to investigate EM functions which can lead buyers to participate in a RAEM (Reverse Aggregation Electronic Market). According to the transaction cost theory, previous studies, and interviews with practitioners, this study included (1) buyers' search ability, (2) buyers' selection ability, (3) buyers' level of satisfaction with the product price offered by off-line suppliers, (4) delivery service from off-line suppliers, and (5) buyers' Internet literacy as possible factors which influence buyers' participation in a reverse aggregation electronic market (RAEM). Results indicate that fast delivery and support for Internet illiteracy are potential incentives that could influence buyers' decision of joining a RAEM.

REFERENCES

Bakos, J., "A strategic analysis of electronic market place", *MIS Quarterly*, Vol. 15, No. 3, 1991, pp. 295- 310.

Benjamin, R., & Wigand, R., "Electronic markets and virtual value chains on the information superhighway", *Sloan Management Review*, Vol. 36, No. 2, 1995, pp. 62-72.

Chau, P., & Hui, K., "Determinants of small business EDI adoption: An empirical investigation", *Journal of Organization Computing and Electronic Commerce*, Vol. 11, No. 4, 2001, pp. 229-252.

Choudhury, V., Hartzel, K., & Konsynski, B., "Uses and consequences of electronic markets: An empirical investigation in the aircrafts parts industry", *MIS Quarterly*, Vol. 22, No. 4, 1998, pp. 471-507.

Clemons, E., Peddi, S., & Row, M., "The impact of information technology on the organization of economic activity: The "move to the middle" hypothesis", *Journal of Management Information System*, Vol. 10, No. 2, 1993, pp. 10-35.

Coase, R., The nature of the firm, *Economica*, 4, pp. 386-405, 1937.

Dewan, R., Jing, B., & Seidmann, A., "Adoption of internet-based product customization and pricing strategies", *Journal of Management Information Systems*, Vol. 17, No. 2, Fall 2000, pp. 9-28.

Grant, E. X., "E-commerce to top $1 trillion in 2002", *E-Commerce Times*. Retrieved January 1, 2003, from http://www.ecommercetimes.com

Gurbaxani, V., & Whang, S., "The impact of information systems on organizations and markets", *Communications of the ACM*, Vol. 34, No. 1, 1991, pp. 59-73.

Hess, C., & Kemerer, C., "Computerized loan origination systems: An industry case study of the electronic markets hypothesis", *MIS Quarterly*, Vol. 18, No. 3, 1994, pp. 251-275.

Kaplan, S., & Sawhney, M., "E-Hubs: The new B2B marketplaces", *Harvard Business Review*, Vol. 78, No. 3, 2000, pp. 97-103.

Korean Automobile Importers & Distributor's Association (KAIDA) (2004), *Annual Report*, January.

Korean Automobile Manufacturers Association (KAMA) (2003), *Automobile Statistics*, December.

Lewis, Peter, "Broadband Wonderland", *Fortune*, Vol. 150, No. 6, 2004.

Maingot, M., & Quon, T., "A survey of electronic data interchange (EDI) in Canada, including a discussion of EDI audit issues and audit implications", *Proceedings of the 23rd Annual Congress of EAA*, Munich, 2000.

Malone, T., Yates, J., & Benjamin, R., "The logic of electronic markets", *Harvard Business Review*, Vol. 67, No. 3, 1989, pp. 166-170.

Malone, T., Yates, J., & Benjamin, R., "Electronic market and electronic hierarchies", *Communications of ACM*, Vol. 30, No. 6, 1987, pp. 484-497.

Ministry of Construction and Transportation (MCT) (2003), *Annual Report of 2003*, Korea, December.

Ministry of Information and Communication (MIC) (2004), *Annual Report of 2003*, Korea, December.

Moon, I., "South Korea: A voter's revolution", *Business Week*, February 16, 2004, p. 242

O'Callaghan, R., Kaufmann, P., & Konsynski, "Adoption correlates and share effects of electronic data interchange systems in marketing channels", *Journal of Marketing*,

Vol. 56, No. 12, 1992, pp. 45-56.

Porter, M., "Strategy and the Internet", *Harvard Business Review*, Vol. 79, No. 3, 2001, pp. 63-77.

Premkumar, G., & Ramamurthy, K., "The role of interorganizational and organizational factors on the decision mode for adoption of interorganizational systems", *Decision Sciences*, Vol. 26, No. 3, 1995, pp. 303-336.

Tapscott, D., Ticoll, D., & Lowy, A., *Digital capital*, Boston, MA: Harvard Business School Press, 2000.

Turban, E., King, D., Lee, J., & Viehland, D., *Electronic commerce: A managerial perspective*, Upper Saddle River, NJ: Prentice Hall, 2003.

Vijayasarathy, L., & Tyler, M., "Adoption factors and electronic data interchange use: A survey of retail companies", *International Journal of Retail & Distribution Management*, Vol. 25, No. 9, 1997, pp. 286-292.

Whitaker, J., Stephens, J., & Traham, C., "Successfully securing suppliers", *Supply Chain Excellence*, Issue 4, May 29, 2001.

<Abstract>

Small Buyers' Adoption of Reverse Aggregation Electronic Markets: A Case Study on the Korean Auto Repair Industry

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The purpose of this study is to investigate factors which can lead small buyers to participate in a Reverse Aggregation Electronic Market (RAEM). Five factors including search, selection, price, delivery, and Internet literacy were selected as possible factors which are expected to influence small buyers' participation in a RAEM. This paper focused on a RAEM of the Korean automotive industry in which the third party aggregator formed a group of small automobile repair shops (ARS) and amassed buying power for them by building a buyer'oriented electronic market (EM). Survey data were collected from small ARS in South Korea. The results of the empirical analysis indicated that fast delivery and support for Internet illiteracy are potential incentives that could influence buyers' decisions to join a RAEM.

Keywords : Reverse Aggregation, Electronic Market, Automotive industry