The elements influencing the online price dispersion on Iranian electronic retailers

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Abstract

According to some recent studies, frictionless electronic commerce is a made-up story and online price dispersion is high and steady. There is not enough proof that online prices are decreasing and becoming alike. Although the studies show that prices dispersion on the Internet is decreased, they are steady yet. Therefore, this study aims to determine the important dimensions of electronic retailers’ heterogeneity and examine the markets elements that influence price dispersion. The rapid development of e-commerce in Iran has made this task feasible. Questionnaire and observation were the methods used for collecting the data in this study. 106 identical products from 56 electronic retailers and 948 price quotes in different products categories such as books, CDs, laptops, mobiles, monitors, MP3s and digital cameras in online market have been used as data. 140 questionnaires have been developed for evaluating electronic retailers’ characteristics. The method used in this analysis is statistical which mostly were factor analysis, cluster and regression analyses.
It has been proved that services provided by electronic retailers could be described by five basic factors. Average price level of items and increase in the number of competitors, increase and decrease price dispersion respectively. Over 85% of the variance in price dispersion are explained through the model.

Keywords: Intermediary, E-commerce, Information economics, E-tailing, Pricing
1. Introduction

E-commerce is capable of bringing a revolution in the interaction between individuals and organization. Increased market access and decreased operating and procurement costs are among the efficacies provided by e-commerce for retailers. On the other hand, consumers access to more extended information on goods and services and benefit from products customization, greater shopping convenience, increased choice of products and enhanced price competition.

E-commerce and specifically electronic retailing have lead to series of studies on online price dispersion. Online price dispersion means the difference in prices of an item with the same features across the online sellers of that item in certain point of time.

Online price dispersion deserves examination and study because of its possible future effect on modeling consumer and producer behavior and policy. Price dispersion is important concerning consumers, sellers, and the market as a whole. Price dispersion means alternative offerings in the market for consumers and will therefore influence their search and purchase behavior. And it’s a mirror of competitors’ pricing strategy and their interactions for sellers. And it also shows the level of information efficiency in the market.

Since frictionless economy is a made-up story (e.g., Baye and Morgan 2001;2000, Clay, Krishnan, Wolf and Fernandes 1999, Ellison and Ellison 2001; Morgan; Pan, Ratchford and Shankar 2002a, 2002b. Sholten and Smith 2002, Smith and Brynjolfsson 2000, 2001), it is a generally accepted idea that online price dispersion is an important subject. There are some elements for this dispersion. Since online markets have grown dramatically in Iran recently, the elements influencing online price markets are being studied. According to some studies (e.g., Baye, Morgan and Sholten 2001; Ratchford, Pan and Shankar 2003), no variance is seen in online price dispersion over time. Online price dispersion and the elements influencing them should be studied considering a number of different products sold in online markets to be able to identify the drivers of online price dispersion which is the main purpose of this study.

There are several elements that are identified to have influence in offline market such as incomplete information (Stigler 1961), not a consistent price setting due to menu cost (Fishman 1992), uncertainty demand, costly capacity and setting of price (Dana 1999). Although many theoretical discussions have been held about potential elements influencing price dispersion, very few empirical studies have been carried in this area.

Different kinds of influencing elements have been identified in these studies. According to Clemons, Hann, and Hitt (1998), online price dispersion is the result of price discrimination caused by marketers. Lower price sensitivity and thus difference in prices could be caused by difference in information content, (Shanker, Rangaswamy and Pusateri (2001)). According to Smith, Bailey and Brynjolfsson (2000), heterogeneity in features of services provided by electronic retailers is the main cause of online price dispersion. And the studies carried by Pan, Ratchford and Shankar (2002b) suggest that online price dispersion is explicable through electronic retailers’ characteristics, market characteristics and product differences.

We conclude that although there are several explanations for online price dispersion, not enough empirical work has been done on the influencing elements on online markets in IRAN. Understanding the phenomenon of online price dispersion depends heavily on such empirical work. The probable influencing elements on online price dispersion are discussed in the next section. Research questions and model formulation are explained in section 3 and 4 respectively. Data and the measurement and analysis the data are discussed in section 5. The result is presented in the subsequent section.

2. Literature Review
2.1. E-Tailer Characteristics

Smith, Bailey, and Brynjolfsson (2000) enumerate the possible elements effecting price dispersion in online markets: diversity of product, shopping suitability, consumer awareness of the seller’s existence, branding and trust provided by electronic retailer that decrease consumer risks, make any change in costs impossible, and difference in prices. Generally, these sources and other additional influencing elements could be categorized into two groups: (1) electronic retailer characteristics and (2) market characteristics. This is done after checking differences in product category (Pan, Ratchford and Shankar 2002b). Here we explain the effects of these elements on electronic retailer prices and price dispersion.

Shopping convenience: variety of shopping suitability might affect price dispersion. Feasibility of finding and evaluating with the help of more qualified search tools, navigation and faster checkout make it possible to search far less and bear less costs. In this way, by offering more qualified services, one can profit more (Smith, Bailey, and Brynjolfsson 2000). Then there it is expected to be relevance between price dispersion and difference in shopping suitability.

Reliability in fulfillment: price dispersion of a product could be influenced by differences in reliability in electronic retailer’s work. Reliability depends on the following factors: delivery time, whether the product was delivered as promised, and consistency of customer service. As buyers and sellers in online markets do not deal in the same place and time, the transaction does not happen at exactly the same time, and this makes customers to worried whether they would receive the product they buy online (Smith, Bailey, and Brynjolfsson 2000 ). Therefore, the more an electronic retailer reliable is, the higher prices he can charge.

Product information: if websites provide users with high quality information about product, the sensitivity about online price decreases (Shankar, Rangaswamy and Pusateri 2001). The electronic retailers who provide deeper information are more successful in decreasing price sensitivity and charging higher prices.

Shipping and handling: electronic retailer prices could also be affected by Shipping and handling service. There are consumers who put value at high quality for shipping and handling services and the electronic retailers who satisfy such customers would be able to charge higher prices. However, here raise a question.

According to Brynjolfsson and Smith (2000), there are some superior services that have inverse proportion to prices. For example, some electronic retailer that have better return policies, have lower prices. It seems that there is a more complicated relationship between services and prices. However, shipping and handling could play an important role in price dispersion.

Pricing policy: electronic retailer with whatever financial policy, need to consider this factor important in diversity. There are some retailers who are able to offer blow marginal cost and bear some loss at the beginning to profit in the future (Burdett and Coles 1997). Others may not. It is expected that electronic retailer who believe on the higher prices than usual, have higher prices. Therefore, diversity in pricing policy should be related to price dispersion.

Inventory position: price for an item could be determined by this factor. It seems that the higher the level of this factor is, the lower the price would be. As it could differ for different items in the same retailer, could not be an attribute for electronic retailer services. But it is expected to have relevance with price dispersion.

Time of online market entry: Schmalensee 1982; Shankar, Carpenter and Krishnamurthi 1999 have discussed the advantage that the early mover enjoyed in conventional market and their online counterpart have the same status, though not mentioned that much. According to Geyskens, Gielens and Dekimpe
2.2. Market Characteristics

Number of competitors in a market: competitiveness has already been examined in offline price dispersion (Carlson and McAfee 1983; Cohen 2000; Dahlby and West 1986). According to Carlson and McAfee (1983), there is an inverse proportion between the number of competitors and price dispersion. But this was not the case in Dahlby and West (1986) Test. They applied the model offered by Carlson and McAfee in insurance market and found that price dispersion increase by competitors increasing. This inconsistency remained unexplained. Cohen (2000) believes that the number of alternatives in a market functions conflict as "a double-edged sword." On the one hand, the more the number of alternative is, the higher the competitiveness and the less price dispersion are. On the other hand, the "DIF-ness" (distortion in information function) increase as well and decrease consumer awareness and therefore price dispersion increase again. The result is repeated in a small survey of household beverage as well. Therefore, there is inconsistency between competitiveness and price dispersion. When the number of competitors is low, more rivals tend to increase the price competition and lessen price dispersion. For example, Amazon.com reduced its prices by the entry of Barnes & Noble into the market (Bailey 1998). However, when there are lots of competitors in a market (for example, there are 6,219 unique book retailer sites listed by Yahoo!), consumers become confused by so many sellers and prices, so that sellers could charge them differently. Therefore, it expected that price dispersion decrease at a diminishing rate with increase of the competitors.

Consumer involvement: Search behavior of consumers influences their involvement level (e.g., Kujala and Johnson 1993). The more they are involved, the more they take time for searching because they understand the benefits they could receive by searching. The term “involvement” in the marketing literature means “utility level”, i.e. "price level" or "financial outlay" (Moorthy, Ratchford, and Talukdar 1997; Cohen 1998), the more expensive a product is, the more search is done before buying (see review by Miller 1993). Therefore, as the search models predict, there should be less price dispersion in expensive product category. But the evidence is not clear. Cohen's (1998) findings verify this prediction but those of Pratt, Wise and Zeckhauser (1979) do not. Therefore, to know the exact effect of consumer involvement on price dispersion, we should further our research. In addition, only inexpensive product categories such as books and CDs have been studied till now and low involvement factor has been considered in all studies, but how about more expensive products such as laptops. Popularity of the product item among consumers: the products that are well accepted and purchased by many consumers are considered popular. Online markets depend heavily on word of mouth marketing. Consumers tell their friend about the products they like through news groups, chat room, etc. the more
2.3. Products category differences

Hedonic price regression method was used in previous studies to check product diversity. For example, arrival and departure times, number of connections, and Saturday night stays are the elements studied in variation in airline ticket prices by Clemens, Hann, and Hitt (1998). Despite controlling these sources of heterogeneity, price dispersion found to be still important. However, the aspects such as meal offering and refund policy were not considered in the model. Therefore, to omit unmeasured product heterogeneity, other studies on homogeneous products, such as books, CDs, DVDs, electronics, computer hardware and software is needed. Price dispersion could be different for different product categories. Despite controlling the price level of different product categories, they could have different levels of price dispersion. For example, products with high consumer awareness might have lower price dispersion. But we could not deal with such effects in this study. Therefore, we use dummy variables to check potential category differences.

3. Problem statement

Our first hypothesis investigates some key dimensions of e-tailer heterogeneity.

**RQ1:** What are the some key dimensions of e-tailer heterogeneity?

This question is based on major underlying dimensions of e-tail services which are ease of ordering, product selection, product information, price, web site navigation and looks, On time delivery, product representation, level and quality of customer support, tracking and shipping and handling factors which are used by Bizrate.com, Motorola.com, shopper.com and shopping.com. It is used by previous researches (Erevelles et al., 2001; Lee and Gosain, 2002; Ancarani and Shankar, 2004)

**RQ2:** How product, market characteristics and e-tailer characteristics effect on the prices of homogeneous goods sold on the Internet? (Drivers of online dispersion)

We can classify these sources and other additional drivers of online price dispersion into two sets of factors, namely, (1) e-tailer characteristics and (2) market characteristics, after controlling for product category differences. It is defined by previous research (e.g., Carlson and Mcafee; Brynjolfsson and smith 2000; Ancarani and Shankar, 2004)

4. Research Model

Separating the factors influencing the variation in price dispersion is the main goal. First, we factor analyze the e–tailer services to identify the major underlying dimensions of e–tail services; factor scores based on these ratings provide the service measures used as independent variables in our analysis of price dispersion. Second, in order to identify the competitive positioning of e-tailers on these
service cluster analysis of these factor scores is done. Third, we use a set of regressions linking price dispersion measure to variation in e–tailer and in market characteristics to investigate the drivers of price dispersion. In order to test the e–tailer, market characteristics and product category on price we applied the comprehensive model which introduced by Pan, Ratchford and Shankar 2003 in figure 1.

5. Data Gathering & Analysis

To avoid the potential problem of unmeasured product heterogeneity, it is focused deliberately on identical products such as books, CDs, laptop, mobile, monitor, mp3, Digital camera. We collected 948 price quotes for 106 identical products form 58 e–tailers during 2007 year. For example, the Dell laptop computer with features P4,1800 MHZ processor, 512 MB memory, 120 GB hard disk, 8x DVD, 56Kbps modem and 15.1 screen, sold by one e–tailer is the same sold by another. Summary statistics of the data appear in table 1.

Ten aspects of e–tailers services are evaluated using a five-point scale and an overall measure of the average of the ten measure is also provided. In Table 2 the ten measures used by Bizrate.com are listed and explained. Online markets such as shopper.com, shopping.com and price.com use these ratings widely. Inventory position is also measured by percentage of on-time shipments from the electronic retailer.

Figure 1: Research Model (Drivers of Online Price Dispersion)

Source: Pan, Ratchford and Shankar 2003a
Table 1: Summary statistics of Price Observation

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Items</th>
<th>Number of Obs.</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book</td>
<td>50</td>
<td>500</td>
<td>21040.80</td>
<td>15270.29</td>
<td>4000</td>
<td>67500</td>
</tr>
<tr>
<td>CD</td>
<td>10</td>
<td>80</td>
<td>46031.25</td>
<td>38945.62</td>
<td>8000</td>
<td>154000</td>
</tr>
<tr>
<td>Laptop</td>
<td>10</td>
<td>80</td>
<td>12408500</td>
<td>13046085</td>
<td>740000</td>
<td>13800000</td>
</tr>
<tr>
<td>Mobile</td>
<td>10</td>
<td>80</td>
<td>2501000</td>
<td>1983396</td>
<td>480000</td>
<td>7800000</td>
</tr>
<tr>
<td>Monitor</td>
<td>10</td>
<td>80</td>
<td>3259375</td>
<td>2928924</td>
<td>2100000</td>
<td>2750000</td>
</tr>
<tr>
<td>Mp3</td>
<td>10</td>
<td>80</td>
<td>1266375</td>
<td>807512.6</td>
<td>400000</td>
<td>3150000</td>
</tr>
<tr>
<td>Digital camera</td>
<td>6</td>
<td>48</td>
<td>4239792</td>
<td>2051512</td>
<td>2000000</td>
<td>8700000</td>
</tr>
</tbody>
</table>

Table 2: Explanation of Measures of E-Tailers Features

<table>
<thead>
<tr>
<th>Measure</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of Ordering</td>
<td>Convenience and speed of ordering</td>
</tr>
<tr>
<td>Product Selection</td>
<td>Breath of products offered</td>
</tr>
<tr>
<td>Product Information</td>
<td>Information quantity quality and relevance</td>
</tr>
<tr>
<td>Price</td>
<td>Price relative to similar stores</td>
</tr>
<tr>
<td>Web site navigation and looks</td>
<td>s and speedLayout links pictures image</td>
</tr>
<tr>
<td>On Time Delivery</td>
<td>Expected vs actual delivery</td>
</tr>
<tr>
<td>Product Representation</td>
<td>Product description depiction vs what was received</td>
</tr>
<tr>
<td>Level and Quality of Customer Support</td>
<td>Status updates and complaint question handling</td>
</tr>
<tr>
<td>Tracking</td>
<td>eking order statusTra</td>
</tr>
<tr>
<td>Shipping and Handling</td>
<td>Shipping and handling charges and options</td>
</tr>
</tbody>
</table>

Alexa.com is a second source of our data. The information on each website’s traffic, external links, and online market entry date is obtained from Alexa.com. For web traffic, it provides data on the number of unique visitors to each website and it is not just ranking sites based on web traffic but it gives additional information. Web traffic and number of external links are considered as measure of consumer awareness. For each studied electronic retailer, data about trust through third party certification is gathered. A few
exist in e-markets from which we use BBB online, Bizrate.com, Gomez.com, truste.com and versign.com is collected. The variable “third part certification” ranges from 0 to 5.

5.1. Factor analysis

From the ten measures studied for all electronic retailers by applying factor analysis method, five of them shown to explain 81.5% of the variance. Tables 5 (page 12) provide the component matrix obtained using Equimax rotation respectively. The analysis has been repeated for 20 randomly selected electronic retailers to know if the results are the same for small groups as sample and it is proofed to be similar. Factor 1 includes on-time product delivery, product representation, customer support, and tracking of shipping status. According to Smith, Bailey, and Brynjolfsson 2000, consumers are most worried about receiving the product after online shopping and hence this factor could be a sign of reliability of electronic retailer. The higher the score on Factor 1 is, the more comfortable the consumers are. Ease of ordering, product selection, and the electronic retailer’s web site navigation are considered in Factor 2 which all of them are related to shopping convenience. Factor 3 includes the quantity, quality and relevance of product information provided by electronic retailers. Factor 3 includes options and charges of shipping and handling. Factor 5 includes electronic retailers’ pricing policy. Therefore, shopping convenience, reliability, product information, shipping and handling, pricing policy could describe the heterogeneity observed in electronic retailers’ services.

5.2. Cluster Analysis

Electronic retailer then could be categorized based on their scores on the five factors into 3 clusters by using a K-means cluster analysis. Table 4 shows the final cluster centers. The results of ANOVA indicate that the means of all the five factors are significantly different (p < 0.05) across the three clusters.

<table>
<thead>
<tr>
<th>E-tailer Features</th>
<th>Cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Reliability</td>
<td>0.524</td>
</tr>
<tr>
<td>Shopping Convenience</td>
<td>0.720</td>
</tr>
<tr>
<td>Product Information</td>
<td>-1.068</td>
</tr>
<tr>
<td>Shipping &amp; Handling</td>
<td>0.359</td>
</tr>
<tr>
<td>Pricing</td>
<td>0.143</td>
</tr>
<tr>
<td>Percent of Sample in Cluster</td>
<td>12.5%</td>
</tr>
<tr>
<td>Cluster is comprised of e-tailers</td>
<td>Reliable and Convenient, Uninformative</td>
</tr>
</tbody>
</table>
Cluster 1 with 12.5% of the electronic retailers is the smallest in Table 3. They are most reliable and are most convenient for shopping but they are not good at providing information on their websites. Since their price and shipping and handling charges are moderate, they could satisfy the consumers who want what they want. 38% of electronic retailers belong to cluster 2. They charge the highest price and provide the least shopping convenience but in economical and flexible shipping and handling, they are number 1. Their score in reliability and information providing are average. These electronic retailers aim at those consumers who don’t care about price and are satisfied through receiving high quality shipping and handling services.

Cluster 3 includes 49.5% of electronic retailers which is the largest. The lowest price and deep information are their important characteristics but they are the poorest in reliability and handling and moderate in shopping convenience. It seems that this Group tries to satisfy consumers who seek reasonable prices. What is said about the three clusters shows that they could not be perfect in every aspect. They focus on different target audiences to be unique in their field.

5.3. Regression Analysis

Variation in price dispersion results from variation in electronic retailers and market characteristics. The independent variables are as follows:

Electronic retailers characteristics: the following electronic retailers’ variables are included in the regression analyses of price dispersal (PRDISP) of each item i in category j. Dispersion in (1) shopping convenience (CONV), (2) reliability (REL), (3) product information (INFO), (4) shipping and handling (SHIP), (5) pricing policy (PRPOL), (6) inventory position (INV), (7) time of online market entry (TIME), (8) trust (third party certification) (TRUST), and (9) consumer awareness (web traffic and number of referral links) (AWARE). Two sets of regressions are run, one set using ranges and the other set using standard deviations in these characteristics. For showing dispersion for each variable a letter “D” comes before them.

Market characteristics: the following properties are examined in the regression analyses:

1) Number of competitors in market, measured by of electronic retailer selling an item (Comp), (2) average price level of the item, a measure consumer involvement (INVOL), and (3) popularity with consumers, measured by a dummy variable indicating the best-selling products (POPLR). The differences in product category are checked using dummy variables.

Each of the five measures of price dispersion on these two classes independent variables and on product category dummies are regressed. (BOOK for BOOK, CD for CD, LTOP for Laptop computer, MOB for Mobile, MOTT for Monitor, MP3 for Mp3 player, and DCAM for digital camera). $\eta$ is an error term.

$$PRDISP_i = \alpha_1 + \alpha_2 DCONV_{ij} + \alpha_3 DREL_{ij} + \alpha_4 DINFO_{ij} + \alpha_5 DSHIP_{ij} + \alpha_6 DPRPOL_{ij} + \alpha_7 DINV_{ij} + \alpha_8 DTIME_{ij} + \alpha_9 DTRUST_{ij} + \alpha_{10} DWARE_{ij} + \gamma_1 COMP_{ij} + \gamma_2 INVOL_{ij} + \gamma_3 POPLR_{ij} + \gamma_4 BOOK_{ij} + \gamma_5 CD_{ij} + \gamma_6 LTOP_{ij} + \gamma_7 MOB_{ij} + \gamma_8 MOTT_{ij} + \gamma_9 MP3_{ij} + \gamma_{10} DCAM_{ij} + \eta_i$$

Linear, semi logarithm and double logarithm models are run for each dependant measure. After being compared, the double logarithm functional form based on Box-Cox (Box and Cox 1964) test is selected. The regression results for the double logarithm model were very similar across dependent measures, therefore, the result of only two dependant measures, i.e., price range and price standard deviation are reported in Table 4. No problem of multicollinearity is revealed through diagnostic statistics. The existence of the heteroscedasticity detected by Breusch-Pagan test. Table 4 shows the estimated coefficient with their significance levels and model goodness of fit.

Online price dispersion is affected significantly by differences in shopping convenience, reliability, product information, shipping & handling, and pricing policy. Other electronic retailers’ variables such as timing of
entry into online market are related to online price dispersion.
By increasing the number of competitors price dispersion decreases, albeit at a diminishing rate. Price dispersion increases with greater consumer involvement or higher price levels, but also at a decreasing rate, thus relative price dispersion declines with greater consumer involvement or higher price levels.

6. Conclusion

The effects of variation in electronic retailers and market characteristics on price dispersion among electronic retailers have been examined across items. The electronic retailers’ characteristics are the following service characteristics: shopping convenience, reliability in fulfillment, product information provision, economy and flexibility in shipping and handling, pricing policy, inventory position, time of online market entry, trust, and consumer awareness. Studied Market characteristics include number of sellers in market, consumer involvement, and popularity of the category among consumers. The examination consist three steps. In first step, factor analysis of electronic retailers’ characteristics has been performed to define the basic aspects of electronic retailer service. Shopping experience, reliability, information provision, shipping and handling, and pricing policy are the five key factors.

In second step, a cluster analysis of the electronic retailers based on consumers’ perception of their services has been performed. The results show that there are three types of electronic retailers aiming different consumer segments. Cluster 1 which is the smallest consists of the most reliable electronic retailers with generally moderate price. Electronic retailers targeting price insensitive consumers with the highest overall price belong to cluster 2 who tries to attract and keep the consumers by providing superior shipping and handling service. Cluster 3 contain electronic retailers targeting the price sensitive consumers and are perceived to have the best price and product information, but the worst shipping and handling. Near half of the electronic retailers belong to this cluster. The cluster analysis explains a general image of how electronic retailers’ characteristics are related to their overall prices.

In step three, a set of regressions were used to examine the effective elements on price dispersion. Our regression models consistently have adjusted $R^2$ of over 92% and thus they explain the sources of price dispersion very well.

The standardized coefficient shows that market and electronic retailers’ characteristics are the main explanatory variables of price dispersion among electronic retailers. Variation in shopping convenience, reliability, product information provision, economy and flexibility of shipping and handling, and overall pricing, which are all among electronic retailers’ characteristics, are related to price dispersion. While variation time of entry into online market affects price dispersion in all the regression models, variation in trust and consumer awareness do not affect price dispersion. An increase in number of competitors which is a market feature, leads to a decrease in price dispersion, but at a descending rate. The higher consumer involvement is, the higher the price dispersion - measured by the range and standard deviation of price - would be. But here the increase is at a slower rate.

Therefore, price dispersion, when measured by the percentage difference or the coefficient of variation of price, decreases with consumer involvement. And price dispersion is not influenced by product popularity.
Table 4: Regression Results of Drivers of Price Dispersion

<table>
<thead>
<tr>
<th>Measure of variation in e-tailer characteristics</th>
<th>Range of e-tailer characteristics</th>
<th>Standard Deviation of e-tailer characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured of price dispersion (dependent variable)</td>
<td>Price Range</td>
<td>Price STD</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>89%</td>
<td>87%</td>
</tr>
<tr>
<td>Intercept</td>
<td>-5.41b</td>
<td>-4.67a</td>
</tr>
<tr>
<td>E-tailer Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shopping convenience</td>
<td>0.47a</td>
<td>0.41a</td>
</tr>
<tr>
<td>Reliability in fulfillment</td>
<td>0.16a</td>
<td>0.18b</td>
</tr>
<tr>
<td>Product information provision</td>
<td>0.56a</td>
<td>0.51a</td>
</tr>
<tr>
<td>Shipping and handling</td>
<td>0.22b</td>
<td>0.17c</td>
</tr>
<tr>
<td>Pricing Policy</td>
<td>0.38a</td>
<td>0.41a</td>
</tr>
<tr>
<td>Timing of online market entry</td>
<td>0.81a</td>
<td>0.72b</td>
</tr>
<tr>
<td>Trust/third party certification</td>
<td>-0.07</td>
<td>-0.1</td>
</tr>
<tr>
<td>Consumer awareness</td>
<td>-0.06</td>
<td>-0.03</td>
</tr>
<tr>
<td>Market characteristic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of competitors</td>
<td>-0.59a</td>
<td>-0.77a</td>
</tr>
<tr>
<td>Average price (consumer involvement)</td>
<td>0.84a</td>
<td>0.85b</td>
</tr>
<tr>
<td>Popularity of product with consumers</td>
<td>0.01</td>
<td>0.05</td>
</tr>
<tr>
<td>Product category differences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOOK</td>
<td>-0.23b</td>
<td>-0.31a</td>
</tr>
<tr>
<td>CD</td>
<td>-0.71a</td>
<td>-0.77a</td>
</tr>
<tr>
<td>Laptop</td>
<td>-0.22</td>
<td>-0.25</td>
</tr>
<tr>
<td>MOBILE</td>
<td>-0.25</td>
<td>-0.28</td>
</tr>
<tr>
<td>MONITOR</td>
<td>-0.23a</td>
<td>-0.29a</td>
</tr>
<tr>
<td>MP3</td>
<td>-0.39a</td>
<td>-0.44a</td>
</tr>
<tr>
<td>Digital Camera</td>
<td>-0.18</td>
<td>-0.21</td>
</tr>
</tbody>
</table>

Dependent and non-dummy independent variables are measured in natural logs.
P<0.01a; p<0.05b; p<0.10c. Significant effects in bold.
### Tables 5: Factor Analysis of E-tailer Services: Rotated component Matrix

<table>
<thead>
<tr>
<th>Variable/Measure</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Ease of Ordering</td>
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**Factor Name**
- Reliability in Fulfillment
- Shopping Convenience
- Product Information
- Shipping and Handling
- Pricing Policy
References


