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Consumer's Preference between the Internet and Conventional Stores
(An Exploratory Study)
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Abstract
Consumer Behavior in Electronic Market is one of the urgent issues to be investigated in MIS and Marketing areas. This study adopts the comparative approach to examine the consumer preference between the sales channels. Majority of the confirming dimension (MCD) decision strategy, which allows the consumer to consider the alternatives in pair, is used as the underlying concept of preference. The pair of alternative in this study is the choices of the Internet and the conventional stores. The study additionally proposes a new scale for measuring consumer's preference and behavior. The preference is categorized into attribute-based and attitude-based preference in the structural equation model. The relationship between the two preferences and consumer behavior are hypothesized and tested. The results of LISREL support the research hypothesis and the scale is validated. In addition, the result verifies the role of mediator of attitude-based preference in the relationship.

Introduction
Understanding how and what extent that consumers use the Internet in making their buying decisions was claimed to be one of the urgent needs for Electronic Commerce research (McGaughey and Mason, 1998). In order to have the better understanding, the empirical evidence is critical. Unfortunately, most of the past literatures describe the consumer behavior in the descriptive manner. Moreover, the past empirical studies view the Internet stores in the absolute term. By absolute, they assume that consumers make their purchasing decision by analyzing the advantages and disadvantages of the Internet stores solely without considering other alternatives.

We argue that the study of consumer's decision of using the Internet store should investigate how consumers compare the Internet stores with the other sale channels. The role of World Wide Web on the Internet has transformed from the informational tools to the transactional tool. Therefore it is appropriate to view the Internet stores or the virtual stores as one of the sale channels available to the consumers. The sales channels available to the consumers include conventional store, mail order, direct marketing, Internet stores etc. Consumers act as the decision-maker for choosing the best sale channels. Hence, the comparative approach will yield the deeper understanding of consumer's decision-making process when the selection of sale channels has to be made. Based on the Majority of Confirming Dimensions (MCD) Decision-Making strategy (Russo and Dosher, 1983), we simplify our research by considering only two important sales channels, the conventional and the Internet stores.

The contribution of this study lies in the validation of consumer's preference between the virtual and traditional stores and also the validation of the underlying concept of attribute-based preference as the driver of attitude-based preference. In other words, the study verifies the role of attitude-based preference as the mediator in the alternative evaluation and purchase decision phases in decision-making process. In addition, the study introduces the new form of scale to evaluate preference construct in consumer's decision-making process. The scale enables the researchers to conduct the comparative approach for selecting one alternative over another. In this case, the alternatives are the virtual and the conventional stores.

Literature Review
Decision Making on Online Purchasing
The well-known decision model by Simon argues that human evaluates the alternatives before making decision (Simon, 1955). Once the alternatives are evaluated, the action will be taken (Simon, 1955). The information relevant to the alternatives will be analyzed and the choices will be ranked according to the benefits they offer to the decision maker. Consequently, the alternative that best fits to the decision maker resources and yields the highest benefits will be given the highest preference.

Such decision-making process has long been applied to the consumer's purchasing behavior. The classical buyer decision-making process consists of five phases. They are problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior phases (Engel, Kollat, and Blackwell, 1973; Howard and Sheth 1972, Nicosia, 1982). This study focuses on the alternative evaluation and purchase decision phases. Within the alternative evaluation phase, the consumers develop their preferences over their choices. Preference has been used extensively in large number of decision making research. Unfortunately, it has not been used in the selection process of the Internet (virtual) and the conventional stores.
Theory and Past Implication of Preference

Preference has been playing the vital roles as a construct in decision-making process. There appears to be two underlying approaches to view preference construct. The two approaches entail different preference formation processes. First approach suggests that preference formation involves comparing specific attributes (attribute-based preference), while the second approach signifies the overall evaluation of alternatives (attitude-based processing) (Mantel and Kardes, 1999).

Past research argues that the two types of preferences are generated in different circumstances. The generation of those preferences depends upon the information-processing strategies (Alba, Hutchison, and Lynch, 1991). The information strategies generally used by consumers are stimulus-based versus memory-based processing (Hastie and Park, 1986). In stimulus-based processing, all relevant information is observable in the judgment context, and consumers can compare the alternatives on all attributes (Mantel and Kardes, 1999). This is the situation when the attribute-based preference is generated. By contrast, in memory-based processing, information about alternatives is limited by the human memory, then the detailed information or attributes of alternatives are neglected and the overall attitudes toward the alternatives are used. This is the circumstance of attitude-based preference formation. The attribute-based preference is generated when all information available and consumers have sufficient time and other resources to investigate such detailed information, while the attitude-based preference is generated when consumers lack time and other resources to investigate the detailed information.

In addition, when the concern about accuracy is high, people tend to utilize stimulus-based and tend to be somewhat data driven (Alba and Hutchinson, 1987). As concern about accuracy diminishes, people are likely to be more theory driven or more reliant on stereotypes, preconceptions, and heuristics (Wyer and Srull, 1989). In the case of being data driven, consumers tend to generate the attribute-based preference. In case of theory-driven, the consumers are likely to use the attitude-based preference. Thereby, the literature implies that these two preferences occur separately (Mantel and Kardes, 1999). Nonetheless, our study argues that the two kinds of preferences are developed together and that attribute-based preference is the one that drives the attitude-based preference.

Model and Scale Development

We begin the first step of model development by employing the concept of attribute-based and attitude-based preference. We argue that the attributed-based influences the attitude-based preference in the decision of choosing between the Internet and conventional stores. The concept is consistent with the notion proposed by Mantel and Kardes (1999). Their study articulates that attribute-based preference may be used as heuristic cues or as cues to form general attitudes before the preference judgment is formed. In addition, their study implies that before the decision is made the consumers use general attitudes and impression instead of specific attribute-by-attribute comparison. Accordingly, the following is the proposed model of relationship among attribute-based preference, attitude-based preference, and behavior (propensity to purchase online), where the attitude-based preference is acting as the mediator between the attribute-based preferences and consumer's behavior.

Figure 1: Relationship among Attribute-based Preference, Attitude-based Preference, and Behavior

The second step of model development is related to the selection of decision-making strategies. When consumers make their decision, there are two major goals that have to be achieved. They are to maximize accuracy of decision and minimize cognitive effort (Bettman, Luce, and Payne, 1998). Based on the decision-making strategies in the prior section, there appears to be several strategies that consumers use to develop their preference. The weighted adding strategy and the major of confirming dimensions (MCD) strategy are selected in this study for our scale development.

The weighted adding strategy (WADD) assumes that consumer can assess the importance of each attribute and assign a subjective value to each possible attribute level. This strategy is driven by attributed-based preference (Bettman, Luce, and Payne, 1998), which therefore is suitable for the proposed model above. It also provides us with the opportunity to generate a logical conclusion of the importance level of attribute within the attributed-based preference. Additionally, WADD is considered one of the most popular decision techniques used by researchers to assess preference construct.

The majority of confirming dimensions strategy (MCD) was initially proposed by Russo and Doshel (1983). Alternatives are processed in pairs, with the value of the two alternatives compared on each attribute, and finally the alternative with a majority of better attribute values is retained for the subsequent comparison. Since the consumers face several kinds of sale channel (Internet store, conventional store, catalogs, home shopping television, etc.), this decision strategy allows us to focus on the two major sale channels, the Internet and the...
conventional stores. Consequently, we are able to create the new form of scale used to investigate the preference between the two alternatives, the Internet and the conventional stores. The following is the example of the scale used for each items in this study. Such scale is used for both attributed-based and attitude-based preference.

Figure 2: The Scale Developed to Compare the Preference between the Internet and Conventional Stores

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<tr>
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<th>1</th>
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<th>3</th>
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<th>6</th>
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<tbody>
<tr>
<td>Conventional store is highly superior.</td>
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<tr>
<td>Conventional store is superior.</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Convention store is somewhat superior.</td>
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<tr>
<td>Internet store is superior.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Internet store is somewhat superior.</td>
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</table>

The weighted adding strategy (WADD) also directs our research to the rational choice theory. Such theory assumes that consumer has ability or skill in computation. Such skill enables the consumers to investigate the options that will maximize the received value of the attributes within each alternative. The consumer can estimate and calculate the weighted of each attribute among alternatives or options. The economic theory additionally suggests that the consumers give weight to their alternatives based on theirs limited resources and expected return or benefits from the purchasing process.

The third step of model development is to examine the attributes that consumers are likely to compare between the Internet and the conventional stores. Combined with the economic theory, the MCD strategy is used to investigate the consumer cost and return occurring in their shopping activities. Large numbers of literatures witness the characteristic of time saving when consumers make purchases online (Bellman et al., 1999). We, consequently, consider "Shopping Hours" the limited resource of consumer and the driver that persuades the Internet shopping. Shopping Hour is then used as one of the constructs (attributes) that consumer will evaluate across the two sale channels of our interest. The items used for this construct are "Number of Hours Spent for Shopping" and "Shopping Hour Quality". These two items use the scale developed in figure 2.

In transaction process, the major return from the exchanging process that consumers will receive is the product. Therefore, the "Product" construct (attribute) will be used as another construct within the level of attributed-based preference. Past studies show that product is one of the major concerns from consumer when purchasing decision is made. The items used for this construct are derived from the current literatures. They are "Product Variety", "Product Availability", and "Product Quality". These three items are not only found important in the Internet shopping environment (Jarvenpaa and Todd, 1996-1997) but has long been proven significant in several classic literatures conducted in the traditional shopping atmosphere.

Considering only the major return, "Product", from the cost and return approach is narrowed minded. The peripheral return from transaction activities should be incorporated in the model. Past researches have shown that Internet shopping currently faces the problem of "Social Interaction" paucity (Alba et al., 1997). Social interaction is one of the peripheral benefits that shoppers gain from the conventional shopping environment. Therefore, in order to complete the cost and return approach, "Social Experience" construct is employed as another attribute within the attribute-based attitude level. The items used for this construct is "Social Interaction".

Moving toward the attitude-based preference level, the model focuses on more global attitude toward two alternatives of the Internet and conventional stores. The "Preference" construct is then used for representing such global feeling. The scale in the attitude-based preference level then consists of two items, "Overall Attitudes" and "Overall Preference". Within the dependent variable domain, the single item ("Frequency to Purchase Online") is used to describe the consumer behavior. For this item, the subjects were asked to answer how often they purchase online and the scale contains four answers, ranging from never, 1-2 time (s) a year, 3-5 times a year, and more than 5 time a year. Figure 2 demonstrates the preliminary model of this study.

Research Hypotheses

The study consists of two major hypotheses. One of which is the hypothesis testing the relationship between the attitude-based and attribute-based preference (H_a). Another is the hypothesis testing the relationship between the behavior and attitude-based preference (H_b). To simplify the understanding of hypothesis setting, the comprehension of nature of scale development is required. It is worth noting that our scale is developed from the "Majority of Confirming Dimensions Strategy", where there are only two sale channels, the Internet and conventional stores, being evaluated. In addition, the model inherently implies the positive relationship among all constructs. The best way to explain the relationship of constructs is to use the example.
The example is as follow. Mr. A generally prefers to purchase products offered by the conventional stores, then he is supposed to have a better attitude toward the conventional stores than toward the Internet stores and vice versa. This similar approach is also applied to the relationship of Time and Social Experience constructs to the consumer’s attitude. Moreover, it is applied to the relationship of attitude to frequency to purchase online as well. If a consumer scores 6 to Attitude-Based Preference construct, he or she is likely to purchase online frequently. Consequently, all four hypotheses represent the positive relationships among the proposed five constructs. Figure 3 demonstrates the model of relationships among constructs. Within this model, the following hypotheses are tested.

\[ H_a: \text{The Attitude-based Preference is a positive function of Attribute-Based Preference.} \]
\[ H_1: \text{The Attitude-based Preference is a positive function of Product Preference.} \]
\[ H_2: \text{The Attitude-based Preference is a positive function of Time Preference.} \]
\[ H_3: \text{The Attitude-based Preference is a positive function of Social Experience Preference.} \]
\[ H_4: \text{The Behavior is a positive function of Attitude-Based Preference.} \]
\[ H_5: \text{The Frequency to Purchase Online is a positive function of Attitude-based Preference.} \]

**Methodology**

Survey method is used in this study. The student subjects are employed as the respondents. The student subjects intensively clusters among the group of graduate and senior students. With the student characteristic taken into consideration, the study attempts to enhance the generalizability by carefully selecting types of classes. The variety of classes is selected including management, accounting, finance, and computer related classes. Such selection allows us to have a various levels of computer literacy among subjects. Data was gathered by handling the survey to the instructor in various types of classes. There is no interview conducted prior to the completion of the questionnaires. However, the brief introduction of survey’s objective was informed to the students.

**Data Analysis**

**Respondent Demographics**

A sample of 104 students was collected. Only 89 respondents completed the questionnaires and their data were used to conduct the analysis. The sample group contains 50 males (56.18%) and 39 females (43.82%). While more than 85.4% of the subjects (76 subjects) has computer and the Internet access at home, it is surprising that more than 30% of such group has no shopping experience via the Internet.

**Descriptive Statistics**

The descriptive statistics provides us with the overall picture of how the subjects view the Internet stored compared to the conventional stores.

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**Figure 3: LISREL Diagram of Underlying Constructs from the Proposed Model**

Attributed-Based Preference
\[ \xi_1 = \text{Product Preference} \]
\[ \xi_2 = \text{Time Preference} \]
\[ \xi_3 = \text{Social Experience Preference} \]

Attitude-Based Preference
\[ \eta_1 = \text{Attitude-Based Preference} \]

Behavior
\[ \eta_2 = \text{Frequency to Purchase Online} \]
The subjects believe that both kinds of stores offer relatively the same level of product variety and product availability. The results additionally show that the subjects think they can have a relatively better product quality, less shopping hour quality, and more social interaction from the conventional stores. And, the results additionally confirm the normative belief of the ability to save shopping time when the product or service is purchased online.

Table 1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Variety (X₁)</td>
<td>3.37</td>
<td>1.47</td>
</tr>
<tr>
<td>Product Availability (X₂)</td>
<td>3.73</td>
<td>1.46</td>
</tr>
<tr>
<td>Product Quality (X₃)</td>
<td>2.73</td>
<td>0.96</td>
</tr>
<tr>
<td>Number of Hours Spent for Shopping (X₄)</td>
<td>2.27</td>
<td>1.62</td>
</tr>
<tr>
<td>Shopping Hour Quality (X₅)</td>
<td>4.00</td>
<td>1.70</td>
</tr>
<tr>
<td>Social Interaction (X₆)</td>
<td>1.63</td>
<td>0.83</td>
</tr>
<tr>
<td>Overall Attitude (Y₁)</td>
<td>2.55</td>
<td>1.12</td>
</tr>
<tr>
<td>Overall Preference (Y₂)</td>
<td>2.42</td>
<td>1.40</td>
</tr>
<tr>
<td>Frequency to Purchase Online (Y₃)</td>
<td>2.15</td>
<td>1.03</td>
</tr>
</tbody>
</table>

Results for Proposed Hypotheses Measurement Model

Maximum likelihood estimation (Joreskog and Sorbom, 1984) was used in the measurement and model testing phases of the study. This analysis provides a simultaneous test of model relationship as well as estimates of measurement error in the constructs. LISREL 8.3 was used to conduct such analysis.

Using a correlation matrix as the input, the test of the measurement model generated strong measure of fitness between the data and the proposed measurement model (Chisquare=18.45, df=19, and p=0.50). Additionally, Goodness of Fit Index (GFI) and Normed Fit Index (NFI) demonstrate the high values of 0.96 and 0.94 respectively. The t-value of each items is greater than 2.0 as well. The modification matrices for Theta-Delta were all relatively low. These evidences indicated that there is little room for the improvement of the proposed measurement model. The results also show that the model possesses a relatively low root mean square residuals (RMR = .037) comparing to the suggested cut off of 0.5 by Bentler (1985). Fitted residuals are criteria to determine how data fit model. The results indicated that the model have relatively low fitted residuals (-0.11 < fitted residuals < 0.07), while a desirable fitted residual is 0.

Structural (Causal) Model

Table 2 shows that all proposed hypotheses are supported. The first three hypotheses posit that the preference between the Internet and conventional stores in general is a positive function of preference within the domain of "Product", "Time", and "Social Experience". This concludes the importance of attribute-based preference that influences the Overall Preference before the behavior happens.

Table 2

Parameter Estimates for the Exogenous and Endogenous Measurement Model

<table>
<thead>
<tr>
<th>Standardized Loading</th>
<th>t-value</th>
</tr>
</thead>
</table>

Exogenous Variables

<table>
<thead>
<tr>
<th>Attribute-Based Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Preference</td>
</tr>
<tr>
<td>λ₁ : Product Variety</td>
</tr>
<tr>
<td>λ₂ : Product Availability</td>
</tr>
<tr>
<td>λ₃ : Product Quality</td>
</tr>
<tr>
<td>Time Preference</td>
</tr>
<tr>
<td>λ₄ : Hour to spend</td>
</tr>
<tr>
<td>λ₅ : Hour quality</td>
</tr>
<tr>
<td>Social Experience Preference</td>
</tr>
<tr>
<td>λ₆ : Social Interaction</td>
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</table>

Endogenous Variables

<table>
<thead>
<tr>
<th>Attitude-based Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>λ₁ : Overall Preference</td>
</tr>
<tr>
<td>λ₂ : Overall Attitude</td>
</tr>
<tr>
<td>Behavior</td>
</tr>
<tr>
<td>λ₃ : Frequency to buy</td>
</tr>
</tbody>
</table>

Hypothesis 4 states that behavior is a positive function of attitude-based preference. The result confirms the positive relationship between the attitude-based preference and frequency to purchase online. The result also confirms that consumers' preference is generated through a specific phases where the attribute-based preferences are initially constructed and lead to the creation of attitude-based one. In other words, the relationship between evaluation of alternatives and purchasing phase has the “attitude-based preference” as the mediator. Table 3 shows the finding in the structural model.

Table 3

Parameter Estimates for the Proposed Model

<table>
<thead>
<tr>
<th>Causal Path</th>
<th>Standardized Loading</th>
<th>t-value</th>
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<table>
<thead>
<tr>
<th>Attitude-Based Preference Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>γ₁₁ : Product Preference</td>
</tr>
<tr>
<td>γ₁₂ : Time Preference</td>
</tr>
<tr>
<td>γ₁₃ : Social Experience</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency to Purchase Online Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>β₂₁ : Attitude-Based Preference</td>
</tr>
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</table>
The structural model demonstrates the $\chi^2$ of 21.11 with the p-value of 0.95. The GFI and NFI of the structural model indicate value of 0.95 and 0.94 respectively, which is higher than the benchmark of 0.90. The model also yields the RMSR value of 0.044.

Since the hypotheses in the study tested only the relationship of the proposed model where the attitude-based preference acts as the mediator, the direct relationship from the attributed-based preference to the behaviors may still remain doubtful to the readers. We then did additional test of such relationship by adding the path from each attributed-based preference to the behavior at a time. The result shows insignificant improvement of Chi-square from the process of adding such paths to the behavior construct. This concludes that consumers generally make decision in form of phases and indicates that there is necessity to have both attribute-based and attitude-based preference in order to explain the relationship between evaluation and purchasing phases.

Implications and Contributions

The study has significant number of implications and contributions. In the area of academic, a new form of scale measuring the Preference construct is proposed and validated. The study confirms that online purchasing behavior is derived from the evaluation of the store's attributes. The study simplifies the idea of preference formation by employing the majority of confirming dimension strategy where a pair of alternatives is evaluated at a time. The study then validates such scale by adopting two alternatives, the Internet and conventional stores.

It is worth noting that the proposed scale can be applied to other kinds of pair selections. We encourage the use of this scale in the other area where the decision between two major alternatives has to be made. For instance, the selection between Data Warehouse and Data Mart in organization, the selection between desktop and note book computer for consumer, etc. However, the only adjustment for the use of such scale for any pair of alternative is at the attribute-based preference level. The researchers to use such scale should conduct an extensive literature review to create the measurement at the attribute-based level.

In term of managerial contribution, the finding suggests that the Internet stores developers pay attention to the "Social Experience" activities. There are two major reasons behind that. First, the relatively low average value of social interaction item from descriptive statistics demonstrates that the Internet stores currently lack of capability to provide the pleasure traditionally gained from the conventional shopping. Moreover, based on WADD, the relatively higher value of $\gamma$ from "Social Experience" implies that consumers put more weight to "Social Experience" when they have to make comparison between the conventional and the Internet stores. Consequently, it becomes the responsibility of both web designer and managers to incorporate or simulate the social interaction into the online shopping activities in order to enhance the frequency to purchase online.

Limitation

Although the circumspect selection of subjects was done in order to avoid having the highly computer-literate subject as the majority in the group study, the nature of student subject prevents the study from achieving the high level of generalizability. The future study could replicate the similar scale to the real natural setting environment where the variety of consumers can be attained.

Aside from the generalizability bailiwick, the focus of the items in this study is solely based on the "shared attributes" between two kinds of sale channel. The nature of the scale also limits the ability to incorporate the "unique attributes" of both stores (Tversky's Model, 1977). For instance, the Microcomputer Playfulness (Webster, 1992) is considered one of the unique attributes offered by the Internet stores and cannot be found in the conventional shopping environment. Also, the study focuses solely on the evaluation and purchasing behavior phases in consumer's decision-making. The future study may append the model by incorporating other phases.

Conclusion

The study proposes the new scale for measuring the preference between two sale channels, the Internet and conventional stores. The model is validated and proves that preference formation consists of two major phases, the attribute-based and the attitude-based. In addition, the finding confirms the proposed model and verified the mediator role of attitude-based preference in the decision-making activities of consumer. Finally, the study indicates the need of improvement in the area of "Social Experience" in order to enhance the frequency of online purchasing from consumers.

References


Survey & Correlation Matrix

Survey and Correlation Matrix is available upon request from the author. (amthtchr@memphis.edu)