

**AN EXAMINATION OF PERCEIVED RISK AND TRUST  
AS DETERMINANTS OF ONLINE PURCHASING  
BEHAVIOUR: A STUDY WITHIN THE U.S.A. GEMSTONE  
INDUSTRY**

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I declare that this thesis is my own account of my research and contains as its main content work, which has not been previously submitted for a degree at any tertiary education institution.

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## **Appendix 1:**

# **Incentive Report (Results of Exploratory Study) and Exploratory Questionnaire**

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### ***Critical Attributes in Gemstones Purchasing via Internet: U.S.A.***

#### ***Executive Summary***

Gemstones have played a significant role in economies of many countries, especially the U.S.A. Despite the myriad benefits of adopting the Internet-based EC in many industries and positive predictions, the volume of online gemstone trading remains limited compared to those of gemstone trading using traditional (i.e. offline channels). Moreover, formal studies investigating factors that influence utilization such as the risk perception and trust of gemstone buyers using Internet are limited in scope. This report aims to identify the attributes that influence risk perception and trust of online gemstone buyers. The relationships and levels of relevance between associated attributes and risk perception and trust of gemstone buyers using the Internet were also examined.

Gemstone buyers regarded several attributes when considering the risk perception and trust to buy online. For the risk perception, gemstone buyers considered color-shade shown via images presented on Web site the most critical attribute to their concerns about product information. Adopting seal of privacy practices from global well-known programs is also perceived positively by gemstone buyers. Advertising in gemstone and jewelry e-market places as well as offering variety of gemstone lot-sizes should be choices of practices for online sellers. Moreover, concerns about sellers' security practices can be eased by using global well-known security programs and payment options.

In terms of the trust, using global well-known financial institutions for payment processing could be an alternative to protect Internet fraud. Offering return within inspection time, warranty/guarantee of gemstone(s) sold and authentic testimonials provide assurance to online buyers. Similarly, gemstone buyers also considered perceived reputation of online seller such as the size of organization and length of buyer-seller relationship.

The above findings imply buyer perception or buyer preferences toward online seller practices. It is evident that the most important benefit for online seller lies in satisfying buyers' needs and mitigating concerns which should be one of the business goals. In turn for buyers, such improvements in sellers' performance may entail more comfortable environment to purchase gemstones online.

## ***Introduction***

Over the centuries gemstone(s) have at times played a key role in the international trade. In today's global trade where the Electronic Commerce (EC), in particular the Internet-based EC has been embraced in conducting business ("Electronic Commerce and Development Report", 2001; Fox, 2001), they still play a significant role in economies of many countries. Not surprisingly, there is a significant interest in optimizing the usage of Internet-based EC in gemstone trading because of its myriad benefits.

The Internet-based EC has helped businesses to improve business opportunities and productivity in many aspects. For example, increase the range of new potential suppliers and business hours; spur speed and access; reduce transaction costs; and reduce operating costs involved in holding surplus inventory which can eventually result in streamlining of inventory system (J. C. Anderson, 1995; Corbitt, 2002). In terms of indirect impacts, purchasing using EC can help buyers to obtain a considerably comparative price which should result in decreased direct material costs (Winder, 2001) and improving the timeliness and quality of products purchased. Moreover, regardless of concerns in relation to security issues electronic bill payment can help reduce company's paper-based billing cycle and then improve cash flow (Robinson, 2001).

In so doing, gemstone and jewelry industry has adopted Internet-based EC as new/alternative way of trading. However, selling and buying gemstone using online channel remains in its infancy (Elmore, 2001). Some optimistic predictions, for example, Merrill Lynch predicts annual world online gemstone trading should reach 25% by 2005 (Krausz, 2001). Despite these predictions, the online colored gemstone trading volume has accounted for only small proportion compared to the world colored gemstone trading. That is, less than 1% in 2001 (Siripant & Mansrisuk, 2001) and is reported a mere 2% in 2002 (Meredith, 2002), which is equal to an approximate US\$38 billion. In 2004, the upward trend of utilizing Internet in gemstone buying is implied from the survey of Colored Stone Magazine. It also identifies a significant increasing in sellers' concern, arose from 8% in 2003 to 45%, that Internet sales was the first biggest problem harming the gemstone and jewelry industry (Prost, 2005). Sellers claimed it caused several serious problems, especially price undercutting and fraudulent practices. In turn, such explicitly higher percentages signified the higher levels of [gemstone and jewelry] online trading from 2003.

There is limited research in relation to gemstone trading online. Previous studies have shed light on gemstone's characteristics, qualities, treatment procedure or gemstone trading using the traditional channel (Siripaisanpipat, Patarakorn, Sanjuanrueng, Khoonsaeng, & Patarakorn, 1998; Siripant, 2002; University, 1998). Such traditional trading using the offline channel tends to dominate gemstone trading (Beard, 2000; Association, 2004). In reality, visualizing and touching gemstone(s) is still considered the most common method in purchasing gemstone(s) (Greenwood, 2004; Spierer, 2004; Porncharern, 2004; Buncharoen, 2004).

The literature suggests that many factors are influencing both offline and online purchasing behavior. The risk perception and trust concept have played a significant role when examining the purchasing behavior (e.g. "JCOC Consumers Predictions" 2002; Doney & Cannon, 1997; Mitchell & Boustani, 1994; Miyazaki & Fernandez, 2001; Ranchhod, 2001). Nevertheless, many of these studies (e.g. provided by MVI Marketing Research, JCOC) have been focused on consumer perspectives rather than business. Furthermore, the attributes influencing risk perceptions and trust of online gemstone buyers have not been fully investigated.

## Significance

This study aims to identify the underlying factors influencing risk perceptions and trust of online gemstone buyers. The relationships and intensities between associated attributes and the sub-constructs under risk perception and trust of gemstone buyers using the Internet are also investigated. The knowledge and understanding acquired in this research is expected to assist in formulating recommendations on how to deal with buyers' risk perception and trust in gemstone purchasing, especially for online sellers. For buyers, this may entail more comfortable environment to purchase gemstones online.

## Methodology

This preliminary report is part of the main study, "An Examination of Risk Perception and Trust as Determinants of Online Purchasing Behaviour: The U.S.A. Gemstone Industry". The study collected data from U.S.A. gemstone buyers using the Internet. The population and sample was 775 company members of American Gems Trade Association (AGTA) 2002. The number of respondents was reduced to 557 due to the availability of e-mail addresses.

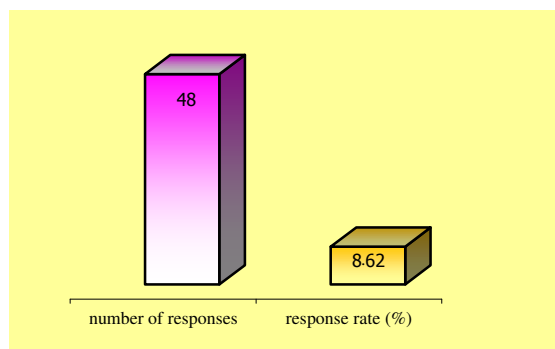
## Data Collection

The study used a mixed-mode survey consisted of:

- Internet survey: the electronic questionnaires posted on the Web survey, <http://www.it.murdoch.edu.au/~buygemsonline/index.htm>
  - 10 responses obtained
- Incorporating a MsWord format questionnaire as email attachment
  - 15 and 23 responses obtained

Figure 1.1A reported the total number of 48 responses was obtained which was equal to the response rate of 8.62%

Figure 1.1A: Response Rates



## Data Analysis

Factor analysis was used as the main statistical method supported by the descriptive statistics (Zikmund, 2003). There were 45 completed responses available for the analysis.

## Findings

The results are presented in two sections, demographic data and the critical attributes in gemstone purchasing via the Internet, respectively.

### Demographic Data

As depicted in Figure 1.2A, the majority (53.3%) of respondents are gemstone dealers, followed by gemstone and jewelry dealers (42.2%) and jewelry retailers (4.4%), respectively. The result supports the assumption of higher uses of gemstone (s) by gemstone dealers and gemstone and jewelry dealers.

Figure 1.2A: Company Type

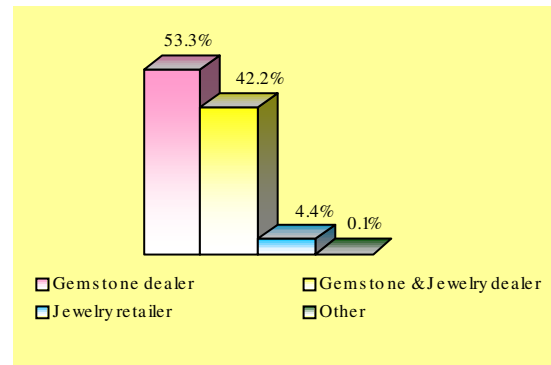
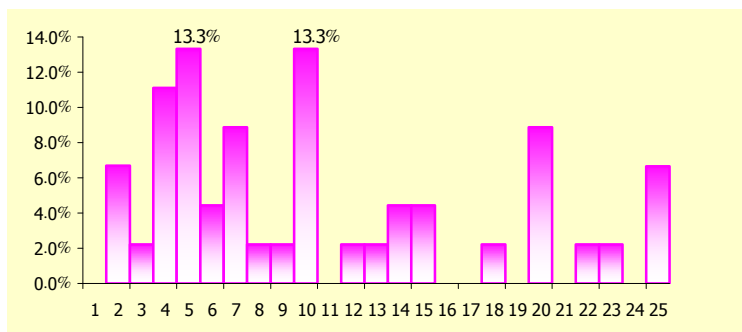


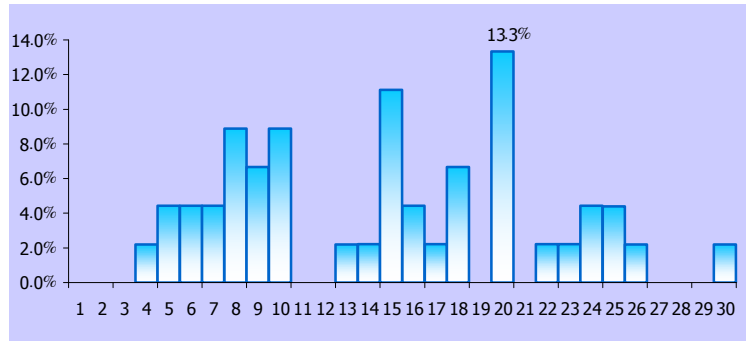
Figure 1.3A shows that the number of employees appeared in the range of 2 to 25 employees. It was salient that respondents had a small number of employees. They were ranking from 5 (13.3%) and 10 (13.3%), followed by 4 (11.1%), 7 (8.9%) and 20 (8.9%), 2 (6.7%) and 25 (6.7%), 6 (4.4%) as well as 14 (4.4%) and 15 (4.4%) and 2.2% for each of the remained number, respectively. This finding implies respondents are likely to be small companies.

Figure 1.3A: Number of Employees



Years of experience in the gemstone industry ranged from 4 to 30 years. Figure 1.4A reports that the respondents tended to have significant experiences in the gemstone industry as the majority of years in industry were 20 (13.3%) followed by 15 (11.1%), 8 (8.9%) and 10 (8.9%).

**Figure 1.4A: Years of Experience**



### **Critical Attributes in Gemstone Purchasing via Internet**

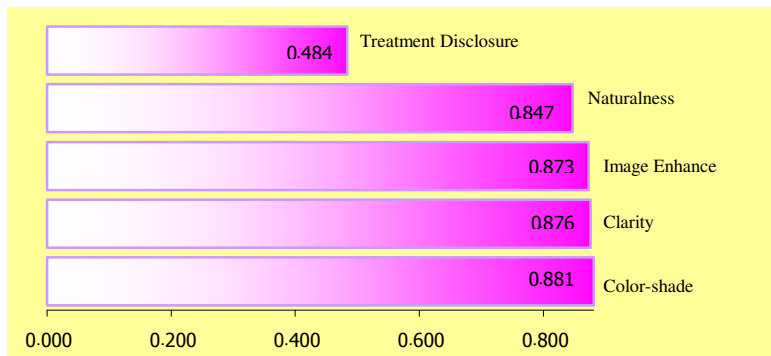
Several attributes were found associated with the categories under risk perception and trust of online gemstone buyers. These attributes were presented based on their relevant constructs as detailed under.

#### **Risk Perception**

Attributes that online gemstone buyers considered associated with risk perception when buying gemstone(s) online were grouped into factors/categories. The attributes in each category were ranked based on the level of their relevance (i.e. factor loading scores) from the most to the least criticality to the factor.

When considering aspects relating to concern about product information, gemstone buyers expressed the close degrees of attentions on the first top 3 attributes. Figure 1.5A shows that gemstone buyers regarded color-shade shown via image the most critical attributes (.881), followed by clarity shown via image (.876) and information on image enhance (.873), respectively. Naturalness shown via image came fourth with loading score of .847 followed by information on treatment disclosure with loading score of .484. Moreover, these attributes had a high internal consistency (coefficient alpha of .84) which indicated that they were the appropriate measure for concern about product information (Hair, Bush & Ortinau, 2000).

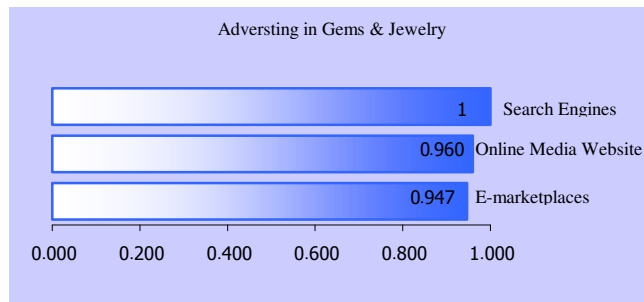
**Figure 1.5A: Attributes in Concern about Product Information**



Three marketing features emerged when examining type of Internet marketing strategy. To highlight key findings, only the top three attributes of each factor were displayed in Figures 1.6A1-1.6A3.

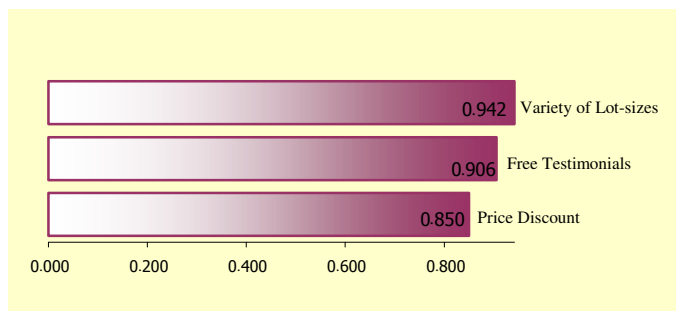
■ Promotion strategy (coefficient alpha of .93): gemstone buyers considered advertisement of organizations in gems & jewelry e-marketplaces the most critical promotion strategy (1.00). It is followed by posting organization’s icon (logo) in gems & jewelry online media Web site (.960), advertisement of organization in gems & jewelry search engines (.947), posting organization’s icon in gems & jewelry association Web site (.809), offering additional services such as customisation (.729), advertising the organization in gems & jewelry printed media (.704) and advertising the organization in gems & jewelry association (.505).

**Figure 1.6.A1: Attributes in Promotion Strategy (Top 3)**



■ Price and product availability (coefficient alpha of .93): buyers considered offering variety of lot-size the most critical strategy (-.942) followed by offering free testimonials (-.906), offering price discount (-.850), and variety of lot-type (-.820), respectively.

**Figure 1.6A2: Attributes in Price & Product Availability (Top 3)**





■ Convenient use of Web site (coefficient alpha of .84): buyers considered well functioning shopping cart the most critical strategy (.915) followed by quick download time (.885). The ease of navigation was not considered by gemstone buyers.

Figure 1.6A3: Attributes in Convenient Use of Web site (Top 3)

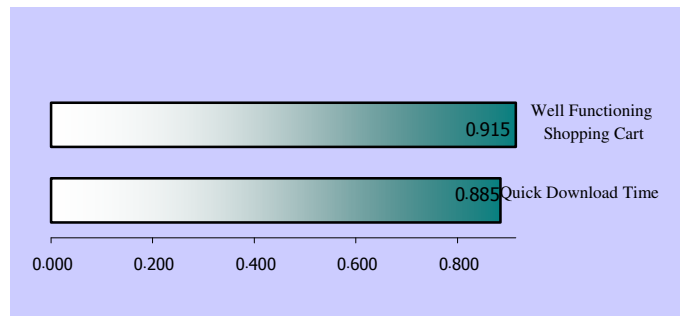
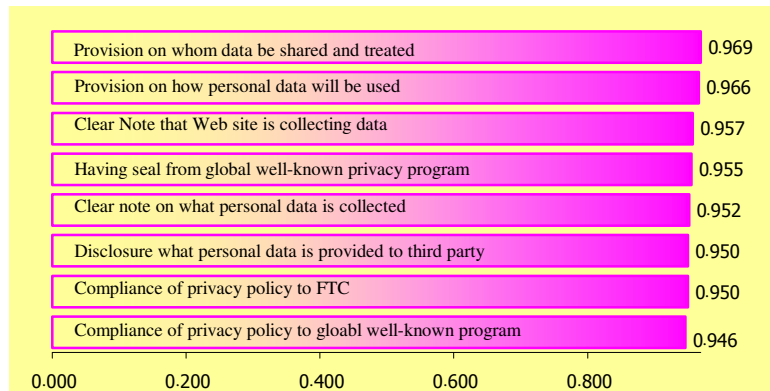


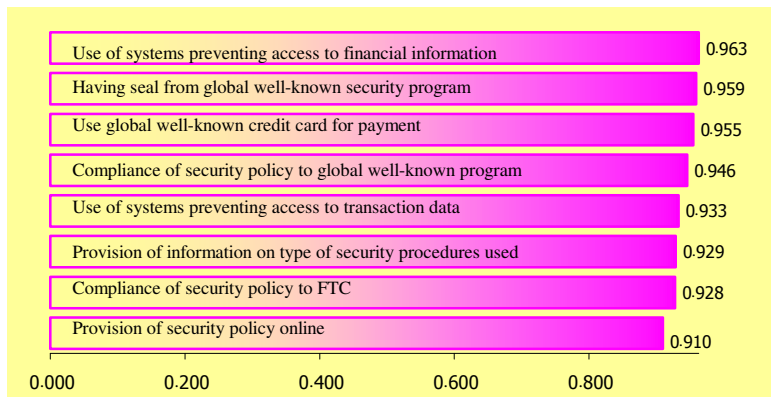
Figure 1.7A shows that attributes associated with buyers' concern about privacy practices of sellers. Gemstone buyers considered all predetermined choices (coefficient alpha of .98). Examples of these are provision of information on whom data be shared & treated the most critical practice (.969), followed by provision of information on how personal data will be used (.966), clear note that Web site is collecting personal data (.957), having seal of privacy practice from global well-known programs (.955), clear note on what personal data is collected (.952), disclosure of what personal data is provided to third-party (.950), compliance of privacy policy to Federal Trade Commission (FTC) (.950) and compliance of privacy policy to global well-known programs (.946).

Figure 1.7A Attributes in Category of Privacy Concern



The attributes related to buyers' concern about security practices of sellers were depicted in Figure 1.8A. Gemstone buyers considered all predetermined choices (coefficient alpha of .98). Examples of these are use of systems that preventing access to financial information both via offline & online the most critical practice (.963), having seal of security practice from well-known programs (.959), use of global well-known credit card provider in payment (.955), compliance of security practice to global well-known program (.946), use of systems that preventing transaction data access both via offline & online (.933), provision of clear information on type of security procedure used (.929), compliance of security practice to FTC (.928) and provision of written security policy online (.910).

**Figure 1.8A Attributes in Category of Security Concern**



### Trust

Similarly, attributes that gemstone buyers considered associated with the trust to buy gemstone(s) online were grouped into factors/categories. These attributes are categorized and ranked based on level of their relevance (i.e. factor loading scores) from the most to the least criticality to the factor.

Gemstone buyers also considered all attributes proposed to assess Internet fraud protection (coefficient alpha of .98). Gemstone buyers regarded impact of non-delivery fraud to be the most critical attribute (.994). This is followed by adherence of payment fraud protection policy to FTC (.986), impact of payment fraud to the trust to buy gemstone(s) online (.939), having guarantee of delivery (.918), use of global well-known payment institutions (.903), provision of written payment fraud protection policy online (.867), provision of written non-delivery fraud protection policy online (.866) and provision of information on how the payment data will be secured (.858), adherence of payment fraud protection policy to global well-known payment programs (.837), and existence of Internet fraud protection policy (.801). These findings signify the impact of Internet fraud tends to play a role in buyer perception. That is, buyers consider Internet fraud protection practices of sellers are important to their trust to purchase online. The ranking of these attributes (8 attributes) was presented in Figure 1.9A.

**Figure 1.9A: Attributes in Internet Fraud Protection**

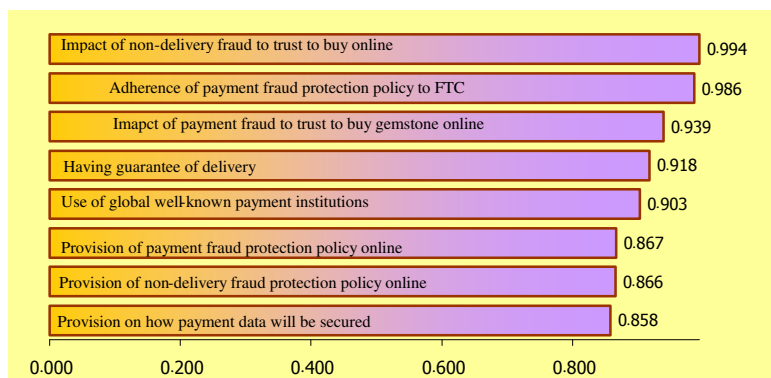


Figure 1.10A shows that attributes which helped provide assurance to buyers (coefficient alpha of .87). They considered offering return within inspection time the most critical attribute (-.881), followed by offering warranty/guarantee (-.827) and offering authentic testimonials with gemstone(s) sold (-.724), respectively. A shipping insurance on buyers' cost did not seem to provide assurance to gemstone buyers.

**Figure 1.10A: Attributes in Assurance**

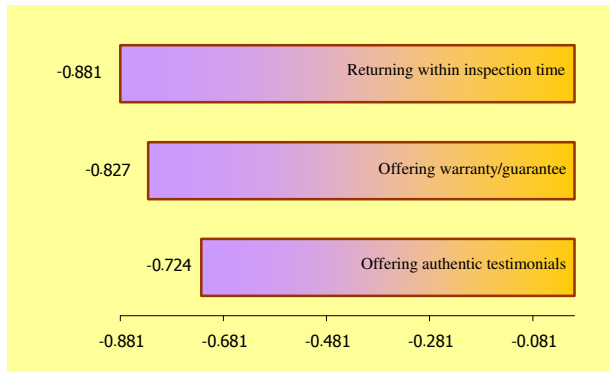
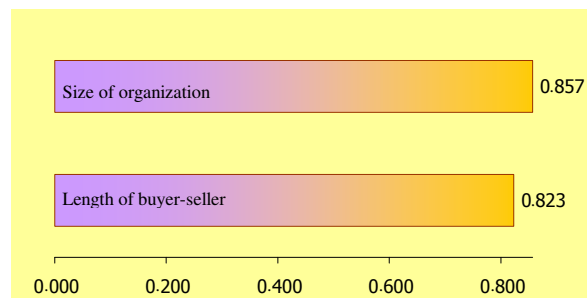


Figure 1.11A shows that gemstone buyers considered the size of organisation the most critical attribute (.857) followed by length of buyer-seller relationship (.823) when assessing perceived reputation of seller. These attributes had a fair internal consistency (coefficient alpha of .62), however they remained a proper set to measure perceived reputation of sellers (Hair et al., 2000).

**Figure 1.11A: Attributes in Perceived Reputation**



## Discussion

The above findings provide significant insight on issues related to the risk perception and trust for both online gemstone buyers and sellers. Adopting the findings of this research can help in providing practical solutions on how to address these issues in gemstone trading online.

What come to the risk perception of gemstone buyers, the color-shade shown via image presented was considered the most critical attribute demonstrating *concern about gemstone information*. Such result tends to tune in with the instructions to assess value of gemstone(s) in practices where gemstone color is the most important attribute to determine the value of gemstone (GIA, 2001). That is, about 50-70% of

its value is justified by color (Weinburg, 2001). In addition to the maintenance, improvement on the quality of gemstone color-shade shown via images presented on the Web site is likely to be vital.

The successful gemstone and jewelry retailers tended to rely more on word-of-mouth than on paid-advertisement (Prost, 2005). However, in this study, advertising in gemstone and jewelry e-market places was considered the most critical promotional strategy. This implies the likely sources for gemstone buyers to search for sellers. In addition, such finding support the suggestion to advertise in Web sites that possible buyers will visit, for instance, gemstone and jewelry sites if you are gemstone and jewelry traders (Duncan, 2001a).

In terms of *type of Internet marketing strategy*, product availability: offering variety of gemstone lot-sizes appeared first in gemstone buyers' perception. This finding supports the findings from earlier studies. The survey of PricewaterhouseCoopers suggesting that after the close-up product images (44%), 39% of consumers were likely to purchase from sellers that provide product availability (Professional jeweler, 2001). Similarly, e-consumers prefer online sellers offering variety choices of products (Hargraves, 2000). Furthermore, gemstone buyers tend to prefer online sellers who provide well functioning shopping cart. This finding backs the finding that convenient use of shopping cart is backbone of sellers Web sites (Duncan, 2001b). Therefore, advertising organizations in gemstone and jewelry e-market places as well as offering variety of gemstone lot-size and providing well functioning shopping cart should be the recommended choices.

When considering *privacy concern*, compliance of privacy policy to FTC and having seal of privacy practice from one of the global well-known programs are not considered in the top three critical attributes. However, gemstone buyers are aware of them. Adopting seal of privacy practices from global well-known program is perceived positively in the minds of gemstone buyers. They similarly considered seal of security practices from global well-known programs. This finding implied the relevance of renting reputations (Wind & Mahajan, 2001) from global well-known security program. If not already using, online sellers should consider adopting the use of such security seals.

For *security concern*, a relationship between renting reputation (Wind & Mahajan, 2001) from financial institutions and security practices of online sellers was found. Use of security systems preventing access to financial data and the use of global well-known credit card providers for payment processing are high priority in gemstone buyers' mind. Online sellers using security systems or global well-known payment options are perceived more secure by gemstone buyers.

In terms of the trust, non-delivery fraud and payment fraud played a significant role in *Internet fraud protection*. This finding supports the earlier study that Internet fraud makes buyers wary of purchasing using the Internet ("Electronic Commerce and Development Report", 2001; Prost, 2005). Gemstone buyers are only aware of having guarantee of delivery and the use of global well-known payment providers for payment. Again, this finding is in line with previous studies suggesting that buyers' concerns on payment fraud of sellers can be alleviated by renting reputation from third-party organisations (Wind & Mahajan, 2001; Kimery & McCord, 2002). Using

global well-known payment providers for payment should be considered as an alternative to deal with buyers' concerns on Internet fraud.

Gemstone buyers also considered the size of organization and length of relationship when considering *perceived reputation* of seller. Such finding supports the findings from previous studies. Doney & Cannon (1997) suggested that the larger the size of seller organization, the higher the buyer's trust in organization. Dwyer, Schurr, & Oh (1987) and E. Anderson, Lodish, & Weitz (1989) suggested that the buyer's trust in sellers can increase with the length of relationship between buyer-seller. Buyers' consideration about length of relationship implies that they are likely to be the existing customers rather than new ones.

To provide assurance for online buyers, sellers should offer return within inspection period, warranty/guarantee of gemstone(s) sold and authentic testimonials. This finding supports the findings of Shimp & Bearden (1980) and Bearden & Shimp (1982) that the products warranty offered by seller is likely to help enhance buyers' trust in respects of its quality.

There are clear implications for gemstone buyers and sellers. The feedback provided to sellers should result in improving overall sellers' performance that helps reduce risk perception and hence enhance the trust in gemstone purchasing using the Internet. In other words, this report can help to provide a win-win solution for buyer-seller in the gemstone industry.

## **Conclusion**

The findings of this report help identify attributes (i.e. grouped into factors/categories) influencing the risk perceptions and trust of online gemstone buyers. The degree of relevance between associated attributes and the categories under risk perception and trust of online gemstone buyers are similarly revealed. The knowledge and understanding provided can be used to formulate recommendations to help alleviate risk perception and boost levels of gemstone trading online.

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## Exploratory Questionnaire

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# The Critical Attributes Associated with Perceived Risk and Trust in Online Gemstone Trading

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### Section I: Company Data

Please tell us a little about your company and yourself for classification purposes.

**1. Which of the following best describe your company type (X ONE BOX)?**

Gemstone Dealers	<input type="checkbox"/>	Jewellery Retailers	<input type="checkbox"/>
Gemstone and Jewellery Dealers	<input type="checkbox"/>	Other, please specify _____	<input type="checkbox"/>

**2. How many employees are there in your company?** Employees

**3. Which category best describes your method of buying (select as many as apply)?**

Visit gemstone exhibition	<input type="checkbox"/>	Visit to seller organisation	<input type="checkbox"/>
Use the Internet	<input type="checkbox"/>	Buy from travelling salesperson	<input type="checkbox"/>
Other, please specify _____	<input type="checkbox"/>		

**4. How long have you been in gemstone industry?** Years

**5. Is your company using the Internet for buying gemstones?**

*Yes, go to 6*

No, please provide brief reasons and thank you very much for your time  
\*\*END IF CHOOSE NO\*\*

	<input type="checkbox"/>

**6. In a typical month, how many times would you say your company uses the Internet for buying gemstones?** Times

**7. Which category represents the types of gemstones you buy using the Internet (select as many as apply)?**

Precious gemstones	<input type="checkbox"/>	Semi-precious gemstones	<input type="checkbox"/>
Other, please specify _____	<input type="checkbox"/>		

⇒



## Section II: Critical Attributes in Gemstone Purchasing via Internet

1. Following is a listing of various attributes in relation to PERCEIVED RISK gemstone traders considered when making decisions to buy gemstones using the Internet. According to your experiences, please use the scale provided to rate the criticality of each attribute (Select only ONE BOX).

Not at all an attribute (1)	Only somewhat of an attribute (2)	Generally an attribute (3)	Definitely an attribute (4)	A critical attribute (5)
--------------------------------	--------------------------------------	-------------------------------	--------------------------------	-----------------------------

### Concern about Product Information

1	2	3	4	5
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- 1) Information provided on the treatment disclosure of gemstones (e.g. heating, diffusion)
- 2) Naturalness of gemstone colour shown through the image presented
- 3) Information about gemstone origin
- 4) Distinction of gemstone colour-shade shown through the image presented
- 5) Information provided on the enhancement of gemstone image (e.g. colour enhanced)
- 6) Distinction of gemstone clarity shown through the image presented
- 7) Gemstone cutting-style shown through the image presented
- 8) Information about carat weight of gemstones
- 9) Other, please specify

### Type of Internet Marketing Strategy Used by Seller

#### a. Product Strategy

1	2	3	4	5
---	---	---	---	---

- 1) Variety of gemstones available
- 2) Variety of gemstone lot-sizes available (e.g. small lot, big lot)
- 3) Variety of gemstone lot-types available (e.g. calibration, loose, single)
- 4) Other, please specify

#### b. Price Strategy

1	2	3	4	5
---	---	---	---	---

- 1) Price which is cheaper than competitors
- 2) Price which is higher than competitors but focus on the superior quality and services
- 3) Price of customised service which is higher than competitors but focus on the guarantee
- 4) Other, please specify

Not at all an attribute (1)	Only somewhat of an attribute (2)	Generally an attribute (3)	Definitely an attribute (4)	A critical attribute (5)
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**c. Promotion Strategy**

- 1) Advertisement of organisation in general search engines (e.g. Yahoo.com)
- 2) Advertisement of organisation in gemstone & Jewelry search engines
- 3) Posting of organisation's icon link in Web sites of gemstone & jewelry on-line media
- 4) Posting of organisation's icon link in Web sites of gemstone & jewelry associations (e.g. TGJTA, AGTA)
- 5) Advertisement of organisation in gemstone & jewelry printed media (e.g. magazine)
- 6) Advertisement of organisation in gemstone & jewelry associations (e.g. directory)
- 7) Offering of price discount
- 8) Offering of free testimonials with some types of gemstone (e.g. single piece)
- 9) Offering of free gifts
- 10) Offering of a variety of shipping methods
- 11) Differentiation strategy by offering additional services (e.g. tailored cutting, repairing)
- 12) Differentiation strategy by offering free additional services such as live chat, e-mail
- 13) Public relation strategy such as providing gemstone & treatment library
- 14) Other, please specify

1	2	3	4	5
---	---	---	---	---

**d. Place Strategy and Convenient Use of Web Sites**

- 1) Ease of navigation
- 2) Ease/ simplicity of ordering process
- 3) Quick download time
- 4) Ease/simplicity of the use of shopping cart
- 5) Provision of associated Web links and page links
- 6) Provision of additional information (e.g. FAQs)
- 7) Sell through general E-marketplace (e.g. eBay )
- 8) Sell through gemstone & jewelry E-marketplaces (e.g. Jnet, Ganoksin)
- 9) Other, please specify

1	2	3	4	5
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Not at all an attribute (1)	Only somewhat of an attribute (2)	Generally an attribute (3)	Definitely an attribute (4)	A critical attribute (5)
--------------------------------	--------------------------------------	-------------------------------	--------------------------------	-----------------------------

**Privacy Concern**

- 1) Existence of organisation's privacy policy
- 2) Provision of written privacy policy online
- 3) Clear notification that Web site is collecting personal data
- 4) Clear information provided on what personal data will be collected
- 5) Information provided on how personal data will be used
- 6) Disclosure of what personal data is provided to third parties
- 7) Information provided on to whom the personal data collected might be shared and how they will treat data
- 8) Provision of choices on what personal data is collected (e.g. gender, product interests)
- 9) Provision of choices on uses of personal data collected
- 10) Information provided on how user behaviour is tracked (the use of cookies and other methods)
- 11) Information provided on how inaccuracies in personal information can be corrected
- 12) Compliance of privacy practices by the legislation of Federal Trade Commission (FTC)
- 13) Compliance of privacy practices by global well-known privacy program (e.g. TRUSTe)
- 14) Certification (seal) of privacy practices from global well-known privacy program (e.g. BBBOnline)
- 15) Other, please specify

1	2	3	4	5
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**Security Concern**

- 1) Existence of organisation's security policy
- 2) Provision of written security policy online
- 3) Clear information provided on the type of security procedures used
- 4) Use of systems that prevent unauthorised access to personal data
- 5) Use of systems that prevent unauthorised access to transaction data
- 6) Use of systems that prevent unauthorised access to financial data
- 7) Use of global well-known credit card companies for payment (e.g. Visa, MasterCard)
- 8) Use of global well-known online payment systems (e.g. PayPal, Escrow.com)
- 9) Use of encryption on financial transaction information such as credit card details

1	2	3	4	5
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Not at all an attribute (1)	Only somewhat of an attribute (2)	Generally an attribute (3)	Definitely an attribute (4)	A critical attribute (5)
--------------------------------	--------------------------------------	-------------------------------	--------------------------------	-----------------------------

**Security Concern (continued)**

1	2	3	4	5
---	---	---	---	---

- 10) Compliance of security practices by the legislation of Federal Trade Commission (FTC)
- 11) Compliance of security practices by global well-known security program (e.g. TRUSTe)
- 12) Certification (seal) of security practices from global well-known security program (e.g. BBBOnline)
- 13) Other, please specify

**2. Following is a listing of various attributes in relation to TRUST gemstone traders considered when making decisions to buy gemstones using the Internet. According to your experiences, please use the scale provided to rate the criticality of each attribute (Select only ONE BOX).**

Not at all an attribute (1)	Only somewhat of an attribute (2)	Generally an attribute (3)	Definitely an attribute (4)	A critical attribute (5)
--------------------------------	--------------------------------------	-------------------------------	--------------------------------	-----------------------------

**Internet Fraud Protection**

1	2	3	4	5
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- 1) Existence of organisation's Internet fraud protection policy
- 2) Provision of written payment fraud protection policy
- 3) Clear information provided on how the payment data will be secured
- 4) Adherence of payment fraud protection policy to global well-known payment fraud protection program (e.g. TRUSTe, PayPal)
- 5) Use of global well-known financial institutions for payment (e.g. Amex)
- 6) Impact of payment fraud to trust/confidence in purchasing gemstones via the Internet
- 7) Provision of written non-delivery fraud protection policy on-line
- 8) Clear information provided on guarantee of product delivery
- 9) Adherence of non-delivery fraud protection policy to Federal Trade Commission (FTC)
- 10) Impact of non-delivery fraud to trust/confidence in purchasing gemstones via the Internet
- 11) Other, please specify

Not at all an attribute (1)	Only somewhat of an attribute (2)	Generally an attribute (3)	Definitely an attribute (4)	A critical attribute (5)
--------------------------------	--------------------------------------	-------------------------------	--------------------------------	-----------------------------

**Assurance**

1	2	3	4	5
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- 1) Offering of warranty/guarantee of gemstones sold from organisation
- 2) Offering a return of gemstones within inspection period
- 3) Offering of authentic testimonials
- 4) Offering of shipping insurance on buyers' cost
- 5) Using global well-known shipping companies (e.g. FedEx, DHL)
- 6) Other, please specify

**Perceived Reputation**

**Note: please use the scale provided to rate the influence of following attributes on your trust to purchase gemstones using the Internet**

No influence at all (1)	Only somewhat of an influence (2)	Generally an influence (3)	Definitely an influence (4)	A strong influence (5)
----------------------------	--------------------------------------	-------------------------------	--------------------------------	---------------------------

1	2	3	4	5
---	---	---	---	---

- 1) Reputation of seller organisation
- 2) Size of seller organisation
- 3) Length of buyer-seller relationship
- 4) Expertise of salesperson
- 5) Friendliness of salesperson
- 6) Resemblance of salesperson (e.g. common interests and values with your organisation)
- 7) Other, please specify

**THANK YOU VERY MUCH FOR YOUR CO-OPERATION**

## Appendix 2:

### Research Questionnaire

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#### NOTICE EMAIL

Subject: Please help: Notice email for the doctoral survey and a report to return your favor

Dear respondent name or Purchasing Manager,

Survey Title:

"An Examination of Risk Perception and Trust as Determinants of Online Purchasing Behaviour: The Thai and U.S.A. Gemstone Industry"

**\*NO IDENTITY TRACEBACK\***

This is the follow-up survey of an exploratory study, Critical Attributes in Gemstone Purchasing via Internet, administered between April-May, 2004. The survey is designed to suit both subsequent and new participants, and persons who do not buy gemstones online.

As the manager/staff who know about the purchasing of gemstones in your company, I am extremely expecting your cooperation in this study. The results could provide a useful knowledge to improve your business.

This main survey will be conducted using the Web-based survey which recorded only the responses and the incoming time of your responses. Thus, it is completely anonymous. The link to the Web survey will be sent to this email address in the next two weeks.

To appreciate your co-operation, the report "Critical Attributes in Gemstone Purchasing via Internet: The U.S.A." is provided at the end of this survey.

We thank you in advance and extremely expecting for your participation. Please do not hesitate to contact me, if you or your members have any queries.

Leela Tiangsoongnern  
A Ph.D. Candidate - Murdoch Business School,  
Murdoch University, Western Australia,  
Tel: (618) 9368 5857  
Email: [30129425@student.murdoch.edu.au](mailto:30129425@student.murdoch.edu.au)

## INVITATION EMAIL

Subject: Please help: The doctoral survey and a report to return your favor

Dear respondent name or Purchasing Manager,

Survey Title:

"An Examination of Risk Perception and Trust as Determinants of Online Purchasing Behaviour: The Thai and U.S.A. Gemstone Industry"

\*NO IDENTITY TRACEBACK\*

This is the follow-up survey of an exploratory study - Critical Attributes in Gemstone Purchasing via Internet, administered between April-May, 2004. The survey is designed to suit both subsequent and new participants, and persons who do not buy gemstones online.

Please click the link below to begin the survey:

<http://www.it.murdoch.edu.au/~buygemsonline/>

If you have security concern about clicking the link provided, please type the link address to your browser instead.

TO APPRECIATE YOUR PARTICIPATION, RESULT FROM THE EXPLORATORY STUDY IS PROVIDED AT THE END OF THE SURVEY.

We thank you in advance and please respond by April 13, 2005

Yours sincerely,

Leela Tiangsoongnern  
A Ph.D. Candidate - Murdoch Business School,  
Murdoch University, Western Australia,  
Tel: (618) 9368 5857  
Email: [30129425@student.murdoch.edu.au](mailto:30129425@student.murdoch.edu.au)

NEXT>>

Start Questionnaire



## **An Examination of Perceived Risk and Trust as Determinants of Online Purchasing Behaviour: The USA Gemstone Industry**

I am a doctoral student at Murdoch University who administering the above thesis title to explore the relationships between perceived risk and trust, and online purchasing behaviour of gemstone buyers. The purposes of this study are to identify the factors and their intensities influencing the perceived risk and the trust of online gemstone buyers and how these related to the level of gemstone purchasing online. Results obtained from this study are expected to help provide new knowledge to the literature using evidence from this unusual examining area of gemstone purchasing. Moreover, findings are expected to help assist buyers in getting increased confidence to purchase gemstones online, provide sellers with alternative strategies to deal with sales management, and provide the gemstone industry with alternatives ways to increase the market size of gemstones purchasing online.

If you are willing to participate in this study, please complete the electronic questionnaire below. Participants can withdraw their consent at any time. All information given during the survey is confidential and no names or other information which might identify participants will be used in any publications associated with this study.

Should you have any queries or concerns, please feel free to contact me at [30129425@student.murdoch.edu.au](mailto:30129425@student.murdoch.edu.au). I am happy to discuss with you any concerns you may have on how this study is conducted.

**Click the “next” button below to get started.**

NEXT>>



## Questionnaire

# An Examination of Perceived Risk and Trust as Determinants of Online Purchasing Behaviour

### Section I: Company Data

Please tell us a little about your company and yourself for classification purposes.

**1. Which of the following best describe your company type?**

- Gemstone Dealers  Jewelry Retailers   
 Gemstone and Jewelry Dealers  Other, please specify

**2. How many employees are there in your company?**

- 1-5  6-10  11-15  16-20  21-25  26-30  >30

**3. Which category describes your method of buying?**

- Visit gemstone exhibition  Buy from Seller's Web sites   
 Visit to seller organization  Buy from e-marketplaces e.g., eBay   
 Call salesperson  Buy from gems & jewelry e-marketplaces e.g., Jnet   
 Buy from travelling salesperson  Other, please specify

**4. How long have you been in gemstone industry?**  Years

**4.1 Which category represents the highest level of education you have attained?**

- Some high school  High school graduate  Some college  College graduate  Post graduate

**5. Which category represents the types of gemstone(s) you buy using the Internet?**

- Ruby  Sapphire  Emerald  Amethyst  Topaz  Moonstone   
 Bead  Quartz  Other, please specify \_\_\_\_\_

**6. Which category represents the gemstone lot-types you buy using the Internet?**

- Loose stones  Single stones  Calibrated stones  Other, please specify \_\_\_\_\_

**6.1 Which category represents the qualities of gemstones you buy using the Internet?**

- High  Medium-high  Medium-low  Low   
 Zero  One  Two  Three  Four  Five   
 Six  Seven  Other, please specify \_\_\_\_\_

**7. In a typical month, how many times would you say your company buys gemstones online?**

---

## Section II: Critical Attributes in Gemstone Purchasing via Internet

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### Perceived Risk

1. The following statements refer to attributes in relation to PERCEIVED RISK that gemstone traders considered when making decisions to buy gemstone(s) using the Internet. Please select the number that best describes your feeling about each statement. If you feel that you lack of enough experience in that or you never concern about that, please select 'not applicable'.

#### Concern about Product Information

I tend to be concerned about

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Not Applicable
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- 1) Treatment disclosure e.g. heating, diffusion
- 2) Naturalness shown through gemstone images
- 3) Origin of gemstone(s)
- 4) Color-shade shown through gemstone images
- 5) Disclosure of color enhancement (if any)
- 6) Clarity shown through gemstone images
- 7) Cutting style of gemstone(s)

#### Type of Internet Marketing Strategy Used by Seller

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Not Applicable
-------------------	----------	---------------------------	-------	----------------	----------------

- 1) Gemstone & jewelry search engines help me to find sellers
- 2) I rarely search for sellers from Web sites of gemstone & jewelry online media
- 3) I look for sellers from Web sites of gemstone & jewelry associations
- 4) I usually look for sellers from gemstone & jewelry magazines
- 5) I think printed publications of gemstone & jewelry associations are the first source to find sellers
- 6) I never buy online from sellers in general e-marketplaces e.g. eBay
- 7) I buy online from sellers in gemstone & jewelry e-marketplaces e.g. Polygon, Jnet
- 8) I tend to buy from sellers offering price discount
- 9) I prefer to buy from sellers offering gemstone(s) in variety of lot-sizes e.g. small, big lots
- 10) Variety of lot-types e.g. loose, calibrated influences my decision
- 11) Ease of Web site navigation is not important to my decision
- 12) I am concerned about download time of Web site

13) I am not concerned about easy use of shopping cart

**Privacy Concern**

I tend to be concerned about

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Not Applicable
-------------------	----------	---------------------------	-------	----------------	----------------

- 1) Availability of written privacy policy on seller's Web site
- 2) Collection of my personal information on Web sites
- 3) Type of my personal information that will be collected
- 4) Not knowing how my personal information will be used
- 5) Disclosure of my personal information collected to third-parties
- 6) Seller not having a choice on what personal information is collected
- 7) Not knowing if my behavior is tracked and by what methods
- 8) Not knowing how to correct inaccuracies of my personal information
- 9) Sellers' compliance of privacy practices by Federal Trade Commission (FTC)
- 10) Sellers' compliance of privacy practices by global well-known privacy program e.g. Truste, BBBOnLine
- 11) Seller not having a seal of privacy practices from global well-known privacy programs

**Security Concern**

I tend to be concerned about

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Not Applicable
-------------------	----------	---------------------------	-------	----------------	----------------

- 1) Availability of written security policy on seller's Web site
- 2) Seller not using systems that prevent unauthorized access to my personal information
- 3) Seller not using systems that prevent unauthorized access to my transaction information
- 4) Seller not using systems that prevent unauthorized access to my financial information
- 5) Seller not using global well-known credit card companies for payment e.g. Visa, MasterCard
- 6) Seller not using global well-known online payment systems e.g. PayPal
- 7) Seller not using encryption on financial transaction e.g. credit card details
- 8) Sellers' compliance of security practices by Federal Trade Commission (FTC)
- 9) Sellers' compliance of security practices by global well-known security program e.g. TRUSTe, BBBOnLine
- 10) Seller not having a seal of security practices from global well-known security programs

**2. Considering all attributes/issues regarding the PERCEIVED RISK of buying gemstone(s) using the Internet.**

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Not Applicable
-------------------	----------	---------------------------	-------	----------------	----------------

- 1) I feel that buying gemstone(s) using the Internet is risky
- 2) I feel that it is less risky to buy gemstone(s) using the Internet today
- 3) Buying gemstone(s) using the Internet is safe

**Trust**

**3. The following statements refer to attributes in relation to TRUST gemstone traders considered when making decisions to buy gemstone(s) using the Internet. Please select the number that best describes your feeling about each statement. If you feel that you lack of enough experience in that or you never concern about that, please select “not applicable”.**

**Internet Fraud Protection**

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Not Applicable
-------------------	----------	---------------------------	-------	----------------	----------------

I tend to consider about

- 1) Availability of written payment fraud protection policy on seller’s Web site
- 2) Sellers’ adherence of payment fraud protection practices to global well-known program e.g. TRUSTe
- 3) Seller not using global well-known financial institutions for payment e.g. Amex
- 4) Impact of payment fraud on my company
- 5) Availability of written non-delivery fraud protection policy on seller’s Web site
- 6) Seller not having guarantee of product delivery
- 7) Sellers’ adherence of non-delivery fraud protection practices to Federal Trade Commission (FTC)
- 8) Impact of non-delivery fraud on my company

### Perceived Reputation

- 1) I prefer to buy from sellers that have good reputation
- 2) Size of online seller organization influences my buying decision
- 3) I usually don't buy online from new contacts
- 4) Knowledge/expertise of salesperson has nothing to do with my decisions to buy gemstone(s) online

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Not Applicable
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### Assurance

- 1) I tend to buy from sellers offering warranty/guarantee for gemstone(s)
- 2) Offering return of gemstone(s) within inspection period influences my decision to buy gemstone(s) online
- 3) I am concerned about not having authentic testimonials with gemstone(s)

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Not Applicable
-------------------	----------	---------------------------	-------	----------------	----------------

### 4. Considering all attributes/issues regarding the **TRUST** on buying gemstone(s) using the Internet.

- 1) I feel confident to buy gemstone(s) using the Internet
- 2) I feel wary to buy gemstone(s) using the Internet
- 3) I feel more confident to buy gemstone(s) using the Internet today
- 4) To date, buying gemstone using the Internet tends to be reliable

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Not Applicable
-------------------	----------	---------------------------	-------	----------------	----------------

THANK YOU VERY MUCH FOR YOUR CO-OPERATAION



## Appendix 3: Measures and Items Used

Table 3.1A Measures and Items

Measure and Items	No. of Items	Reference	Reliability	Validity	Original Items	Scale used
<b>Perceived Risk</b> 1) I feel that buying gemstone(s) using the Internet is risky 2) I feel that it is less risky to buy gemstone(s) using the Internet today 3) Buying gemstone(s) using the Internet is safe (reverse coded)	3	Adapted from Miyazaki & Fernandez (2001)	0.91	Multiple regression, $r = -.44$ , $p < .05$	1) In general, I feel that purchasing products or services over the Internet is risky 2) I typically feel comfortable using the Internet to purchase goods or services (reverse coded) 3) Purchasing things over the Internet is a safe thing to do	Three seven-point Likert-Scale anchored with Strongly Disagree to Strongly Agree
<b>Concern about Product Information</b> I tend to be concerned about 1) Treatment disclosure 2) Naturalness shown through gemstone images 3) Origin of gemstone 4) Color-shade shown through gemstone images 5) Disclosure of color enhancement (if any) 6) Clarity shown through gemstone images 7) Cutting style of gemstone(s)	7	Adapted from Coloredstone Annual Survey 2004 (Prost, 2005) and AGL (2002)	Not reported	Percentage of responses	What is the customer's biggest concern about buying colored stones? - 18% the gem is good quality (e.g. color, clarity, cutting) - 12% the gem is properly identified - 10% treatments have been disclosed	Select one

Measure and Items	No. of Items	Reference	Reliability	Validity	Original Items	Scale used
<p><b>Type of Internet Marketing Strategy Used</b></p> <p>Promotion Strategy</p> <ol style="list-style-type: none"> <li>1) Gemstone &amp; jewelry search engines help me to find sellers</li> <li>2) I rarely search for sellers from Web sites of gemstone &amp; jewelry online media</li> <li>3) I look for sellers from Web sites of gemstone &amp; jewelry associations</li> <li>4) I usually look for sellers from gemstone &amp; jewelry magazines</li> <li>5) I think printed publications of gemstone &amp; jewelry associations are the first source to find sellers</li> </ol> <p>Place Strategy</p> <ol style="list-style-type: none"> <li>6) I never buy online from sellers in general e-marketplaces e.g., eBay</li> <li>7) I buy online from sellers in gemstone &amp; jewelry e-marketplaces e.g., Polygon, Jnet</li> </ol>	13	<p>Adapted from <i>JCOC Consumers Predictions for 2002</i></p> <p>Adapted from <i>JCOC Consumers Predictions for 2002</i></p>	<p>Not reported</p> <p>Not reported</p>	<p>Percentage of responses</p> <p>Percentage of responses</p>	<p>In general how do you decide what fine jewelry to buy (select all that apply)?</p> <ul style="list-style-type: none"> <li>- 28% look at print ads in magazines</li> <li>- 28% look at print ads in newspaper</li> <li>- 37% search the Internet</li> </ul> <p>For myself I will most likely shop for fine jewelry this year at the following store?</p> <ul style="list-style-type: none"> <li>- 7% Internet jewelry Websites</li> </ul>	<p>Select all that apply</p> <p>Select only one</p>



<p>8) Ease of Web site navigation is not important to my decision  9) I am concerned about download time of Web site  10) I am not concerned about easy use of shopping cart</p>		<p>Adapted from Belanger, Hiller, &amp; Smith (2002)</p>	<p>0.72</p>	<p>Pair comparison t-test</p>	<p>-This web site was easy to use  -This web site had helpful pictures and graphics  -This web site provided completed information  - I would give this web site an excellent rating</p>	<p>Seven-point Likert-Scale anchored with Strongly Disagree to Strongly Agree</p>
<p>Product Strategy  11) I prefer to buy from sellers offering gemstone(s) in variety of lot-sizes e.g., small, big lots  12) Variety of lot-types e.g., loose, calibrated influences my decision</p>		<p>New scale developed from the issue suggested by G. Gao (2005): offering variety choices of products is related with increased sales</p>				
<p>Price Strategy  13) I tend to buy from sellers offering price discount</p>		<p>Adapted from <i>JCOC Consumers Predictions for 2002</i></p>	<p>Not reported</p>	<p>Percentage of response</p>	<p>In general, which incentives would make you spend more on fine jewelry this year?  - 37% discounted coupon  - 55% discounted at the store  - 38% discounted purchased with purchase</p>	<p>Select all that apply</p>

Measure and Items	No. of Items	Reference	Reliability	Validity	Original Items	Scale used
<b>Privacy Concern</b> I tend to be concerned about	11	Miyazaki & Fernandez (2000)	Not reported	Percentage of Websites that contains investigating items	List of items regarding privacy concerns - No policy statement about the issue	Stating (1) or not stating (0)
1) Availability of written privacy policy on seller's Web site  2) Collection of my personal information on Web sites 3) Type of my personal information that will be collected 4) Not knowing how my personal information will be used					List of Items regarding collection of personal information - No policy statement about the issue - Does not collect any information	
5) Disclosure of my personal information collected to third-parties 6) Not knowing if my behaviour is tracked and by what methods		Miyazaki & Fernandez (2001)	Not reported	Percentage of total responses	What concern do you have about making purchases over the Internet? -Sharing personal information to other companies -Tracking of shopping habits, purchases, etc	

7) Seller not having a choice on what personal info is collected 8) Not knowing how to correct inaccuracies of my personal info		New scale Developed from FTC's privacy principles: choice, and access to info collected (FTC, 2000)				Five-point Likert scale anchored with Strongly Disagree to Strongly Agree as used by (Pires, Stanton, & Eckford, 2004) with NA choice as used by (Inma, 2002)
9) Sellers' compliance of privacy practices by Federal Trade Commission (FTC)		New scale developed from the issue suggested by Erbschloe & Vacca (2001)				
10) Sellers' compliance of privacy practices by global well-known privacy program e.g., TRUSTe, BBONLine		New scale developed from the issue suggested by				
11) Seller not having a seal of privacy practices from global well-known privacy programs		Harris Interactive (2001) and Belanger et al. (2002)				

Measure and Items	No. of Items	Reference	Reliability	Validity	Original Items	Scale used
<b>Security Concern</b> I tend to be concerned about	10					
1) Availability of written security policy on seller's Web site		Miyazaki & Fernandez (2000)	Not reported	Percentage of Websites that contains investigating items	List of items regarding security concerns - No policy statement about the issue -Secure transactions -Online credit card security guarantees	Stating (1) or not stating (0)
2) Seller not using global well-known credit card companies for payment e.g. Visa, MasterCard						
3) Seller not using global well-known online payment systems e.g. PayPal						
4) Seller not using encryption on financial transaction e.g. credit card details						
5) Seller not using systems that prevent unauthorised access to my personal information		Miyazaki & Fernandez (2001)		Percentage of total responses	What concern do you have about making purchases over the Internet? -Unauthorised third-party access to personal info -Unauthorised third-party access to financial info	Stating (1) or not stating (0)
6) Seller not using systems that prevent unauthorised access to my transaction information						
7) Seller not using systems that prevent unauthorised access to my financial information						

8) Sellers' compliance of security practices by Federal Trade Commission (FTC)		New scale developed from the issue suggested by Erbschloe & Vacca (2001)				Five-point Likert scale anchored with Strongly Disagree to Strongly Agree as used by Pires, Stanton, & Eckford (2004) with NA choice as used by Inma (2002)
9) Sellers' compliance of security practices by global well-known security program e.g., TRUSTe, BBOnLine		New scale developed from the issue suggested by Miyazaki & Fernandez (2001)				
10) Seller not having a seal of security practices from global well-known security programs		and Palmer, Bailey, & Faraj (2000)				

Measure and Items	No. of Items	Reference	Reliability	Validity	Original Items	Scale used
<b>Trust</b> 1) I feel confident <sup>1</sup> to buy gemstone(s) using the Internet 2) I feel wary to buy gemstone(s) using the Internet (reverse coded) 3) I feel more confident to buy gemstone(s) using the Internet today 4) To date, buying gemstones online tends to be reliable <sup>2</sup> <sup>1</sup> replaced the original word “comfortable” <sup>2</sup> replaced the original word “risky”	4	Adapted from scale used by Miyazaki & Fernandez (2001) with the words about trust used by Chellappa (2003) and Kimery & McCord (2002)	0.91	Multiple regression, $r = -.44, p < .05$	1) In general, I feel that purchasing products or services over the Internet is risky 2) I typically feel comfortable using the Internet to purchase goods or services (reverse) 3) Purchasing things over the Internet is a safe thing to do	Three seven-point Likert-Scale anchored with Strongly Disagree to Strongly Agree
<b>Internet Fraud Protection</b> I tend to consider about	8					
1) Availability of written payment fraud protection policy on seller’s Web site		Adapted from Miyazaki & Fernandez (2000)	Not reported	Percentage of Websites that contains investigating items	List of items regarding payment fraud protection - No policy statement about the issue	Stating (1) or not stating (0)
2) Sellers’ adherence of payment fraud protection practices to global well-known program e.g., TRUSTe		New scale developed from the issue suggested by Kimery & McCord (2002)				
3) Seller not using global well-known financial institutions for payment e.g., Amex						

4) Impact of payment fraud on my company		New scale developed from suggestion of Baker (1999) and Cowcher (2001)				
5) Availability of written non-delivery fraud protection policy on seller's Web site		Adapted from Miyazaki & Fernandez (2000)	Not reported	Percentage of Websites that contains investigating items	List of items regarding payment fraud protection - No policy statement about the issue	Stating (1) or not stating (0)
6) Seller not having guarantee of product delivery		Adapted from Miyazaki & Fernandez (2001)	Not reported	Percentage of total responses	What concern do you have about making purchases over the Internet? - Potential for non-delivery of ordered goods	Stating (1) or not stating (0)
7) Sellers' adherence of non-delivery fraud protection practices to Federal Trade Commission (FTC)		New scale developed from the issue suggested by Erbschloe & Vacca (2001)				
8) Impact of non-delivery fraud on my company		New scale developed from suggestion of Baker (1999) and Cowcher (2001)				

Measure and Items	No. of Items	Reference	Reliability	Validity	Original Items	Scale used
<b>Perceived Reputation</b>	4					
1) I prefer to buy from sellers that have good reputation		Adapted from Jarvenpaa, Tractinsky, & Vitale (1999)	Not reported	CFA, SEM, $p < .05$	-This store has a good reputation -This store has a bad reputation in the market (reverse)	Seven-point anchored with (strongly disagree/strongly agree)
2) Size of online seller organization influences my buying decision		Adapted from scale used by Doney & Cannon (1997)	0.83	CFA, LISREL	-This supplier is a very large company -This supplier is the industry's biggest supplier of this product -This store is a small player in the market (reverse)	Seven-point anchored with (strongly disagree/strongly agree)
3) I usually don't buy online from new contacts		Adapted from scale used by Doney & Cannon (1997)	NA	CFA, LISREL	About how long has your company contacted with this supplier?	
4) Knowledge/expertise of salesperson has nothing to do with my decisions to buy gemstone(s) online		Adapted from scale used by Doney & Cannon (1997)	0.79	CFA, LISREL	-This salesperson is very knowledgeable -This salesperson knows his/her product line very well -This salesperson is not an expert (reverse)	



Measure and Items	No. of Items	Reference	Reliability	Validity	Original Items	Scale used
<b>Assurance</b> 1) I tend to buy from sellers offering warranty/guarantee for gemstone(s) 2) Offering return of gemstone(s) within inspection period influences my decision to buy gemstone(s) online 3) I am concerned about not having authentic testimonials with gemstone(s)	3	Adapted from <i>JCOC Consumers Predictions for 2002</i>	Not reported	Percentage of response	In general, which incentives would make you spend more on fine jewelry this year? -25% warranty or guarantees (include return with money refund) -33% certificate of authenticity	Select all that apply
<b>Online Purchasing Behaviour</b> 1) In a typical month, how many times would you say your company buys gemstone online?		Adapted from scale used by Miyazaki & Fernandez (2001)	NA		How many purchases you have made on the Internet during the past three years?	Ratio scale
<b>Biographical Data</b>	6	Adapted from Coloredstone Annual Survey 2004 (Prost, 2005) and <i>JCOC Consumers Predictions for 2002</i>	NA			Select one and multiple responses (buying methods)

Note:

*JCOC Consumers Predictions for 2002*: survey from 502 responses over the 12 day period from 30 June-11 July 2002

\* These scales were also used by Tiangsoongnern & Vuori (2004)

## Appendix 4: Results of Exploratory Factor Analysis

**Table 4.1A Results of Factor Analysis and Descriptive Statistics**

Items	Factors/Factor Loading															
	Prodcon	Productst	Promost	Pvinfo	Pvthird Party	Pvchoice	Sechird party	Secsystem	Secpay	Risk	Ifthird party	Ifinfo	If impact	Repu	Assur	Trust
Market2	.807															
Market1	.764															
Market6	.492															
Market3	.428															
Market10		.897														
Market9		.871														
Market2			.887													
Market3			.679													
Market6			.643													
Market1			.595													
Market11			.566													
Market7			.504													
Privacy2				.928												
Privacy3				.926												
Privacy4				.886												
Privacy1				.792												
Privacy10					.960											
Privacy11					.937											
Privacy9					.647											
Privacy8						.863										
Privacy6						.664										
Privacy7						.593										
Security9							.839									
Security8							.806									
Security10							.785									
Security2								.826								
Security3								.825								
Security4								.783								
Security6									.884							
Security5									.875							
Security7									.525							
Risk3										.949						
Risk1										.875						
Risk2										.865						

Factors/Factor Loading																
Items	Prodcon	Productst	Promost	Pvinfo	Pvthird Party	Pvchoice	Sechird party	Secsystem	Secpay	Risk	Ifthird party	Ifinfo	If impact	Repu	Assur	Trust
Fraud2											.860					
Fraud3											.794					
Fraud7											.761					
Fraud1												.821				
Fraud6												.771				
Fraud5												.755				
Fraud4													.901			
Fraud8													.750			
Repu2														.760		
Repu4														.645		
Repu1														.638		
Assur2															.824	
Assur1															.821	
Assur3															.479	
Trust1																.927
Trust3																.899
Trust2																.787
Trust4																.719
<b>No. Items</b>	3	2	6	4	3	3	3	3	3	3	3	3	2	3	3	4
<b>α</b>	0.43	0.84	0.75	.92	0.84	0.60	.84	0.76	0.70	0.87	0.73	0.67	0.60	0.43	0.41	0.85
<b>Mean</b>	4.29	3.62	3.32	4.34	4.42	3.74	4.51	4.64	4.24	2.58	4.41	4.48	4.05	4.02	4.44	2.70
<b>Standard Deviation</b>	0.48	0.77	0.49	0.56	0.58	0.66	0.51	0.41	0.63	0.92	0.46	0.48	0.68	0.51	0.46	0.97

Note:

Prodcon: Concern about product information

Pvinfo: Providing privacy policy

Sechirdpaty: Security practices from third parties

Risk: Perceived risk

Ifthirdparty: Internet fraud protection practices from third parties

Repu: Perceived reputation

Trust: Trust

Productst: Product strategy

Pvthirdparty: Privacy practices from third parties

Secsystem: Use of systems to protect personal, transactional, and financial information

Ifinfo: Providing Internet fraud protection policy

Assur: Assurance

Promost: Promotion strategy

Pvchoice: Providing choices regarding privacy information collected

Secpay: Security practices regarding payment

Ifimpact: Impact of Internet fraud on company

Online purchasing behaviour is a one-item measure

## Appendix 5: Measurement Properties of the Measures Used in the Study

Scale and items and loadings of latent constructs	Mean (std deviation)	Alpha Reliability
<b>Perceived Risk</b> (3 items) <i>AVE=0.80</i> I feel that buying gemstone(s) using the Internet is risky (0.75) I feel that it is less risky to buy gemstone(s) using the Internet today (0.78) Buying gemstone(s) using the Internet is safe (0.88)	2.57 (0.92)	0.91
<b>Concern about product information</b> (4 items) <i>AVE=0.47</i> concern about treatment disclosure (0.57) concern about naturalness (0.78) concern about origin (0.25) concern about clarity (0.29)	2.95(0.35)	0.43
<b>Type of Internet marketing strategy used by seller</b> (4 items) <i>AVE=0.51</i> Advertise on web sites of industry (0.77) Buy from general e-marketplaces (0.30) Buy from industry e-marketplaces (0.55) Ease of web site navigation (0.42)	3.18(0.85)	0.60
<b>Privacy Concern</b> (6 items) <i>AVE=0.89</i> collection of personal information (0.98) type of personal information collected (0.95) not knowing how personal information will be used (0.92) privacy information consists of availability of written privacy policy(0.79) not using systems access to personal information (0.91) not using systems access to transactional information (0.80)	4.45(0.48)	0.90
<b>Security Concern</b> (8 items) <i>AVE=0.92</i> compliance of security practices to well-known security programs (0.99) compliance of privacy practices to well-known privacy programs (0.99) not having seal of security practices from well-known security programs (0.99) compliance of privacy practices to well-known privacy programs (0.99) compliance of security practices by FTC (0.97) not using well-known credit card for payment (0.81) not using well-known online payment systems (0.80) compliance of privacy practices by FTC (0.80)	4.43(0.47)	0.88
<b>Internet Fraud-Protection</b> (4 items) <i>AVE=0.62</i> adherence of payment fraud protection practices to well-known program (0.80) not using well-known financial institutions (0.69) not having guarantee of product delivery (0.28) adherence of non-delivery fraud protection practices to FTC (0.69)	4.49(0.38)	0.65
<b>Trust</b> (4 items) <i>AVE=0.78</i> I feel confident to buy gemstones using the Internet (0.97) feel wary to buy gemstones using the Internet (0.69) I feel more confident to buy gemstones using the Internet (0.88) to date, buying gemstones online tends to be reliable (0.58).	2.70(0.97)	0.85
<b>Online purchasing behavior</b> (1 item)	0.88(0.93)	NA