An Exploratory Study on Influential Factors of Online Consumer Behavior

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Asia E-business Workshop, 2003
Motivation

- Impact of E-commerce
- The different E-commerce readiness environment
- Reasons behind the differences
  - Economical and social background
  - Consumers’ consciousness
- Benefit to business managers in electronic marketplace
Outline

- Current Status of EC in Asia
- Theoretical Background
- Research Method
- Results and Data Analysis
- Conclusion
- Future Research
# Current Status of EC in Asia

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Business Environment</th>
<th>Connectivity</th>
<th>E-business Readiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Singapore</td>
<td>8.55</td>
<td>8</td>
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<tr>
<td>9</td>
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<td>8</td>
<td>8.3</td>
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<td>7</td>
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<td>5</td>
<td>5.6</td>
</tr>
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<td>3</td>
<td>4.5</td>
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<td>5.88</td>
<td>3</td>
<td>4.4</td>
</tr>
<tr>
<td>54</td>
<td>Vietnam</td>
<td>5.3</td>
<td>3</td>
<td>4.2</td>
</tr>
</tbody>
</table>

E-business readiness ratings of major Asian nations  
(Source: the EIU E-business forum, 2001)
## Current Status of EC in Asia

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>USA</td>
<td></td>
<td></td>
<td>908.6</td>
<td>9.0</td>
<td>Forrester Research</td>
</tr>
<tr>
<td>Japan</td>
<td>283.6</td>
<td>12.37</td>
<td>296.0</td>
<td>7.1</td>
<td>ECOM, METI, NTT, 2002</td>
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<td>England</td>
<td>32.4</td>
<td>5.95</td>
<td>38.3</td>
<td>2.7</td>
<td>EITO, 2002</td>
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<tr>
<td>South Korea</td>
<td></td>
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<td>23.5</td>
<td>National Statistical Office, 2002</td>
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<td>Singapore</td>
<td>64.7</td>
<td>1.49</td>
<td>66.2</td>
<td>77.3</td>
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<td>China</td>
<td>11.8</td>
<td>0.16</td>
<td>11.9</td>
<td>1.0</td>
<td>CCID, 2002</td>
</tr>
</tbody>
</table>

*E-commerce market size and GDP (billion dollars) (Source: ECOM, 2003)*
Current Status of EC in Asia

- Increasing tendency of Internet users and Internet penetration in all of three countries
  - Number of Internet users in Japan is in lead.
  - Internet penetration rate in Korea occupies the highest level

- From the worldwide viewpoint
  - In terms of number of Internet users
    - Japan and China ascend in the top 10 countries
  - In the light of Internet penetration
    - The ratios of Internet users in Korea and Japan are located in the top 20 countries and regions

Theoretical Background

The Theory of Reasoned Action (TRA)

Three main areas

- Attitude toward the Behavior
- Subjective Norm
- Intention

Relationship between the three main areas
Theoretical Background

- Marketing strategy (Rayport and Sviokla)
  - Content
  - Context
  - Infrastructure
    - Create brand value

- Proposition of influential factors
  - Content
  - Context
  - Infrastructure
  - Consumer service
Theoretical Background

Structure conceptual model

Conceptual model of interrelationship between influences
Research Method

- General methods of related researches
  - Survey questionnaire
  - Multiple regression analysis
  - Path analysis

- Path analysis
  - A straightforward extension of multiple regression analysis
  - Aim at providing estimates of the magnitude and significance of hypothesized causal connections between sets of variables

Path coefficient
(provide an estimate of magnitude of effect)
Research Method

- Path diagram: the diagrammatic representation of a causal model used in path analysis
  - Input path diagram
  - Output path diagram

- The process to obtain path coefficients (*Excel*)

- Hypothesis testing
  - Goodness-of-fit test
  - Test of significance

- Pretest
Sample profile

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>Japan</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>74</td>
<td>75</td>
<td>95</td>
</tr>
<tr>
<td>Female</td>
<td>36</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 20</td>
<td>12</td>
<td>44</td>
<td>0</td>
</tr>
<tr>
<td>21~25</td>
<td>75</td>
<td>45</td>
<td>85</td>
</tr>
<tr>
<td>25~30</td>
<td>15</td>
<td>7</td>
<td>29</td>
</tr>
<tr>
<td>Over 30</td>
<td>8</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td><strong>Average time online/week</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 1hrs</td>
<td>10</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>1hrs~5hrs</td>
<td>42</td>
<td>40</td>
<td>47</td>
</tr>
<tr>
<td>5hrs~10hrs</td>
<td>23</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Over 10hrs</td>
<td>35</td>
<td>25</td>
<td>27</td>
</tr>
<tr>
<td><strong>Experience of online shopping</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No any experience</td>
<td>82(25.5%)</td>
<td>60(41.2%)</td>
<td>19</td>
</tr>
<tr>
<td>Have experience</td>
<td>28(25.5%)</td>
<td>42(41.2%)</td>
<td>96(83.5%)</td>
</tr>
</tbody>
</table>

Survey participants: Xi’an Jiaotong University, Xi’an University of Technology, Tokyo Institute of Technology, Hanyang University (May ~ June, 2003)
Descriptive statistics

<table>
<thead>
<tr>
<th></th>
<th>Content</th>
<th>Context</th>
<th>Infrastructure</th>
<th>Service</th>
<th>Attitude</th>
<th>Intention</th>
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</thead>
<tbody>
<tr>
<td><strong>China</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mean</td>
<td>3.35</td>
<td>3.65</td>
<td>3.81</td>
<td>3.30</td>
<td>3.43</td>
<td>3.55</td>
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<tr>
<td>S.D.</td>
<td>0.52</td>
<td>0.44</td>
<td>0.63</td>
<td>0.65</td>
<td>0.55</td>
<td>0.59</td>
</tr>
<tr>
<td><strong>Japan</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>3.29</td>
<td>3.35</td>
<td>3.40</td>
<td>3.21</td>
<td>3.12</td>
<td>3.35</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.59</td>
<td>0.67</td>
<td>0.48</td>
<td>0.70</td>
<td>0.68</td>
<td>0.70</td>
</tr>
<tr>
<td><strong>Korea</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mean</td>
<td>3.41</td>
<td>3.46</td>
<td>3.66</td>
<td>3.46</td>
<td>3.52</td>
<td>3.65</td>
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<tr>
<td>S.D.</td>
<td>0.61</td>
<td>0.58</td>
<td>0.59</td>
<td>0.63</td>
<td>0.70</td>
<td>0.69</td>
</tr>
</tbody>
</table>

Descriptive statistics of attitude and behavior intention
(1, strong negative; 2, negative; 3, neutral; 4, positive; 5, strong positive)
**Goodness-of-fit test**

- Coefficient of determination ($R^2$) is often used as a basic measure of the goodness of fit of the model.

$$R^2 = \frac{SR}{ST} = 1 - \frac{SE}{ST} \quad (0 \leq R^2 \leq 1)$$

Where: $SR$, Regression sum of squares (SSR); $SE$, Error sum of squares (SSE); $ST$, Total sum of squares (SSTO).
Goodness-of-fit test

- A value of $R^2$ near 1 indicates that the regression model is extremely useful for making predictions.

<table>
<thead>
<tr>
<th>Country</th>
<th>$R^2$</th>
<th>Attitude to use</th>
<th>Behavioral Intention</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td></td>
<td>63%</td>
<td>66%</td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td>78%</td>
<td>65%</td>
</tr>
<tr>
<td>South Korea</td>
<td></td>
<td>60%</td>
<td>70%</td>
</tr>
</tbody>
</table>

Value of $R^2$ in the models
Modified output path models (China)

Modified output path diagram in China (1, P<0.05; 2, P<0.01; 3, P<0.001)
Modified output path models (Japan)

Modified output path diagram in Japan (1, P<0.05; 2, P<0.01; 3, P<0.001)
Modified output path models (Korea)

Content

Context

Infrastructure

Consumer service

Attitude to Use

Behavioral Intention to Use

Modified output path diagram in Korea (1, P<0.05; 2, P<0.01; 3, P<0.001)
Discussion

- Consumer intention towards online shopping can be predicted reasonably from their attitude to use.
  - Be in line with the principle proposed by the TRA

- Content, context and consumer service related factors are significant to determine consumers’ attitude to purchase online.
  - Coincide with Rayport and Sviokla’s framework in the electronic marketplace

- Consumer service-related factors are the essential determinants of consumers’ attitude.
  - Be explained from the fundamental implication of E-commerce
Discussion

- Effect of infrastructure on consumers' attitude to purchase online is not so significant in China.
  - Current development of E-commerce
  - Main needs of many consumers
  - Distinct phrases of online purchase activity

- Relationship between broadband Internet service and online shopping
  - Cost and efficiency of broadband Internet service

- Importance of playfulness of online shopping
  - Characteristics of potential consumers
  - Previous computer adoption studies
Conclusion

Consumers’ attitudes have positive effect on their behavioral intention at the 0.001 level of significance.

- Classic theory on social behavior is still valid in predicting online consumer behavior in the context of electronic marketplace.

Determinants of consumers’ attitude towards online shopping have different significance in the distinct phrases of online purchase activity.

- Content and context related factors are the critical determinants to entice potential online consumers in the initial phrase of online purchase activity.
- Consumer service is important for users to turn into actual purchase.
Beneficial information for business managers

- To develop different strategies to cater to different consumers’ needs.
  - Integration of real-world traditional establishments and online presence
  - Enhancement of the level of entertainment of online shopping to entice more potential young consumers

- Strong support from consumer service system is one of the primary influences to enable the potential consumers turn into actual purchasers.
Limitations

- A little explanation for actual use in the proposed model.

- Statistical errors derived from insufficient number of respondents offered by each country.

- A degree of limitation of samples’ particular scope.
  - *the characteristics of online users*
Thank you

Thank You for Your Attention