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Differentiating Between Traditional and Electronic Markets: Toward a Consumer Cost-Based Model

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Introduction

The questions that arise from the current growth of electronic commerce (e-commerce) are whether all commerce in the future will be facilitated electronically, or whether electronic commerce's hype far exceeds its future impact. It is likely that the future of electronic commerce falls somewhere in between the two extremes. Some industries will be affected more dramatically by electronic commerce than others. The purpose of this paper is to present our findings related to the impact of electronic markets (e-markets) on consumers (the demand side of transactions), organizations (the supply side of transactions), and transaction facilitators (the intermediaries of transactions, such as brokers, interactive service providers, and state government). Past work has focused on the theoretical relationship, generally based on transaction cost economics analysis [Williamson 85], between IT and transaction governance (markets vs. hierarchies) [Malone 87] [Malone 89] [Malone 91] [Bakos 91] [Gurbaxani 91] [Benjamin 95]. Essentially, the choice between markets and hierarchies is determined by which best economizes on transaction costs for a particular type of transaction. Our study theorizes the differences between traditional markets (such as retail stores) and electronic markets, and empirically tests these theoretical differences, using a cost-based economics perspective similar to previous work. In this paper we discuss our model of, and empirical results related to, consumer behavior in on-line markets. We also discuss the implications that our findings have for supply side and intermediary organizations.

Consumer Cost-Based Model to Differentiate Between Traditional and Electronic Markets

Electronic markets provide consumers with an additional sales channel through which they can buy products. Although there may be certain benefits derived by consumers in electronic markets (lower prices and search costs), it also increases the complexity of their decision process by adding another option to consider. It may also add new forms of consumer risk. Assuming rational decision making, if the costs relevant to the comparison of traditional and electronic markets can be identified, consumer behavior can be analyzed based on the assumption that the decision maker would attempt to minimize the overall cost of the transaction (and thus economize on transaction costs). From the consumer perspective the potentially relevant costs that we have identified include: (1) product price (P_C), (2) search costs (SC_C), (3) risk costs (RC_C), (4) distribution costs (DC_C), (5) sales tax (T_C), and (6) market costs (MC_C). The product price is the sum of the production costs, coordination costs, and profits of the value chain. Search costs include the time, effort and money involved in searching for a seller who has the product demanded at an acceptable price with acceptable product features and quality. The cost of the time and effort involved would be determined by the value the consumer places on their time and effort. Risk costs include the costs involved in minimizing transaction risk as well as the costs associated with losing value in a transaction. The risk dimensions typically considered are economic risk, social risk, performance risk, and personal risk [Simpson 93]. An additional form of risk that is potentially important to Internet shoppers is privacy risk [Jarvenpaa 97]. Additional costs of concern include distribution costs, the costs associated with physically moving the product from the seller to the buyer, sales tax, and market costs, the costs associated with participating in a market. Traditional markets are assumed to be costless, while e-market costs may include fixed access costs and/or transaction (variable) costs paid to the firms that operate the e-market. Interesting questions arise from the tradeoffs that must take place to minimize overall costs. To validate our model we look at whether consumers perceive differences in the individual costs between different sales channels or sellers, and whether their behavior shows us that these cost differences are significant.

Empirical Study of Consumer Behavior and Perceptions in E-Markets

We analyzed the demand side effects of e-markets by conducting an empirical study of a USENET based e-market in the sports trading card industry. The six separate discussion groups include one group for discussion of issues outside of buying and selling and the other five groups support buying and selling baseball (rec.collecting.sport.baseball), basketball, football, hockey and miscellaneous items. On average there are more than 10,000 buy, sell and trade posts per week to these groups. Its usefulness comes from its ability to enable collectors to trade directly rather than through intermediaries such as dealers. There are incentives for collectors to participate in this e-market because it eliminates the need for some intermediaries between the buyers and sellers and thus reduces transaction costs. Nearly 20 million people have access to the Internet's many collecting news groups. Cruising cyberspace has become a key part of sport-card collecting, whether you're searching for that elusive prize or connecting with hobbyists around the world [Tuttle 96]. This industry provides an excellent example of an industry where e-markets have the potential for a major impact because there are a large number of buyers and sellers, the products are mostly low priced, and there is a widespread and accepted standard for textually describing the products. To gather the empirical data necessary to test our hypotheses we sent a survey electronically to 400 randomly selected active participants in the e-market. Of the surveys sent, 58 were completed and returned for a response rate of 14.5%. We gathered demographic information to determine that a diverse sample of e-market participants was surveyed to increase the validity of our findings and the likelihood that the findings will be generalizable to other e-markets and industries. Our sample was predominately male Americans (ages 18-55), but this was expected based on the consumers in the sports trading card industry. Although this does not match consumers in general, it does not vary dramatically from the traits commonly associated with Internet users.

Findings of the Empirical Study

Our hypotheses look both at individual costs in our model, comparing traditional and electronic markets, as well as pairs of costs, namely product price and search costs, and product price and risk costs. First, we asked consumers to report the average percentage of the high-end full retail price, as reported in the monthly Beckett price guides (a monthly, industry wide, publication of retail prices), that they paid for items during 1996. They reported prices for retail stores (81.2%), specialty card shops (72.4%), card shows (several dealers gather at a mall, etc.) (53.8%), and electronic markets (USENET, etc.) (45.5%). From the data we see that prices in electronic markets are significantly lower than in other sales channels (at 95% confidence).

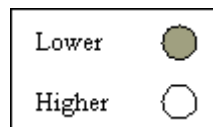
The question then is why are prices lower. Our hypothesis is that prices are lower because search costs are lower. It is easier to quickly, and cheaply, compare a large number of prices in an electronic market than in a traditional market. To test this hypothesis we go back to the data above. The data support the hypothesis that product prices are positively correlated with search costs. Retail stores and card shops (where one price is available) have the highest prices and search costs, card shows (where several prices are potentially available) are lower, and e-markets (where many prices are available) are the lowest.

Why then aren't all products purchased through electronic markets? One answer is that e-markets, like mail order, involve risks not associated with traditional markets (including payment, distribution, and seller opportunism risks). Because of this it is common for consumers to incur certain costs to minimize transaction risk. To test this hypothesis consumers were asked three questions. They answered the questions on a three point scale with one being false, two being unsure, and three being true. The question: Good deals make me more likely to buy again from the same seller if the price for the cards is similar to other sellers, resulted in a score of 2.90. While the question: I may pay a higher price to a seller if I know I can trust them, resulted in a score of 2.31. Both results were significantly true at 95% confidence. Also, the question: When I buy an item I always buy from the seller with the lowest price, resulted in a score of 1.78. This is significantly false at 95% confidence. Therefore the data support the hypothesis that price is not the only determinate of where to buy. Other non-price factors that consumers reported as important included seller reputation, past deals with the seller, and seller reliability. It was also found that consumers paid for insurance (to reduce distribution risk) in 14% of deals, generally on shipments valued at \$65 or more. Additional consumer costs relevant to differentiating between traditional and electronic markets include distribution costs, sales taxes, and market costs. We found that consumers paid distribution costs (for non-digitized products) in electronic markets that they did not pay in traditional markets. They reported that, on average, they paid \$2.04 for shipping costs for their 1996 sports card purchases. Therefore, the data support

distribution costs as a cost-based difference between e-markets and traditional markets. We also found that consumers generally did not pay sales taxes in e-market purchases like they would for traditional market purchases. It was found that consumers only paid sales tax on 1.8% of electronic market transactions. This is significantly different than the nearly 100% of retail transactions where consumers would pay sales tax. This supports our hypothesis that sales taxes are relevant to differentiating between the market types. Finally, we found that there are market cost differences between e-markets and traditional markets. This is mainly due to Internet access fees. From the survey, we found that 12 consumers (21%) have free Internet access, but the others paid a fixed monthly Internet access fee. The remaining consumers from the survey sample averaged a monthly fee of \$19.75, with a low of \$5 per month and a high of \$40 per month. No one reported a variable e-market transaction charge. Traditional markets have no comparable fees. The data support this model by showing that consumers differentiate between sales channels and sellers based on the components of the model. Thus, our PRSDTM model describes an objective function that generally determines consumer behavior in an environment where e-markets are available. In this instance we find that price differences between traditional markets (such as specialty card shops) and the e-market are sufficient to outweigh increases in risk, distribution and market costs. Our findings are summarized in Figure 1.

Figure 1 - Summary of Findings Related to Individual Consumer Costs

| | Market | E-Market |
|--------|--------|----------|
| P_c | ○ | ● |
| SC_c | ○ | ● |
| RC_c | ● | ○ |
| DC_c | ● | ○ |
| T_c | ○ | ● |
| MC_c | ● | ○ |



The data also support the theory that the impact of e-markets varies by industry. From Figure 1 we see that, while e-markets reduce some consumer costs, they also increase other costs. The choice of traditional or e-markets then depends on the relative magnitude of the individual costs. We can conclude that there are economic incentives, in some instances, for consumers to participate in e-markets. These incentives underlie the rapid growth in e-commerce that we have seen in the past several years.

Organizational (Supply-Side) Implications

Electronic markets affect a wide range of organizations that provide products and services, or support commercial transactions. Our findings point out potential implications for product/service providers, transaction brokers, ISPs, and the government.

Product/Service Provider Implications. The implications for product/service providers in an e-market come from the price and risk cost components, P_C and R_C , of our model. Essentially, sellers can compete using a low cost producer strategy, and/or they can compete using a strategy by which they differentiate themselves from other sellers because they are less risky (more trusted) in the market. Competing based on reducing consumer risk costs, when the seller/consumer relationship is supported electronically, can be described as an *electronic virtual partnership*. This is interesting because it describes how, over time, submarkets may form within the overall electronic market because consumer knowledge is limited and there is still a cost to gather information about new sellers. Unless a seller's price is significantly lower than prices from a trusted seller, the switching cost will inhibit the consumer from buying from the unknown seller.

Transaction Intermediary Implications. The implications for transaction brokers (e.g. stock brokers, real estate agents, intelligent agent software developers, and so forth) in an e-market come from the search and risk cost components, S_C and R_C , of our model. In some situations buyers may be willing to pay someone to gather and/or analyze market information (a traditional broker role) related to their purchases, or they may pay for software that provides this same functionality (decision support software or more advanced intelligent agent software). They will pay for someone or some thing to do their searching. Also, consumers may be willing to pay for broker services such as risk assumption. For example, consumers may be willing to pay for a service such as an on-line better business bureau. There are also implications for distribution companies (such as Federal Express) that arise from the distribution cost component, D_C , of our model. Package shipment companies can expect continued growth in their business related to increased usage of e-markets, but, as more and more products are digitized, this growth may be reduced.

Interactive Service Provider (Market Maker) Implications. The implications for interactive service providers come from the market and search cost components, M_C and S_C , of our model. Consumers may be willing to pay ISPs a portion of the money they save (by buying products in an e-market versus a traditional market) to gain access to the e-market. Consumers may also be willing to pay for access to systems because they provide much more than just e-market access, for example entertainment. The growth of ISPs clearly shows that consumers are willing to pay for these services.

Government Implications. Finally, the implications for government come from the sales tax component, T_C , of our model. As more transactions move from traditional markets to e-markets, it is likely that a smaller proportion of sales tax will be collected by state governments. Generally, laws exist that require the payment of sales taxes even on interstate commerce, but collection is a practical problem. This is especially likely since entry barriers into e-markets are low which increases the likelihood that there will be an increase in the number of sole proprietorships and small businesses that sell products online to buyers around the world. It is harder to track a large number of small sellers. It is also more difficult to track e-market transactions that involve buyers and sellers in different countries. As this problem increases, with the growth of e-commerce, we can expect a greater effort on the part of government to collect the sales tax they are owed.

References

References available upon request from first author.