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December 2003

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### Recommended Citation

Pathak, Khagesh; Thyagaraja, Shalini; and Harrington, Susan, "Impact of the Unique Card on Electronic Commerce" (2003). *AMCIS 2003 Proceedings*. 263.

<http://aisel.aisnet.org/amcis2003/263>

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# IMPACT OF THE UNIQUE CARD ON ELECTRONIC COMMERCE

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## Abstract

*This study focuses on the impact of using the Unique Card technology for electronic commerce transactions. This research has studied how the two factors, lowered privacy and security concerns, and perceived higher trust, lead to consumers' intention to transact using the Unique Card technology. The proposed research model is initially tested, and the results show support for the Unique Card's relationship to privacy and security, as well as to trust and the intention to transact. Future implications for researchers and Unique Cards are also proposed.*

## Introduction

Electronic commerce is a modern business practice associated with the buying and selling of information, products, and services via Internet (Kalakota and Whinston, 1996). The open nature of the Internet as a transaction medium and its unregulated global nature create additional risks for online consumers, making security, privacy, and trust crucial elements of e-commerce (Hoffman, Novak, and Peralta 1999, Culnan and Armstrong 1999). Given the uncertain nature of the online environment, Stewart, Pavlou, and Ward (2001) argue that perhaps the most important element of consumer-marketer relationships is the notion of trust. Consequently, providing financial instruments, establishing guarantees for transactions, and ensuring privacy that are readily available should be valuable to the e-commerce user (Mahadevan, 2000).

Recently, in an effort to reduce online credit card fraud and consumers' security concerns about online transactions, several major credit card companies have come up with the concept of generating a random 16-digit card number that can be used in lieu of a regular credit card number. This card includes an expiration date of one month and a limit on the dollar amount, and, once charged, it cannot be used again by anyone. Its card number can also be used for shopping via phone, fax, or any other method, wherever a regular credit card number is required for payment. Since various companies have marketed this technology with different names, we have labeled it the "Unique Card." This pilot study is undertaken to see if consumers will accept the Unique Card technology as a more safe and secure method for e-commerce transactions and whether it will increase their intention to perform online transactions.

The conceptual model is presented below and discussed in the following sections. Initial results of this study are presented and discussed in the final sections of the paper.

## Concerns About E-Commerce Risks

Much anecdotal evidence exists that e-commerce is impacted by consumers' lack of trust and concern about security and privacy. The open nature of the Internet and its unregulated global nature have heightened concerns about transaction security (Fung and

Lee, 1999). Recently Pavlou (2003) used the TAM model integrated with trust to show that trust does explain the consumer's intention to transact on e-commerce sites. Gefen (2002) found that trust in the vendor affected purchase intentions. Yet, little data can be found that shows a relationship between concerns in general and past or future purchases. Therefore, we propose:

**H<sub>1</sub>: Concerns about security and privacy have negatively affected customer e-commerce purchases.**

**H<sub>2</sub>: Concerns about security and privacy will negatively affect future purchase intentions.**

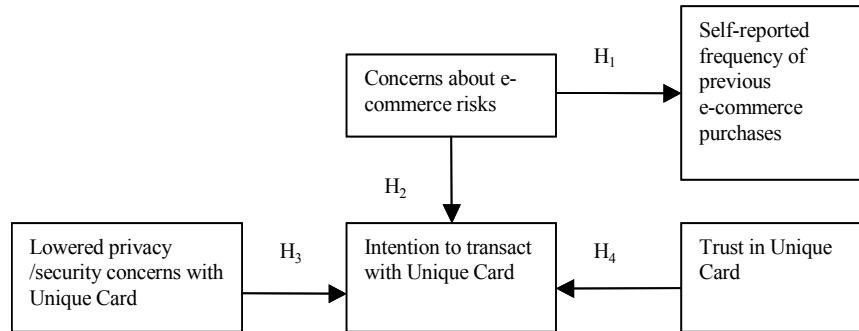


Figure 1. Conceptual Model

## Use of Intermediaries to Reduce Concerns

Chircu, Davis and Kauffmann (2000) argued that the use of intermediaries reduce the need of the consumer to monitor the web retailer and increase trust. Increased trust should lead to increased transactions. Similarly, we argue that the Unique Card allows the consumer to expend less effort monitoring the transaction and provides an assurance mechanism for security and privacy. However investigations into whether alleviation of financial responsibility through limited liability clauses and the role of trusted third parties have shown mixed results with respect to consumer trust in e-commerce transactions (Chellappa and Pavlou, 2002). Therefore, it is important to study the effect of technologies such as the Unique Card on privacy, security, and trust.

## Lowered Privacy and Security Concerns with Unique Card

Privacy and security concerns can be viewed as the perceived possibility of disclosing personal information during e-commerce transactions. According to Westin (1967), privacy is the consumers' ability to control the terms by which their personal information is acquired and used. Prior research on privacy found that consumers might be willing to disclose personal information in exchange for some apparent benefits if they believe that they have control over this information (Stone and Stone, 1990).

Security and privacy are interrelated concepts (Jones 1991) since the secure transmission and storage of consumer information affects privacy. A secure transaction is one in which only authenticated parties have access to the information, both during its transit and storage (Bruno 1998). The Unique Card provides greater security and thus privacy over any confidential information of the consumer. Hence, we propose:

**H<sub>3</sub>: Lowered Privacy and Security Concerns with Unique Card are positively related to Intention to transact with Unique Card.**

Intention to transact in this context refers to whether the consumers will be willing to use the Unique Card for e-commerce transactions.

## Perceived Greater Trust Due to Unique Card

In an e-commerce environment, trust is more difficult to build and even more critical for success than traditional commerce. Trust is arguably even more important in the case of e-commerce because of the less verifiable and less controllable business

environment of the Web (Gefen, 2000; Reichheld & Schefer, 2000). If less monitoring of the transaction is required with the Unique Card, the consumer's lower risk and increased trust is likely to result in an increase in transaction intentions. Hence, we propose:

**H<sub>4</sub>: Trust in Unique Card is positively related to the intention to transact with Unique Card.**

## Research Methodology

A demonstration of the Unique Card technology followed by a survey was conducted to validate the proposed research model. Fifty-one undergraduate and graduate students in a supervised lab were shown a 10-minute demonstration about the Unique Card technology and then asked to fill out the survey. They were awarded bonus points for their participation in the survey. The queries that students had after the demonstration were answered. This allowed the participants to gain understanding about the Unique Card technology.

## Measure Development and Validation

A questionnaire consisting of fifteen questions was posted online (Appendix A). A five point Likert scale ranging from 'Strongly Agree' to 'Strongly Disagree' were chosen to measure the questions. Previous purchase perceptions was measured by agreement or disagreement with the statement, "I often purchase some product or service Online." Appendix A shows the other measurement scales for the principal constructs.

The principal constructs are conceptually similar to existing measures used by other researchers (e.g., Pavlou, 2003). All items were submitted to a factor analysis with Varimax rotation and loaded as expected on their hypothesized factors. Cronbach alphas are shown on the diagonal in Table 1 and range from .81 to .95, thus showing excellent reliability.

**Table 1. Spearman Correlation Coefficients**

	Concern	Previous Purchase Perceptions	Privacy / Security	Trust	Intention to Transact
Concern	(.95)				
Previous Purchase Perceptions without Unique Card	-.181 <sup>+</sup>	N/A			
Privacy / Security with Unique Card	-.272*	.212 <sup>+</sup>	(.90)		
Trust with Unique Card	-.156	.364**	.869***	(.92)	
Intention to Transact with Unique Card	-.183 <sup>+</sup>	.328**	.609***	.741***	(.81)

Numbers in parentheses on the diagonal are Cronbach alphas.

+ Correlation is significant at the .10 level; \*.05 level; \*\*.01 level; \*\*\* .001 level.

## Analysis of Results

Overall, the correlation matrix (Table 1) shows significant correlations between lowered privacy and security concerns with Unique Card, trust in Unique Card, and intention to transact with Unique Card.

More specifically, H1 and H2 are marginally supported at the .10 level: i.e., concerns about security and privacy are related to perceptions of past purchase transactions and intentions to transact with the Unique Card. Thus if concerns can be lowered, transactions may increase. However, an anomalous finding is the negative relationship between concerns and perceptions of security and privacy in the Unique Card. The greater the concerns, the less the perception of security and privacy provided by the card. This raises a question about the underlying nature of those with higher concerns: is it lack of understanding of the

technology, a generalized higher level of suspicion of technology in general, or some other reason? Further research may prove fruitful.

H3 and H4 were supported at the  $p < 0.001$  levels: i.e., perceptions of security and privacy as well as trust in Unique Card are positively related to the intention to transact with the Unique Card.

Twenty-two out of 51 subjects agreed they would do more shopping with the Unique Card, thus suggesting that the Unique Card does provide assurance of greater security and trust. However, fourteen were neutral, and fifteen disagreed with the statement that they would do more shopping with the Unique Card. Open-ended answers by those disagreeing to the question suggested that the primary reasons were lack of use of online shopping – brick and mortar shopping was preferred and a belief that their current credit card offered sufficient protection. Open-ended answers by those agreeing to the question used descriptions such as “less risk”, “confidence of security”, etc. suggesting that for a high proportion the card enhances feelings of security and trust.

## Limitations of the Study

The reported conclusions are limited by the nature of the lab experiments and subjects who were students, many of whom reported having limited budgets, thus limiting the external validity and generalizability. Secondly, there was a possibility of response bias because all of the close-ended questions were on a Likert-scale. This may have inflated the correlations between the variables. Thirdly, the various items measuring the different constructs are an initial attempt based on the literature and need to be further validated and improved.

## Conclusions and Implications for Researchers and Managers

This exploratory study suggests that technologies such as Unique Card may increase intentions to transact online. By lowering concerns of privacy, security, and risk, the Unique Card increases consumers' willingness to participate in e-commerce. As seen from the results and the comments from the subjects, most of them feel that they will be more secure because of the one-time usage characteristic of this Unique Card technology.

An extension of this research will investigate and expand the concept of intention to transact with the Unique Card. Whether transactions will increase in general or whether Unique Card transactions will substitute for existing transactions is an unanswered question. Moreover, it is unclear whether those who are already aware of and understand the intermediaries and alternate payment cards are those most likely to use the Unique Card, or whether it is those who are reluctant to make online purchases who will begin doing so with this card. The negative relationship between concerns about e-commerce risks and belief in the improved security offered by Unique Card may suggest that some consumers cannot be budged from their belief that technology can make transactions more secure. If no increase in transactions occurs, the use of such cards may have minimal effect and have implications for their future in e-business.

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## Appendix A. Measurement Instrument

Web address: <http://oldcapitol.gcsu.edu/mmis2/kpathak/research>

<b>Concerns About E-Commerce Transactions</b>	
<b>Q2</b>	Security Concerns
<b>Q3</b>	Risk involved in online payment methods
<b>Q4</b>	Trust in the technology of payment methods
<b>Lowered Privacy and Security Concerns with Unique Card</b>	
<b>Q5</b>	While using a Unique Card, I have full control over how the private information I provide will be subsequently used by other unauthorized parties.
<b>Q6</b>	I am confident that once my Unique Card is charged for a specific authorized transaction, my Unique Card information is of no value.
<b>Q7</b>	Overall, compared to all other online payment methods, I am confident that the payment by Unique Card would significantly reduce my concern for privacy invasion.
<b>Q8</b>	I feel secure that the information provided during my online transaction is of no use for subsequent transactions.
<b>Q9</b>	Overall, I have confidence in the security of my transaction with the use of Unique Card.
<b>Trust in Unique Card</b>	
<b>Q10</b>	Due to its distinct feature like one time usability, I tend to have more trust in using Unique Card technology for online payments.
<b>Q11</b>	I trust that the Unique Card technology keeps my best interests in mind.
<b>Q12</b>	Compared to other online payment methods, I would characterize the technology of online payments using Unique Card, as a safe payment method.
<b>Q13</b>	In general, I believe that using Unique Card for payments is considerably less risky.
<b>Intention to Transact with Unique Card</b>	
<b>Q14</b>	I predict that I would use the Unique Card for future transactions.
<b>Q15</b>	It is likely that I will do more online shopping with the Unique Card in future.