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## **Consumer Perceptions of Privacy and Security Risks for Online Shopping**

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Although originally not designed for such purposes, the free market has allowed and encouraged the Internet to evolve into a megalopolis of commerce. The National Retail Federation has forecasted that online stores and other e-commerce websites will boost a twenty-percent year-to-year increase in gross sales in 2006 – totally \$211.4 billion in retail sales.<sup>1</sup> This has allowed for a paradigm shift in how commerce and competition acts, since the traditional restrictive barriers of a physical “marketplace” have been knocked down and rebuilt with non-restrictive virtual walls in the “marketspace” (Rayport and Sviokla, 1994).<sup>2</sup>

The proliferation and rapid growth of retail sales over the Internet has been reviewed by many studies. Two associating reasons that have been weighed differently in each of those studies – or in some, not considered at all – have been the concerns that, “pertain to the privacy and security of accumulated consumer data (Briones 1998; Culnan 1999) and the perceived risks that consumers may experience with respect to these issues (Ernst & Young 1999; Milne and Boza 1999; Milne 2000).”<sup>3</sup>

Miyazaki and Fernandez (2001) explore the variances in these perceptions by contrasting the relationship of Internet experiences with perceived risk and online purchasing patterns.<sup>4</sup> One-hundred and sixty participants filled out paper questionnaires that gauged the experiential elements of the respondents’ use of the Internet, by the frequency that they access the Internet and the duration of the experience; as well as evaluated the online purchasing behavior of each individual.<sup>5</sup>

The surveys were administered at an International Airport in a major U.S. metropolitan city and represent a self-assessed fair sampling of U.S. Internet users by varying age groups, economical classes, educational background, and also the sample is evenly distributed by gender. Results of the surveys were tabulated by inserting the data into six perception categories that pertained to the testing of Miyazaki and Fernandez’s hypothesis.

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<sup>1</sup> “Understanding How Consumers Use the Internet to Research & Shop for CE Products.” Consumer Electronics Association and Yahoo!. Hall & Partners Commissioned Study. October 2006.

<sup>2</sup> Butler, Patrick and Joe Peppard. Consumer Purchasing on the Internet: Process and Prospects. European Management Journal, Volume 16, No. 5. 1998, pg. 601.

<sup>3</sup> Miyazaki, Anthony D. and Ana Fernandez. Consumer Perceptions of Privacy and Security Risks for Online Shopping. The Journal of Consumer Affairs, Volume 35, No. 1. Summer 2001, pg. 27.

<sup>4</sup> Miyazaki, pg. 28.

<sup>5</sup> Miyazaki, pg. 33.

The categories used were:

- 1) Privacy – Infringement by Online Retailers;
- 2) System Security – Third-Party Fraudulent Behavior;
- 3) Security – Fraudulent Behavior of Online Retailers;
- 4) Inconvenience of Online Shopping;
- 5) No concerns; and
- 6) Miscellaneous (nonsense and uncategorized response).<sup>6</sup>

Data was also further broken down into subcategories that fit under the rubric of the parent category. Results of the study can be seen in Appendix I.

Through weighting the results, Miyazaki and Fernandez found that the perception of system security was the biggest fear of online shopping with nearly thirty-seven percent of the sample responding to the threat of third-party fraudulent behavior. Additionally, the individual fear that gained the most attention was that of unauthorized third-party access to credit card information, which garnered twenty-plus-percent of the total responses.<sup>7</sup> Interestingly, the inconveniences of online shopping placed second, over privacy concerns and the fraudulent behavior of online retailers that respectively placed third and fourth.

The evolution of the Internet into a mass medium for commerce is actually more or less just the digitalization through technical innovation of other modes of remote purchasing, such as via telephone or mail-order, that come with the same risks of privacy and security. Whether the perceived risks were higher or lower in these forms of commerce is unknown, but the real threat of third-party intrusion of personal information or financial information is actually less of a threat online than via the more traditional means. Simply, the Internet has many safeguards in-place – such as encryption – that make the theft of this information much more difficult than in the traditional phone or mail-order settings. Any envelope can be misrouted or opened by an unscrupulous individual that will use the information for his/her personal gain. Same can be said for phone ordering or even commerce at brick and mortar stores, specifically once a consumer hands a credit card over to a retailer than he/she places trust in a complete stranger to use that information for the sole designed purpose of performing that transaction. Nothing is stopping a waiter at an *Applebees* restaurant, that is making minimum wage, from writing down a name and credit card number once he/she walks away with the bill besides his/her morals. Through the Internet the personal factor/enticement/sin of greed is eliminated as the entire transaction is fulfilled via mechanization.

Miyazaki and Fernandez argue that, “both early and more recent research on telephone and mail-order purchasing (e.g., Cox and Rich 1964; Jasper and Lan 1992; Peterson, Albaum, and Ridgway 1989; Simpson and Lakner 1993; Spence, Engel, and Blackwell

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<sup>6</sup> Miyazaki, pg. 35.

<sup>7</sup> Miyazaki, pg. 35.

1970) indicate that these shopping venues have certain risks...which may be compared with online shopping” and continue by hypothesizing that if consumers are comfortable with the traditional vehicles of remote purchasing than they will be more comfortable with the modern vehicle of Internet shopping.<sup>8</sup> This is due to the lessened effects of perceived risk to the consumer decision process from positive feedback from the post-purchase behavior from the classical remote purchasing mechanisms of phone ordering and/or mail-ordering.<sup>9</sup>

Butler (1998) argues for this where, “sources of information for the evaluative stage include past experiences” within one of the five phases of the consumer purchasing process: 1) problem recognition; 2) information search via internal and external mechanisms; 3) evaluation of alternatives; 4) choice/purchase; and lastly 5) post-purchase behavior.<sup>10</sup> Although purchasing over the Internet is different than purchasing via one of the other third parties, the consumer associates the previous experiences of remote purchasing onto the Internet framework.

The association of past experiences of remote purchasing corresponds to Miyazaki and Fernandez’s hypothesis of the relationship of Internet experiences with the perceived risks of privacy and security through online purchasing. Consumers that have had positive previous experiences of phone or mail-ordering and those that have had previous positive experiences in online purchasing will have a more favorable attribution towards returning to online purchases or other remote purchasing mechanisms in the future. The Theory of Reasoned Action (Weiner 2001) tells us that the anticipatory satisfaction of a purchase plays a significant role in forecasting future behavior, specifically that the, “attributional principle addressing the issue of subjective likelihood of success (satisfaction) after attainment or nonattainment of a goal...is ascribed to a stable cause then the same outcome will be anticipated in the future.”<sup>11</sup> Inferring this to the hypothesis, the more people that have positive experiences purchasing on the Internet will only lead to more purchases on the Internet, and less perceptions of privacy and security risks.

As the perception of security and privacy is based on the consumer’s knowledge it would be a disservice to not develop or incorporate theories of knowledge calibration. The knowledge of consumers are typically based on overconfidence and thus the calibration of such knowledge or the “match between confidence and accuracy” for the consumer’s knowledge is essential to understand the confidence of purchasing securely online (Alba and Hutchinson 2000).<sup>12</sup> As stated earlier, the element that received the most responses in the Miyazaki and Fernandez study was the system security of third-party fraudulent behavior, specifically the fear of having one’s credit card information being stolen. Obviously, yes there is a risk of financial or identity theft when making an online

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<sup>8</sup> Miyazaki, pg. 30-31.

<sup>9</sup> Butler, pg. 603-604.

<sup>10</sup> Butler, pg. 606.

<sup>11</sup> Weiner, Bernard. Attributional Thoughts about Consumer Behavior. Journal of Consumer Research, Volume 27. December 2000, pg. 383.

<sup>12</sup> Alba, Joseph W. and J. Wesley Hutchinson. Knowledge Calibration: What Consumer Know and What They Think They Know. Journal of Consumer Research, Volume 27. September 2000, pg. 123.

purchase, but is the threat any more or less real than any other consumer experience? Is it more or less of a threat than the disgruntled *Applebees* waiter stealing your information? The calibration for this threat comes from the consumer's perceived knowledge or confidence of the information he/she has received and the opinions he/she has formulated on such opinions, which may not necessarily be based on accurate and factual information. Miyazaki and Fernandez contend that as consumers Internet experience increases than their calibration of the security and privacy concerns reach a higher level of the over/underconfidence score or the, "difference between the average stated probability and the average percent correct."<sup>13</sup>

The consumer's knowledge assessment is based on his/her objective knowledge and self-assessed knowledge (Park, Mothersbaugh, and Feick 1994).<sup>14</sup> The self-assessed knowledge is tantamount to the calibration; while the objective knowledge, or the "accurate information about the product class stored in long-term memory" for the Miyazaki and Fernandez study can be the level of expertise the consumer has on encryption technologies, spoofing websites, spamming, and what are the capabilities of a *cookie* once it is placed on the consumer's hard-drive.<sup>15</sup> The study did not include data from any participants that claimed to have had no experiences with the Internet for this reason. The mean of the one-hundred and sixty respondents was 2.85 years of the three years that the study reviewed. Also, fifty-three percent claimed to have had at least one purchase over the three years with the respondents' mean being 8.4 purchases.<sup>16</sup> This shows that the average participant in the study has had significant experience with e-commerce and the data also correlates to other studies of the time with larger samples.

Miyazaki and Fernandez found support for their assertions that the, "higher Internet experience and the use of other remote purchasing methods are related to lower levels of perceived risk toward online shopping, which in turns results in higher online purchase rates."<sup>17</sup> Additionally, they noticed that there is a correlation to the amount of experience of the consumer to the Internet to the perceived fear of privacy rather than security – thus implying a shift in the knowledge assessment.

As this study was conducted in 2001, the data of the time showed that "over half (52%) of American adults use the Internet, which is twice as many as in mid-1997" and "approximately half of current Internet users have purchased products or services online" (Sefton 2000).<sup>18</sup> As reported earlier, the National Retail Federation has forecasted that online stores and other e-commerce websites boosted a twenty-percent year-to-year increase in gross sales in 2006 – totally \$211.4 billion in retail sales. As the medium of the Internet continues to grow as a global "marketspace" a snowball effect occurs with the quantity of online shoppers in the "marketspace." Those consumers that had feared e-commerce become more tempted to partake as there peers enter the market.

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<sup>13</sup> Alba, pg. 125.

<sup>14</sup> Park, C. Whan, David L. Mothersbaugh, and Lawrence Feick. Consumer Knowledge Assessment. Journal of Consumer Research, Volume 21. June 1994, pg. 71.

<sup>15</sup> Park, pg. 71.

<sup>16</sup> Miyazaki, pg. 36.

<sup>17</sup> Miyazaki, pg. 38.

<sup>18</sup> Miyazaki, pg. 28.

Miyazaki and Fernandez show that as more consumers begin to transition to the Internet, the perceived fears of security risk begin to fall. Although, the perceived fears of privacy grow that should not stunt future growth in electronic commerce as the consumer's expertise level is also increasing. The consumer becomes a savvy expert and brand loyalty towards online shopping rather than the brick and mortar "marketplaces" begins to grow.

As the inconvenience of online shopping received the second most quantity of responses in the study, it is fair to assume that many consumer items will remain preferential to the "marketplace." In the survey, eight-plus percent of respondents claimed it was an inconvenience to touch, feel, or see actual goods to assess quality therefore it is fair to assume that at a minimal basis nearly ten percent of consumer goods could and should remain on store shelves in the future.<sup>19</sup> Overall, nearly twenty-four percent of responses in the Miyazaki and Fernandez study claimed an inconvenience of online shopping.

Therefore, as consumer's perceptions of privacy and security become more accurate online shopping can potentially grab upwards to three-quarters of the entire consumer/retail market. This will most-likely not happen, but e-commerce will certainly remain a growth market for many companies for many years to come as the proliferation of Internet services continues to spread to underserved regions and the overall Internet and e-commerce experiences reach a market take-off point...if it hasn't reached that point already.

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<sup>19</sup> Miyazaki, pg. 35.

## Appendix I

### Classification Scheme for Online Shopping Concerns

Number of Responses	Percentage of Total	Classification Categories (in bold) and Subcategories
<b>43</b>	<b>16.0</b>	<b>Privacy – Infringement by Online Retailers</b>
15	5.6	Sharing (selling, renting) personal information to other companies
6	2.2	Tracking of shopping habits, purchases, etc.
4	1.5	Placement of <i>cookies</i> on a consumer’s computer
4	1.5	Being contacted by the company without providing consent
14	5.2	General Privacy Concerns
<b>98</b>	<b>36.4</b>	<b>System Security – Third-Party Fraudulent Behavior</b>
19	7.1	Unauthorized third-party access to personal information
54	20.1	Unauthorized third-party access to credit card information
25	9.3	General security concerns
<b>36</b>	<b>13.4</b>	<b>Security – Fraudulent Behavior of Online Retailers</b>
14	5.2	Potential for nondelivery of ordered goods
22	8.2	General misrepresentation or fraud
<b>63</b>	<b>23.4</b>	<b>Inconvenience of Online Shopping</b>
22	8.2	Unable to touch, feel, or see actual goods to assess quality
8	3.0	Potential inaccuracies regarding the item being purchased
8	3.0	Potential hassles or costs of returning undesirable goods
5	1.9	Difficulty in contacting customer service personnel
8	3.0	Shipping-related inconvenience
12	4.5	General difficulties or hassles of online shopping
<b>5</b>	<b>1.9</b>	<b>No concerns</b>
<b>24</b>	<b>8.9</b>	<b>Miscellaneous (nonsense and uncategorized responses)</b>
269		Total

Source: Miyazaki (2001)<sup>20</sup>

<sup>20</sup> Miyazaki, pg. 35.

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