The Impact of Web Design Dimensions on Consumer Trust at Different Price Ranges

by

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This thesis is dedicated to my husband Hani, I give my deepest expression of love and appreciation for the encouragement that you gave me throughout my journey.

To my son Mohammed, thank you for all the hugs and cuddles.

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ABSTRACT

As the use of e-commerce websites continues to increase, and with cybercrime on the rise, trust in a website has become an important issue. Hence, online stores invest time, money and effort in their website design; they must design websites in a manner that creates a strong bond of trust between consumer and retailer. This thesis examines the relationship between web design features and trust while taking into consideration the cost of the items. Web design features were considered and classified into 5 dimensions: (1) Graphic Design, (2) Structural Design (3) Content Design (4) Social Cue Design and (5) Perceived Security. Three methods were used to study this relationship. The first was an online survey of the features of websites that generated trust. The survey specifically addressed the issue of item cost. The second was an experimental manipulation of web design features and item cost. Participants were asked to directly contrast four different website designs so to determine which features matter more to trust. Item cost was an explicit part of the manipulation, comparing the same websites promoting an expensive and an inexpensive item. The final task was a structured interview. Generally, it was found that different features did affect trust. Features that fell within the category of graphic design dimension were the least important while features classified as content design dimension were the most important. However, features from every category mattered. The effect of item price was more ambiguous, but some features mattered more for inexpensive items (a convenient layout for fast product selection) whereas other features tended to be more important for expensive items (i.e., product information and detail). This study also discovered (through the interview primarily) that *interactivity* in a website is a relatively new feature that has an affect on consumer trust. The type of interactivity varied as a function of item cost.

LIST OF ABBREVIATIONS USED

ANOVA	Analysis of Variance
B2C	Business to Consumer
EXP	Expensive
HCI	Human-Computer Interaction
INEXP	Inexpensive
S.d.	Standard Deviation
MoTEC	Model of Trust in E-commerce Websites
WAI	Web Assessment Index
HTTPS	Hyper Text Transmission Protocol Secure
URL	Unified Resource Locater

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CHAPTER 1 INTRODUCTION

Web-based virtual stores exist for many businesses. A person entering a website, just like a person entering a physical store, has an immediate first impression. In order for a website to be profitable, those who visit must not only make purchases, but also return and make more purchases. However, with cybercrime on the rise, some online consumers are reluctant to provide their personal and financial information because of privacy and security concerns. If consumers do not trust that a website will deal appropriately with their information, they are not going to purchase from that website. Hence, online stores invest time, money and effort in their website design; they must design websites in a manner that creates a strong bond of trust between the consumer and retailer, and they must reinforce this bond to ensure repeat business and to garner recommendations, referrals and positive reviews. Websites must create a good first impression by implementing good design for this trusting relationship to prosper. For online sellers, it is critical, therefore, to convince potential consumers that they are trustworthy, and the main mechanism for this is the design of the website. The design of the website should save the consumer time and effort and consumers must know that they are gaining significantly more than they may lose when engaging in a transaction. Consumer losses can take the form of dispensing confidential information, deception or frustration.

Online shopping has flourished since the internet was opened for commercial use in 1991, and since technological innovations such as online banking and encryption emerged in 1994. Online shopping is an important source of income for businesses all around the world, and although online shopping led to more profits for businesses, it also led to new types of online crime. Online crime (Kirby, 2005) comes in the form of fraud, spam, phishing, harassment etc. The development of e-commerce is strongly affected by online crime; fraud is a major barrier that prevents users from providing the necessary information for online shopping. If users do not trust a website, they will not enter any personal information (i.e., credit card numbers, full names, shipping addresses), and thus, will not purchase anything.

Businesses must design websites in a manner that creates a strong bond of trust between consumer and the retailer. They must continually reaffirm that trust to ensure repeat business and recommendations.

Trust is a complex construct, and different disciplines define trust in different ways. This study will consider trust to be the act of providing a website with vulnerable information (e.g., credit card information, name, address, etc.). This is based on Hosmers'(1995) definition of trust, as the expectation that the e-commerce website will not take advantage of vulnerable buyer information, that it will keep its commitments and that it will negotiate honestly. In addition, one must be aware that that there are two dimensions to trust. The first is that the online store will act to prevent third parties from malicious access to sensitive information (i.e., secure transmission, storage, and use of sensitive information). The second is that the online store itself is a reputable business that offers fair value, and good service. These can be seen as the external and internal aspects of trust. These are often labeled as "hard trust" and "soft trust" (Bollier, 1996). They are not unrelated because both are based on the notion of a conscientious retailer.

The relationship between web design and consumer trust is not completely understood (Ou & Sia, 2010). For one, the definition of good web design differs from one person to another, for example: one person can think that a color combination on a website is beautiful while another would think that it is not. Indeed even the basic dimensions that would characterize good web design are difficult to define. However, according to Wang et al., (2005), there are four dimensions of design that affect consumer trust. Those dimensions are (1) *Graphic Design,* (2) *Structure Design* (3) *Content Design,* and (4) *Social Cue Design. Perceived Security* can be added as a fifth design dimension, based on studies by some researchers (see Chapter 2).

This thesis examines the relationship between trust and website design, according to the web design dimensions by Wang et al., (2005), and the perceived security as a fifth design dimension. This thesis also deals with the escalation of trust that is associated with greater commitment. It seems intuitive that greater expenditures require greater trust. In any endeavor, if potential losses are large (or larger than the online shopper can easily sustain), greater trust is required. However, in any transaction – regardless of amount – the release of personal information (name, contact, and credit card numbers) should

require a minimum level of trust (protection from external threats – "hard trust"). Thereafter, there may be an escalation of trust based on potential loss (protection from internal threats – "soft trust").

In the typical bricks-and-mortar store, it is the store front and the sales staff that establish that trust. In the online world, it is the website that must establish that trust. However, the situation is more complex for the online store because there is no face-to-face interaction, very little dialogue or negotiation, no physical presence, and the possibility of international connections. An online store can disappear overnight with very little in the way of a "paper trail". A bricks-and-mortar store cannot do so as easily: there is a paper trail and the employees and owner likely reside in the local area. Although a plethora of studies examined the effect of consumer trust on e-commerce websites, almost no studies consider the price of the items.

The purpose of this thesis is to examine and evaluate methodological knowledge on the relationship between consumer trust and some web design dimensions (graphic design, structure design, content design, social cue design, and perceived security) taking into consideration the price of items.

1.1 Problem statement

Which web design dimensions do online stores use to create an impression of trust when selling expensive or inexpensive items, and is there a relationship between these design dimensions to the cost of items (e.g., inexpensive and expensive products)? This study will add new knowledge by examining the impact of website design on consumer trust in e-commerce websites, with additional consideration for the price of items that the consumer intends to buy. This study will help to define the web design dimensions that have impact on the decision to purchase depending on price.

1.2 Research Goals

This research will examine the relationship of trust and web design dimensions according to Wang et al., (2005) while considering the cost of the items sold. The goals of the study are to:

a) Achieve a better understanding of how people perceive trust based on web design dimensions.

b) Provide more guidelines and suggestions to web designers or online store owners on web design dimensions that depend on the price of the items sold.

1.3 Research Process

To investigate the impact of web design dimensions on consumer trust in e-commerce websites, data will be collected using an online survey and a laboratory study. The laboratory study includes a direct comparison of the degree of trust inspired by specific web-design features (an experimental design) and a semi-structured interview about previous buying experiences and online purchasing habits. These different approaches were used because each has its own strengths and weaknesses. For example, experimental studies are limited to just a few participants (one would like more for generalizations) and specific research questions. Surveys allow one to obtain some breadth of data from a large number of people, but they are limited to the insights that the researcher could put into the design of the questions. Experiments that also includes interviews can provide explanations and insights that the research may have missed, but require far more time for both execution and analysis. A thorough explanation is provided in Chapter 3.

1.4 Organizational Overview

This thesis is organized into six Chapters. Chapter 2 introduces related background literature on the topics of web design and trust. Chapter 3 discusses the methodology that was used to collect data for the survey study and the experimental study. Chapters 4 and 5 discusses the survey study then the experimental study and interview consecutively. Finally, Chapter 6 provides a general conclusion that links the results across the two studies in Chapters 4 and 5, and outlines implications for future web design.

CHAPTER 2 RELATED LITERATURE

Trust has been studied in relation to many disciplines. Understanding trust was important even before the internet age. Currently, researchers are still trying to understand how people trust "off-line" and "online". In this Chapter we will examine trust from an online point of view. The web design dimensions used in the context of our study will be examined. Also, general models of trust will be visited and multiple definitions of trust will be examined.

2.1 Design Dimensions in previous literature

Website design has to be optimized to gain the trust of consumers. Businesses must ensure that the building and integrating of models to imply trust are an essential part of website design (Corbitt, Thanasankit & Yi, 2003). Online shoppers make educated decisions to distinguish between a trustworthy website and a disreputable website. Multiple studies examined the effects of web design on trust. In this section, we will focus on the most common dimensions of trust that were found in the literature. A study by Wang et al., (2005) is foundational for the thesis investigation that involved the four web design dimensions that affects trust.

According to Wang et al., (2005) there are four dimensions of design that affect consumer trust. Those dimensions are namely (1) ***Graphic Design*** (Kamari & Kamari, 2012; Beldad, Jong & Steehouder, 2010), (2) ***Structure Design*** (Kamari et al., 2012; Vila & Kuster, 2011; Hernández, Jiménez & Martín, 2009), (3) ***Content Design*** (Rahimnia & Hassanzadeh, 2013); Wu, Huang, Yen & Popova, 2012; Vila et al., 2011; Hernández, et al., 2009; Liao, Palvia & Lin, 2006), and (4) ***Social Cue Design*** (Huang & Benyoucef, 2013; Pentina, Zhang, Basmanova, 2013; Bente, Baptist & Leuschner, 2012). ***Perceived Security*** can be added as a fifth design dimension based on studies by Shi, Xu and Zhang (2011), Lauer and Deng (2007), Kim, Ferrin and Rao (2007).

2.1.1 Graphic Design

A website with good Graphic Design would include distinct graphics, appropriate colors and appropriate fonts. All of these provide the online shopper with legibility – the ability to see and read about the product and the policies.

Kamari et al., (2012) examined trust as key for online relationships. They created a model (look at Figure 2.3 for details) that helps businesses capture, sustain and contrast long term relationships with their buyers. The model took into consideration the usability of the website which falls under Graphic Design, as well as Structure Design.

Beldad et al., (2010) composed a literature review on the antecedents of trust, covering empirical studies on people's trust in and adoption of computer-mediated services. The results show that there are many antecedents in electronic services including those dimensions mentioned by Wang et al., 2005.

2.1.2 Structure Design

A website with good Structure Design will have consistent and easy-to-use navigation, will follow principles of website usability and will have accessible information (no broken links or missing pictures).

Vila et al., (2012) analyzed the effect of a well-designed website on five indicators including trust. The study was tested by building an expert-designed website and removing one of the five indicators. When focusing on the structure of the website, it was clear that easily navigated websites elicited more trust than websites that were not structured properly. Hernández et al., (2009) studied some features that determine website quality including navigation and content. This study used a Web Assessment Index (WAI) to determine the importance of each feature; it was evident that website navigation increases the probability of completing a transaction when navigating the website is comfortable and simple, which implies trusting that website.

2.1.3 Content Design

A website with good Content design would have complete formation, correct and necessary information (Rahimnia et al., 2013) and clearly disclosed customer relationship (privacy policies, legal issues, security etc.).

Rahimnia et al., (2013) studied the impact of website Content Design dimension on trust by examining the sales and marketing of a sample of 100 commercial online businesses in Iran. They concluded that website content has an effect on trust. Wu et al., (2012) studied the effect of online privacy policy on consumer trust by comparing the content of the online privacy statement, consumer trust and the effect of different cultural backgrounds. A total of 500 participants — 250 from Russia and 250 from Taiwan — participated in the survey. The findings indicated that there is a significant relationship between the content of the privacy policy and the increase of participants' willingness to provide personal information.

Hernandez et al., (2009) studied features that determine website quality including content, as mentioned in structure design. It was evident that website content must be accurate, informative, up-to-date and relevant to customers' requirements for a website to be considered high quality, which increases the probability of completing a transaction; hence trusting the website with vulnerable information. Consumers' perceptions about a website are primarily built on their interactions with this website (Ha & Stoel, 2009). Liao et al., (2006) examined consumers' perceived usefulness of websites and trust by studying the roles of habits in e-commerce websites. Results show that consumers' behavioral intentions about the continued use of an e-commerce website are determined by three key factors: perceived usefulness, trust, and habit.

2.1.4 Social Cue Design

A website with good Social Presence would include embedded social cues (i.e., Facebook or Twitter links) and live communication channels (live chat and assistance). (Huang et al., 2013) undertook a study on design features of social commerce websites (websites that include embedded social cues such as Facebook or Twitter buttons). The findings indicated that design features must include individual, conversation such as live communication channels, as well as community and commerce levels, those levels are part of a social ecommerce design model that they proposed. Another study by Pentina et al., (2013) studied the impact of embedded social media buttons on trust transfer in an American-Ukrainian sample. The study concluded that the positive effect of trust in Twitter on its users' patronage intentions was robust across their sample. Bente et al.,

(2012) conducted a study on reputation scores and seller photographs using a computer-mediated trust game. It was evident that the lack of information about reputation scores, and sellers' photos led to distrust. On the other hand, positive information increased trust and led to online transactions.

2.1.5 Perceived Privacy and Security Features Design

Finally, in addition to the design dimensions of Wang et al., (2005), a website should provide basic "hard trust" in the form of policy statements and technology seals. Shi, Xu, and Zhang, (2011) examined the reasons why indicators in web browsers fail to warn users about web frauds. They found that a well-designed security indicator will enhance the users' trust. Stronger privacy assurances and security features are known to increase the trust of an e-commerce website (Lauer et al., 2007). Lauer et al., based their study on an "offline" trust model by Mayer, Davis and Schoorman., (1995) (revisited by the authors Schoorma, Mayer and Davis., in 2007) and adapted it to an internet context. A sample of 269 participants contributed to this study and results clearly showed that trust is strongly linked with the perception of the company's respect to the customers' privacy. Kim et al., (2008) studied the role of trust, perceived risk and their antecedents. They used a Structural Equation Modeling technique on Internet consumer purchasing behavior data-collected via an online survey. They concluded that privacy concerns and security concerns have strong effects on consumer trust.

This study will build upon the five dimensions of design and test the impact of those design dimensions on consumer trust while considering the price of the item. For clarity, the price of items will be restricted to two levels: expensive or inexpensive.

2.2 WHAT IS ONLINE TRUST?

Trust is usually defined by researchers according to a particular context (Wang et al., 2005). The notion of trust has been studied in philosophy, psychology, management, marketing, management, human-computer interaction (HCI) and electronic commerce (Corritore, Kracher, & Wiedenbeck, 2003). However, even before the internet age, trust was difficult to define and measure. Generally, Rousseau, Sitkin, Burt & Camerer (1998)

commented that: *To date, we have had no universally accepted scholarly definition of trust. (p. 394.*

Many studies explored the definition of trust under the scope of e-commerce but it is still difficult to define. The reason people trust certain websites and not others is not clear. Nonetheless, it has been repeatedly stated that the lack of trust is one of the most significant barriers that prevents consumers from engaging in online transactions (Abbasi , Bigham & Sarencheh, 2011; Wang et al., 2005; Grabner-Krauter & Kaluscha, 2003). Hosmer (1995) defined trust as the expectation that the e-commerce website will not take advantage of vulnerable buyer information and that it will keep its commitments and negotiate honestly. According to Nah and Davis (2002), consumer trust in an e-commerce website is defined as: *The willingness of the consumer (trustor) to be vulnerable to the actions of an online party (trustee) by engaging in online relationship exchanges with the party.(p.105),*Trust is also defined by (Yuan & Sung, 2004) as: *[T]he subjective probability of a desirable action. (p.74).*

Although there is a lack of consistent principles by which to define trust (Wang et al., 2005) this study will define the concept of trust as the willingness to provide the website with vulnerable information (e.g., credit card information, name, address, etc.). This is based on the notions of Kamari et al., (2012), Rousseau et al., (1998), and Hosmer (1995) who defined trust as the expectation that the e-commerce website will not take advantage of vulnerable buyer information and that it will keep its commitments and negotiate honestly.

2.3 General Models of Trust

Customers' lack of trust in completing online transactions is cited as one of the major barriers to the growth of electronic commerce; this problem was researched by many over the years. Researchers approached this problem in many ways; some researchers focused on the HCI aspect while others focused on psychological aspects. Some researchers examined those together.
In this section, high lights of the most influential models of trust are briefly explained.

2.3.1 Egger's (MoTEC) Model

The Model of Trust in E-commerce websites (MoTEC) was developed by Egger (2000) to describe what design factors affect customers' trust in an online vendor. The goal of this model was to validate methodological knowledge in a way that would help HCI developers to design and evaluate trust-forming factors in e-commerce websites.

The MoTEC model was first developed in 1998; it then went through user tests and was refined in 2003 to include four main dimensions as shown in Figure 2.1(Egger, Florain, Luiten, & Producties 2003).

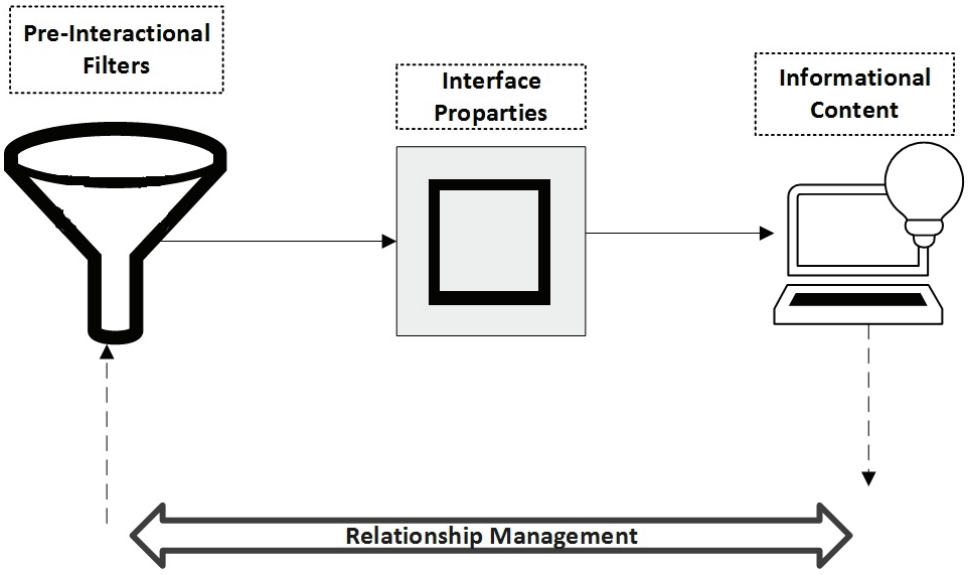


Figure 2.1 Eggers MoTEC model of trust - Egger (2000)

The *Pre-interactional Filters* are the factors that affect a consumer's trust online even before accessing an online website. The *Interface Properties* namely focus on graphic design and ease of use of the website. *Information Content* refers to the two types of information that are provided by the website; the first being information about the Company and the Product and (*competence*) the other being information about security and privacy (*risk*). The last dimension is *Relationship Management*; which refers to any interactions with the online vendor that occur over time. The interactions can occur pre-purchase and post-purchase.

The design dimensions under study in this thesis, relate to the *Interface Properties*, *Informational Content* and the *Relationship Management* of the MoTEC model.

2.3.2 McKnight's Web Trust Model

McKnight, Choudhury & Kacmar, (2002) developed a *Web Trust Model*. The model aimed to validate measures of trust for a multidisciplinary model in e-commerce. This is because previous research had inconsistent definitions of trust, making it hard to compare results across different studies. The relationships among the trust constructs were tested for internal validity, as relationships between the trust constructs and three other e-commerce constructs were also tested for external validity. Figure 2.2 showcases the four high-level constructs of trust:

1. *Disposition to trust*: is the tendency to depend on others despite a spectrum of situations. Two sub-constructs of disposition of trust were used by the authors; *Faith in humanity* (competence, benevolence, and integrity) attributes of general others; and *Trusting stance* which is a personal approach of dealing with others.

2. *Institution-based trust*: this kind of trust comes from sociology, and deals with the structure of a website that makes the online environment feel trustworthy.

3. *Trusting beliefs*: this construct is the perceptions of specific web vendor attributes. Those attributes are mainly competence, benevolence and integrity.

4. *Trusting intentions*: is that the truster is willing to depend on the online vendor. This construct can be divided to *Willingness to depend* which is making oneself vulnerable to the trustee, and *Subjective probability of depending* which is the perceived likelihood that one will depend on the vendor.

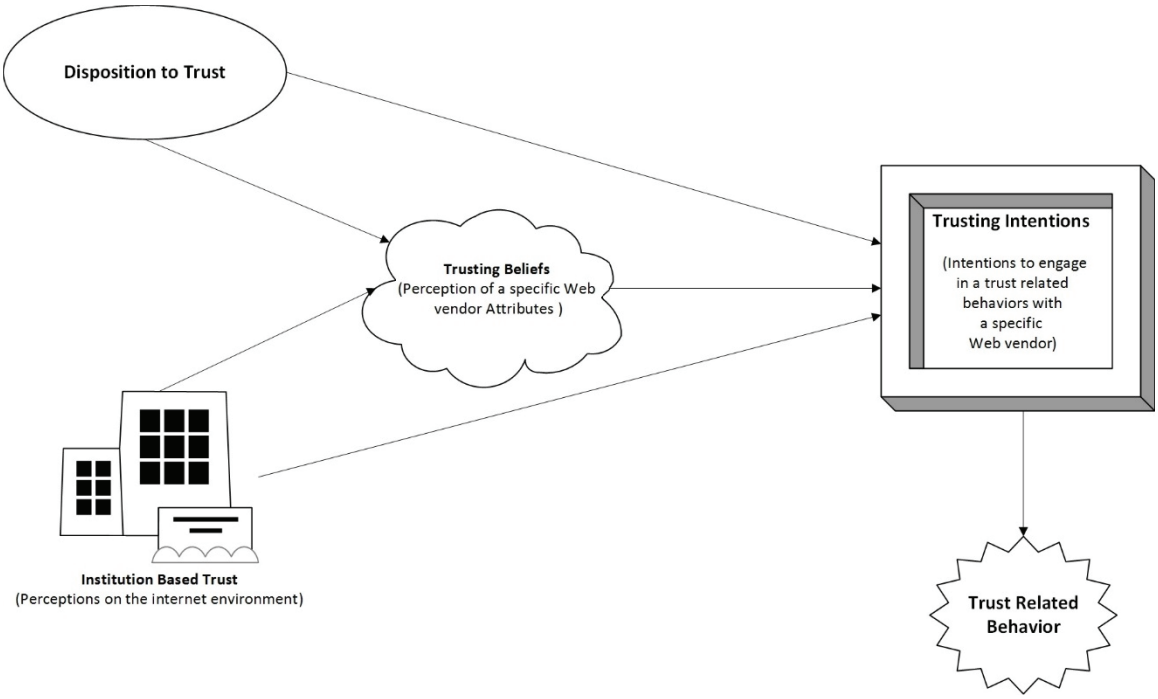


Figure 2.2 McKnight's Web Trust Model - McKnight et al., (2002)

The design dimensions under study in this thesis, relates to the four constructs of trust in the Web Trust Model.

2.3.3 Kamari et al., (2012) Proposed Model for Building Trust in B2C E-commerce Websites

Kamari et al., (2012) proposed one of the most recent online trust models to date. The model was created to investigate what makes a business-to-consumer (B2C) website effective. The overall model was built around trust being the key to the relationships in the model. The final goal of the model was to help businesses engage more with customers, sustain them and create long-term relationships with those customers. The model shown in Figure 2.3 includes four main sections: *Professionalism, consideration, reliability* and *technologic incentives.*

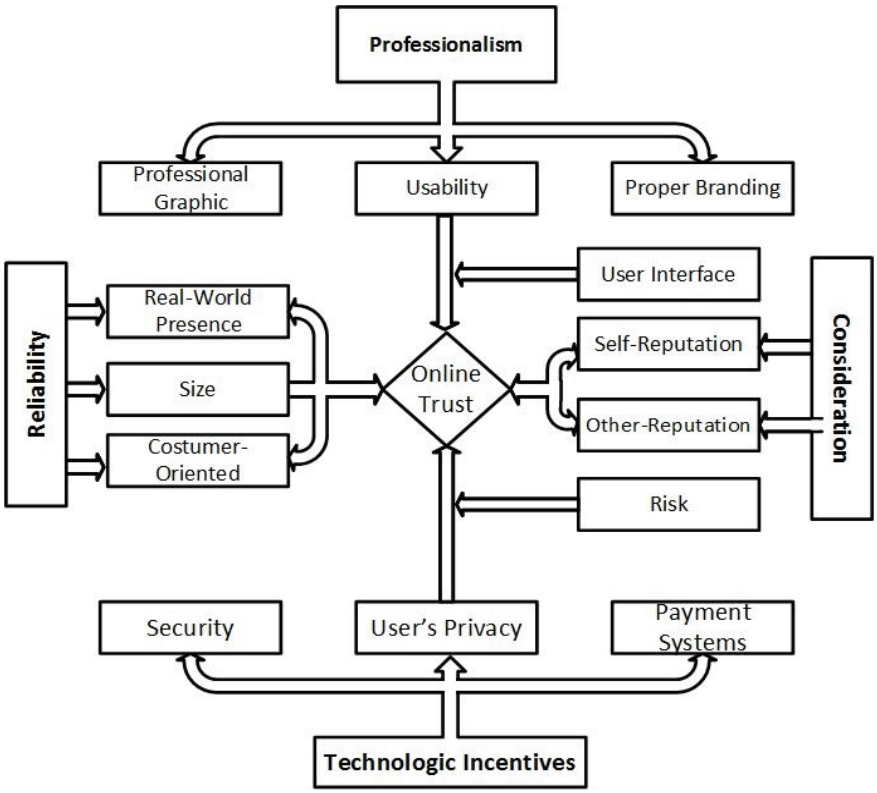


Figure 2.3 Kamri Et al., (2012) proposed model for building trust in B2C

Professionalism indicates that a website has professional graphics, good usability and proper branding. A professional website is a website that has good graphics and images and good usability. *Consideration,* includes user interface, self and other reputation and risk. This thesis takes into account the *"consideration"* section under the structure and the social cue design dimensions. *Reliability* is when the consumer thinks that a company has the ability and the motivation to deliver good quality items or services as expected to the consumer. In Kamari et al., (2012) study, a company can be considered reliable if it has real world presence, is big in size, and is costumer-oriented. *Technologic incentives* includes security, privacy issues and payment systems. According to Kamari et al., (2012) Technologic incentives are considered the drivers of trust. This section of trust can be considered hard trust (the notion of soft trust and hard trust is discussed in Section 2.4).

2.3.4 Wang et al., (2005)

Wang et al., (2005) did not develop a model per se. They completed a review of the literature on online trust and studied the concepts and elements and implications of trust. Wang et al., (2005) then developed a framework of trust that includes website design features that were collected from literature. The design features were divided to four dimensions, namely *Content design, structure design graphic design* and *social cue design.* These are the design dimensions that are used in the context of this thesis to examine the impact of trust on web design at different price ranges. The survey and laboratory study all included aspects that covered those dimensions of trust. Section 2.1 fully explains the dimensions and ties it in with other literature that takes those dimensions into consideration while examining trust online.

2.4 "HARD TRUST" AND "SOFT TRUST"

According to Bollier (1996) (as cited in Singh & Slegers 1997), trust can be distinguished to "hard trust" and "soft trust".

Hard trust (can also be termed as external trust) involves security issues such as authenticity, encryption, and the security of transactions. On the other hand, soft trust (can also be termed as internal trust) involves control, human psychology, brand loyalty, and user-friendliness.

> It is important to see that the problems of engendering trust are not simply technical in nature.... Trust is also a matter of making psychological, sociological, and institutional adjustments (Bollier, 1996, p 21).

Hard trust is easier to quantify because for example it is clear when a website is secure (i.e. the "S" in HTTPS). Soft trust is not easy to quantify because it mostly depends on users preference and different perceptions. Our focus in this thesis is on "soft trust" which involves the human psychology (the notion to trust) with web design dimensions. A more detailed explanation of the distinction of hard trust and soft trust is provided in CHAPTER 3.

2.5 Trust and Risk

Trust is about measuring the amount of risk in relation to the gain of the online transaction. What security threats does the online shopper face? More importantly, what does the typical online shopper *perceive* as a threat? Perceptions are likely more important than reality for the online shopper. The perception of risk to be overcome is the core of the issue of trust.

There are several threats. The first involves the issue of secure transmission of personal data. Because online stores act at a distance, the online shopper must feel that the personal information will be secure during transit (in fact, this is the whole reason that companies like FedEx and Purolator came into being). In web design, this feeling of security is achieved primarily through the use of HTTPS, encryption and payment systems (Kamari & Kamari, 2012) which can be defined as "hard trust". Secondly, the online shopper must feel that the same personal information will be secure once it arrives at the online store. This is an issue of the internal structures that the store has in place – the security of its website from malicious attack and the security of its filing system. For the online shopper, this is likely most obvious in the actual purchase transaction and associated statements. It is also most likely related to aspects of Structural Design in that a smooth website implies a competent business model. Thirdly, the online shopper must trust that the store will provide "fair value" for products purchased. For the online shopper, trust is most likely related to the presentation of products and their price (Graphic Design and Content Design). Trust is also related to the willingness of the store to disclose any known issues or limitations associated with the product. Another factor is the ability to gather more information about products if necessary (e.g., dialogue with store personnel, dialogue with other customers, other reviews of the store: Social Presence). Finally, the online shopper must feel that there is a mechanism for handling any disputes. This includes things like a return policy for repairs/replacement. Ideally, all of these issues are spelled out in the privacy policy of a store.

Finally, in all of this, one must remember that the lack of security may arise from either malicious intent or incompetence. Malicious intent refers to those online stores that are essentially scams, but also to those that intentionally fail to live up to their own stated

policies. Incompetence refers to those that simply complete transactions improperly despite the intention to do so correctly. The perception of incompetence may be due to a lack of knowledge, a lack of resources, or even a lack of willful effort in that direction. Note that in some cases (e.g., honoring a return policy), the distinction between malicious intent and incompetence may not be obvious (particularly to the online shopper) and in fact, may be a matter of opinion or perception.

2.6 Price in relation to trust

After a thorough review of literature, there were no studies found that examined the impact of website design on trust at different prices. This thesis will examine the dimensions of trust that were collected and studied by Wang et al., (2005) in addition to the "perceived security" dimension that was identified by Shi et al., (2011), Lauer et al., (2007), Kim et al., (2007). All the five dimensions will be studied in relation to two different price ranges. The survey and experiment used in this thesis will focus on the price of the items that are divided to expensive an inexpensive items. A further explanation of the methodology used is explained in the next Chapter.

CHAPTER 3 METHODOLOGY

In order to understand the impact of web design on consumer trust at different price ranges, two methods were used to collect data; a survey and a scenario based task experiment with a semi-structured interview. This Chapter defines the problem space, states the research questions and goals, and provides study details.

3.1 Problem Statement and research Goals

The relationship between web design dimensions and trust at different price ranges is not clear. This thesis will examine the relationship of trust and web design dimensions while taking into consideration the price of the items. This will help to achieve a better understanding of how people perceive trust in websites. This understanding will help us suggest how online stores can better design their websites to promote trust while considering the price of their products.

Simplistically, online shoppers should know that external trust depends primarily on one key feature of website design: the use of secure communication which may be evidenced by the security lock and the use of HTTPS in the URL. In principle, all online shoppers should require this as a minimum. Thereafter, internal trust will be related to website design. Generally, more trust should be associated with better design.

Previous literature in Chapter 2 (section 2.1) demonstrates the relationship between design dimensions and trust. In this context, the relationship between the design features and trust were examined to better understand the relationship between the dimensions and trust at different price ranges. This was done using an online survey. Also, a scenario based tasks study in section 3.4.2 of this Chapter manipulated some of those features to better understand the effects of the dimensions on trust at different price ranges. The relationships between design dimensions and trust as per previous literature are:

1- Better structural design should have a positive relationship with consumer trust. Better structural design consists of:
    a. Consistent navigation with in a website
    b. Easy to use navigation menus
    c. Good website usability
    d. Information accessibility

2- Better graphic design should have a positive relationship with consumer trust. Better graphic design consists of:
    a. Distinct graphics
    b. Appropriate colors and fonts
    c. Well-designed logos

3- Better content design should have a positive relationship with consumer trust. Better content design consists of:
    a. Correct product information
    b. Complete product information
    c. Full disclosure about the customer relationship (privacy policies, legal issues, security etc.)

4- The existence of a social presence should have a positive relationship with consumer trust. Social presence consists of:
    a. Embedded social cues
    b. Multiple communication channels

5- Better perceived security design should have a positive effect on consumer trust. Better perceived security design consists of:
    a. Security cues (secure transaction cues HTTPS)
    b. Existence of security and privacy policy

6- Each of these aspects of web design may be affected by price
    a. Hard trust: Security should not be affected by price
    b. Soft trust: will be affected by price and there should be a higher standard for more expensive items.

For the proper interpretation of the results, it is important to be clear about the distinction. Hard trust is related to the use of encryption, authenticity and secure transactions (Bollier, 1996) (such as HTTPS). HTTPS is a communication standard that may or may not be implemented in an online store. The Security Lock icon is a graphical representation of the level of security in that communication. A valid HTTPS connection indicates that communication between the shopper and the website is encrypted. This standard assures the shopper that the intended website is being accessed (protection from

man-in-the-middle attacks), and the standard provides a bidirectional encryption of data (protection from eavesdropping). Security and encryption are managed through the use of certificates, and these certificates are provided by third party "certification authorities". In fact, only the highest level of security (a green security lock icon) implies that that the certification authority has actually confirmed the website is owned or operated by a business that is legal within the stated jurisdiction. The key point is that the security is limited to the communication. HTTPS (and the associated Security Lock) is not an endorsement from the better business bureau, or other consumer groups, about the quality of the online store (the certification authority makes no assertion about the business practices of the website). That is, the presence of HTTPS (and the security lock) does not provide any guarantees about the security of credit card or personal information *once that information has been securely transmitted to the online store*, and it does not indicate that the store is trustworthy.

However, other tools are necessary to ensure that the online store itself is a trustworthy business. This is the assessment of "soft trust". Such an assessment can only be based on the properties of the website itself, and perhaps, the recommendations of the community. That assessment is the point of the current work. Note that the presence of HTTPS (and the security lock) is also somewhat indicative of a trustworthy online business because considerable effort is required by the business to setup HTTPS and to obtain certification. Hence, for the *knowledgeable* online shopper, the presence of HTTPS would be associated with "soft trust" and therefore other indices of "soft trust". However, for the *ignorant* online shopper, the situation is more complex. Some online shoppers may be blissfully unaware of the role of HTTPS. Alternatively, some may attach too much meaning to these features: For example, they may assume that these imply that the online store itself is trustworthy. Hence, the notions of "trust" and security may have different meanings to the online shopper.

3.2 Study Approaches

To better understand this relationship of web design dimension and trust with prices, we have used two different study approaches to collect data: a survey, a scenario based task experiment with a semi-structured interview (see Figure 3.1). The survey

helped us reach a large number of people to gain a general understanding of the relationship of design to price. The scenario based experiment enabled us to observe people actually perform tasks with real websites that was followed by a semi-structured interview to help us better understand people's perceptions of the relationship between trust, design and prices of items. While the survey was used to reach a high number of participants, we off-set the limitations of a survey by also performing a scenario based experiment with a semi-structured interview (McGrath, 1995). The experiment was designed to understand "why" participants chose certain answers in the survey. The interview asked about previous purchases to understand participants' behaviors and their assessment of trust when purchasing online. It also was done to shed the light on other design features that were not included in the Wang et al., (2005) study.

As mentioned by Rogers, Sharp and Preece; conducting a survey is helpful because a large number of people can provide their input. Individuals can respond at their convenience which makes their participation more likely. Also, a wide range of respondents are reached when using a survey (2011). A survey has some limitations as well; the expression of the participants' reactions are not captured, moreover participants may skip some questions which provides for missing data. To off-set the limitations of the survey, a controlled scenario based tasks experiment is conducted (see section 3.4.2).

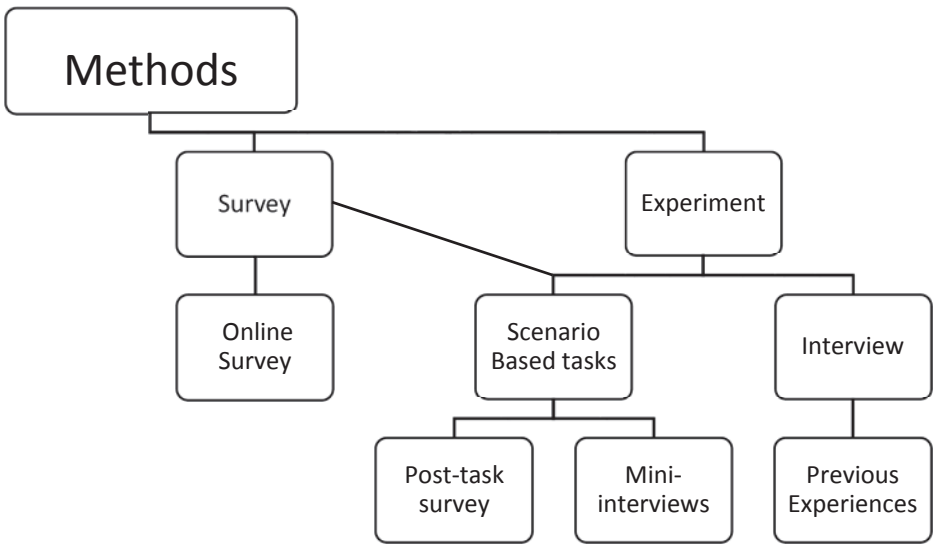


Figure 3.1 Study approaches

3.3 The Survey

The online survey was created and posted online using Opinio. Opinio is a web-based online survey system hosted and maintained by Dalhousie University. It was designed to take participants about 15 minutes to complete. The survey was approved by Dalhousie's Research Ethics Board Committee (see Appendix K). An initial form of the survey was pilot tested with nine lab-mates. Based on that data, the wording for some questions was changed before launching it for participants.

The survey contained a total of 19 main questions although, most of those questions contained several parts. As such, the survey actually contained 49 questions. The survey mostly used likert scales but there was also some ranking and open-ended questions. The survey was divided into three sections: demographics, shopping activities, and trust.

The first section gathered demographic data (e.g., gender, age, education, and residency). The second section collected data about the participant's online shopping activities. The third section collected data relevant to the issue of trust. In the third section, most questions were asked twice using two different contexts: One referred to the purchase of an expensive item (cost around $800.00) and the other referred to the purchase of an inexpensive item (cost around $30.00). This section was the longest and was the main part of the survey. It focused on hard and soft trust. Several questions (11, 12, 13, 14, 15, 18, and 19) addressed the issue of "soft trust" which is the primary focus of this research. We asked questions relating to importance of different web design dimensions in relation to price while a couple of questions (16 and 17) concerned the issue of "hard trust" which is considered secondary.

3.3.1.1 The Survey Study Process

The survey study was approved by Dalhousie's Research Ethics Board Committee (see Appendix K). Participants were recruited by e-mail announcements through Dalhousie university mailing lists (i.e., the computer science mailing lists). In the recruitment notice, participants were asked to log on to the survey website "Opinio", by using a link provided in that email. The email recruitment script is shown in Appendix A-

1. Also, some online resources (i.e., Twitter and Facebook) were used to encourage participation in the survey (See Appendix A-2). Finally, Dalhousie's Facebook page was also used to advertise for this survey.

An online consent process was used. Information about the study was introduced to the participants before the survey. The participants were informed that they can withdraw from the study at any time without penalty. Those individuals who did not consent to participate the study were automatically directed to a thank you note that ended their participation. The consent form is presented in Appendix B.

The results and discussion based on the collected survey data are all addressed in Chapter 4.

3.4 SCENARIO BASED TASKS EXPERIMENT AND INTERVIEW

This section describes the experimental design of the scenario based tasks to study the affect of website design on trust. The experiment was approved by Dalhousie's Research Ethics Board Committee (see Appendix L).This experiment was used to understand the relationship between the web design dimensions and consumer trust at different price levels. We used scenarios to observe and better understand participants' actions, and their rational towards different purchases. Different websites were designed to manipulate key design associated with trust. The website prototypes were created based on *The Principles of Beautiful Web Design* (Beaird, 2007) and by using "Axure"[1], a wire-framing, rapid prototyping, and specification software tool.

After the participants performed the scenario tasks, they participated in a semi-structured interview about their previous experiences with expensive and inexpensive online purchases. The interview was intended to learn about the behavior of the participants in their natural environment.

[1] For information about Axure visit: www.axure.com

3.4.1 Scenario Based Tasks Instruments

For this experiment, each participant visited a total of four websites to perform task scenarios. The scenarios were mock online-shopping tasks where participants were asked to "purchase" an item from a pair of websites that sells expensive items (i.e. Mobile phone), then asked to "purchase" an item from a pair of websites that sells inexpensive items (i.e. gift box). After performing the first task of buying an expensive item from the pair of websites, participants rated each website in this pair using a post-task questionnaire and participated in a mini-interview about the tasks they completed. After performing the second task of buying an inexpensive item from the pair of websites, they rated both websites using the same survey, and participated in a similar mini-interview. The post-task questionnaire and mini-interview are available in Appendix F. At the end of the study, they completed a semi-structured interview (Appendix H). The semi-structured interview asked participants about expensive and inexpensive online purchases that were completed before, this aimed to better understand their behavior in real circumstances (i.e. using their money and time to purchase online).

3.4.2 Design Dimensions for each proto-type website

Four websites were designed that varied specific parameters relevant to trust. These parameters fell within the categories of Content Design, Graphic Design, Structure Designs and Social Cue Design (see Table 3.1 and Table 3.2). Websites were designed in pairs that contrasted particular design elements. Websites had to look "reasonable" and yet had to provide the participant with a sufficient amount of differentiation for a later decision about trust. That is, it was not useful to simply make one website "poor" and another "good" on all features (modern online shoppers are more sophisticated than that). In addition, it was not feasible to change just one feature at a time because this would require an inordinate number of websites, participants, and research time (and money). Hence, paired websites differed on multiple features. It was intended that the Post-Task Questionnaire (see Appendix G) would identify those differences that mattered.

Table 3.1 presents the Websites A and B. These were coupled with the sale of mobile phones (as the expensive item) and mobile phone covers (as the inexpensive

item). The same design features were manipulated in the case of expensive and inexpensive items.

Table 3.1 Contrasting Features for Websites A and B

Dimension	Quality	Website A	Website B
Content	Strong	Complete product information when checking-out	Detailed product information
	Weak	Incomplete shipping information	Incomplete product information when checking out
Graphic	Strong	Good easy-to-read fonts	Clear images
			Attractive homepage display
	Weak	Logo of website is blurry	Poor color contrast
		Small product images	Poor unclear fonts
Structural	Strong	Consistent navigation bar	Easy navigation to product
		Multiple menus	
	Weak	Unnecessary navigation menus when checking out	Inconsistent navigation bar
			Inconsistent menus on product page
Social Cue	Strong		Facebook and Twitter buttons
	Weak	No social media presence	

Table 3.2 presents the Websites C and D. These were coupled with the sale of watches (as the expensive item) and gift boxes for watches (as the inexpensive item).

Table 3.2 Contrasting Features for Websites C and D

Dimension	Quality	Website C	Website D
Content	Strong	No information on shipping	Complete product information
	Weak	Incomplete product information	No confirmation of purchase
		Errors and broken links	
Graphic	Strong	Clear large images	Clear images when checking out
		Sharp clean display	Clean simple design
	Weak	Poor unclear fonts	Small images
			Pixilated images on homepage
Structural	Strong	Easy navigation to product	Consistent navigation bar
	Weak	Vague names on navigation menu	Lack of navigation menus
			Many clicks to checkout
Social Cue	Strong		Live chat option
	Weak	No social media presence	

To expose participants to four different websites, the participants who used sites A,B to purchase the "expensive" Mobile Phone, used websites C,D to buy the "inexpensive" Gift box. In contrast the participants who used sites A,B to purchase the "inexpensive" Mobile Phone Covers, used websites C,D to purchase the "expensive" watch. The following procedure includes some screenshots of each website (Figure 3.2 through Figure 3.5). A more through explanation of the experiment is included in procedures of the scenario based tasks in section 3.4.

An example: the post checkout should favour Site A over B, because Site A provided detailed information at checkout. Hence, if participants choose Site B before checkout, they should switch to Site A. Similarly, the post checkout should favour Site D over Site C, though the situation if more complex. Site D fails to confirm the purchase,

whereas Site C fails to provide shipping information, which might be a consideration. Details of the findings are included in Chapter 5.

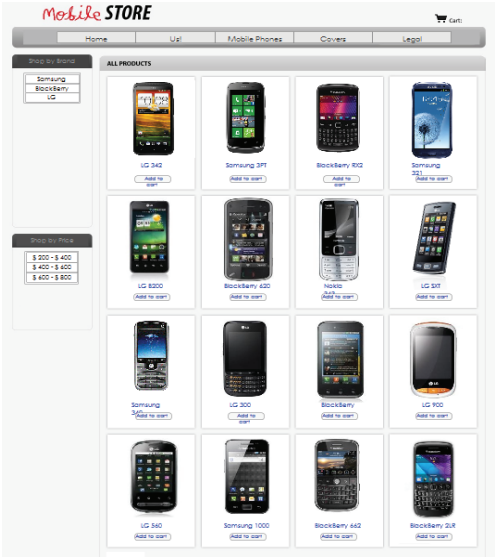
3.4.3 Scenarios and Websites

We designed the scenarios so that participants would be asked to compare the same product for sale on two different websites. Each website had different design characteristics. The participant was asked to make two purchases: one expensive (a watch or a new mobile phone) and inexpensive (a gift box for the watch or a mobile phone cover). The expensive items were about $800 and the inexpensive items were about $30. The scenarios and their corresponding websites are:

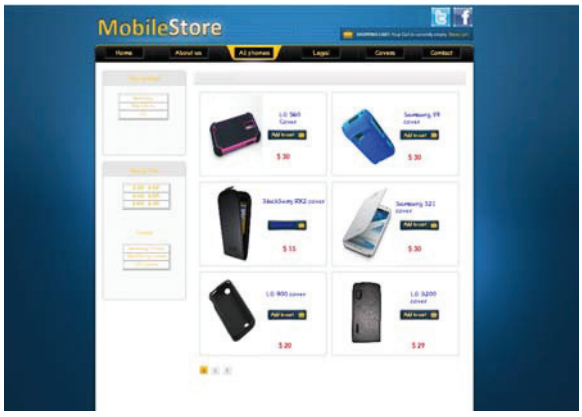
3.4.3.1 Scenario 1a

"You need to purchase a new mobile phone. You have found what you want and have narrowed your choices to two mobile phones that are available in these two different websites. Using the provided websites, decide which phone you will purchase (Phone 1, Phone 2)."

Figure 3.2 shows the two website designs for the mobile phones



Website 'A' Expensive



Website 'B' Expensive

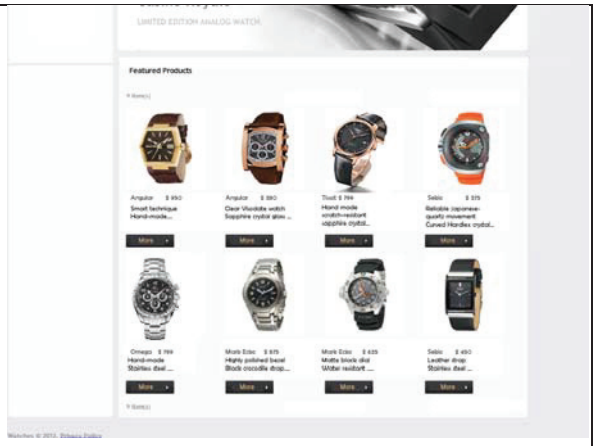
Figure 3.2 The websites used for the mobile phone scenario

3.4.3.2 Scenario 1b

"You need to purchase a new watch. You have found what you want and have narrowed your choices to two watches that are available in these two different websites. Using the provided websites, decide which watch you will purchase (Watch 1, Watch 2)."

Figure 3.3 shows the two website designs for the watches.

Website 'C' Expensive



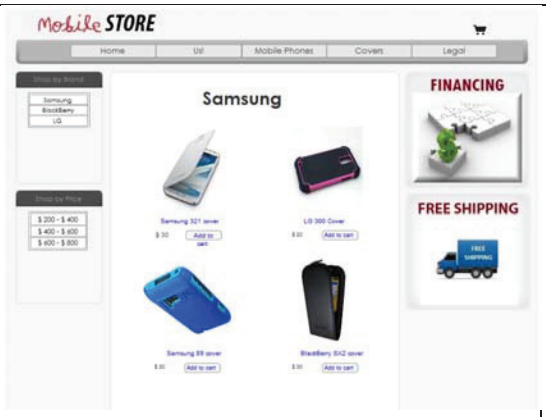
Website 'D' Expensive

Figure 3.3 The websites used for the watches scenario

3.4.3.3 Scenario 2a

"You need to purchase a mobile phone cover. You have found what you want, and have narrowed your choices to two covers that are available in these two different websites. Using the provided two websites, decide which cover you will purchase"

Figure 3.4 shows the two website designs for the mobile covers.



Website "A" inexpensive

Website "B" inexpensive

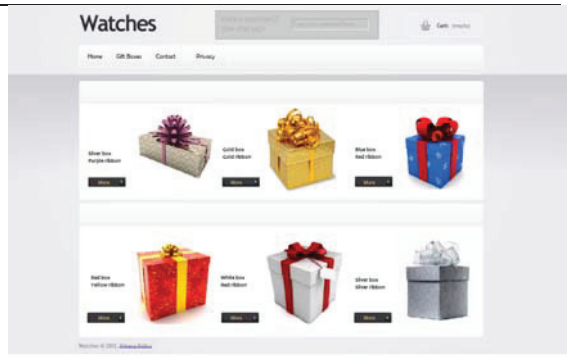
Figure 3.4 The websites used for the mobile covers scenario

3.4.3.4 Scenario 2b

"You need to purchase a gift box for a watch. You have found what you want, and have narrowed your choices to two gift boxes that are available in these two different websites. Using the provided two websites, decide which gift box you will purchase"

Figure 3.5 shows the two website designs for the gift boxes.

Website "C" inexpensive



Website "D" inexpensive

Figure 3.5 The websites used for the gift boxes scenario

To provide an additional level of control and external validity, each participant completed two scenarios in this study. Each participant saw either Scenario 1 or Scenario 2. In each case, they purchased one expensive item deciding between Websites A and B (Scenario 1) or Websites C and D (Scenario 2), and they purchased one inexpensive item deciding between Websites C and D (Scenario 1) or Websites A and B (Scenario 2). Furthermore, they were designed so that each participant compared Sites A and B, and compared Sites C and D. To control for learning effects we counterbalanced the tasks. As noted in Table 3.3, eight groups of three participants were presented with different orders of tasks, for a total of 24 participants.

Table 3.3 Counterbalanced Orders of Presentation.

Group	**Scenario**	**Order of websites and tasks**
1	1	(AB-Phones) (CD-Gift Boxes)
2	2	(CD-Watches) (AB-Phone Covers)
3	1	(CD-Gift Boxes) (AB-Phones)
4	2	(AB-Phone Covers) (CD-Watches)

Group	Scenario	Order of websites and tasks
5	1	(BA-Phones) (DC-Gift Boxes)
6	2	(DC-Watches) (BA-Phone Covers)
7	1	(DC-Gift Boxes) (BA-Phones)
8	2	(BA-Phone Covers) (DC-Watches)

3.5 SCENARIO BASED TASK PROCEDURE

Participants who completed the scenario based task experiment went through several steps as demonstrated in Table 3.4. The procedure of the scenario based task experiment was as follows:

We met participants in the Computer Science Building, where we explained the study and asked participants to read and fill in the informed consent (Appendix D). Participants then filled in a demographic questionnaire (Appendix E). The demographic questionnaire was intended to gather information about the participants age group, gender, level of education (undergraduate, graduate), and previous online shopping experience.

The core of the experiment consisted of Phases 3 through 6 (see Table 3.4). In Phase 3, participants compared two expensive items (2 mobile phones worth about $800) that were presented in two different websites (Websites A and B: a.k.a. Mobile sites A and B). Participants were asked to choose one of the items based only on the information available in each site. Before checkout, participants provided their opinions of the website (Mini-Interview 1: Appendix F). In Phase 4, they then made a decision to purchase. After checkout they were again asked their opinions of the two sites (Mini-Interview 2: Appendix F). This allowed for the separate assessment of the effect of checkout. This was followed by the Post-Task Questionnaire (see Appendix G) which effectively contrasted Mobile sites A and B. In Phase 5, participants compared two inexpensive items (2 gift boxes worth about $30) that are available in two different websites (Websites C and D: a.k.a. Gift box sites C and D). Participants were asked to choose one of the items based only on the information available in each site. Before checkout, participants provided their opinions of the website (Mini-Interview 1: Appendix F). In Phase 6, they then made a decision to purchase. After checkout they

were again asked their opinions of the two sites (Mini-Interview 2: Appendix F). Again, this allowed for the separate assessment of the effect of checkout. This was followed by the Post-Task Questionnaire that compared gift box Sites C and D (see Appendix G). As shown in Table 3.4, the experiment was followed by the two additional phases as demonstrated in the following Section 3.6.

3.6 Interview and Post-study Survey

Phase 7 was a post-experiment semi-structured interview (Post-study Semi-structured Interview) which consisted of a number or questions designed to probe the participants' opinions and experiences about the effect of website design on trust (See Appendix H). Phase 8 was a post-experiment survey (Post-Study Questionnaire: Appendix I). In fact, this was the same survey that will be analyzed in Chapter 4. The results from the survey are included in Chapter 4.

At the end, participants were thanked, debriefed and then compensated $15.00. The entire study took each participant about an hour to complete, which consisted of about 5-7 minutes for instructions, consent and the demographic questionnaire, 15- 30 minutes for Phases 2 through 5, 10 -15 minutes for the semi-structured interview (Phase 7) and 10-15 minutes for the post-study questionnaire (Phase 8).

This experimental scenario was designed to model the process of online shopping in which online shoppers likely view two or more online stores and then make a decision to purchase from one. The checkout process was completed using a fabricated credit card number, address and billing information that was provided to the participant (note that the websites could not save any entered information). Also, in this scenario, participant "purchased" one expensive item by comparing two sites (Mobile sites A and B) and then "purchased" one inexpensive item by comparing two *different* sites (Gift box sites C and D). Hence, there was no carryover from the expensive to the inexpensive websites.

Table 3.4 summarizes the scenario based task experiment including the post-scenario interview and the post-study survey.

Table 3.4 Summery of the scenario based tasks experiment

Phase	Task	Questionnaire type	Appendix
1	Fill in consent form	consent form	(Appendix D)
2	Fill in demographic questionnaire	Pre-study demographic questionnaire	(Appendix E)
3	(Task 1): Using the provided 2 different websites, decide on which phone you will purchase between (phone 1,2).	Post-task mini interview questions (Task a)	(Appendix F)
4	(Task 2): After deciding, complete the transaction in both websites using Credit Card Number: #321 and the following shipping address (Halifax 12345)	Post-task mini interview questions (Task b) Then, post task questionnaire	(Appendix F) (Appendix G)
5	(Task 3): Using the provided 2 different websites, decide on which gift box you will purchase between (gift boxes 3,4).	Post-task mini interview questions (Task a)	
6	(Task 4): After deciding, complete the transaction in both websites using Credit Card Number: #321 and the following shipping address (Halifax 12345)	Post-task mini interview questions (Task b) Then, post task questionnaire	(Appendix F) (Appendix G)
7	Participate in the interview	Semi-structured interview	(Appendix H)
8	Fill in Post Study survey	Post-Study questionnaire	(Appendix I)
	Receive compensation	payment form	(Appendix J)

3.7 SUMMARY

This Chapter discussed the methods used to answer the research question and achieve the research goals. The following 3 Chapters will discuss in details the results and findings.

CHAPTER 4 SURVEY STUDY

To gather basic data about online shoppers' attitudes towards hard and soft trust issues, a survey approach was used. A survey was considered appropriate because it allows for the collection of a large amount of data from a large number of individuals in a short time. This provides the breadth that is of use when first exploring issues within an area. Surveys have been used previously to collect data similar to what is used in this study. For example Coles (2010) used a survey to ask participants about design components that affect trust.

The survey used in this thesis included general questions about web design and their effect on consumer trust and specific questions relating to the purchase of inexpensive and expensive items (Appendix I). In order to compare the different design dimensions on consumer trust, the same questions were asked relating to expensive and inexpensive items. There was a scenario preceding the questions to insure that participants imagined themselves in an appropriate online shopping situation. Some responses were collected using a Likert scale, other questions included check boxes or multiple choice answers. There was only one open-ended question in the online survey which asked participants to define what is considered a professional website by them.

While most questions addressed the issue of "soft trust" two questions addressed the issue of "hard trust" which included the topic of perceived security and privacy.

The survey was posted online, and participants were invited to participate through email solicitation and through other online postings, for more details look at Chapter 3. In practice it required an average of 16 minutes (sd: 8.6) with a maximum of 55 minutes for participants to complete the survey.

4.1 Results and Discussion

4.1.1 Participant Demographics

A total of 132 participants completed the survey: 69 males and 61 females (2 participants left this field empty). It should be noted that we combined the online survey data results with the post-study survey (Appendix I) that the participants filled in during the task scenario study. The questions were the same and while we recognize that the context for filling in each was different (i.e., the participants in the task scenario study

had just finished specific tasks that may have influenced their answers) we found that the difference between the answers in both groups to be very small (as reported in Section 4.4). There were 110 participants who filled in the online survey and 22 participants who filled in the questions after doing the study.

Demographics: Data for age was collected within four age groups (Figure 4.1), with 64 participants between the ages of 18-25 and only 4 over the age of 46. This is due to the fact that our sample mostly consisted of Dalhousie University students.

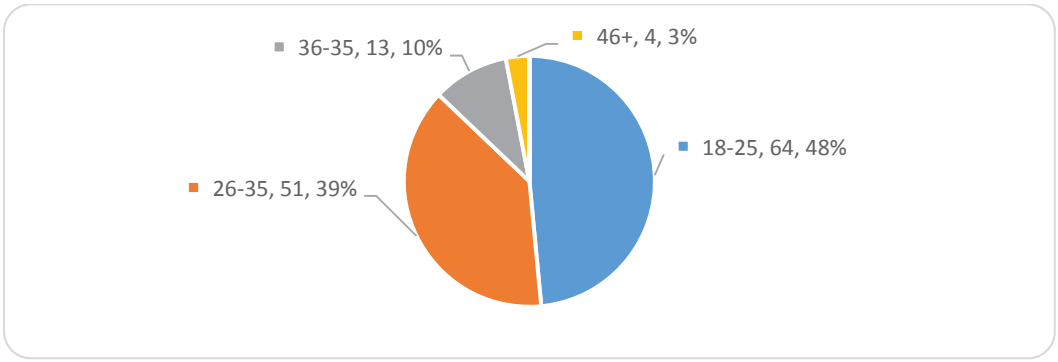


Figure 4.1 Age ranges of participants

46% (60/132) of participants were or had graduate level of education as seen in Figure 4.2.

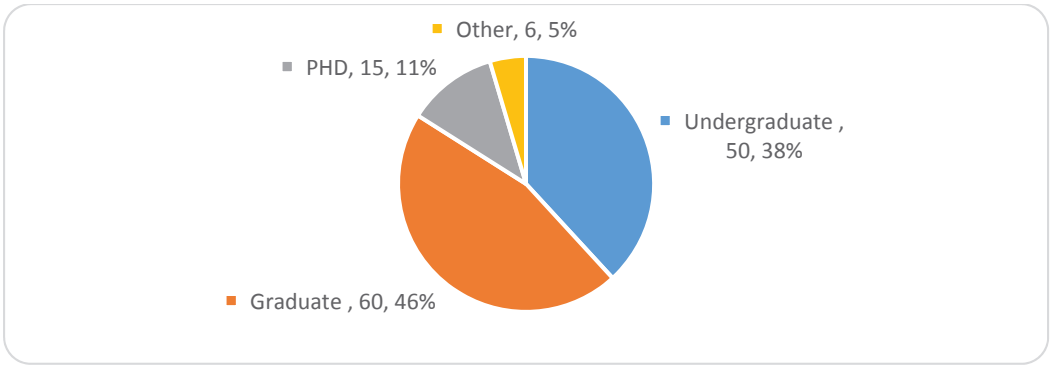


Figure 4.2 Level of education

As shown in Figure 4.3, of the 132 participants the most common type of online purchase was technology (80%) and jewelry (80%), while only 12% participants reported buying furniture. Clothing (67%) and online games/music (61%) were also popular items. Participants were allowed to choose multiple answers.

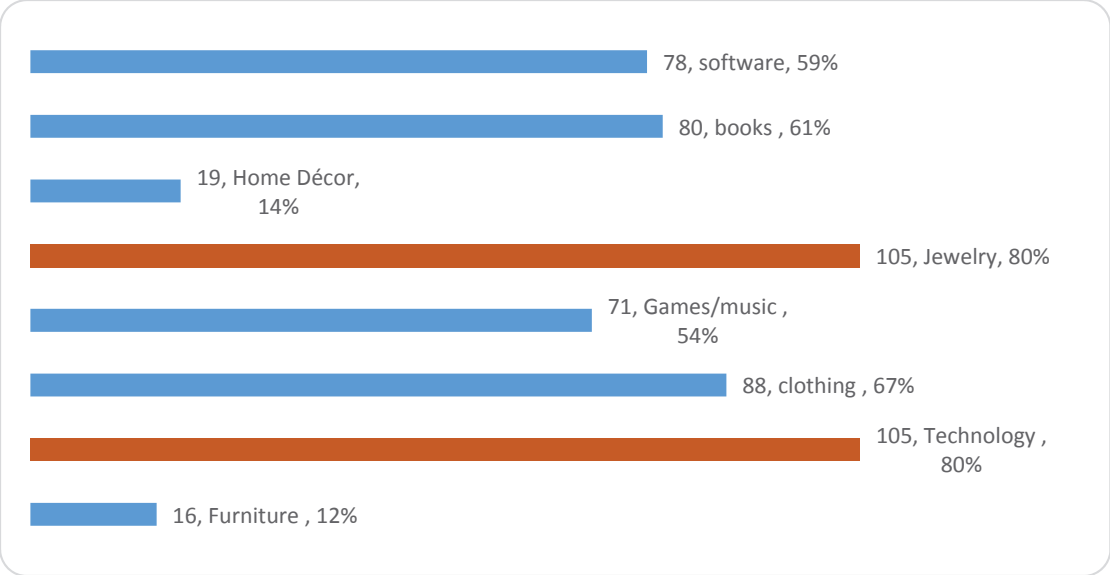


Figure 4.3 Types of online purchases

As shown in Figure 4.4, of the132 participants 25.8% reported using Debt Cards, 90.2% reported using Credit Cards, 44.7% reported using PayPal, 9.8% reported using Pre-paid Credit Cards, and 15.2% reported using Pre-paid Store Cards. Note that shoppers often use more than one payment method, with a mean of 1.86 methods (a mode of 1, median of 2) and a range from 1 to 4.

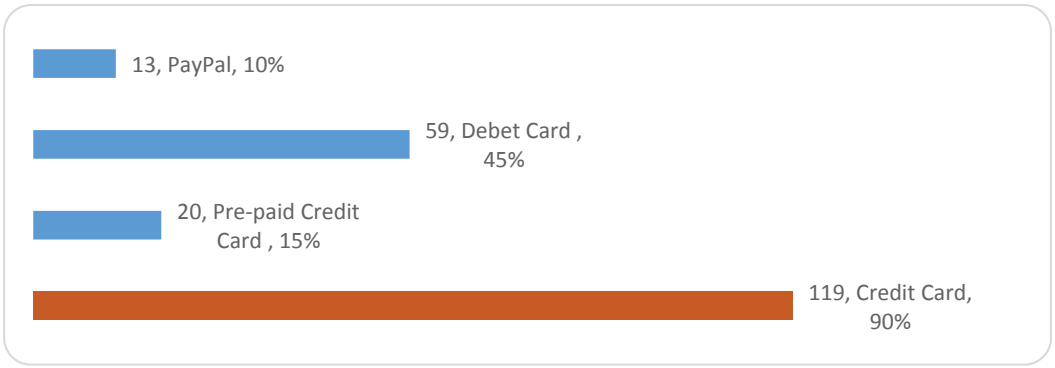


Figure 4.4 Online methods of payment.

Figure 4.5 shows, of the 132 participants, the vast majority of 93.2% reported using Laptop or Desktop computer. While 34.8% reported using Mobile phones and 20.5% reported using Tablets. Note that shoppers often use more than one access method, with a mean of 1.48 methods (a mode of 1, median of 1) and a range from 1 to 3 (i.e., some used all).

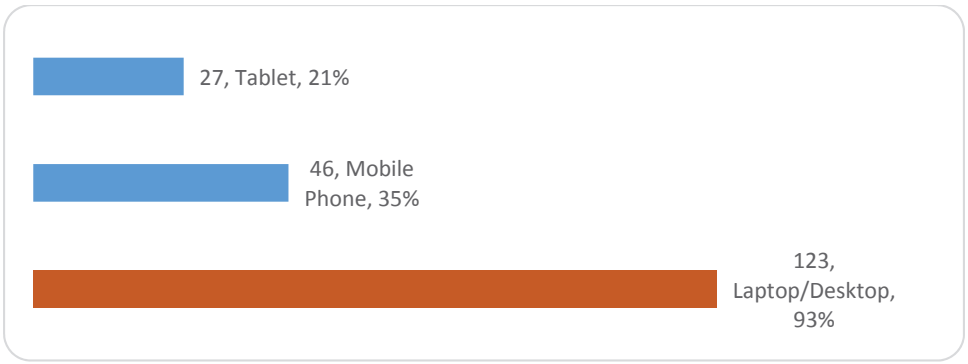


Figure 4.5 Devices used for online purchases.

4.1.2 Survey Results

Results from the online survey were downloaded to an excel file. The data was then cleaned and checked. Analysis were conducted within SPSS version 20.0. In this analysis, it must be noted that the important (critical) information is contained within each individual question. That is, for each individual question, the important analysis compares the response for the expensive item to the response for the inexpensive item.

In addition, the survey contains several questions that address similar information (e.g., the importance of the sizes of images). This repetition served, in part, as a measure of reliability. However, it should be further noted that the repetitions were not identical – they had different goals. For example, when examining Appendix I, Questions 11/12 asked whether or not image size ranked within the top three design features, while Question 15 simply contrasted image size, and Questions 18/19 provided an absolute rating of the importance of size. All of these can be related to each other (i.e., they should be consistent), but they are not repetitions (the ideal of reliabilities analysis). In principle, all questions provided some new information. Hence, the discussion of responses that are indicative of reliability (i.e., relationships between questions) is interwoven with the discussion of the results for each individual question.

4.1.3 Importance of Design Features

Design dimensions consist of different design features as mentioned in Chapter 3. In Questions 11 and 12, participants were asked to rank the top three features from seven

that were provided (*Clarity of Information*, *Image Size*, *Professional Looking*, *Color Scheme*, *Ease of Navigation*, *Reviews of Website*, and *Familiarity with Store/Logo*) for expensive and inexpensive items. If the participant felt a feature that was not included in the list would be a top feature, they could add it to the seven. Since we were only interested in the three most important design features to the participants, and did not need to know the ranking of what comes after. For each participant, first, second and third were coded as 1, 2, and 3. Any feature not ranked as first, second, or third, was coded as a 4 (fourth or higher) which makes them fall into the same category.

Seven participants only ranked their second and third feature without ranking an item to be first. In these cases, we did not include a "first" rank. In addition, participants were provided with three additional open-ended options (*Other*) in case the specified options were not suitable.

Table 4.1 shows the number of times each website feature was ranked by participants as the most important (first), second most important, and third most important feature for both prices levels (expensive and inexpensive). For example, when buying an expensive item, *Clarity of Information* was ranked first by 24 of 127 participants (18.2%). Table 4.1 also includes the number of times each particular feature was ranked within the top three (this is the sum of times ranked first, second or third). For example, *Image Size* was ranked within the top three on 25 occasions. Note that the total number of participants for each ranking varies slightly due to missing data. The total number of participants was 132. Missing data ranged from 2 to 15 for rankings. In addition, the open-ended *Other* categories were used on 16 occasions (for expensive items) and on 11 occasions (for inexpensive items).

Table 4.1 Most Important Web Design Features when buying Expensive and Inexpensive Items.

Design Features	When Buying: Expensive Item				When Buying: Inexpensive Item			
	Times Ranked				Times Ranked			
	First	Second	Third	In Top 3	First	Second	Third	In Top 3
Clarity of Information	24 18.2 %	30 23.1%	27 20.5%	81	24 18.2%	22 16.7%	28 21%	74
Image Size	3 2.3%	7 5.3%	15 11.4%	25	3 2.3%	12 9.1%	8 6%	23
Professional Looking	14 10.6%	16 12.1%	20 15.2%	50	13 9.8%	24 18.2%	20 15%	57
Color Scheme	2 1.5%	7 5.3%	2 1.5%	11	1 0.8%	5 3.8%	0 0.0%	6
Ease of Navigation	2 1.5%	13 9.8%	18 13.6%	33	10 7.8%	16 12.1 %	21 16%	47
Reviews of Website	31 23.5%	34 25.8%	21 15.9%	86	24 18.2 %	21 15.9%	24 18%	69
Familiar with Store/Logo	**42 31.8%**	19 14.4%	21 15.9%	82	**35 26.5%**	15 11.4%	14 11%	64

When buying an expensive item, the most highly ranked feature was *Familiarity With The Store / Logo*. Forty-two participants, (32%) considered this to be the most important feature. The second most highly feature was *Reviews of Website*, with 31 (23.5%) of participants. *Clarity of Information* was also ranked highly by 24 (18.2%) of participants. In contrast, *Color Scheme* and *Ease of Navigation* was only selected as first by 2 participants (2%).

Interpretation of this number of "firsts" is complicated because a particular feature may be important but not consistently ranked first. Note, for example, that *Reviews of Website* seems to be the second most important feature. However, *Reviews of Website* was ranked second on 34 (25.8%) occasions and third on 21 (15.9%) occasions. Both of these exceed the ranking for *Familiarity with the Store/Logo* at 19 and 21 occasions. Hence, to address this issue, the number of times each was ranked in the top 3 was assessed. By this scale, the most important feature is *Reviews of Website*, followed by *Familiarity with Store/Logo*, and then *Clarity of Information*. Using number of times in top 3, the least important features is *Color Scheme*, then *Image Size*. Note that *Reviews*

of Website, followed by *Familiarity with Store/Logo* reflect "external" checks on the integrity of the online store. That is, in some sense, they are not aspects of web design. However, reminders for both can, and often are, placed on the website (e.g., testimonials), and as such are considered an aspect of Social Cues/Presence. *Clarity of Information*, which is the third most important, is an aspect of content design. Note that *Color Scheme* and *Image Size* are aspects of Graphic Design. In the middle, there are *Professional Looking*, an aspect of graphic design, and *Ease of Navigation*, an aspect of Structural Design.

Note that, generally, when buying an expensive item, participants thought it important to know the store, to learn about the website, and to be clear about the products. Also note that *Professional Looking* and *Ease of Navigation* are also of some importance because they imply competence. A disorganized store, or online store, could lose an order or credit card information. Finally, *Color Scheme* and *Image Size* are not important to trust.

When buying an inexpensive item, the rankings were similar, but not the same. *Familiarity with Store / Logo* was ranked first by 26.5% of participants. *Reviews of Website* and *Clarity of Information* were tied at 18.2% of participants. When considering the number of times in the top 3, the ranking of features was *Clarity of Information*, *Reviews of Website* and then *Familiarity with Store/Logo*. This order is slightly different from that of expensive items. *Color Scheme* and *Image Size* still received the lowest rankings.

For these questions, an open-ended response was permitted (actually 3 open-ended responses were permitted). The most important observation is that these categories were not used very often (19 and 17 times for the expensive and inexpensive items – out of a possible 396 ratings). These other comments referred to security on nine occasions (e.g., "clarity of security/privacy policies", "Secure Site", "security", "https") to reputation on nine occasions (e.g., "the online repetition of the website", "good reputation", "personal referrals", "user reviews", "YouTube reviews"), to design features of the site on one occasion (i.e., "no pop-ups or advertisement"), or to aspects of the transaction on eleven occasions ("return policy", "fast shipping", "the shipping safety" ,

“contact info”, “the shipping price” “Third party is PayPal”, “item price”). Some were not easily classified (i.e., “Item's Original Website” “rate of the seller”).

To compare the ratings of features for expensive and inexpensive items, a series of analyses were conducted. These analyses build from the simpler to the more complex as follows:

4.1.4 Ranking of Features Based on Item Price

A paired *t*-test was performed to compare the mean rating for the expensive items to the mean rating for the inexpensive items. We used the paired t-test because each participant provides a “pair” of scores – one for the expensive and one for the inexpensive item. Table 4.2 presents the mean rankings for the expensive and inexpensive items

Table 4.2 Mean Ranking of Each Feature for Expensive and Inexpensive Items.

	Expensive		**Inexpensive**	
	Mean	**S.d**	**Mean**	**S.d**
Clarity of information	2.83	1.15	2.91	1.16
Image size	3.74	0.64	3.69	0.73
Professional website	3.31	1.03	3.19	1.06
Color scheme	3.92	0.43	3.90	0.46
Easy Navigation	3.64	0.71	3.37	0.97
Website Reviews	2.74	1.20	2.95	1.17
Familiarity with online store or logo	2.73	1.31	2.87	1.30

The interpretation of these means depends on the coding scheme. Recall that a rank of first was coded as 1, a rank of second was coded as 2, a rank of third was coded as 3, all other ranks were coded as 4, because participants were only required to rank the 3 most important features to them. Hence, values ranged from 1 to 4. As such a mean below 3 implies that the particular feature was ranked within the top 3, whereas a mean greater than 3 implies that the feature was *not* ranked in the top 3. Note that the analysis mirrors the prior description of the raw data (i.e., the ranks). *Website Reviews*, *Familiarity with online store or logo*, and *Clarity of Information* (Content Design) are the most important (mean ranks nearer to 1). *Color Scheme* and *Image Size* (Graphic Design)

are the least important (mean ranks near 4). *Professional Website* (Structure Design) and *Easy Navigation* (Structure Design) are in the middle.

Table 4.3 provides the analysis of these means, comparing the ranking of each feature within the expensive versus inexpensive categories. The table includes the mean difference (from Table 4.2), the t-test and the t-test and the correlation.

Table 4.3 Analysis of Differences in the Ranking of Each Feature as a Function of Expensive versus Inexpensive.

Feature	Mean Difference	t-test		Correlation	
		t-value	P(t)	R	p(r)
Clarity of Information	-.083	-0.968	.335	.632	.001
Image Size	.053	1.094	.276	.678	.001
Professional Looking	.121	1.480	.141	.592	.001
Color Scheme	.015	0.446	.656	.616	.001
Ease of Navigation	.273	3.735	.001	.537	.001
Reviews of Website	-.212	-2.465	.015	.651	.001
Familiar with Store/Logo	-.144	-1.459	.147	.622	.001

Notes: df = 131 for all tests.

The analyses indicate that the mean ranking changes for the *Ease of Navigation* feature ($t = 3.735, 65, p < .05$) and for the *Reviews of Website* feature ($t = -2.45, p < .05$). *Ease of Navigation* gets a higher ranking (less importance) for the expensive items whereas *Reviews of Website* gets a lower ranking (more importance) for the expensive item. The analyses indicate that all of the remaining features are "essentially" the same for both the expensive and inexpensive items. Said another way, the analysis shows that the difference between the expensive and inexpensive items is *not significantly different from zero*.

The correlations provide some additional information. Basically, all correlations are significantly different from zero ($p < .05$), and all are positive. This implies that the participant who gave the highest rankings to a particular feature when coding the expensive item also gave the highest rankings when coding for the inexpensive items. In some sense, participants are consistent in the way they use the rankings.

4.1.5 Ratings for web design features based on Expensive Items and for Inexpensive Items

Table 4.1 implied that the different features had different degrees of importance. The same was implied by Table 4.2 (the mean rankings per feature). This second set of analyses was designed to support that observation. Hence, one analysis was conducted that compared the seven features within the expensive item and the seven features within the inexpensive item.

The analysis used a within-subjects ANOVA (a.k.a. the repeated measures ANOVA). Generally, the ANOVA tests whether or not a set of means are "equal". More precisely, the ANOVA tests whether or not the differences between the means are so small that those differences could be due to chance (sampling, or random, variations). If the differences are small, then the means are considered "equal". If the means are large, then the means are considered "different". The within-subjects aspect simply implies that all the means are based on data from the same participants – that each participant contributes some information to each and every mean.

For the expensive item, the within-subjects ANOVA indicated that the mean rankings for the different features were not equal, with $F(6, 786) = 33.914$, $p < .001$. Technically, the differences between the means are *significantly* different from zero. From inspection of the means in Table 4.2, it can be concluded that *Familiarity with Store/Logo*, *Reviews of Website* and *Clarity of Information* have significantly higher rankings than the other features.

For the inexpensive item, the within-subjects ANOVA indicated that the mean rankings for the different features were not equal, with $F(6, 786) = 19.559$, $p < .001$. Technically, the differences between the means are *significantly* different from zero. From inspection of the means in Table 4.2, it can be concluded that *Familiarity with Store/Logo*, *Reviews of Website* and *Clarity of Information* have significantly higher rankings than the other features.

4.1.6 Features Ratings When Averaged Over Price

The final analysis of the features of the website compared the set of seven rankings for the expensive item to the set of seven rankings for the inexpensive items.

The analysis was again, a within-subjects ANOVA, but in this case there were two variables and three "effects" (called a two-way within-subjects ANOVA). The first variable was Features. This is the difference between the mean rankings for the seven features.

The second variable was price. This is the difference between *average* rankings for the expensive item and the *average* ranking for the inexpensive item. This is similar to the previous analysis, but, in fact, the analysis of this variable is irrelevant by design. Both items were ranked (on all features) using the same four-point scale. As such, the set of all features should have the same average ranks. That is, for the expensive item, for the set of all features, there should be 132 rankings of "first", 132 rankings of "second", 132 rankings of third, and a final 132 rankings assigned as fourth. The same is true for the inexpensive item. Hence, both have the same number of firsts, seconds, thirds and fourths across all features. In principle, there cannot be any difference. In practice, however, there can be small differences due to missing values or the use of the *Other* categories.

In a two-way ANOVA, the use of two variables gives rise to a third "effect". This effect is the interaction between the two variables. Simply stated, the interaction tests the pattern of means for one variable as a function of the other variable. For example, the interaction compares the pattern of means for features for the expensive item (column 1 of Table 4.2) to the pattern of means for features for the inexpensive item (column 3 of Table 4.2). If the pattern is the same, then the interaction is not significant. If the patterns are different, then the interaction is significant. Figure 4.6 provides a graphical representation of the patterns. Note that the expensive and inexpensive items do not seem to follow the same patterns. For example; the C*larity of Information* is lower when buying an expensive item than when buying an inexpensive item. However, for *Size of Images*, this relationship reverses.

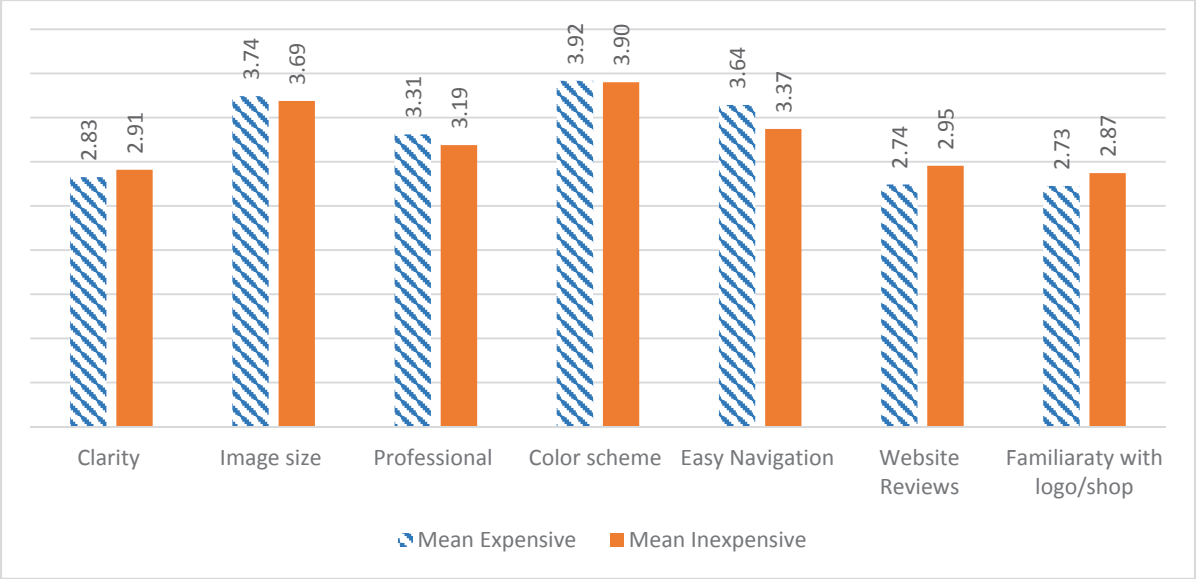


Figure 4.6 A graphical representation of Table 4.2 (the means of expensive and inexpensive rankings of web design features)

The two-way within-subjects ANOVA indicated that there were significant differences between the Features when averaged over the expensive and inexpensive items with $F(6,786) = 33.085$. $p < 001$. Note that this is not surprising because the expensive and inexpensive items had very similar patterns (i.e., in both *Familiarity with Store/Logo*, *Reviews of Website* and *Clarity of Information* were much higher than the others). The analysis found no significant difference for Price, with $F(1,131) = .070$, $p <$. 791. This was expected as noted above. Finally, there was a significant interaction, with $F(6,786) = 4.218$, $p < 001$. Hence, the pattern for an expensive item is different from the pattern for an inexpensive item. This implies, simplistically, that participants use different criteria for "trusting" a website when buying an expensive versus an inexpensive item.

4.1.7 Summary of the Ranking of Features

The features analyses indicates that there are some differences in "soft trust" when the cost of the item is considered. Generally, *Website Reviews* (Social Cues), *Familiarity with online store or logo* (Graphic Design), and *Clarity of Information* (Content Design) are rated as the most important for trust. *Professional Website* (Graphic Design) and *Easy Navigation* (Structure Design) are in the middle while, *Color Scheme* and *Image Size* (Graphic Design) are the least important.

Furthermore, when considering item cost, *Clarity of Information* seems to be the most important when buying an inexpensive item but, external references (*Reviews of Website*, *Familiar with Store/Logo*) are more important when buying an expensive item. In truth, of these three, only *Website Reviews* showed a significant difference between expensive and inexpensive items. In addition, *Ease of Navigation* also showed a significant difference between expensive and inexpensive items.

From the online shopper's perspective, these differences are perfectly reasonable. Generally, one would expect *Image Size* and *Color Scheme* to be the least important attributes for trust. Furthermore, when buying an inexpensive item, the potential losses are small, and convenience is likely a large factor (i.e., the ability to "get in", "get done", and "get out" quickly). On the other hand, when buying expensive items, potential losses are large, and one "should" take the time to ensure that the proper item is selected.

4.1.8 Website Layout

One item of the survey (Question 14) asked about the ideal format for the website: List, Grid or No difference. Again, there was an open-ended *Other* option. Participants could only select on option. Responses were coded as 1 for the selected option, and 0 for all other options.

The subsequent analysis focused on the comparison of the expensive and inexpensive items. Table 4.4 provides the basic data. Note that responses are spread across the different options more or less equally.

Table 4.4 Ideal Website Layout for Expensive and Inexpensive Items.

	Expensive	**Inexpensive**
List	56 (42%)	46 (34.8%)
Grid	47 (35.6%)	51 (38.6%)
No difference	27 (20.5 %)	34 (25.8%)
Other	2 (1.5%)	1 (0.8%)
Total	132	132

For analysis, a simple same/different coding was created. That is, if the same option was selected for both the expensive and inexpensive items, a code of 0 was given. If different options were selected, a code of 1 was given. This coding indicated that 89

participants (67.4%) selected the same layouts for both expensive and inexpensive items. Hence, 43 (32.6%) selected different layouts. To determine if this 32.6% represented a significant proportion of the underlying population, a simple one-group *t*-test was conducted (a binomial analysis could also be used, but, technically, a two-way chi-square analysis is not valid because the expensive and inexpensive data are not independent). The one-group *t*-test determines whether or not the mean (in this case, the mean proportion) is different from zero. That analysis indicated that the proportion was significantly different from zero ($t[131] = 7.956$, $p < .001$), implying that a substantial part of the population prefers different website layouts depending on the price(s) of the item. Note that the layout is an aspect of Graphic Design.

4.1.9 Summary for Website Layout

In summary the layout does seem to matter as a function of cost. More people prefer a Grid format for inexpensive items. This can be rationalized. A grid format provides the ability to see a large number of items quickly. If the objects are not expensive, then one is trying to sort through a large number of similar items (e.g., consider buying headphones).

4.1.10 Image Size

One item of the survey (Question 15) asked about the ideal size for images on the website: Small, Large or No difference. Again, there was an open-ended *Other* option. Participants could only select on option. Responses were coded as 1 for the selected option, and 0 for all other options.

For the subsequent analysis, focused on the comparison of the expensive and inexpensive items, a simple same/different coding was created. That is, if the same option was selected for both the expensive and inexpensive items, a code of 0 was given. If different options were selected, a code of 1 was given. Table 4.5 provides the basic data. Note that responses are not spread equally across the different options. For expensive items, large images are vastly more preferred.

Table 4.5 Ideal Website Layout for Expensive and Inexpensive Items

	Expensive	**Inexpensive**
Small images	6 (4.5%)	17 (12.9%)
Big images	118 (89.4%)	85 (64.4%)
No difference	8 (6.1%)	30 (22.7%)
Total	132	132

The coding as same versus different indicated that 95 participants (72.0%) selected the same layouts for both expensive and inexpensive items. Hence, 37 (28.0%) selected different layouts. To determine if this 28.0% represented a significant proportion of the underlying population, a simple one-group *t*-test was conducted which indicated that the proportion was significantly different from zero ($t[131] = 7.143$, $p < .001$). Hence, a substantial part of the population prefers different image sizes depending on the price(s) of the item. Note that the image size is an aspect of Graphic Design.

4.1.11 Summary for Image Size

In summary, image size does seem to matter as a function of cost. More people prefer a large image, and more prefer large images when buying an expensive item. This, too, can be rationalized. Larger images enable one to discern the details (important for expensive items), but larger images take longer to load and limit the number of images per page view (slowing the shopping process).

Note that this effect of size in not entirely consistent with that of the previous Analysis of the Features in which image size did not differ as a function of item cost. However, the two analyses are not directly comparable. In Analysis of the Features, the goal was to determine the three most important features for trust – size was not in the top three (for expensive or inexpensive items). Hence, size was coded as a 4 for both expensive and inexpensive items. As such, it would be difficult to see any differences in size. That is, if features had been ranked from 1 to 7, differences in size might have mattered if, for example, size had been ranked as 6th and 7th. As a quick check of this idea, the absolute value of the difference between the ranking of size for expensive and inexpensive items was computed. Most of these differences were zero (both ranked 4th), but note that size was ranked higher than 4th by some participants. This difference was

then correlated against the cited same versus different coding noted above. The two were correlated at .161 ($p < .066$), implying that those who preferred different sizes in Analysis of the image size, also tended to assign (slightly) different ranks in Analysis of the Features.

4.1.12 Store Attributes

One set of items on the survey (Questions 18 and 19) referred to issues that reflect of the attributes of the online store, more than the form of the website although there is some overlap between "features" and "attributes. The term "attributes" was used to help maintain a distinction between Questions 18/19 and Questions 11/12 (Features). Each of the 14 attributes was rated on a seven point Likert scale with 1 implying the lowest level of endorsement (Strongly Disagree) and 7 implying the highest degree of endorsement (Strongly Agree). Note that some of these items overlap with the features.

Table 4.6 presents the descriptive statistics for the expensive and inexpensive items. A short descriptive phrase is used for each question. Note that the middle (neutral) point for each item was four (4). As such, values below 4 generally imply disagreement with the question, whereas values above 4 imply agreement with the question. Values near 4 (i.e., between 3.5 and 4.5) imply that the attribute is irrelevant. For example, that the use of the privacy policy is above 4, whereas the reliance on friends is below 4.

Table 4.6 Descriptive Statistics and Analysis for each of the Store Attributes

	Expensive		Inexpensive		Analysis	
	Mean	S.d.	Mean	S.d.	Mean Diff	r
Privacy Policy (+)	4.74	1.89	4.44	1.98	.300**	.844***
Too Much Info (-)	5.64	1.42	5.37	1.63	.271**	.761***
Familiar logo (+)	4.95	1.64	4.99	1.65	-.040	.868***
Friends Recommend (+)	3.63	1.88	3.73	1.91	-.103	.757***
Friends Have Issues (-)	2.04	1.33	2.39	1.53	-.352***	.662***
Live Chat (+)	3.36	1.62	3.52	1.67	-.155*	.867***
Broken Links (-)	5.29	1.64	5.20	1.52	.093	.618***
Clear Images (+)	4.96	1.44	4.88	1.51	.086	.756***
Bad Product Info (-)	2.03	1.24	2.32	1.41	-.287**	.717***
Bad Diction (-)	2.52	1.32	2.79	1.42	-.271*	.620***
Easy Navigation (+)	4.75	1.46	4.76	1.49	-.008	.789***
Bad Menu Bar (-)	2.88	1.29	3.34	1.42	-.469***	.555***
Bad Color Scheme (-)	3.10	1.56	3.44	1.54	-.331**	.720***
Familiar Store (+)	6.21	1.13	6.14	1.28	.072	.728***

Notes: ***$p < .001$, **$p < 01$, *$p < .05$

In addition, for each question a "(+)" or a "(-)" has been added to indicate the direction of trust. A (+) implies that agreement with the question (higher rating) indicates a higher level of trust, while (-) indicates that agreement with the question (higher rating) implies a lower level of trust.

Note that an individual may endorse the question (provide a high rating), but that endorsement has a negative valence. For example, for *Too Much Information* a high rating means that a participant agrees with "I will abandon a shopping cart if I think the website is asking for unnecessary personal information", but that agreement implies distrust. In addition, note that the +/- coding of the question about Privacy Policy is a bit different in that higher values simply imply that the individual is more likely to look for a privacy policy (i.e., it does not imply that this will generate trust, though one can assume that the lack of a privacy policy will generate distrust). The (+) or (-) are tied to the short phrase provided in Table 4.6. Figure 4.7 is a visual representation of Table 4.6.

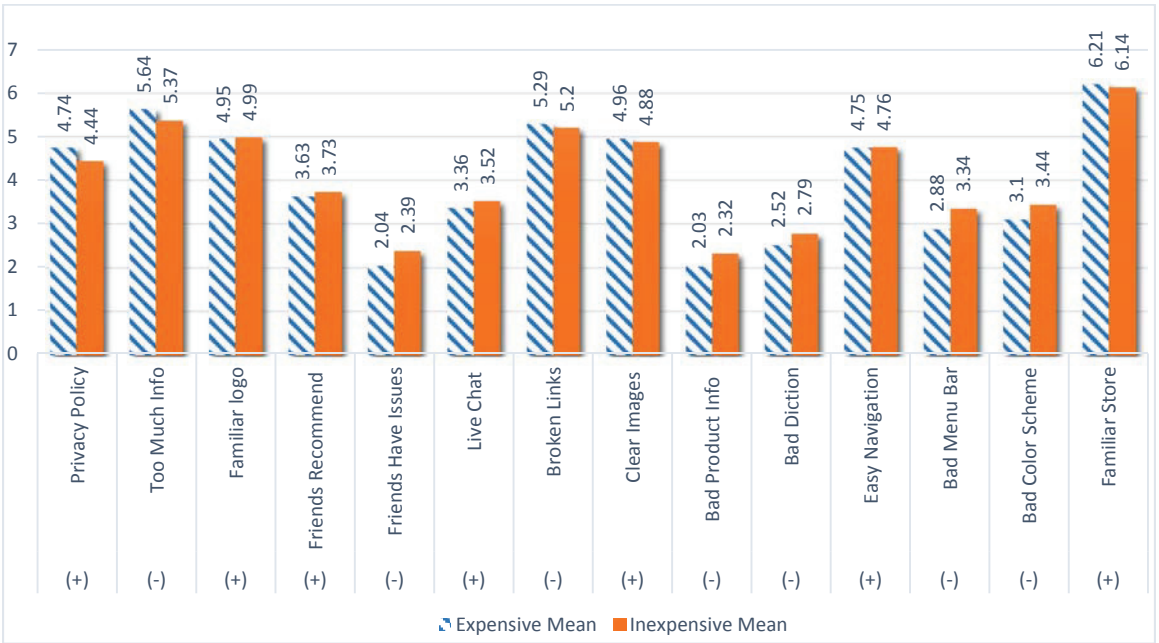


Figure 4.7 Mean ratings of the store attributes

4.1.13 Rating of Attributes Depending on Item Price

As before, the analyses compared the ratings for the expensive items to the ratings for the inexpensive items (14 analyses). As before, each analysis was a simple paired t-

test. Table 4.6 includes the mean difference (with the significance of the resulting *t*-test), and the correlation (with its significance) between the expensive and inexpensive items.

Note that there are significant mean differences for *Privacy Policy* (expensive higher), *Too Much Info* (expensive higher), *Friends Have Issues* (expensive lower), *Live Chat* (expensive lower), *Bad Product Info* (expensive lower), *Bad Diction* (expensive lower), and (strangely) *Bad Color Scheme* (expensive lower).

For *Privacy Policy* (*I look for the privacy policy before providing my payment information*), the means are only slightly above 4 and therefore imply that participants do not check the privacy policy very much. The difference implies that participants are more likely to check the privacy policy when buying more expensive items.

For *Too Much Information* (*I will abandon a shopping cart if I think the website is asking for unnecessary personal information*), the high means imply that they are quite concerned about providing too much information. In addition, the difference implies that unwarranted requests for information will cause the participant to abandon an expensive purchase more than an inexpensive purchase.

For *Familiar Logo* (*I feel comfortable providing my credit card information to a website when I see a familiar symbol [e.g., PayPal icon or visa symbol]*), the high means imply that participants are more willing to provide information to sites with familiar logos. Note that the mean ratings are similar to those of the *Privacy Policy*, but less than those of *Unnecessary Information*. The lack of a difference implies that the price does not matter.

For *Friends Recommend* (*If my friends have recommended a site … I am more likely provide my personal information … even if I do not think the site is trustworthy*), the means, which are between 3 and 4, imply that the opinions of friends are not particularly important when the participant has already decided that the site is not trustworthy (i.e., "everyone" trusts the site except me, but I don't care). In addition, the lack of a difference implies that they do this to the same degree with both expensive and inexpensive items.

For *Friends Have Issues* (*I will provide my payment information … even if my friends mentioned … that they had issues or problems with this website*), the very low means imply that the negative opinions or experiences of friends matter a great deal. In

addition, the difference implies that the opinion of friends matters more for expensive than inexpensive items.

For *Live Chat* (*I am more likely to provide my payment information if there is a live chat available on the website.*), the means, which are between 3 and 4, imply that live chat is not a strong inducement to provide personal information. In addition, it is even less of an inducement for expensive items.

For *Broken Links* (*Finding a broken link on the website will make me less likely to provide the website with my payment information.),* the high means imply that broken links do matter to participants. The lack of difference implies that price of an item is not an issue. Note that the means are nearly as high as those for *Unnecessary Information*.

For *Clear Images* (I *would provide my payment information if I can see clear and accurate images of the product.),* the means, which are between 4 and 5, imply that clear images do not have a major impact on the willingness to provide information. The lack of difference implies that clear images matter equally to both expensive and inexpensive images. This may simply reflect the fact that one cannot properly assess the product without clear images.

For *Bad Product Info* (*I will provide my payment information to a website even if product information was incorrect or incomplete.*), the very low means imply that participants will not buy from a site that has low quality information. Furthermore, the difference implies that the quality of information is even more important for expensive items.

For *Bad Diction* (*I will provide my payment information to a website even if I find spelling and grammar errors.*), the very low means imply that improper spelling and grammar (diction) is an issue. This has implication for websites that try to reach an international audience. Furthermore, the difference implies that the diction is even more important for expensive items.

For *Easy Navigation* (*I will provide my payment information to a website if I can navigate easily to the product I want to purchase.*), the means, which are between 4 and 5, imply that ease of navigation is a minor issue for trust. The lack of a difference implies that ease of navigation is equally important for expensive and inexpensive items. Note

that this may simply reflect buyer frustration. If it is too much work to navigate, the shopper may abandon the purchase.

For *Bad Menu Bar* (*I will provide my payment information to a website if the menu bar is inconsistent.*), the low means implies that such inconsistency is a matter for trust. Furthermore, it is more of an issue when buying an expensive item.

For *Bad Color Scheme* (*I will provide my payment information even if I think that the colors are not appropriate or do not have good contrast.*) the means are near a value of 4 and imply that such features are not particularly important to online shoppers. However, the inconsistency is more of an issue when buying an expensive item.

Finally, *Familiar Store* (*I will provide my payment information if I am purchasing from a familiar store.*), has the highest means implying that this is a crucial predictor of trust. Furthermore, familiarity is not affected by the price of the item.

In addition, all of the correlations are positive and significantly different from zero. Hence, participants maintain their relative ranks for the expensive and inexpensive items. Those who care the most about a particular attribute for expensive items tend to be the ones who care the most about that same attribute for inexpensive items.

4.1.14 Attributes Ratings for Expensive Items and for Inexpensive Items

As in the previous analysis of features, it is useful to check to see if the ratings for the attributes in Table 3.6 are different. Is the rating for *Friends Have Issues* different from the rating for *Familiar Store*? To assess this, as in Section 4.1.4, a simple one-way within subjects analysis was conducted for the 14 attributes within the expensive items. A similar analysis was conducted within the inexpensive items.

For the expensive item, the within-subjects ANOVA indicated that the mean ratings for the different attributes were not equal, with $F(13, 1573) = 109.72$ ($p < .0005$). For the inexpensive item, the within-subjects ANOVA indicated that the mean rankings for the different features were not equal, with $F(13, 1573) = 71.14$ ($p < .0005$).

4.1.15 Attribute Ratings Averaged Over Price

As in the previous analysis of features, it is useful to check to see if the ratings for the attributes in Table 3.6 change when moving from expensive to inexpensive items.

That is, is the pattern of ratings for the 14 attributes different as a function of item price (expensive vs. inexpensive items). To assess this, as in Section 4.1.4, a two-way within subjects analysis was conducted with Attributes (14 attributes) by Cost (the two prices: expensive and inexpensive)

The two-way within-subjects ANOVA indicated that there were significant differences between Attributes when averaged over the expensive and inexpensive items with $F(13, 1443) = 104.10$ ($p < .0005$). Some Attributes were consistently higher for both expensive and inexpensive items (e.g., *Familiar Store*), while other Attributes were consistently lower for both expensive and inexpensive items (e.g., *Complete Product Information*). The analysis found a significant difference for price, with $F(1,111) = 29.74$ ($p <. 005$). However, this was not too surprising because most Attributes were lower for expensive items (i.e., most Attributes had a negative mean differences in Table 3.3). Finally, the important component was the interaction. There was a significant interaction, with $F(13,1443) = 88.55$ ($p < 0005$). Hence, the pattern or ratings for Attributes for an expensive item is different from the pattern for an inexpensive item. This implies, simplistically, that participants use different rankings of the attributes for trusting a site when buying an expensive versus an inexpensive item

4.1.16 Summary of the Importance of Store Attributes

The analyses of the store attributes essentially confirms and extends the findings of the Features, the Image Size and the Layout. Firstly, some attributes are more important for soft trust. Given the scale mean of 4, one could say that rating below 3 or above 5 are relatively more important. However, one must be mindful of the wording of each question because for some, a higher rating means "important" while for others a lower rating means "important". To summarize, the most important attributes, in order of importance, are *Familiar Store* (2.21 from the middle rating of 4*), Bad Product Info* (1.97), *Friends Have Issues* (1.96), *Too Much Info* (1.64), *Broken Links* (1.29), *Bad Diction* (1.48) and *Bad Menu Bar* (1.12). Using that same, simple, criteria, *Clear Images* (.96), *Familiar Logo* (.95), *Bad Color Scheme* (.90), *Easy Navigation* (.75), *Privacy Policy* (.74), *Live Chat* (.64), and *Friends Recommend* (.37) are not important attributes for soft trust. Note that there is no consistent pattern to the categories of web design:

Familiar Store is Social Cues*, Bad Product Info* is Content Design, *Friends Have Issues* is Social Cues, *Too Much Info* is Content Design, *Broken Links* is structural Design, *Bad Diction* is Content Design, *Bad Menu Bar* is Structural Design, *Clear Images* is Graphic Design, *Familiar Logo* is Graphic Design, *Bad Color Scheme* is Graphic Design, *Easy Navigation* is Structural Design, *Privacy Policy* is Perceived Privacy and Security Design, *Live Chat* is Social Cues, and *Friends Recommend* is Social Cues. No particular category stands out. On the other hand, the results are completely reasonable, with the possible exception of *Privacy Policy* (though they tend to be obtuse). That is, the attributes that have the highest degrees of importance relative to the ability to trust the online store seem to have higher ratings. It also seems that friends are important providers of negative, but not positive, information.

In addition, item price does matter for the issue of "soft trust", but the effect of price is subtle and inconsistent. There were effects for *Privacy Policy*, *Too Much Info*, *Friends Have Issues*, *Live Chat*, *Bad Product Info, Bad Diction* and *Bad Color Scheme*. The effects did work in the "logical" direction. For example, people checked the privacy policy, which likely includes information about returns, more for expensive items. The negative experiences of friends matter more for expensive items. The lack of complete product information matters more for expensive items. Trivial design issues (spelling/grammar, colors, menu consistency) matter more for expensive items probably because they imply a degree of professionalism. Requests from an online store for excessive amounts of personal information matter more for expensive items. This may be an aspect of professionalism. Finally, the availability of live chat matter more for inexpensive items, to ask questions on the fly about colors, sizes etc. There were no effects for *Familiar Logo*, *Friends Recommend*, *Broken Links*, *Clear Images*, *Easy Navigation*, or *Familiar Store*. The lack of effects is sometimes difficult to explain. For example, it seems that the negative experiences of friends matter to item price, but the positive recommendations of friends do not (once the person has made a decision about the site).

These results are not entirely consistent with the relevant aspects of the Features. For example, in Section 4.1.4*, Ease of Navigation* and *Reviews of Website* were the only significant effects for item price. However the complementary questions (*Easy*

Navigation and *Friends Recommend*) were not significant in the current analysis. Similarly, *Clarity of Information* and *Color Scheme* were not significant in Section 4.1.4, but *Bad Product Info* and *Bad Color Scheme* were in the current analysis. On the other hand, *Image Size* and *Familiar with Store/Logo* were not significant in the analysis of the features while the complements *(Image Clarity, Familiar Store* and *Familiar Logo)* were not significant in the current analysis but Image size was.

As noted previously, such discrepancies can be explained by the different methods of asking. In the analysis of features the discussion was about the question that asked participants to rank the top three. As such, anything that was not "consistently" in the top three received equal ranks near 4. Therefore, subtle differences between the features ranked near 4 would be missed. The analyses of layout and image size (Sections 4.1.8, and 4.1.10), the questions asked had a forced choice approach. Participants had to pick one option. Although one of the options was "no difference", for some individuals, the format of the question focuses their attention on subtle distinctions. In the analysis of Attributes (Section 4.1.12), ratings were provided as a Likert scale – as such, there is no "direct" comparison of attributes. As such, each is rated in isolation. Each method provides slightly different information even if used to assess the same attributes. Nonetheless, the fact that the results change as a function of method implies that the effects of item cost are not that pronounced.

4.1.17 Security Checks (Hard Trust)

Two items of the survey (Questions 16 and 17) specifically asked whether or not participants checked for website features that advertised secure financial transactions (Security Lock and the HTTPS). Both items collected responses using a 5-point Likert scale ranging from never to always (coded as 0 to 4). In this case, there was no option for "other".

Table 4.7 provides the basic data for both questions. Note that responses are not spread equally across the different options. In addition, note that checking is more frequently checked for expensive items.

Table 4.7 Frequency with which the Security Lock and HTTPS are checked for Expensive and Inexpensive Items.

Security	Security Lock		HTTPS	
	Exp (%)	Inexp (%)	Exp (%)	Inexp (%)
Never	27 (20.5%)	28 (21.2%)	33 (25%)	30 (22.7%)
25% of the time	7 (5.3%)	15 (11.4%)	15 (11.4%)	12 (9.1 %)
50% of the time	13 (9.8%)	23 (17.4%)	17 (12.9%)	13 (9.8%)
75% of the time	21 (15.9%)	21 (15.9%)	23 (17.4%)	22 (16.7%)
100% of the time	64 (48.5%)	45 (34.1%)	44 (33.3%)	55 (41.7%)

The actual frequency is a measure of security consciousness. In principle, online shoppers should check security 100% of the time but about 30% *never* check. In fact, more than 50% do *not* diligently check security.

A first analysis examined the mean ratings for the expensive and inexpensive items. The Likert scale was treated as a five-point scale consistent with such use in much of the literature. Note that the middle of the scale was a value of 2.0. Hence, a mean greater than 2 implies that, on average, individual do check security (more than 50% of the time). For *Security Lock*, the mean rating for the expensive item was 3.67 (sd: 1.595), and the mean rating for the inexpensive item was (3.30, sd: 1.553). Note that both are higher than 2.0 and in fact, imply that most participants (>75%) check for the security lock. Of some note, the ratings on the expensive item were correlated with the ratings on the inexpensive item at $r = .889$ ($p < .001$). That it, those participants who had a high probability to look for the lock when buying expensive items also had a high probability to look for the lock when buying inexpensive items. Those participants who did not look for the lock when buying inexpensive items, did not look for the lock when buying expensive items. For *HTTPS*, the mean rating for the expensive item was 3.45 (sd: 1.627) and the mean rating for the inexpensive item was 3.23 (sd: 1.209) The correlation between the ratings was high at $r = .905$ ($p < .001$): Those who are more likely to look for the *HTTPS* with expensive items are also more likely to look for the *HTTPS* with inexpensive items.

A simple within-subjects t-test was used to examine the differences in ratings for expensive and inexpensive items. For *Security Lock*, the test indicated that the mean rating for the expensive item was significantly higher than the mean rating for the inexpensive item with $t(131) = 5.614$, $p < .001$. For *HTTPS*, the same test indicated that the mean rating for the expensive item was significantly higher than the mean rating for the inexpensive item with a $t(131) = 3.702$, $p < .001$.

The test of the means implied that ratings do change as a function of price. In a perfect world, the level of diligence would be the same for both expensive and inexpensive items (and both would be at 100%). Using different levels of diligence for different levels of expenditure implies a fundamental lack of understanding about internet security. Hence, for both *Security Lock* and *HTTPS*, the rating for the expensive was compared to the rating for the inexpensive using a same/different coding. If the participant assigned the same level of diligence to both the expensive and inexpensive items, a code of "same" (zero) was assigned. If they used different levels, a code of "different" (one) was assigned.

For *Security Lock*, the analysis of same versus different indicated that 101 participants (76.5%) selected the same frequency for both expensive and inexpensive items. Hence, 31 (23.5%) selected different degrees of diligence. To determine if this 23.5% represented a significant proportion of the underlying population, a simple one-group *t*-test was conducted which indicated that the proportion was significantly different from zero ($t[131] = 6.341$, $p < .001$). For *HTTPS*, the coding of same versus different indicated that 108 participants (81.8%) selected the same frequency for both expensive and inexpensive items. Hence, 24 (18.2%) selected different degrees of diligence. A simple one-group *t*-test indicated that the proportion was significantly different from zero ($t[131] = 5.395$, $p < .001$). Hence, a substantial part of the population changes their own tendency to check some security features (*Security Lock* or *HTTPS*) depending on the price of the item.

A final analysis examined the relationships between *Security Lock* and *HTTPS*. Table 4.8 presents the correlation matrix for this four variables (*Security Lock* for expensive and inexpensive, *HTTPS* for expensive and inexpensive). The results echo the previous.

Table 4.8 Correlations between Security Measures

	Security Lock		HTTPS	
	Expensive	**Inexpensive**	**Expensive**	**Inexpensive**
Lock: Expensive	1.000	.889	.765	.735
Lock: Inexpensive		1.000	.812	.852
HTTPS Expensive			1.000	.905
HTTPS: Inexpensive				1.000

The high correlations imply that some people are simply more security conscious than others.

4.2 HARD TRUST VS. SOFT TRUST

The analysis of Feature Rankings, Website Layout, Image Size and Attribute Ratings have focused on the amount of "soft trust" associated with individual components of a website or online store. Two items specifically addressed the specific security features of a website (*Security Lock* and *HTTPS*) that are associated with "hard trust". This set of analysis compares "hard trust" (the specific security features) to "soft trust" (the other components of design). As noted earlier, these are largely independent, but one could expect "hard trust" to be related to "soft trust" because some effort is required to set it up (i.e., only conscientious stores would bother) or because some shoppers misattribute the meaning of HTTPS. Indeed, as noted in the analysis of the Features, some participants specifically mentioned security as a component of trust.

The first analysis examined the association of "soft" and "hard trust" for the expensive and inexpensive items separately. A simple correlation was computed between each of the prior elements (features or design) and security (see Table 4.8). In Table 4.9, the Features are grouped into Security, Design, Social Cues, Content and Navigation. In addition, a (+) or (-) has been added to each feature to indicate that higher scores imply more trust (+) or that higher scores imply less trust (-). This is important for understanding the correlations.

Table 4.9 The Correlations between "Features" and Security for Expensive Items (n = 122).

Category	Feature	Security Lock	HTTPS
Security	Security Lock	1.000	.771***[a]
	HTTPS	.771***	1.000
	Privacy Policy (+)	.032	.174
	Too Much Info (+)	.007	.126
Graphic design	**Image size (-)**	-.048	-.094
	Professional (-)	-.076	-.120
	Color scheme (-)	.000	.042
	Familiarity with store/logo (-)	-.046	.063
	Familiar Logo (+)	-.172	-.134
	Clear images (+)	-.169	-.137
	Bad Color Scheme(-)	-.091	-.074
	Familiar store (+)	.061	.004
Social Cues	**Website Reviews (-)**	.006	.089
	Friends recommend (+)	-.271**	-.153
	Friend have issues (-)	-.017	-.022
	Live chat (+)	-.234**	-.247**
Content design	**Clarity of Information (-)**	.043	.009
	Broken links (-)	.075	.130
	Bad Product Info (-)	-.169	-.132
	Bad Diction (-)	-.043	-.114
Structure design	**Ease of Navigation (-)**	.063	-.001
	Easy Navigation (+)	-.168	-.209*
	Bad Menu bar (-)	-.100	-.212*

*Notes: Bolded Measures are from Analysis 1. Those note bolded are from Analysis 4. [a] The value is slightly different from that in Table 4.9 because all correlations in Table 4.10 have n=122 (no missing data for any question). ***p < .001, **p<.01, *p<.0*

To interpret this, one should first note that none of the correlations are particularly large. Hence, even the strongest relationships are not particularly strong. Secondly, one should note that although the measures of "hard trust" are highly correlated, the measures of "hard trust" with "soft trust" are not. Hence, the two are relatively independent concepts in the minds of participants. This may be due to true independence or to the effect of random variation. Thirdly, one must be careful of the direction of the coding of

response. For example, for all of the measures in Analysis of the Features, lower scores imply that the item is *more* important for trust.

There is a *negative* association between *Friends Recommend* and security. This implies that those who trust the recommendations of their friends (i.e., recommendations of friend can override personal misgivings) do not look for the *Security Lock*. However, those who do not trust the recommendations of their friends do tend to look for the *Security Lock* more often. There is also a negative association between *Live Chat* and security. In this case, it means that those who are inclined to trust a site because of the presence of a chat room, are not inclined to look for the security features (*Security Lock* and *HTTPS*). However, those who are not impressed by the availability of a chat room do check for security. In this case, it seems that there is an either/or type of thinking. Some trust friends and chat room (i.e., Social Cues) while others trust the security features.

Table 4.10 repeats the analysis but for the inexpensive items. Note that the pattern is not quite the same. Firstly, there are more significant correlations. Secondly, those correlations are larger in a relative sense (but not large).Thirdly, some items are correlated in Table 4.10 that were not correlated in Table 4.9.

Table 4.10 The Correlations between "Features" and Security for Inexpensive Items (n = 119).

Category	Feature	Security Lock	HTTPS
Security	Security Lock	1.000	.847***
	HTTPS	.847***	1.000
	Privacy Policy (+)	.145	.199
	Too Much Info (+)	-.006	.050
Design	**Image size (-)**	-.059	-.076
	Professional (-)	-.022	-.043
	Color scheme (-)	.037	.066
	Familiarity with store/logo (-)	.080	.121
	Familiar Logo (+)	-.220*	-.184*
	Clear images (+)	-.164	-.123
	Bad Color Scheme(-)	-.112	-.036
	Familiar store (+)	-.007	-.033
Social Cues	**Website Reviews (-)**	-.043	-.066
	Friends recommend (+)	-.387**	-.313**
	Friend have issues (-)	-.214*	-.196*
	Live chat (+)	-.283**	-.234**
Content	**Clarity of Information (-)**	-.031	-.013
	Broken links (-)	-.037	.031
	Bad Product Info (-)	-.309**	-.207*
	Bad Diction (-)	-.065	-.059
Structure	**Ease of Navigation (-)**	.073	.038
	Easy Navigation (+)	-.166	-.118
	Bad Menu bar (-)	-.088	-.112

Notes: See Table 4.9

As with the previous expensive items, there is a negative correlation between *Friends Recommend* and security (*Security Lock* and *HTTPS*). There is a similar negative correlation for *Live Chat.* Note that in both cases, the correlations for the inexpensive items are much stronger than those of the expensive items (the proportion of variance explained rises from about 4% (maximum r = .271) to about 15% (maximum r = .387). In addition, there are negative correlations between *Friends Have Issues* and Security, but this implies that those who listen to the objections of their friends will check security. Those who do not listen to friends do not check security (generally reckless behavior). There is a negative association between *Bad Product Info* and security (*Security Lock* and

HTTPS) implying that those who check security also worry about the quality of product information. That is, those who do not check security also do not worry about product presentation (generally reckless behavior). Finally, there was a negative correlation between security and *Familiar Logo* (i.e., a Visa symbol). Those who check security are also more comfortable with standard logos.

4.3 Secondary Analyses of Demographic Variables

A number of demographic variables were collected (Age, Gender, Education, Country). These were intended to serve as "control" or "covariate" variables. For example, age and the associated experience are issues for online shopping. In a similar fashion, data was collected on the payment method(s) (Debt card, Credit Card, PayPal, Pre-paid credit card, and Pre-paid store card) and on the mode(s) of shopping (Mobile phone, Tablet, and Lap top). Finally, data was collected about the typical purchases (Clothes, Jewelry, Technology, Home Décor, Furniture, Games/Music, Books, and Software). Again, these variables were considered as controls or covariates.

A term used in the statistical literature for such variables is moderator. That term implies that the effect of item price (high vs. low) on trust is moderated by, for example, education. It could be expected that those with a higher level of education have the same degree of trust when buying expensive and inexpensive items. However, those with a lower level of education have more trust issues when buying a more expensive item. To assess the effect of a moderator variable, one uses a two-way design (as in Analysis of the Features or Attributes) to obtain the interaction. If the interaction is significant, then the variable is a moderator. If the interaction is not significant, the variable is not a moderator. For example, one can examine the effect of *Price* and *Age* on *Clarity of Information*. Price was considered alone in the analyses of the Features. Here, when combined with Age, one can see the interaction of Price by Age. In a two-way design, one also gets the main effect of Price and the main effect of Age. The main effect of Price should provide the same basic results as its prior analysis in Features. It will not be identical because an analysis in isolation is not quite the same as an analysis in the context (of other variables).

The analysis of *Gender* as a moderator is presented in Table 4.11. Table 4.11provides the main effect of *Price* (which should replicate – in terms of significance – Table 4.3), the main effect of *Gender*, and the interaction. The interaction is the primary interest.

Table 4.11 The role of Gender as a Moderator Variable for Features

Features	Price	Gender	Interaction
Clarity of Information	F= 1.122, p < .292	F = 0.263, p < .609	F = 0.004, p < .948
Image Size	F= 1.132, p < .289	F = 1.645, p < .202	F = 0.004, p < .948
Professional Looking	F= 2.088, p < .151	F = 0.412, p < .512	F = 0.850, p < .358
Color Scheme	F= 0.175, p < .677	F = 2.544, p < .113	F = 0.175, p < .677
Ease of Navigation	F=12.857, p < .001	F = 0.278, p < .599	F = 0.508, p < .477
Reviews of Website	F= 4.635, p < .033	F = 0.122, p < .728	F = 1.931, p < .167
Familiar with Store	F= 2.194, p < .141	F = 6.469, p < .012	F = 0.224, p < .637

Firstly, the main effect of *Price* does replicate the analysis in Table 4.3. That is, *Ease of Navigation* and Reviews of Website had significant effects. Secondly, there was only one main effect for *Gender*, on the variable *Familiarity with Store/Logo*. It seems that females (mean 2.51) rank familiarity higher than males (mean 3.02). Finally, there were no significant interactions. Hence, one can conclude that gender is *not* a moderator for the ranking of importance of features.

The analysis of *Age* as a moderator is presented in Table 4.12. Table 4.12 provides the main effect of *Price* (which should replicate Table 4.11 and Table 4.3), the main effect of *Age*, and their interaction. The interaction is the primary interest.

Table 4.12 The role of Age as a Moderator Variable for Features

Features	Price	Age	Interaction
Clarity of Information	F= 1.181, p < .279	F = 1.315, p < .272	F = 0.379, p < .769
Image Size	F= 0.433, p < .512	F = 0.559, p < .643	F = 1.202, p < .312
Professional Looking	F= 1.371, p < .244	F = 3.084, p < .030	F = 1.217, p < .306
Color Scheme	F= 0.010, p < .922	F = 0.460, p < .711	F = 0.647, p < .586
Ease of Navigation	F= 5.670, p < .019	F = 1.864, p < .139	F = 0.252, p < .860
Reviews of Website	F= 0.866, p < .354	F = 0.531, p < .662	F = 0.268, p < .848
Familiar with Store	F= 0.145, p < .705	F = 2.274, p < .047	F = 0.930, p < .428

Firstly, the main effect of *Price* generally replicates the analysis in Table 4.3 in that *Ease of Navigation* had a significant effect. However the effect for *Reviews of Website* disappeared. This is not uncommon when comparing analysis in isolation to in context. Secondly, there were two main effects for *Age*, on the variables *Professional Looking* and *Familiarity with Store/Logo*. The higher ages tend to rank professional looking lower, from a mean rank of 3.02 at the lowest age to a mean rank of 4.00 at the highest age. The higher ages tend to rank familiarity higher, from a mean rank of 3.94 at the lowest age to a mean rank of 2.88 at the higher ages. Finally, there were no significant interactions. Hence, one can conclude that gender is *not* a moderator for the ranking of importance of features.

The analysis of *Education* as a moderator is presented in Table 4.13. Table 4.13 provides the main effect of *Price* (which should replicate Table 4.12 and Table 4.3), the main effect of *Education*, and their interaction. The interaction is the primary interest.

Table 4.13 The role of Education as a Moderator Variable for Features

Features	Price	Education	Interaction
Clarity of Information	F= 0.570, p < .452	F = 0.927, p < .430	F = 0.102, p < .959
Image Size	F= 0.017, p < .896	F = 3.419, p < .019	F = 0.693, p < .558
Professional Looking	F= 1.907, p < .170	F = 0.145, p < .933	F = 0.292, p < .831
Color Scheme	F= 0.038, p < .846	F = 0.445, p < .821	F = 0.105, p < .957
Ease of Navigation	F= 1.923, p < .168	F = 0.498, p < .116	F = 2.008, p < .116
Reviews of Website	F= 2.545, p < .113	F = 1.038, p < .378	F = 0.035, p < .991
Familiar with Store	F= 1.706, p < .194	F = 5.001, p < .003	F = 0.126, p < .945

In this case, the main effect of *Price* does not replicate the analysis in Table 4.3. This is not uncommon – it implies that when controlling for education, the effect of Price is diminished. There were two main effects for *Education*: on the variables *Image Size* and *Familiarity with Store/Logo*. As education increases, the rank of image size decreases (image size is less important), from a mean rank of 3.83 at the lowest education to a mean rank of 4.00 at the highest education. However, it should be added that it was actually the MSc category that had the highest ranks (hence importance) for image size with a mean rank of 3.55. As education increases, the ranking for familiarity get higher, from a mean rank of 2.90 at the lowest education to a mean rank of 1.97 at the higher educations.

Finally, there were no significant interactions implying *Education* is *not* a moderator for the ranking of importance of features.

The same analyses were repeated for the measures used in Analysis of the Attributes (Questions 18/19). Table 4.14 present the analysis of gender.

Table 4.14 The role of Gender as a Moderator Variable for Attributes

Features	Price	Gender	Interaction
Privacy Policy	F= 10.462, p < .002	F = 0.103, p < .749	F = 0.030, p < .863
Too Much Info	F= 8.496, p < .004	F = 3.363, p < .069	F = 0.805, p < .371
Familiar logo	F= 0.233, p < .630	F = 2.480, p < .118	F = 0.858, p < .356
Friends Recommend	F= 0.840, p < .391	F = 0.517, p < .474	F = 1.389, p < .241
Friends Have Issues	F= 10.870, p < .001	F = 0.082, p < .775	F = 0.367, p < .546
Live Chat	F= 4.474, p < .036	F = 1.374, p < .243	F = 0.887, p < .348
Broken Links	F= 0.702, p < .404	F = 0.055, p < .815	F = 1.745, p < .189
Clear Images	F= 0.793, p < .375	F = 0.000, p < .988	F = 0.503, p < .480
Bad Product Info	F= 9.116, p < .003	F = 0.747, p < .712	F = 0.137, p < .712
Bad Diction	F= 5.862, p < .017	F = 5.121, p < .025	F = 0.550, p < .814
Easy Navigation	F= 0.018, p < .894	F = 1.395, p < .240	F = 0.423, p < .517
Bad Menu Bar	F=17.301, p < .001	F = 0.001, p < .975	F = 0.398, p < .529
Bad Color Scheme	F= 10.659, p < .001	F = 0.555, p < .458	F = 0.046, p < .831
Familiar Store	F= 0.807, p < .371	F = 0.035, p < .853	F = 0.022, p < .881

The main effect for Price generally replicates the earlier analysis of the attributes. In addition there was one interesting effect of Gender on Bad Diction. It seems that, even on a website, women care more about spelling and grammar. Importantly, there were no interactions. The analysis of age is provided in Table 4.15.

Table 4.15 The role of Age as a Moderator Variable for Attributes

Features	Price	Age	Interaction
Privacy Policy	F= 2.091, p < .151	F = 4.165, p < .008	F = 0.410, p < .746
Too Much Info	F= 1.311, p < .254	F = 1.915 p < .131	F = 0.168, p < .918
Familiar logo	F= 0.146, p < .730	F = 3.238, p < .025	F = 1.352, p < .261
Friends Recommend	F= 0.039, p < .845	F = 3.093, p < .030	F = 0.489, p < .693
Friends Have Issues	F= 2.429, p < .122	F = 0.635, p < .594	F = 0.542, p < .655
Live Chat	F= 5.586, p < .020	F = 3.253, p < .024	F = 1.194, p < .315
Broken Links	F= 0.209, p < .648	F = 2.241, p < .087	F = 1.004, p < .393
Clear Images	F= 0.239, p < .626	F = 2.309, p < .080	F = 1.838, p < .144

Features	Price	Age	Interaction
Bad Product Info	F= 2.085, p < .151	F = 3.111, p < .029	F = 0.196, p < .899
Bad Diction	F= 1.504 p < .222	F = 1.283, p < .283	F = 0.694, p < .557
Easy Navigation	F= 0.014, p < .907	F = 0.522, p < .668	F = 0.076, p < .973
Bad Menu Bar	F= 2.759, p < .099	F = 0.641, p < .590	F = 0.705, p < .551
Bad Color Scheme	F= 0.899, p < .345	F = 0.063, p < .979	F = 0.171, p < .916
Familiar Store	F= 0.294, p < .589	F = 0.827, p < .481	F = 0.257, p < .856

Interestingly, many of the previous main effects of Price have disappeared. However, there were many effects of Age. While this is not central to the current thesis, it does imply that some of the aforementioned effects of Price may represent an Age effect. This would require future work to fully understand. Importantly, there were no interactions. The analysis of education is provided in Table 4.16.

Table 4.16 The role of Education as a Moderator Variable for Attributes

Features	Price	Education	Interaction
Privacy Policy	F= 7.266, p < .008	F = 0.693, p < .558	F = 0.302, p < .824
Too Much Info	F= 3.151, p < .078	F = 1.511 p < .215	F = 0.164, p < .921
Familiar logo	F= 0.002, p < .962	F = 0.370, p < .775	F = 0.471, p < .703
Friends Recommend	F= 0.050, p < .823	F = 0.643, p < .589	F = 0.456, p < .713
Friends Have Issues	F= 3.394, p < .068	F = 0.764, p < .516	F = 0.572, p < .635
Live Chat	F= 0.580, p < .448	F = 0.233, p < .873	F = 1.338, p < .265
Broken Links	F= 3.390, p < .068	F = 0.522, p < .668	F = 2.054, p < .110
Clear Images	F= 0.558, p < .457	F = 0.376, p < .771	F = 0.210, p < .890
Bad Product Info	F= 2.351, p < .128	F = 0.771, p < .512	F = 1.089, p < .356
Bad Diction	F= 2.011 p < .159	F = 0.456, p < .714	F = 0.481, p < .696
Easy Navigation	F= 0.034, p < .855	F = 0.207, p < .892	F = 1.107, p < .349
Bad Menu Bar	F= 2.192, p < .141	F = 1.254, p < .293	F = 1.305, p < .251
Bad Color Scheme	F= 1.064, p < .304	F = 0.774, p < .511	F = 2.367, p < .074
Familiar Store	F= 0.674, p < .413	F = 0.475, p < .700	F = 0.165, p < .919

As with Age above, some of the main effect for Price have disappeared (i.e., have moved to not-significant). However, there were no effects for Education. This may be due to the fact that the range of education was quite small. Finally, crucially, there were no interactions.

4.4 Analysis of Differences between Groups of Participants

For the survey, there were actually two groups of participants (see Chapter 4). The first group (n = 110) completed only the survey. The second group (n= 22) completed the survey and an experimental task focused on web design and trust. Because the experimental task was completed before the survey, it may have induced participants to think more deeply about online shopping. It is, therefore, possible that the experience of the second group cause a change in their responses to the survey. This was tested in a series of two-group between-subjects t-tests. There was one t-test for each of the variables used, including the demographic and control variables. It was expected that "some" would show random differences (after all, they are two different groups of participants), but those differences should be small and without any pattern. Table 4.17 provides the analysis of the differences between the two groups.

Table 4.17 The Effect of Participation on Features

Features	Survey Only	Survey + Experiment	t-test
Gender	0.54 (0.50)	0.10 (0.30)	t = 3.941, p < .001
Age	1.74 (0.80)	1.36 (0.58)	t = 2.081, p < .039
Education	1.81 (0.84)	1.91 (0.64)	t = 0.537, p < .592
Clarity of Information (Exp)	2.87 (1.13)	2.59 (1.22)	t = 1.050, p < .295
Image Size (Exp)	3.75 (0.66)	3.73 (0.55)	t = 0.122, p < .903
Professional Looking (Exp)	3.37 (0.97)	3.00 (1.27)	t = 1.562, p < .121
Color Scheme (Exp)	3.98 (0.19)	3.59 (0.91)	t = 4.147, p < .001
Ease of Navigation (Exp)	3.66 (0.71)	3.55 (0.74)	t = 0.710, p < .479
Reviews of Website (Exp)	2.75 (1.20)	2.68 (1.21)	t = 0.260, p < .796
Familiar with Store (Exp)	2.65 (1.31)	3.14 (1.25)	t = 1.627, p < .108
Clarity of Information (Inexp)	2.93 (1.13)	2.82 (1.30)	t = 0.403, p < .688
Image Size (Inexp)	3.75 (0.67)	3.41 (0.96)	t = 1.989, p < .049
Professional Looking (Inexp)	3.23 (1.03)	3.00 (1.20)	t = 0.920, p < .359
Color Scheme (Inexp)	3.98 (0.19)	3.50 (0.96)	t = 4.856, p < .001
Ease of Navigation (Inexp)	3.49 (0.90)	2.77 (1.11)	t = 3.293, p < .001
Reviews of Website (Inexp)	2.91 (1.19)	3.18 (1.05)	t = 0.997, p < .321
Familiar with Store (Inexp)	2.75 (1.31)	3.45 (1.10)	t = 2.348, p < .020

Notes: Gender was coded as a binary (male 0, female 1), so the mean is the proportion of females.

There are some differences on demographics, but the important factor of education is not significant. In addition, for the expensive items, only one of the Features (Color Scheme of all things) is different between the two groups. For the inexpensive items four features are ranked differently: Image Size, Color Scheme, Ease of Navigation and Familiarity with Store. However, note that the means are actually quite close and that the means for the second group are a bit *lower*. If the experimental phase had altered perceptions, it seems to have been in the direction of ranking all elements more equal.

4.5 Summary of All Results

The analysis of the survey contained the analyses of many different questions. The main results (those that address the hypotheses) are presented in Table 4.18.

Table 4.18 Summary of Results

Design	Question		Ranking of Rating by Question	Price Differences
	Number	Feature		Feature more important for:
Structural	11/12	Ease of Navigation	#5/7 --bottom 3	Inexpensive
	14	Site Layout		list for expensive grid for inexpensive
	18/19	Broken Links	#5/14	
		Bad Menu Bar	#7/14 –middle 2	Expensive
		Easy Navigation	#11/14	
Graphic	11/12	Professional Looking	#4/7 –middle	
		Image Size	#6/7–bottom 3	
		Color Scheme	#7/7--bottom 3	
	15	Image Size		Big for expensive Big or small for inexpensive
	18/19	Clear Images	#8/14 –middle 2	
		Familiar Logo	#9/14	
		Bad Color Scheme	#10/14	Expensive

Design	Question		Ranking of Rating by Question	Price Differences
	Number	Feature		Feature more important for:
Content	11/12	Clarity of Information	#3/7 --top 3	
	18/19	Bad Product Info	#2/14 --top 3	Expensive
		Bad Diction	#6/14	Expensive
Social Cues, Presence	11/12	Familiarity with online store or logo	#1/7 --top 3	
		Reviews of Website	#2/7 --top 3	Expensive
	18/19	Familiar Store	#1/14–top 3	
		Friends Have Issues	#3/14–top 3	Expensive
		Live Chat	#13/14–bottom 3	Inexpensive
		Friends Recommend	#14/14 –bottom 3	
Security	18/19	Privacy Policy	#12/14–bottom 3	Expensive
		Too Much Info	#4/14	Expensive
	16	Security Lock	>75%	Expensive
	17	HTTPS	>75%	Expensive

The results imply that aspects of each design category do matter for soft trust, and that the item price is often an issue for trust.

For soft trust, aspects of Social Cues or Presence recommendations of friends and other websites are important. In addition, it seems that the negative recommendations of friends have more impact than the positive recommendations of friends. Content was considered to be the second most important aspect of trust. These aspects were consistently rated high. Finally, aspects of graphic design tend to be uniformly unimportant for trust.

For hard trust, most individuals were aware of the need for hard trust, and yet, consumers check for security more when purchasing an expensive item. This may be related to the notion that they prefer familiar stores that are recommended by a friend, but even still, individuals must make sure that the connection is secure before providing any of their personal or credit card information.

CHAPTER 5 SCENARIO BASED TASKS EXPERIMENT AND INTERVIEW

This Chapter discusses the results obtained from the Scenario based tasks experiment. It also discusses the qualitative results of the mini-interview and the semi-structured interview.

The scenario based tasks experiment is a controlled study that was designed to capture the participants' explanation on what design dimensions helps them trust a website. A detailed explanation of this method is included in Chapter 3.

5.1 RESULTS AND DISCUSSION OF SCENARIO BASED TASKS EXPERIMENT

5.1.1 Data Coding

For the Post-Task Questionnaires, there were 10 questions per site (Sites A, B, C and D). The response to each question (hereafter: "response to each question" is simply called "response") was coded from 1 to 7, with 1 implying "strongly disagree", 7 implying "strongly agree", and 4 for "neutral". All of the questions had a positive valence, and as such, for all questions, a higher score implied a more positive impression of the site. There were no missing data for this experiment. Analyses were conducted within SPSS version 20.0.

The main analysis focused on the two Post-Test Questionnaires that contained 10 pairs of questions (see table 5.1). There was one set of questions for Sites A and B with the expensive item (Mobile phone), one set for Sites A and B with the inexpensive item (Mobile phone covers), one set for Sites C and D with the expensive item (watches) and finally, one set for Sites C and D with the inexpensive items. For each individual Site and Item Price combination, there were 10 questions.

In this analysis, it must be noted that the important (critical) information is contained within each individual question. That is, for example, for Question 1, the important analyses compare:

- the responses to the expensive item in Site A to Site B
- the responses for the inexpensive item in Site A to Site B
- the responses of the expensive item to the inexpensive items in Site A
- the responses of the expensive item to the inexpensive items in Site A

Table 5.1 The Ten Items of the Post-Task Questionnaire.

Design Dimension	Question number	Paired to number	Question
Structure	1 : 2	1	I found the first (second) website easy to navigate
Structure	3 : 4	2	Navigating to the item was easy in the first (second) website
Structure	5 : 6	3	The navigation menu was helpful to reach the item I wanted to buy in the first (second) website
Graphic	7 : 8	4	The images were easy to view on the first (second) website
Content	9 : 10	5	Product information was complete in the first (second) website
Structure	11 : 12	6	Checking out was organized on the first (second) website
Structure	13 : 14	7	The layout of the items made it easier to choose on the first (second) website
Graphic	15: 16	8	The sizes of the images made it easier to buy an item on the first (second) website
Graphic	17: 18	9	I liked the color scheme of the first (second) website
Graphic	19: 20	10	I trusted the first (second) website because it looked professional

This survey was used twice: once for the first pair of website (i.e., A and B) and once for the second pair or websites (i.e., C and D). Each question was answered using a 7 point Likert-type scale with 1 indicating "strongly disagree", 4 indicating "neutral", and 7 indicating "strongly agree". Table 5.2 provides the expected ratings for each website using a simple poor, neutral, good system. Note that the actual ratings (good, natural, poor) do not matter, what matters is that the sites are different.

Table 5.2 Predicted Responses for Each Question, for Each Website.

Question	Rating of A	Rating of B	Favors	Rating of C	Rating of D	Favors
1: Structure	neutral	neutral	-	neutral	Good	D
2: Structure	neutral	neutral	-	good	Neutral	D
3: Structure	neutral	good	B	good	Neutral	C
4: Graphic	poor	good	B	good	Neutral	C
5: Content	neutral	good	B	poor	Good	D
6: Structure	good	poor	A	poor	Poor	-
7: Structure	good	neutral	A	neutral	Good	D
8: Graphic	poor	neutral	B	good	Poor	C
9: Graphic	neutral	good	A	neutral	Neutral	-
10: Graphic	good	neutral	A	neutral	Good	D

5.1.2 Participants

A total of 24 participants completed the experiment part of this research, with 20 males and 4 females. Participants were recruited by e-mail (see Appendix A: Ethics) by using Notice Digest and the moderated email lists available in the author's department. The age range of the participants mostly fell within the "18 – 25" age category as shown in Figure 5.1. This is due to the fact the most of the sample consisted of undergraduate students as shown in Figure 5.2. A number of 20 participants had an "undergraduate" level of education with no participants representing "PhD" or "other" categories.

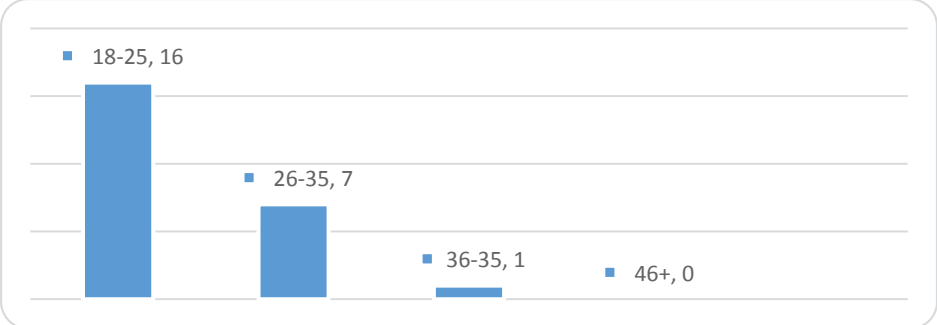


Figure 5.1 Age ranges of Participants.

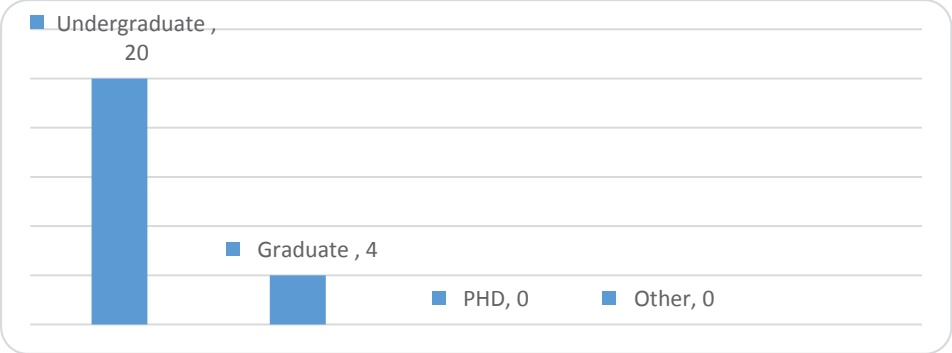


Figure 5.2 Level of education.

Of the 24 participants, 95.8% reported buying Technology, whereas only 4.2% reported buying Home Décor. Other categories are shown in Figure 5.3.

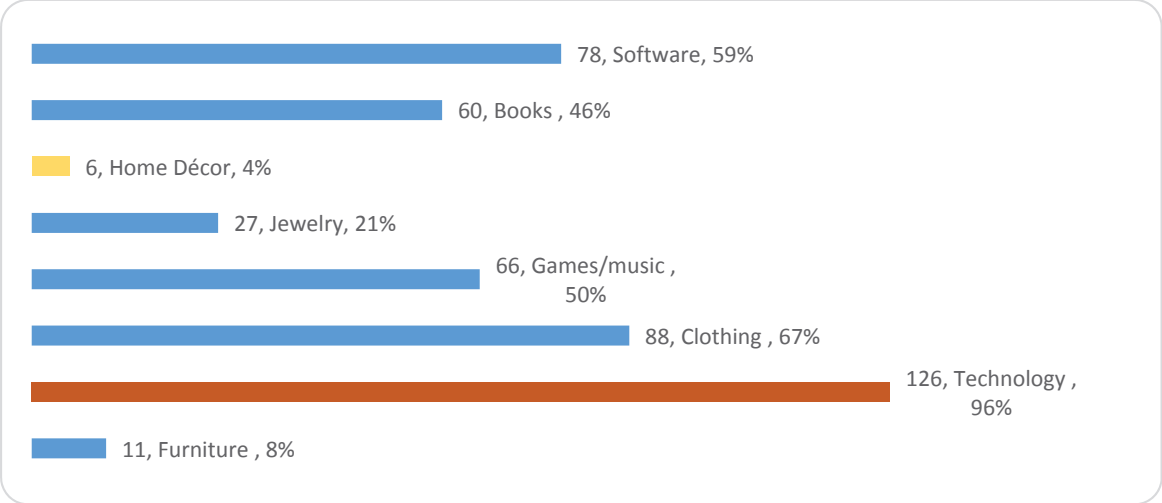


Figure 5.3 Types of online purchases.

Of the 24 participants, 91.7% reported using Credit Cards, while no one used Pre-paid Credit Cards, or pre-paid Store Cards (see Figure 5.4). Note that shoppers often use more than one payment method, with a mean of 1.63 methods (a mode of 1 and 2, median of 2) and a range from 1 to 3.

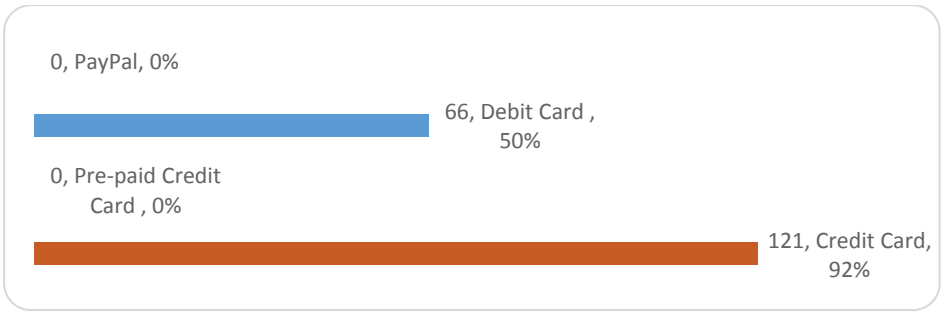


Figure 5.4 Online methods of payment.

Finally, of the 24 participants, 100.0% reported using Laptop or Desktop computer and no one reported using Tablets when purchasing online. Note that shoppers often use more than one access method, with a mean of 1.29 methods (a mode of 1, median of 1) and a range from 1 to 2 (see Figure 5.5).

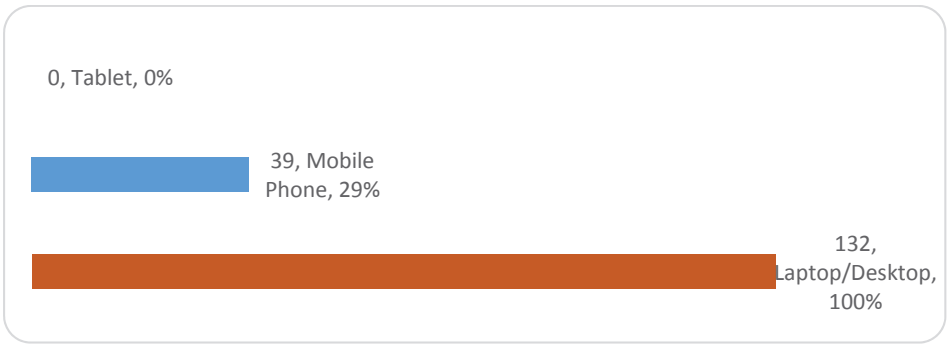


Figure 5.5 Devices used for online purchases.

Of these 24 participants, 22 also completed the survey. For all participants, the survey was completed *after* the experimental study. The results of those 22 participants were compared with the results of those participants who only completed the survey study. The two groups were then combined and analyzed. (See Chapter 4 for information about the survey study).

5.1.3 Post-Task Questionnaire

The data analysis focused primarily on the comparison of Site A with Site B (Scenario 1), and separately on the comparison of Site C with Site D (Scenario 2). Each comparison involved the same 10 questions. It was intended that Question 1 for Site A be

compared to Question 1 for Site B, et cetera. In addition, for each scenario, there was one expensive item (a mobile phone in Scenario 1; a watch in Scenario 2) and one inexpensive item (a phone cover in Scenario 1; a gift box in Scenario 2). Hence, for each scenario, there was also the comparison of Item Price (Expensive vs. Inexpensive).

The analysis of the experimental data was conducted, and is presented, in the same manner as the previous analysis of the questionnaire data. That is, the analyses moved from the simpler to the more complex.

In *Comparison of Sites A and B and C and D* , the response about the phone in Site A was compared to the response about the phone in Site B (i.e., the two expensive items in Scenario 1). Similarly, the response about the phone cover in Site A was compared to the response about the phone cover in Site B (i.e., the two inexpensive items in Scenario 1). These analyses were done for each question. These simply indicate whether or not the site design matters to the content of for each question. Note that for these analyses, item price is controlled.

The analysis was repeated for Scenario 2. The response about the watch in Site C was compared to the response about the watch in Site D (i.e., the two expensive items in Scenario 2), and the response about the gift box in Site C was compared to the response about the gift box in Site D (i.e., the two inexpensive items in Scenario 2).

In *Difference between Sites A and B (or C and D) for Expensive and Inexpensive Items*, a two-way ANOVA (Cost by Site) was conducted for each question within Scenarios 1 and 2 (i.e, 20 analyses). This was intended to determine whether or not the change from Site A to Site B (or Site C to D) was the same for Expensive and Inexpensive items. The interaction is the test of this. This would show that item cost does have an effect, though that effect is more subtle than the direct effect of cost (the previous analyses). For example, it could be that there is a small difference between Expensive and Inexpensive items in Site A, but a large difference between Expensive and Inexpensive items in Site B. This subtlety would not be obvious in the previous analysis.

In *Comparison of Sites and Cost* a one-way analysis that compared responses across questions (i.e., do the different questions produce different ratings?) within each site and item-cost combination (i.e., 8 analyses). Table 5.2 provided specific predictions as to which questions should provide higher values. These analyses should simply verify that questions

do produce some variability in responding (i.e., these analyses are conceptually similar to manipulation checks).

Finally, in *The differences of Patterns of Responses for Questions for Expensive and Inexpensive Items in each Site*, a two-way analysis compared responses as a function of Question and Item price within each site (Sites A, B, C and D). Table 5.2 provided specific predictions as to which questions should provide higher values. The main point to the analysis was the assessment of the interaction. The interaction indicates whether or not the pattern of responses to questions for the Expensive item is the same as the pattern of responses to questions for the Inexpensive item. If it is significant, this shows that the price of an item has different effects (i.e., matters in different questions) in each site. As with the third analysis, it is a more subtle check on the effect of item price.

5.1.4 Results

For Scenario 1 (phone and phone cover), the mean responses for each Question, for each Site and each Item Price are provided in Table 5.3.

Table 5.3 Mean Responses per Question for Scenario 1 (Sites A and B).

	Expensive (Mobile Phone)				**Inexpensive (Mobile Cover)**			
	Site A		**Site B**		**Site A**		**Site B**	
Question	**Mean**	**Sd.**	**Mean**	**Sd.**	**Mean**	**Sd.**	**Mean**	**Sd.**
1.The website was easy to navigate	5.92	0.31	4.92	0.47	6.33	0.31	4.75	0.47
2. Navigating to the item was easy	5.83	0.29	5.33	0.43	6.33	0.29	5.33	0.43
3. The navigation was helpful to reach the item I wanted to buy	6.42	0.23	5.17	0.45	6.08	0.23	5.00	0.45
4. The images were easy to view	5.50	0.48	5.17	0.46	5.58	0.48	5.75	0.46
5. Product information was complete	5.33	0.44	4.58	0.41	6.00	0.44	5.33	0.41
6. Checking out was organized	6.08	0.27	4.67	0.42	6.17	0.27	4.00	0.42
7. The layout of the items made it easier to choose	6.08	0.32	4.00	0.53	5.75	0.32	4.58	0.53
8. The sizes of the images made it easier to buy an item	4.00	0.54	5.00	0.48	4.58	0.54	5.58	0.48
9. The color scheme is appropriate	6.00	0.47	2.83	0.59	5.08	0.47	3.67	0.59
10. The website is professional	6.25	0.42	2.75	0.37	5.33	0.42	3.75	0.37

The first observation is that almost all the ratings are above 4. Hence, there is a positive bias in responding. No site is actually receiving a negative rating on average. However, some participants did score each site with a 1 (Strongly Disagree) for each of the questions. That is, for every question, scores ranged from 1 to 7. The full range of the scale was used which supports the utility of the questions.

Note that when dealing with the Expensive item, Site A tended to receive higher ratings than Site B on every question. The only exception was "*The sizes of the images made it easier to buy an item*" (Q8). This is not consistent with the design of Sites A and B. Site B should have been higher on Questions 2, 3, 4, 5, and 8 (see Table 5.1).

The situation was more ambiguous for the Inexpensive item. Most questions are higher for Site B. That is, responses to "*The images were easy to view on the first/second website*"(Q4), "*Product information was complete in the first/second website*" (Q5), "*The layout of the items made it easier to choose on the first/second website*" (Q7), "*The sizes of the images made it easier to buy an item on the first/second website*" (Q8). "*I liked the color scheme of the first website*" (Q9) and "*I trusted the first website because it looked professional*" (Q10) were all higher in Site B. As noted in Table 5.2, Site B should have been higher on Questions 2, 3, 4, 5, and 8, with 10 being an unknown.

The pattern of responding across questions is consistent within a site. For example, the correlation between the *means* of Expensive and Inexpensive items in Site A is $r = .584$ ($p < .001$) while the correlation between the *means* of Expensive and Inexpensive items in Site B is $r = .819$ ($p < .001$). Note that these are correlations across group means – not individual participants. Different participants rated expensive and inexpensive items. On the other hand, there is no consistency between sites. The correlation between the Expensive items in Sites A and B is $r = -.322$ ($p < .026$). The correlation between the Inexpensive items in Sites A and B is $r = .066$ ($p < .610$). This consistency within, but not between, sites is perfectly reasonable. That is, for some questions, Site A should be higher whereas for other questions, Site B should be higher.

For Scenario 2 (watches and gift boxes), the mean responses for each Question, for each Site and each Item Price are provided in Table 5.4.

Table 5.4 Mean Responses per Question for Scenario 2 (Sites C and D).

	Expensive (watch)				Inexpensive (gift box)			
	Site C		Site D		Site C		Site D	
Questions	Mean	Sd	Mean	Sd	Mean	Sd	Mean	sd
1.The website was easy to navigate	5.08	0.49	5.00	0.41	5.67	0.49	5.75	0.41
2. Navigating to the item was easy	5.25	0.50	5.75	0.34	5.50	0.50	5.92	0.34
3. The navigation was helpful to reach the item I wanted to buy	5.42	0.48	4.83	0.37	5.67	0.48	5.25	0.37
4. The images were easy to view	5.58	0.55	4.75	0.31	4.83	0.55	6.50	0.31
5. Product information was complete	5.00	0.54	4.33	0.54	5.25	0.54	4.50	0.54
6. Checking out was organized	4.42	0.63	4.42	0.46	3.58	0.63	6.00	0.46
7. The layout of the items made it easier to choose	5.17	0.57	4.50	0.41	4.58	0.57	5.50	0.41
8. The sizes of the images made it easier to buy an item	5.58	0.45	4.17	0.39	3.67	0.45	5.50	0.39
9. The color scheme is appropriate	5.50	0.69	4.25	0.46	4.17	0.69	5.42	0.46
10. The website is professional	4.42	0.58	4.75	0.40	4.08	0.58	5.83	0.40

The pattern of responding for Scenario 2 is more complex. Note that, for Expensive items, Site C tends to receive higher ratings than Site D, except on Questions 2 and 10. It was thought that Site D should be higher on Questions 1, 2, 5, and 7 (see Table 5.2), with 10 being an unknown. For Inexpensive items, Site D his higher on only Questions 3 and 5. In general, the responses seem to be less delineated in Scenario 2 than in Scenario 1. In comparison to Table 5.2, the patterns do not match predictions very well.

Again, there is some consistency within a site: the correlation between the Expensive and Inexpensive items in Site C is $r = .282$ ($p < .046$) while the correlation between the Expensive and Inexpensive items in Site D is $r = .377$ ($p < .012$). That is, those questions that got the highest ratings for expensive items also tended to get the highest ratings for the inexpensive items (and vice versa).

However, there is no consistency between sites. The correlation between the Expensive items in Sites C and D is $r = -.014$ ($p < .912$). The correlation between the

Inexpensive items in Sites C and D is r = -.209 (p < .125). This pattern of association is similar to that of Scenario 1. That is, those questions that got the highest ratings in Site C did not tend to get the highest ratings in Site D (and vice versa).

5.1.5 Comparison of Sites A and B And Sites C and D

Table 5.5 contains the summary of the analyses of each question in Scenario 1 (Sites A and B). The first column is the within-subjects t-test that compared the response about the phone in Site A to the response about the phone in Site B. The second column is the corresponding correlation between responses about Site A and responses about Site B. The third column is the within-subject t-test that compared the response about the phone cover in Site A to the response about the phone cover in Site B. The fourth column is the corresponding correlation between responses about Site A and responses about Site B.

Table 5.5 Test of the Differences between Means for Sites A and B.

	Expensive (Mobile phone)		**Inexpensive (Mobile phone cover)**	
Questions	**t-test**	**Correlation**	**t-test**	**Correlation**
1.The website was easy to navigate	1.56, p <.146	0.069, p <.831	3.17, p <.009	-0.294, p <.353
2. Navigating to the item was easy	0.80, p <.438	-0.057, p <.860	2.25, p <.046	-0.143, p <.658
3. The navigation was helpful to reach the item I wanted to buy	3.36, p <.006	0.018, p <.956	1.82, p <.097	0.068, p <.834
4. The images were easy to view	0.43, p <.674	-0.182, p <.572	-0.27, p <.791	0.031, p <.925
5. Product information was complete	1.30, p <.222	0.404, p <.193	2.35, p <.039	0.497, p <.100
6. Checking out was organized	3.14, p <.009	-0.055, p <.866	3.53, p <.005	-0.294, p <.354
7. The layout of the items made it easier to choose	3.29, p <.007	0.000, p <.999	1.83, p <.095	-0.167, p < .604
8. The sizes of the images made it easier to buy an item	-1.17, p <.266	-0.265, p <.406	-1.39, p <.191	-0.108, p <.738
9. The color scheme is appropriate	3.54, p <.005	-0.732, p <.007	1.62, p <.133	-0.153, p <.636
10. The website is professional	6.61, p <.001	-0.214, p <.505	2.19, p <.051	-0.311, p <.325

To interpret, note that for the expensive item (Phone), the questions 1, 2, 4, 5 and 8 were not significantly different between sites. That is, for these questions, responses about Sites A and B were (statistically) the same.

However, questions 3, 6, 7, 9 and 10 did show significant differences and Site A was generally higher. In particular, the differences were large in Questions 9 and 10.

For the Inexpensive item (Phone cover), the pattern was a little different. Questions 3, 4, 7, 8, 9, and 10 were not significantly different between sites. On the other hand, Questions 1, 2, 5, and 6 were significantly different. Again, Site A received the higher ratings. Note that only Question 6 was different for both the Expensive and Inexpensive items. As noted in Table 5.2, Site B should have been higher for Questions 2, 3, 4, 5, and 8.

Finally, it could be noted that Table 5.4 includes the correlations between responses across participants (Table 5.3, Columns 2 and 4). If the correlation is positive, it is implied that there is a tendency for those participants who rated Site A highly to also rate Site B highly (and vice versa). A positive correlation would likely reflect individual differences in website design (e.g., it could be a preference for the common elements that do *not* change between Sites A and B, or general experience, frustration tolerance, or even simply, visual acuity). Conversely, if the correlation is negative, then there is a tendency for those participants who rated Site A high to also rate Site B low (and vice versa). A negative correlation implies a contrast effect (e.g., after rating Site A highly, Site B seems really poor). As it happened, the correlations were a mix of positive and negative. Furthermore, only two correlations were significant and both of those were negative.

It should be noted that the correlation is actually an important component of the statistical test itself – if the correlations are low (or negative), the within-subjects *t*-test is less likely to be significant. Technically, the power of the within-subjects *t*-test to detect differences between the means *depends* on the magnitude of the correlation. Some people go as far as stating that a positive correlation is an assumption of the *t*-test, but that is overstating the case. Regardless of the sign or magnitude of the correlation, the final p-value (significance) is an accurate reflection of the probably of getting mean difference that is this large or large from this particular population. The key point is that when the

correlation is negative, large mean differences are required for "significance", and in some sense, the mean difference is simply less interpretable. Table 5.6 presents the same analysis for Scenario 2: Watch and Gift Box.

Table 5.6 Test of the Differences between Means for Sites C and D.

	Expensive (Watch)		Inexpensive (Gift box)	
Question	**t-test**	**correlation**	**t-test**	**Correlation**
1.The website was easy to navigate	0.10, p <.920	-0.502, p <.096	-0.13, p <.898	-0.082, p <.801
2. Navigating to the item was easy	-0.71, p <.491	-0.120, p <.710	-0.70, p <.499	-0.187, p <.560
3. The navigation was helpful to reach the item I wanted to buy	0.86, p <.409	0.028, p <.931	0.73, p <.480	-0.233, p <.466
4. The images were easy to view	0.97, p <.353	-0.539, p <.071	-3.71, p <.003	0.462, p <.130
5. Product information was complete	1.27, p <.232	0.510, p <.090	0.81, p <.437	-0.443, p <.149
6. Checking out was organized	0.00, p <.999	-0.288, p <.364	-4.05, p <.002	0.160, p <.619
7. The layout of the items made it easier to choose	0.72, p <.489	-0.726, p <.007	-1.22, p <.249	-0.245, p <.443
8. The sizes of the images made it easier to buy an item	2.05, p <.065	-0.153, p <.635	-3.87, p <.003	0.260, p <.415
9. The color scheme is appropriate	1.04, p <.323	-0.800, p <.002	-1.60, p <.137	-0.117, p <.717
10. The website is professional	-0.38, p <.710	-0.430, p <.163	-2.78, p <.018	0.157, p <.626

To interpret, note that for the Expensive item (Watch), there are *no* significant differences for any questions. For the Inexpensive item, Questions 4, 6, 8, and 10 showed significant differences. It was Site D that always received the higher ratings.

Finally, it could be noted that the correlations (in Table 5.5) between responses across participants (Table 5.3, Columns 2 and 4) were a mixed of positive and negative, but only two were significant. These likely reflect a contrast effect.

In summary, one can conclude that there are differences between Sites A and B, and that there are differences between Sites C and D. However, the differences between C and D are less pronounced and only occur for the Inexpensive item. Generally, the

differences do depend, to some degree, on item Price. Nonetheless, the patterns of responses for Expensive and Inexpensive items were correlated within each site.

5.1.6 Differences between Expensive and Inexpensive Items in Scenario 1, and in Scenario 2

The second analysis simply compared responses based on item Price. That is, the analysis tested for response differences based on Price in Sites A, B, C and D separately.

Table 5.7 presents the *t*-test for each question for Sites A and B (Scenario 1: Phone and Phone Cover). Note that these are now between-subjects *t*-tests (rather than within subjects t-test of the previous analysis) because different participants rated different items. Hence, there is no correlation to consider.

Table 5.7 Mean Difference between Expensive and Inexpensive Items for Sites A and B.

Question	Site A	Site B
1.The website was easy to navigate	-0.946, $p < 0.354$	0.249, $p < 0.806$
2. Navigating to the item was easy	-1.216, $p < 0.237$	0.000, $p < 1.000$
3. The navigation was helpful to reach the item I wanted to buy	1.030, $p < 0.314$	0.261, $p < 0.796$
4. The images were easy to view	-0.122, $p < 0.904$	-0.896, $p < 0.380$
5. Product information was complete	-1.076, $p < 0.294$	-1.305, $p < 0.205$
6. Checking out was organized	-0.222, $p < 0.826$	1.121, $p < 0.274$
7. The layout of the items made it easier to choose	0.735, $p < 0.470$	-0.785, $p < 0.441$
8. The sizes of the images made it easier to buy an item	-0.764, $p < 0.453$	-0.859, $p < 0.400$
9. The color scheme is appropriate	1.372, $p < 0.184$	-0.996, $p < 0.330$
10. The website is professional	1.538, $p < 0.138$	-1.902, $p < 0.070$

What is interesting about this analysis is that *none* of the ratings change as a function of item Price. That is, preferences are *not* affected by Price.

The same analysis for Scenario 2 (Watch and Gift Box) is presented in Table 5.8.

Table 5.8 Mean Difference between Expensive and Inexpensive Items for Sites C and D.

Question	Site C	Site D
1.The website was easy to navigate	0.840, $p < 0.410$	1.295, $p < 0.209$
2. Navigating to the item was easy	0.350, $p < 0.729$	0.343, $p < 0.735$
3. The navigation was helpful to reach the item I wanted to buy	0.366, $p < 0.718$	0.799, $p < 0.433$
4. The images were easy to view	-0.972, $p < 0.342$	4.001, $p < 0.001$
5. Product information was complete	0.329, $p < 0.745$	0.217, $p < 0.830$
6. Checking out was organized	-0.931, $p < 0.362$	2.411, $p < 0.025$
7. The layout of the items made it easier to choose	-0.729, $p < 0.474$	1.732, $p < 0.097$
8. The sizes of the images made it easier to buy an item	-3.008, $p < 0.006$	2.402, $p < 0.025$
9. The color scheme is appropriate	-1.361, $p < 0.187$	1.805, $p < 0.085$
10. The website is professional	-0.404, $p < 0.690$	1.922, $p < 0.068$

In contrast to Scenario A, Item Price does occasionally have an effect on the rating of the site: *"The sizes of the images made it easier to buy an item on the first/second website"* (Q8) has a different response for both sites (higher for the Expensive item in Site C but lower for the Expensive item in Site D), while *"The images were easy to view on the first website"*(Q4) and *"Checking out was organized on the first website"* (Q6) only mattered in the Site D (both higher for the inexpensive item).

5.1.7 Similarities in the Difference between Sites A and B (or C and D) for Expensive and Inexpensive Items

For each question, a 2 by 2 ANOVA was conducted. This was done for several reasons. Firstly, previous analyses *"Differences between Expensive and Inexpensive Items in Scenario 1, and in Scenario 2"* indicated that item Price was not a major factor. Secondly, the previous analyses *"Comparison of Sites A and B and Sites C and D"* indicated that site was a factor. However, the results were ambiguous. Hence, collapsing over the two levels of item Price would provide a better test of side effects – effectively doubling the sample size. This could help to articulate the true differences between sites. In addition, this analysis allows one to see if the effect of item Price differs as a function of site (or if sites differ as a function of Price). That is, the interaction is quite informative. Hence, for each question, the 2 by 2 mixed ANOVA was conducted to provide a main

effect of Site (collapsed over item Price), a main effect of Item Price (collapsed over sites), and interaction. There were ten analyses per pair of sites (scenario). Table 5.9 presents the results, including the mean differences, for Sites A and B.

Table 5.9 Analyses of Each Question, as a Function of Sites and Price for Sites A and B.

	(Marginal) Means and S.d								Analyses		
	Site A		Site B		Expensive		Inexpensive		p(F)		
Ques	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Site	Item Price	Inter
1	6.13	0.22	4.83	0.34	5.42	0.28	5.54	0.28	0.004	0.755	0.480
2	6.08	0.21	5.33	0.31	5.58	0.25	5.83	0.25	0.062	0.488	0.519
3	6.25	0.16	5.08	0.32	5.79	0.26	5.54	0.26	0.003	0.499	0.815
4	5.54	0.34	5.46	0.33	5.33	0.32	5.67	0.32	0.867	0.468	0.617
5	5.67	0.31	4.96	0.29	4.96	0.36	5.67	0.36	0.039	0.173	0.898
6	6.13	0.19	4.33	0.30	5.38	0.23	5.08	0.23	0.000	0.371	0.336
7	5.92	0.23	4.29	0.37	5.04	0.30	5.17	0.30	0.002	0.769	0.319
8	4.29	0.38	5.29	0.34	4.50	0.33	5.08	0.33	0.087	0.218	1.000
9	5.54	0.33	3.25	0.42	4.42	0.30	4.38	0.30	0.001	0.923	0.176
10	5.79	0.30	3.25	0.26	4.50	0.24	4.54	0.24	0.001	0.903	0.044

Firstly, Sites A and B now differ on Questions 1, 3, 5, 6, 7, 9, and 10. Hence, 1 and 5 have been added to the list of Questions that matter. Secondly, the Questions never differ on Item Price. This replicates the previous analysis that also showed no differences due to Price. Thirdly, only one interaction is significant -- that of Question 10. By inspection of Table 5.3, one can see that the effect of item Price is the same in both sites (i.e., expensive items produce higher ratings than inexpensive items in both sites), but the size of the difference is much larger in Site B.

The same analysis was conducted for Sites C and D. Table 5.10 presents the results.

Table 5.10 Analyses of Each Question, as a Function of Sites and Price for Sites C and D.

	(Marginal) Means and S.d.								Analyses		
	Site A		Site B		Expensive		Inexpensive		p(F)		
	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Site	Item Price	Inter
1	5.38	0.35	5.38	0.29	5.04	0.27	5.71	0.27	1.000	0.092	0.873
2	5.38	0.36	5.83	0.24	5.50	0.28	5.71	0.28	0.330	0.609	0.929
3	5.54	0.34	5.04	0.26	5.13	0.29	5.46	0.29	0.272	0.431	0.853
4	5.21	0.39	5.63	0.22	5.17	0.28	5.67	0.28	0.400	0.221	0.017
5	5.13	0.38	4.42	0.38	4.67	0.39	4.88	0.39	0.199	0.706	0.939
6	4.00	0.45	5.21	0.33	4.42	0.37	4.79	0.37	0.053	0.475	0.053
7	4.88	0.40	5.00	0.29	4.83	0.25	5.04	0.25	0.837	0.566	0.200
8	4.63	0.32	4.83	0.28	4.88	0.30	4.58	0.30	0.624	0.501	0.001
9	4.83	0.49	4.83	0.32	4.88	0.29	4.79	0.29	1.000	0.843	0.096
10	4.25	0.41	5.29	0.28	4.58	0.32	4.96	0.32	0.066	0.421	0.202

For Sites C and D, there are no significant effects of Site, although Questions 6 and 10 are "close" (sometimes called marginal). Similarly, Item Price is not significant for any question. However, the interaction term is significant for Questions 4 and 8. That is, by inspection of Table 5.4, for Question 4 (Image Quality), in Site C the more expensive item gets the higher rating, while in Site D, the inexpensive item gets the higher rating. For Question 8 (Image Size), in Site C, the expensive item has the higher rating, while in Site D the inexpensive has the higher rating. In fact, in Site D, responses tend to be higher for the less expensive item across the board. One must remember that the ratings for expensive and inexpensive items within a single site were completed by different participants. It is possible that these particular participants simply liked that site.

5.1.8 Comparison of Responses to Questions in Each Combination of Sites and Price

Previous analysis examined each question in isolation. The goal here is to look at the questions in context. The first analysis compares the responses to questions for each combination of site and item price separately (i.e., 8 analyses) using a one-way, within-subjects ANOVA. Generally, the ANOVA tests whether or not a set of means is "equal". More precisely, the ANOVA tests whether or not the differences between the means are

so small that those differences could be due to chance (sampling, or random, variations). If the differences are small, then the means are considered "equal". If the means are large, then the means are considered "different".

For Site A, for the Expensive item, the within-subjects ANOVA indicated that the mean ratings for the different questions were not equal, with $F(9, 99) = 4.729$, $p < .001$. Technically, the differences between the means are *significantly* different from zero. From inspection of the means in Table 4.6, it can be concluded that Question 8 produced the lowest rating, while Questions 3 and 10 produced the highest ratings. For the inexpensive item, the within-subjects ANOVA indicated that the mean ratings for the different features were not equal, with $F(9, 99) = 3.256$, $p < .002$. Inspection of the means (Table 5.3) implied that Question 8 still received the lowest ratings, but Questions 1 and 2 now received the highest ratings.

For Site B, for the Expensive item, the within-subjects ANOVA indicated that the mean ratings for the different questions were not equal, with $F(9, 99) = 5.309$, $p < .001$. From inspection of the means in Table 5.3, it can be concluded that Questions 9 and 10 produced the lowest ratings, while Question 2 produced the highest ratings. For the inexpensive item, the within-subjects ANOVA indicated that the mean ratings for the different features were not equal, with $F(9, 99) = 4.030$, $p < .002$. Inspection of the means (in Table 5.3) implied that Questions 9 and 10 received the lowest ratings, but Questions 4 and 8 received the highest ratings.

For Site C (Table 5.4), for the Expensive item, the within-subjects ANOVA indicated that the mean ratings for the different questions were *not* different, with $F(9, 99) = 1.414$, $p < .192$. For the inexpensive item, the within-subjects ANOVA indicated that the mean ratings for the different features were not equal, with $F(9, 99) = 3.582$, $p < .001$. Inspection of the means implied that Question 6 and 8 received the lowest ratings, while Questions 1, 2 and 3 received the highest ratings.

For Site D (Table 5.4), for the Expensive item, the within-subjects ANOVA indicated that the mean ratings for the different questions were *not* different, with $F(9, 99) = 1.763$, $p < .085$. For the inexpensive item, the within-subjects ANOVA indicated that the mean ratings for the different features were not equal, with $F(9, 99) = 2.806$, $p <$

.006. Inspection of the means implied that Question 5 received the lowest rating, while Question 4 received the highest rating

In summary, these results indicate that there is some variability in responding, but that variability is larger in Scenario A (Sites A and B) than in Scenario B (Sites C and D). In particular, there is little variability in responding about Expensive items in Sites C and D.

5.1.9 Comparison between the Pattern of Responses for Expensive and Inexpensive Items in each Site

The final analysis examined each site, using a two-way mixed ANOVA to compare the pattern of responses about Questions for the Expensive item to the pattern of responses about Questions for the Inexpensive item. The two-way ANOVA actually produces three effects. The main effect of Question indicates whether or not the responses to questions changes on average. That is, is the mean response to Question 1, after averaging the Expensive and Inexpensive items, different from the mean response to Question 2 after averaging the Expensive and Inexpensive items, et cetera. The main effect of Item Price indicates whether or not there is a difference between the average of all responses to Expensive and the average of all responses to the Inexpensive items. Finally, the interaction indicates whether or not the pattern of responses to questions changes as a function of Item Price.

For Site A, the two-way within-subjects ANOVA indicated that there were significant differences between the Questions with $F(9, 198) = 6.276$ ($p < .001$). That is, some questions had higher responses on average (see Table 5.10). The analysis found no significant difference for Item Price, with $F(1,22) = .002$ ($p <. 962$). That is, Expensive and Inexpensive items produced the same average ratings across all questions (see Table 5.10). Finally, there was no significant interaction, with $F(9, 198) = 0.092$ ($p < .092$). Hence, the pattern of responses for the Expensive item is essentially the same as the pattern of responses for the Inexpensive item (see Table 5.10, compare with Table 5.3). In some sense the ratings per question in Table 5.11 are a valid representation for *either* the Expensive or Inexpensive items. Note that in this analysis, there were some minor violations of assumptions (i.e., the correlations between responses were not all equal).

Nonetheless, the more complex multivariate analysis of variance (which is capable of dealing with such violations) provided the same pattern of results.

Table 5.11 Mean Ratings for Questions (collapsed over Expensive and Inexpensive Items) in All Four Sites.

		Site A		Site B		Site C		Site D	
		Mean	**S.d**	**Mean**	**S.d**	**Mean**	**S.d**	**Mean**	**S.d**
Question	1: Navigation	6.125	.220	4.833	.335	5.375	.347	5.375	.289
	2: Navigation	6.083	.206	5.333	.306	5.375	.357	5.833	.243
	3: Navigation	6.250	.162	5.083	.319	5.542	.342	5.042	.261
	4: Images	5.542	.342	5.458	.325	5.208	.386	5.625	.219
	5: Product Info	5.667	.310	4.958	.287	5.125	.380	4.417	.384
	6: Checkout	6.125	.188	4.333	.297	4.000	.448	5.208	.328
	7: Layout	5.917	.227	4.292	.372	4.875	.400	5.000	.289
	8: Image Size	4.292	.382	5.292	.340	4.625	.319	4.833	.278
	9: Colors	5.542	.334	3.250	.418	4.833	.490	4.833	.323
	10:Professional	5.792	.298	3.250	.263	4.250	.412	5.292	.282
	AVERAGE	5.734		4.608		4.921		5.146	
Price	Expensive	5.724	.246	4.442	.275	5.142	.407	4.675	.267
	Inexpensive	5.725	.246	4.775	.275	4.700	.407	5.617	.267

Note that the pattern of results is generally consistent with design. Site A was supposed to be relatively higher on Questions 6 and 7, and relatively lower on Questions 4 and 8, with Question 10 being somewhat indeterminate.

For Site B, the two-way within-subjects ANOVA indicated that there were significant differences between the Questions with $F(9, 198) = 8.499$ ($p < .001$). That is, some questions had higher responses on average (see Table 5.5). The analysis found no significant difference for Item Price, with $F(1,22) = .735$ ($p <. 400$). Expensive and Inexpensive items produced the same average ratings across all questions (see Table 5.10). Finally, there was no significant interaction, with $F(9, 198) = 0.948$ ($p < .485$). Hence, the pattern of responses for the Expensive item is essentially the same as the pattern of responses for the Inexpensive item (compare Table 5.10 and Table 5.3). As with site A, there were minor violations of assumptions, but the more complex multivariate analysis of variance provided the same pattern of results. Note that the

pattern of results is generally consistent with design. Site B was supposed to be relatively higher on Questions 3, 4, 5 and 9, and relatively lower on Question 6, with Question 10 being somewhat indeterminate.

For Site C, the two-way within-subjects ANOVA indicated that there were significant differences between the Questions with $F(9, 198) = 3.294$ ($p < .001$). That is, some questions had higher responses on average (see Table 5.4). The analysis found no significant difference for Item Price, with $F(1,22) = .590$ ($p <. 451$). Expensive and Inexpensive items produced the same average ratings across all questions (see Table 5.9). Finally, there was no significant interaction, with $F(9, 198) = 2.039$ ($p < .037$). Hence, the pattern of responses for the Expensive item is not the same as the pattern of responses for the Inexpensive item (compare Table 5.11 and Table 5.4). In this analysis, there were some minor violations of assumptions. In addition, the multivariate tests indicated that while the Main effect of Questions was still valid, the interaction was not significant. Hence, one must interpret this with some degree of caution (i.e., the effect is on the cusp of significance – another sample might push the results in either direction). Site C was supposed to be relatively higher on Questions 2, 3, 4, and 8, and relatively lower on Questions 5 and 6, with Question 10 being somewhat indeterminate. Note that Questions 8 and 6 seem to contradict this.

For Site D, the two-way within-subjects ANOVA indicated that there were significant differences between the Questions with $F(9, 198) = 3.065$ ($p < .002$). That is, some questions had higher responses on average (see Table 5.10). The analysis found no significant difference for Item Price, with $F(1,22) = .590$ ($p <. 451$). Expensive and Inexpensive items produced the same average ratings across all questions (see Table 5.9). Finally, there was no significant interaction, with $F(9, 198) = 1.397$ ($p < .191$). Hence, the pattern of responses for the Expensive item is essentially the same as the pattern of responses for the Inexpensive item (compare Tables 5.11 and 5.3). As usual, in this analysis, there were some minor violations of assumptions, but the multivariate results provided the same pattern of results. Site D was supposed to be relatively higher on Questions 1, 5, and 7, and relatively lower on Questions 6 and 8, with Question 10 being somewhat indeterminate. Note that Questions 5, 7, and 6 seem to contradict this expectation.

5.2 The Analyses of Mini-Interviews 1 and 2

Between Phases 2 and 3, and between Phases 4 and 5, there were pre-checkout and post-checkout mini-interviews containing a few short questions designed to provide some detail about the reasoning behind site preferences. These comments were simply summarized and common themes are noted below. The first analysis simple describes the overall preferences (and the change before and after checkout). The second analysis examined the verbal responses, gathering and reporting on the common themes. These themes are grouped within the categories of Graphic Design, Structural Design, Content Design, Social Cue Design, Perceived Privacy and Security Design, and Discovered Design Elements. One advantage of the interview process is that it allows the participant to provide insights that the researcher may have missed.

5.2.1 Site Preference

When buying the Expensive item on Sites A or B, *before* checkout, seven participants preferred Site A, two preferred Site B, and three did not like either. *After* checkout, eight participants preferred Site A, one preferred Site B, and three did not like either. In fact, three participants changed their preferences, with two participants changing from Site B to Site A, and one participant changing from Site A to Site B. Recall that Site B lacked detailed product information at checkout.

When buying the Inexpensive item on Sites A or B, *before* checkout, ten participants preferred Site A, none preferred Site B, one did not like either site, and one liked both sites equally. *After* checkout, six participants preferred Site A, one preferred Site B, four did not like either site, and one liked both equally. Four participants changed their responses, with three participants changing from Site A to neither, and one participant changing from Site A to Site B. Recall that Site B lacked detailed product information at checkout, but Site A lacked shipping information.

When buying the Expensive item on Sites C or D, *before* checkout, seven participants preferred Site C, three preferred Site D, and two did not like either. *After* checkout, only three participants preferred Site C, five preferred Site D, three preferred neither site, and one liked both equally. In fact, eight participants changed their

preferences, with one moving from Site C to neither, three moving from Site C to Site D, one moving from Site C to equality, one moving from Site D to Site C, one moving from Site D to neither, and one from neither to Site D. Note that there is no particular pattern, though there is a general shift to Site D after checkout. Recall that Site D had no confirmation of purchase, whereas Site C had no details about shipping.

Finally, when buying the Inexpensive item on Sites C or D, *before* checkout, six participants preferred Site C, four preferred Site D, one did not like either site, and one liked both sites equally. *After* checkout, only two participants preferred Site C, seven preferred Site D, two did not like either site, and one liked both sites equally. Seven participants changed their responses, with five participants changing from Site C to D, one changing from Site D to Site C, and one changing from Site D to neither.

5.2.2 The Qualitative Analysis of the Mini-Interviews

The following is a qualitative summary of the comments participants provided when asked to explain their thinking *before* checkout or *after* checkout. The data was summarized and common themes were noted. Note that there were 24 participants in total, so each incremental increase in the number of participants endorsing a concept represents a 4% increase in support. While this may not seem like much, 4% of the international community that shops online is a very large number.

5.2.3 Purchasing an Expensive Item

Graphic design: Nine participants trusted the website with their credit card information because they thought it was professional. They thought that a professional website included sharp images, good navigation and a good lay-out. This means that participants purchase from a professional looking website unless they encountered something that would make them change their perceptions of trust. Some participants seemed to assume a "professional design" as a starting point, and then used other elements to confirm or disconfirm that trust. One participant said: "If I think that the website has professional design then I would look for reviews about the website before buying". Another participant said: "If I am paying a lot of money I would first look at a

number of professional looking websites, then decide on which website to buy from based on costumer reviews".

Eight participants trusted the websites because they had large and clear images of the items. On the other hand, 8 participants though that they would not trust a website that had small and pixilated images with their credit card information. Small and unclear images would mean that the vendor does not have the technology that would help them present themselves in a better way. Sometimes small images can convey that the vendor is hiding something and does not want the buyer to examine the product closely. Seven participants trusted the website because they thought that it had good colors and contrast between the images and the websites back ground. Seven participants indicated that poor color and contrast would deter them from a website. Two participants thought that clear legible font would help them trust a website and six participants thought that the small size and bad choice of font can stop them from buying from a website.

Content design: Nine participants thought that the lack of information such as a clear verification messages or a confirmatory email after purchase would make them second-guess their buying decision. Four participants thought that they would trust a website because it provides sufficient and correct information about the products that they are buying. Three participants indicated they would need rich content, such as videos, for detailed examination before buying an expensive item. Two participants indicated that a physical address and contact information for an online website would help them to trust a website. Having search options and multiple payment methods were also named by participants as design elements that would help build trust in a website.

Structure design: Seven participants thought that a confusing navigation bar would stop them from buying from a website; for example, a few of the participants spent too much time trying to reach the watches on Site D simply because the tab for the watches was called "collections". Six participants indicated that a flowing layout would make them trust a website. Those participants explained that the locations of buttons and images on a website will give it a better flow. Four participants indicated that an easy to use navigation menu would help to build trust in a website because such a structure enables them to find an item more easily. Six participants indicated that too many clicks to check out would stop them from continuing with the purchase. One participant pointed

out that having menus with a sorting option (e.g., by Price, brand) helps to build trust because the item could be reached quickly. Four participants indicated that multi-layer checkouts (i.e. address information on one page and billing information in another) helps to build trust because they can feel assured that their payment information is going to the "bank" and not the vendor. A general observation is that trust is related to less time finding and buying an item.

Social cue design: Seven participants noted that there were not any reviews about the products or the sellers on the designed websites. One participant indicated that "Whatever the website looks like, I have to read about its reputation first to see if I am comfortable in buying from it". Eleven participants indicated in one way or another that the reputation of a website in other trusted websites can make or break trust. For example, a participant mentioned that, "I have to read about the website and understand what reputation it has before buying". Another participant mentioned: "The reputation and establishment is more important because of service I get and the security of my credit card information". The majority of the participants go back to the same points: they would stay on a website that has a good professional design, but they would only buy from an expensive website that has good reviews (about the store, the retailer and the website itself). For example, a participant said: "I can't buy an $800 watch from an unknown website, if I really like the Price, I would first visit the manufacturer's website or a trusted website like Amazon to read more about the product and check the Price. I would then read reviews about the 'unknown website and would decide based on its reputation." Only one participant thought that the embedded live chat option in Site C helped to build trust, especially when that website does not have any other indices of trust. All participants, except one, did *not* notice the Facebook and Twitter buttons that were embedded in Site C. This participant stated that: "Twitter and Facebook buttons are important just to prove that they have a good audience and reputation but I never click on those buttons."

Perceived Privacy and Security Design: Two participants commented on the lack of security seals (i.e., the security lock associated with HTTPS). Seven participants noted that there are (often) no security seals when buying an inexpensive product. They explained that when selling expensive items, websites are (typically) more professional

and the likeness of scams is less. Inexpensive items are more likely to be sold on less professional looking websites. One participants mentioned a "hard trust" design element by saying: "In any website —expensive or inexpensive— I have to see 's' in HTTPS for a secure transaction".

Discovered design elements: Five participants thought that the lack of interactive viewing options would stop them from buying. Interactivity was defined by them as the ability to zoom on an item, or to rotate the view of an item, or to change the color of an item (if color options were available), to engage in a "quick buy", and to calculate the shipping fees and taxes.

5.2.4 Purchasing an Inexpensive Item

Graphic design: Six participants would trust a website with their credit card information if they thought it was professional. Those participants indicated that they use "professional design" as a starting point, and then use other elements to confirm or disconfirm their trust. One participant said: "When I see that the company didn't put any effort in building their website, and it doesn't look professional, I will leave this website". Four participants trusted the websites because they had large and clear images of the items. On the other hand, another five participants said that they would not trust a website that had small or pixilated images. That is, 9 of 24 participants relied on image clarity or size for trust. Five participants commented that small unclear images imply that the vendor is hiding something (does not want the buyer to examine the item closely), especially if the item is a used (second hand) item. Seven participants trusted a website because they thought that it had good colors and/or contrast. Nine participants indicated that poor color and contrast would deter them from a website. That is, color and/or contrast matters to 17 of 24 participants. Eight participants thought that the absence of clear, legible font would prevent them from buying.

Content Design: Eleven participants thought that the lack of information such as a clear verification message or a confirmatory email after purchase hinders trust, just as when buying an expensive item. The lack of information on shipping options and locations also interferes with trust. Some participants specifically indicated that they

would not want to reach the final stages of checkout, and only then realize that the shipping Prices are too high. The Price of shipping is likely more of an issue for inexpensive items. Six participants indicated that trust is related to the provision of sufficient and correct information about products. Seven participants indicated that an error message (that was planted in Site D) would stop them from buying the product. To them, a broken link means that the website administrator is not updating or attending the website. Some participants added that trust is dependent on (related to) a clear return policy, the number of images for the same item, and the dimensions of the item.

Structure Design: Just as when buying an expensive item, seven participants thought that a confusing navigation bar would stop them from buying an inexpensive item. When an item is hard to reach, participants became frustrated, and did not want to complete the buying process. Five participants indicated that a flowing layout would build trust. A good lay out provides the ability to browse the website and to reach items. Only two participants indicated that too many clicks to checkout would stop them from buying. As with the expensive item, four participants indicated that multi-layer checkouts (i.e. address information on one page and billing information in another) would help build trust.

Social Cue Design: Ten participants indicated that the reputation of the website in other websites (particularly those that review websites) can make or break trust. Most participants commented that they would first search online for reviews before providing their credit card information. One participant noted that, "I would only buy from an unknown website to me if a friend recommended it. That is if I was buying a cheap item". Another participant mentioned, "I have to read about the product from a famous website, then buy it from a secure website even if the design isn't all that". Participants did not think that embedded social buttons such as Facebook or Twitter are important when buying an inexpensive item. They did not care about the live chat option in Site D.

Perceived Privacy and Security Design: Seven participants noted that there were no security seals on any of the websites. Some indicated that they look for security seals to make sure that their payment information is safe. Some participants think that

perceived security is more important than web design; “I would buy from a poorly designed website if the Price was right and I can see that my transaction is secure”. Other participants indicated that they would not even reach the stage of checking security if the overall web-design were to be poor or unprofessional (i.e., they would not bother at all). 3 participants searched for the privacy policy when they first started browsing the given websites.

Discovered Design Elements: Just as in the case of buying an expensive item, eight participants thought that the lack of interactivity would prevent them from buying. Participants wanted to have more control when browsing. Participants mentioned that the ability to view a product from multiple angles, the ability to zoom, and the ability to control image allows them to examine it closely. For example, when buying the mobile phone cover or the gift box, participants wanted to see the back and the bottom of the items. This option was not available in the provided websites. Participants also indicated that they would buy from a website that invested more effort in design and features. Most participants who thought that an interactive website is more trustworthy, also wanted to complete the transaction quickly, and to have more information before completing the buying process. A tax and shipment calculator was mentioned by eight of the participants. In general, when buying from an inexpensive website, participants usually know what they want beforehand, and they want to complete the buying process as quickly as possible. This efficiency builds trust because it helps them to complete their goals quickly, and without any efforts. Options such as drop down menus for provinces or countries, and a “quick buy” were noted

5.3 Post-Task Interview

In Phase 6, participants were asked to reflect on their personal online shopping experiences. The particular focus was on the differences they experienced for the purchase of expensive and inexpensive items. Again the analysis is qualitative and descriptive. Themes are noted. As above, the processes for buying expensive and inexpensive items are considered separately.

In the background questionnaire, participants were asked about the Price of the most expensive items they bought online. The average Price of the expensive items among the 24 participants was approximately $ 688 Canadian. Participants were also asked about the Price of the least expensive items they bought online. The average Price of the inexpensive items was approximately $ 16 Canadian.

The first question was about websites that the participants would usually buy from. Eighteen participants mentioned Amazon.com and E-Bay.com, while a further eight mentioned a website similar to Amazon that exists in their home countries. Most participants said that they use those websites because of their reputation, and quality of service.

5.3.1 Expensive Items

Structure Design: When buying an expansive item, 11 participants mentioned that the most important design is easy navigation to the item. Participants want to reach the product quickly. A navigation menu that can sort the items into categories such as by Price or by brand name was also important when buying an expensive item according to nine participants.

Social Cue Design: Seven participants indicated that they would purchase from an expensive website based on good feedback from their friends.

Graphic Design: For 12 participants, trust is related to a professional design. A professional website would include sharp and clear images, readable and eligible fonts, complete product information, good choice of colors, good layout and no adds.

Content Design: Fourteen participants expect that a website that sells expensive items must have all the information available about this item. For example, if a customer is buying a watch he would expect to see the dimensions, colors, maker, material, movement, country of origin, etc. In addition to the content information, he/she would also expect to see information about shipping and handling and the return policy. Nine participants indicated that they would first examine the information in the manufacturer's website, if available, and then would buy from another professional looking website if that site had a better Price.

Perceived privacy and Security Design: In the interview, ten participants bought expensive items from a certain website because they saw a familiar seal that portrayed security or a safe transaction method (such as the logo of PayPal). Four participants indicated that they must first make sure that their transaction is secure before providing any credit card information.

5.3.2 Inexpensive Items

Structure Design: On the other hand, when buying inexpensive items, according to 15 participants the most important design feature was a search feature. Websites that sell inexpensive items usually have a large collection of items, participants didn't want to waste their time and look manually for the item they needed. They felt that typing in the name of the item would save them time. 7 participants thought that having categories to search within would make them trust a website more, the reason being that the website is more professional and there was much more effort and time spent on creating those search features.

Content Design: Nine participants thought that a website with updated content can be trusted. A website that is not kept up to date means that the web admin is not paying much attention to their website. This make the information not trustable and hence the website too. 7 participants expressed the feeling that in order to trust an inexpensive website, they needed the information about the product to be organized in an easy to read layout. They indicated that they did not want to read through long paragraphs to learn more about the item, but would rather read about the item in a table format that has the feature and the specification of that feature. The information must be complete but presented in a way that is easy to read.

Graphic Design: For the inexpensive items, nine participants thought that the images must be clear and must allow them to examine what they are buying closely. This is specially in the case were the item is a second hand item and in the case of websites like Amazon were there are multiple sellers. Seven participants thought that good color scheme and contrast helps them trust a website. They indicated that a bad color

combination can stop them from continuing to browse a website and there for not purchase from it.

Social Cue Design: Only 3 participants indicated that having a live chat option makes them trust a website. They explained that they would use this feature if they wanted to ask a quick specific questions that is not included in the FAQ.

Perceived Privacy and Security Design: Twelve participants indicated that a website must have third party seals for them to provide their credit card information. The seals assure them that their transaction will be safe. The seals are a way for the websites to show that any transactions that passed through them are safe. The seals maybe there to prove that they are safe but this might not always be the case.

Discovered design: Thirteen participants thought that an *interactive website* is more trust worthy; they would want to examine the product they are buying closely, for example: a few of those participants provided the same scenario of buying an electronic item. They would want to look at the location of the power source or the size of a socket. If they have more control and interaction with the image they would be able to rotate the item to any angle and look at what they need to see. If this option were not available, then images from all angles would be needed. An interactive website gives participants the ability to compere among items and features, and include a quick buy option.

5.3.3 Both Expensive and Inexpensive Items

Several other factors were indicated by participants. These were not, technically, related to website design. They included, previous familiarly with the website, number of product options available, recommendations of friends, multiple payment methods, good Price (lots of "deals"), a shopping cart (for saving items). They also mentioned that having an account with the online store is useful because participants need not re-enter their information every time they make a purchase. Some added that some websites do not specialize in selling expensive or inexpensive items. In such cases, pages that display the inexpensive items can take one form while pages that sell inexpensive items can take another. Finally, the importance of the reputation of a website was mentioned by 17

participants. They say that they would purchase from a well-known reputable website. Such websites usually have good customer service and return policies.

Nine participants thought that the lack of information about the product, or about supporting services, such as shipping and warranties, can prevent them from trusting a website. They think that a website that has dealt with, and served a large number of customers, should know what information must be present and that the customer would not want to spend any time finding this information.

Four participants revealed that they have a "trust building strategy". They first purchase an inexpensive item from a website, and then, if they have a good experience, they may buy a more expensive item from this website. This confirms the importance of repeat customers. In fact, seven participants mentioned that they would trust a website just because they are familiar with it.

Two participants indicated they would trust a website, for either expensive or inexpensive items, if it has a physical store. This leads them to believe that they could return items to the seller if they should encounter any problems with them. What features do you look for when buying expensive verses inexpensive items?

One participant mentioned that: "I don't think good design would convince me to trust a certain website, but bad design will defiantly make me leave a website."

One general observation is that participants are not differentiating between the risk associated with the "value" of an item, and the risk associated with providing personal "information" (i.e., credit cards). Four participants said that it would not be a "big deal" if they were to lose $10 or $ 20 because a website is a scam. However, a scam may not stop with the actual purchase. Only two participants said that they would use a pre-paid credit card if they thought that the site was too risky regardless of the Price of the item. When buying both expensive and inexpensive items, three participants indicated that they like to create an account with the website. They feel that it strengthens the relationship and makes it easier to buy.

Finally, Table 5.12 provides a summary of the beliefs of participants about online shopping. This data represent that which participants think one should do, rather than what they have actually done. That is, this table indicates what the participants think they need to see in order to trust a website.

Table 5.12 Difference Design Features Expected by Online Shoppers.

	Design attributes	Number of participants: Expensive items	Number of participants: Inexpensive items
Graphic design	Professional (more effort and time spent)	**9**	7
	Good color scheme	5	5
	Clear images / high quality images	11	**13**
	Formal fonts	**3**	0
Social cue desig	Reviews about product	**13**	12
	Reviews of website	13	13
	Embedded social buttons	1	3
Perceived privacy & security	Clear privacy policy	**2**	1
	Clear return policy	**2**	1
	Security seals	6	**9**
	Have third party mediators such as PayPal	0	**4**
Struct ure desig	Easy navigation	9	**12**
	Search feature	11	**15**
	appropriate layout	3	3
Content design	Complete information about product	**16**	9
	Multiple images/ angles	**13**	12
	Supporting information (e.g shipping locations)	3	3
Other intera ctive	Interactive website (zoom in to item, rotate, compare between items)	9	9
	Sorting feature (by Price, brand etc.)	8	**12**
Other	Lots of options and products	0	**6**
	Quick buy option	3	3
	No adds	3	3

Table 5.12 shows that 16 participants thought that complete product information was the most important design feature for trust when dealing with expensive item. However, 15 participants thought that the options associated with the search feature were the most important feature when buying an inexpensive item.

Six participants thought that a large variety and options (e.g. colors, sizes etc.) provides more trust when buying an expensive item. Oddly, no participants though that this would be important purchasing an inexpensive item. When buying an expensive item seventeen participants indicated that interactivity (e.g., sorting or rotating images)

and comparison features build trust. When buying an inexpensive item, the number was even higher at 21.

Seven participants indicated that there should not be any differences between the design of websites that sell expensive or inexpensive items.

5.4 SUMMARY

Table 5.13 summarizes the main findings from the experimental study.

Table 5.13 Summary of Results for the Experimental Study.

Design	Question		Site Difference Favors				Price Difference Favors			
	Num	Feature	AB	AB	CD	CD	A	B	C	D
			Exp	Inexp	Exp	Inexp				
Structural	1	Navigation: General		A						
	2	Navigation bar: Item		A						
	3	Navigation menu: Item	A							
	7	Layout	A							
	6	Checkout	A	A		D				Inexp
Graphic	4	Image Quality				D				Inexp
	8	Image Size				D			Exp	Inexp
	9	Color Scheme	A							
	10	Professional Design	A	A		D				
Content	5	Complete Product Info		A						

In short, Site A and B showed effects of Design on trust, but Sites C and D did not. Further, the effects of item Price were negligible. The interviews replicated these effects and added an important consideration: Interactivity.

CHAPTER 6 CONCLUSION

This thesis was designed to study the effect of web design on consumer trust and to examine that effect at different price ranges.

Trust was defined as the willingness of the online shopper to provide sensitive information to the retailer (e.g., name, address, credit card information). Trust was conceptualized as "hard trust" and "soft trust". Hard trust is related to the notion of secure communication and the protection of consumer information from malicious third party attacks. Soft trust is related to the notions of retailer integrity — that the retailer is an honest, reputable business that will provide fair value and good service.

Web design in this study was considered using Wang et al., (2005) four dimensions of (1) *Graphic Design,* (2) *Structural Design* (3) *Content Design,* and (4) *Social Cue Design*. A fifth dimension was added specifically to deal with the notion of hard trust: *Perceived Security*. The specific hypotheses were:

1- Better structural design should have a positive relationship with consumer trust. Better structural design consists of:
    a. Consistent navigation
    b. Easy to use navigation
    c. Good website usability
    d. Information accessibility

2- Better graphic design should have a positive relationship with consumer trust. Better graphic design consists of:
    a. Distinct graphics
    b. Appropriate colors and fonts
    c. Well-designed logos

3- Better content design should have a positive relationship with consumer trust. Better content design consists of:
    a. Correct product information
    b. Complete product information
    c. Full disclosure about the costumer relationship (privacy policies, legal issues, security etc.)

4- The existence of a social presence should have a positive relationship with consumer trust. Social presence consists of:

a. Embedded social cues
b. Multiple communication channels

5- Better perceived security design should have a positive affect with consumer trust. Better perceived security design consists of:
    a. Security cues (secure transaction cues HTTPS)
    b. Existence of security and privacy policy

6- Each of these aspects of web design may be affected by Price

    a. Hard trust (security) should not be affected by Price
    b. Soft trust will be affected by Price and there should be a higher standard for more expensive items.

Note that Hypotheses 1 through 5 were essentially replications of the literature, while Hypothesis 6 was the extension of the literature. However, it is the effect of Price on each on each of the elements defined hypotheses 1 through 5 that is central. See sections 6.4 and 6.5 for a summary of the findings.

6.1 Survey

The survey collected data from 132 participants using a variety of formats. Demographic data indicated that these participants were fairly typical of the younger (less than 35), more highly educated (university plus), online shopper. Table 6.1 shows the summery of the results.

Table 6.1 Summary of Results

Design	Question		Ranking of Rating by Question	Price Differences
	Number	Feature		Feature more important for:
Structural	11/12	Ease of Navigation	#5/7 --bottom 3	Inexpensive
	14	Site Layout		List for expensive Grid for inexpensive
	18/19	Broken Links	#5/14	
		Bad Menu Bar	#7/14 –middle 2	Expensive
		Easy Navigation	#11/14	
Graphic	11/12	Professional Looking	#4/7 –middle	
		Image Size	#6/7–bottom 3	
		Color Scheme	#7/7--bottom 3	
	15	Image Size		Big for expensive Big or small for inexpensive
	18/19	Clear Images	#8/14 –middle 2	
		Familiar Logo	#9/14	
		Bad Color Scheme	#10/14	Expensive
Content	11/12	Clarity of Information	#3/7 --top 3	
	18/19	Bad Product Info	#2/14 --top 3	Expensive
		Bad Diction	#6/14	Expensive
Social Cues, Presence	11/12	Familiarity with online store or logo	#1/7 --top 3	
		Reviews of Website	#2/7 --top 3	Expensive
	18/19	Familiar Store	#1/14–top 3	
		Friends Have Issues	#3/14–top 3	Expensive
		Live Chat	#13/14–bottom 3	Inexpensive
		Friends Recommend	#14/14 –bottom 3	
Security	18/19	Privacy Policy	#12/14–bottom 3	Expensive
		Too Much Info	#4/14	Expensive
	16	Security Lock	>75%	Expensive
	17	HTTPS	>75%	Expensive

For soft trust, the important conclusion is that aspects of each design category matter. Furthermore, item Price is often an issue for trust. Aspects of Social Cues or Presence represent the most important aspects of design. However, these are not the embedded social cues (e.g., live chat) but rather the third party recommendations of friends and other websites. In addition, it seems that the negative recommendations of friends have more impact than the positive recommendations of friends. Content is the second most important aspect of trust. These aspects were consistently rated high. Structural design does not appear to be all that important. Finally, aspects of graphic design tend to be uniformly unimportant for trust.

For hard trust, most individuals seem to be aware of the need for hard trust, and yet, there are significant issues for consumers. Firstly, some 25 – 35% of the sample never check for security. Less than 50% check consistently. This may be related to the notion that they prefer familiar stores that are recommended by a friend, but even still, security, and security policies, can change in stores that they have purchased from or are familiar with. Secondly, there were significant effects of item Price. That is, some 15 – 25% of online shoppers do not seem to realize that there are the same security issues regardless of Price.

6.2 Scenario Based tasks

The Scenario Based Task Study included three separate parts: an experimental test that contrasted pairs of websites, some mini-interviews to gather specific information about each pair of websites, and a more general interview to assess past experiences with online shopping.

6.2.1 Experimental Task

Table 5.11 summarizes the data from the experiment. In the experiment, there were ten questions that contrasted two pairs of websites. The questions asked about design issues within the same four categories. And Table 5.13 summarizes the results of the experimental study.

The main observation is that the design features contrasted in Sites A and B did matter for the perception of trust. However, the design features contrasted in Sites C and D did not matter. In this experiment, Content Design, and Structure Design mattered for trust, and one aspect of Graphic Design mattered as well.

6.3 Mini Interviews and Post Study Interview

In the interviews, the concept of a professional site was mentioned more than once. This echoed its effect in the experimental design, particularly in Sites A and B. A number also mentioned that the size of images – or the quality of images – mattered to trust, in that poor image quality indicated incompetence and/or and intent to deceive. In a similar vein, color (contrast) and fonts were noted as issues. Such comments (the number of participants who made such comments) are not completely consistent with the small effects for image size and quality in the experiment study. However, this may simply reflect the notion that participants completed the mini-interviews before the 10 questions of the experimental task. Hence, the effect of graphics might have been more salient if the participants spent more time browsing the websites before answering the mini-interview. The interviews also echoed the experimental tasks effects for Structural design; many commented on aspects like flow, navigation menus and search options. The lab study included many aspects of Social Cue Design but the 10 experimental questions did not refer to it. However, Social Cue Design it was mentioned by several participants. In particular, participants rely on third party assessments of a website. Only one participant even noticed the embedded Facebook and Twitter buttons for Site C. The interviews also provided one additional point. Participants want interactivity on a website, particularly the ability to view potential purchase from multiple angles and/or the ability to contrast items directly.

Results from the interview largely replicated and reinforced those of the mini-interviews. Given that the design of the study required that the same participants do both interviews within the constraints of an hour, this is not surprising. However, it is informative that participants report the same issues when discussing the designed sites and when discussing sites that they had visited and purchased from.

6.4 SYNOPSIS

Generally, the findings from the Survey and lab study are mutually supportive. Firstly, Content Design mattered for trust in both, while Graphic Design did not. Structural Design falls somewhere between those two. In terms of the specific hypotheses, the effects of various design parameters on trust are summarized in Table 6.2. Because item Price was an important part of the study, each hypothesis is summarized for the expensive and inexpensive items separately.

Table 6.2 Summary of Effects.

Design	Area	Support	Survey and Lab
Structural	Consistent navigation Easy to use navigation Good website usability Information accessibility	Inexp > Exp	Consistent effects
Graphic	Distinct graphics Appropriate colors and fonts Well-designed logos	Exp > Inexp	Inconsistent effects
Content	Correct product information Complete product information	Exp = Inexp	Consistent effects
Social Cues Presence	Embedded social cues Multiple communication channels	Exp > Inexp	Consistent non-effect
	Reviews by Friends and other Websites	Exp > Inexp	Consistent effects
Security	HTTPS / Security Lock Security and privacy policy	Exp > Inexp	- Most look for HTTPS - Policy not important to most
Item Price	Hard trust not be affected by Price	Exp > Inexp	Affected by Price
	Soft trust is affected	Exp > Inexp	Inconsistent effects

The important role of content design is re-enforced in these results. Indeed, during the experimental study, many participants wanted the option to access other websites to check the product information.

Structure design had a positive effect on consumer trust, and had some effects for item Price. In particular, consumers who want to purchase inexpensive items want to find the desired products quickly. Easy and appropriately styled navigation (e.g., list vs. grid) will help build trust because it enables customers to find what they want quickly.
The effects of graphic design were minimal and inconsistent. However, of those components, it was the clarity of images that mattered the most.

Embedded social cues did not have a significant effect on consumer trust, or any interactions with item Price. The availability of features such as Facebook and Twitter buttons or live communication channels did not affect the trust in a website. However, we discovered another aspect of social presence that does matter: Reviews and ratings of a website or a seller that are available in other websites really helps to build trust. We classified this as a social cue because it fundamentally represents the social perception of the site. It is not directly manipulated by the retailer (as a Facebook or Twitter account could be), but is very similar to the inclusion of testimonials on the website itself.

Finally, it could be noted that a number of participants (online shoppers) are "confused" about the role of website security – the HTTPS and Security lock – while too few attend to other aspects of security like the Privacy Policy. Note that this element of the hypotheses was added specifically to contrast hard and soft trust. The main focus of this thesis was on the issue of soft trust for item Price. However, hard trust was conceived as a type of reference point: item Price should not matter for hard trust. Surprisingly it did.

Generally, consumers expect a website that sells expensive items to be more professional. They have a higher standard of trust when spending more money. They want to make sure that the online vendor is spending efforts to make sure that the website is up to date and is taken care of. This means that they have the resources and they are at a high level of precision.

We discovered a new design feature that helps trust a website: *Interactive* website. Consumers want more control when buying items online. Just as in a physical store, a consumer wants to examine an item closely. An *interactive* website will allow the consumer to view the item from different angles, from different magnifications, and will make comparisons between different items easy. Shipping Price calculators were also

considered a part of an interactive website. The consumer wants to learn all the information about an item before committing to buying an item and providing their credit card information.

The implications for those who might design or implement consumer websites are interesting. Firstly, content must be complete and available. Consumers are tolerant (does not affect trust) of poor graphical design, and ordinary navigation, but they will not abide incomplete content. Furthermore, social media cues are not important. It would be a waste of time to devote considerable effort to a Facebook page or Twitter feed if the content were to be poor. Having said that, referrals are critical. However, referrals will only come if the site has good design.

To sell products, interactivity is important. In fact, it is arguable that interactivity will be the next "standard" for consumer sites because consumers are more likely to buy from sites that offer such features.

The second point is that Price is not a major issue for trust – except that it seems that consumers require a higher level of professionalism when buying more expensive items. More results about item Price were obtained in the survey. It is possible that the specific design features that were contrasted in the websites were not the ones that are most important for Price. That was likely due to the fact that the experimental procedure was essentially run in parallel with the survey. Now that we know what seems to matter for trust and item Price, better websites can be designed.

The third point is that in the experiment was conducted without the participants spending their own money when buying items. It would likely be better to test the hypotheses when participants were actually purchasing the item. If they use their own money, they would be expected to be more attentive to the particulars of the website design.

The final point is that consumers are aware of, and using security features such as HTTPS (or security lock), but a number are not aware of security features. Furthermore, consumers may be misattributing the role of HTTPS in consumer interactions. They may think it implies more about reputation than it does.

6.5 Contribution

Generally, this thesis did vindicate the notion that the design dimensions of Wang et al., (2005) – content design, structure design, graphic design and social cue design – do matter for trust. It also, in some sense, provides support for the Model of Trust in E-Commerce websites (MoTEC) developed by Egger (2000). That model holds that trust has four facets: *Pre-interactional Filters*, *Interface Properties* (graphic design and ease of use), *Information Content* (company/product information and security/privacy information), and *Relationship Management.* This thesis did not consider pre-interactional filter but confirmed the roles of information context (product and security), and relationship management, but found that interface properties were not as important. The thesis also provided some support for elements of McKnight et al., (2002) *Web Trust Model* in that the study shows that many individuals seem to have a disposition to trust (i.e., they do not check security). Finally, this study also affirmed Kamari et al., (2012) notion of the role of *Professionalism* for trust in websites as well as *Technological Incentives* (particularly in the pre-checkout vs. post-checkout comparison).

To these models, the current work has added the observations that price *can be* a factor, although it should be seen as a nuance layered on top of the more important general design features. That is, in some sense, consumers attribute more professionalism – hence trust – to website designs that are tailored to the price of the items. Expensive products require more ability to inspect the purchase (i.e., content information). Inexpensive products seem to require a more efficient purchasing process (i.e., fast navigation). In that vein, consumers want more interactivity – which would allow for the greater inspection of products and allow for on-the-fly computations of total expenditures.

Furthermore, this study has shown that the dimensions of hard and soft trust are – for the most part – separate concerns for the consumer. That is, there is no strong correlation between the two across participants. Hence, models of trust should likely separate the two facets of trust.

Also, this study helped to discover a design feature that is important to consumers: *Interactive* website. Consumers want more control when buying items online.

A zooming feature, a shipping calculator and a comparing feature – and other interactive features – will provide consumers with more control and therefore they would trust the website more.

Finally, this study has shown the critical role of social referencing. This does not refer to the use of social media like Facebook or Twitter (which seem to be unimportant). Rather, this refers to the role recommendations by friends and reviews on other websites – particularly negative reviews. The internet makes social communication – and social broadcasting – very easy. More than ever before, stores must be mindful of the comments of their customers. It is possible that because a person is online while shopping online, it is even easier to broadcast discontent about an online retail operation than a bricks-and-mortar operation.

6.6 Limitations

Often with academic studies, the sample pool was mostly university students mostly under the age of 35; however this group can be considered more willing to try and use newer technology. We would like to expand the survey beyond the university community as a large part of the online shopping population does not fit into this category – their issues about soft and hard trust might be different, or simply stronger.

6.7 Future Work

While this work has added to the literature, it has also raised a number of questions. Firstly, this study was focused on goods, and not services. It would be interesting if the same issues of soft trust applied to the purchase of services. In a similar vein, studies should be conducted on the role of interactivity on consumer trust and purchasing. It is unclear why interactivity should promote trust, but it may simply be that the more effort an online store puts into the website, the more committed and diligent it seems, and hence, the more trustworthy. Also, it is unclear why social cues did *not* matter. Currently, many companies are investing considerable sums in the development of such tools. One must ask if they are worth it. Of course, the current work only

examined the role of social cues with respect to trust, but many participants commented that they did not even notice.

6.8 Summary

In summary, the current work has validated models of consumer trust that argue that web design does matter to both hard and soft trust. Furthermore, it has shown that price could be an additional consideration in that trust, although the effects of item price should be seen as a layer on top of the more important dimensions. Lastly, it has, indirectly, shown that reviews by friends and reviews in other websites are crucial to building trust in online shoppers. Online stores could benefit from the idea of building online communities – but it is not clear that Facebook and Twitter represent the proper path to that end.

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APPENDICES

Appendix A – Recruitment Notice – Survey study

Attachment A-1 Recruitment e-mail

I am a Dalhousie graduate student conducting a study examining the impact of web design on consumer behavior at different price ranges. I am looking for a broad variety of participants, both who had a previous online purchasing experience, and those who did not. You will be asked to complete an on-line questionnaire; this will take 15-20 minutes. There is no compensation for completion of the study.
Please visit this website (URL: TBA) to take part in this survey. Your participation is deeply appreciated.

Attachment A-2 Social Media Recruitment Announcements

Twitter
Help us find out the impact of web design on consumer behavior at different price ranges, a Dalhousie masters student survey. Participate through the following link https://surveys.dal.ca/opinio/s?s=17549
Facebook
I am a Dalhousie graduate student conducting a study examining the effect of web design on consumer behavior. I am looking for a broad variety of participants, both who had a previous online purchasing experience, and those who did not. You will be asked to complete an on-line questionnaire; this will take about 5 minutes. There is no compensation for completion of the study, but your contribution will add to knowledge in this topic.
Please visit this website https://surveys.dal.ca/opinio/s?s=17549 to take part in this survey. Your participation is deeply appreciated. Please invite others and help make this survey serve its purpose.

Appendix B – Informed Consent

DALHOUSIE UNIVERSITY
Inspiring Minds

The Impact of Web Design on Consumer Behavior in E-Commerce Websites at Different Price Ranges.

Principal Investigator: Lama Khoshaim, E-commerce Masters Student
Supervisor: Dr. Keith Lawson. Faculty Information Management
Co-supervisor: Dr. Bonnie Mackay. Faculty of Computer Science
Contact Person: Lama Khoshaim **E-mail**: lama.shk@cs.dal.ca

We invite you to take part in a research study being conducted by Lama Khoshaim at Dalhousie University. Your participation in this study is voluntary and you may withdraw from the study at any time. Your academic (or employment) performance evaluation will not be affected by whether or not you participate. To be eligible to participate in the study, you must have purchased online before. The study is described below. This description tells you about the risks, or inconvenience which you might experience. Participating in the study might not benefit you, but I might learn things that will benefit others. You should discuss any questions you have about this study with Lama Khoshaim.

The purpose of the study is to help us understand the impact of web design on consumer behavior at different price ranges. You are invited to complete a questionnaire that should take approximately 15-20 minutes. 100 – 150 participants are invited to participate. In the questionnaire, we would like to learn about some of your habits and opinions when buying a product online. We would also want to know your actions if different circumstances are introduced. To make participating in the questionnaire quick, radio buttons and check boxes will be used. The survey can be taken at any time or place at your convenience. The survey will be done online through "Opinio" which is an online survey software.

Any one that has basic knowledge in using a computer, and has an internet connection is welcome to participate in this questionnaire. If you have any questions about the survey please contact the researcher. Also, if at any time you feel that you would like to withdraw from the study you can do so without any consequences. There are no compensations for participating in this survey, but knowledge will be gained from your participation. There are minimum risks or discomforts associated from completing the questionnaire such as not understating a question.

No personal and identifying data will be collected. Anonymity of textual data will be preserved by using questionnaire numbers. All data collected in the questionnaires will be referred to using the questionnaire numbers to ensure your confidentiality. The informed consent form and all research data will be kept in a secure location under confidentiality in accordance to University policy for 5 years post publication.

The principal investigator of this study is Lama Khoshaim. The survey data will be analyzed by Lama Khoshaim with guidance and review from thesis supervisors: Dr. Lawson and Dr.MacKay.

In the event that you have any difficulties with, or wish to voice concern about, any aspect of your participation in this study, you may contact Catherine Connors, Director, Office of Research Ethics Administration at Dalhousie University's Office of Human Research Ethics for assistance: phone: (902) 494-1462, email: Catherine.connors@dal.ca

Appendix C – Recruitment Notice – Scenario based tasks experiment

I am a Dalhousie Master of E-commerce Student. I am recruiting participants to take part in a research study examining the impact of web design on consumer behavior. I am looking for users who had purchased online before.

The study will be conducted in Dalhousie University, (Computer Science building) and will take about 60 minutes to complete. You will first meet with me to go over the study details, give consent to do the study and fill in a background questionnaire. You will be asked to perform a set of tasks of simulating buying items online. Then you will participate in a mini interview and fill in a short questionnaire. You will then perform a short 10-15 min interview followed by a questionnaire. Compensation is $15 for completion of the study. Please note that you will not use your credit card or any personal information while participating in this study.

If you are interested in participating, please contact Lama Khoshaim (lama.shk@dal.ca) to schedule a time.

http://doodle.com/89dwuxeti8xuig7e#table

Appendix D – Informed Consent

DALHOUSIE UNIVERSITY
Inspiring Minds

A Laboratory Study on: The Impact of Web Design on Consumer Trust in E-Commerce Websites at Different Price Ranges.

Principal Investigator: Lama Khoshaim, E-commerce Masters Student
Contact Person: Lama Khoshaim **E-mail**: lama.shk@cs.dal.ca

I invite you to take part in a research study on the impact of web design on consumer trust in e-commerce websites at different price ranges. The research study is being conducted by Lama Khoshaim at Dalhousie University. Your participation in this study is voluntary and you may withdraw from the study at any time. Your academic (or employment) performance evaluation will not be affected by whether or not you participate. To be eligible to participate in the study, you must have purchased online before. The study is described below. This description tells you about the risks, or inconvenience which you might experience. Participating in the study might not benefit you, but I might learn things that will benefit others. You should discuss any questions you have about this study with Lama Khoshaim.

The purpose of the study is to help us understand the impact of web design on consumer trust at different price ranges. You will be asked to participate in an hour-long study where you will perform eight tasks and answer short questionnaires.

You will be compensated $15 for participating in the study; you can withdraw from the study at any time without consequence. A researcher is always available over the study period by email or to meet in person to answer any questions you may have or address any problems that you may experience with the tasks.

At the beginning of the study, you will meet with the investigator (Lama Khoshaim) at the Computer Science building. At this initial meeting you will be asked to give consent to do the study and to fill in a background questionnaire, you will then be asked to perform a total of 4 tasks. After each pair of tasks, you will participate in a mini interview then fill in a questionnaire asking you about you about your preferences (for a total of 2 post-task questionnaires). You will then participate in a short interview. You will be audio recorded for this interview; you can participate in the interview even if you do not want to be audio recorded. Finally, you will be asked to fill in a post-study questionnaire. Your participation will take about 60 minutes.

All personal and identifying data will be kept confidential. Anonymity of textual data will be preserved by using ID numbers. All data collected in the questionnaires, audio, and interviews will use ID numbers to ensure your confidentiality. The informed consent form and all research data will be kept in a secure location under confidentiality in accordance to University policy for 5 years post publication.

In the event that you have any difficulties with, or wish to voice concern about, any aspect of your participation in this study, you may contact Catherine Connors, Director, Office of Research Ethics Administration at Dalhousie University's Office of Human Research Ethics for assistance: phone: (902) 494-1462, email: Catherine.connors@dal.ca.

"*I have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I hereby consent to take part in the study. However, I understand that my participation is voluntary and that I am free to withdraw from the study at any time.*"

Participant	Researcher
Name: _____	Name: _____
Signature: _____	Signature: _____
Date: _____	***Date:*** _____

□ "*I understand and consent that my participation in the laboratory study will be audio recorded for the purpose of analysis.*"

□"*I will take part in the interview, without the researcher audio recording my participation in the interview.*"

Participant	Researcher
Name: _____	Name: _____
Signature: _____	Signature: _____
Date: _____	***Date:*** _____

"*I agree to let you directly quote any comments or statements made in any written reports and I understand that the anonymity of textual data will be preserved.*"

Participant	Researcher
Name: _____	Name: _____
Signature: _____	Signature: _____
Date: _____	***Date:*** _____

"I would like to receive a copy of the study when completed by email."

[if this option is chosen, please include a contact email address:_____]

Appendix E - Background Questionnaire

PART I - PLEASE FILL IN THE FOLLOWING INFORMATION:

1. Age group :
   - ☐ 19-25
   - ☐ 26-35
   - ☐ 36-45
   - ☐ 46+

2. Gender: ☐ Male ☐ Female

3. Level of education:
   - ☐ 1st Year Undergraduate
   - ☐ 2nd Year Undergraduate
   - ☐ 3rd Year Undergraduate
   - ☐ 4th Year Undergraduate
   - ☐ Graduate – Masters
   - ☐ Graduate – PhD
   - ☐ Other _____

4. What is the price of the most expensive item you have ever bought online? _____
   What did you purchase? _____

5. What is the price of the least expensive item you have ever bought online? _____
   What did you purchase? _____

6. What items do you buy online? (check all that apply)
   - ☐ Clothes/shoes/accessories
   - ☐ Jewellery
   - ☐ Technology
   - ☐ Home décor
   - ☐ Furniture
   - ☐ Games/music
   - ☐ Books
   - ☐ Software
   - ☐ Other _____

7. How do you pay for your purchases? (check all that apply)
   - ☐ debit card
   - ☐ credit card
   - ☐ pay pall
   - ☐ pre-paid credit card
   - ☐ pre-paid store card (e.g., iTunes)

8. What kind of device do you use to purchase online? (check all that apply)
   - ☐ Mobile phone
   - ☐ Tablet
   - ☐ Laptop/desktop

Appendix F - Post-task Mini Interview

Task (a) chose one item (out of two) from the two given websites:

1- Which item did you decide to buy? Why?
2- What website you would most likely provide your credit card information? Why?
   - To this moment, why did you like this website better that the other?
   - What didn't you like in this website?
   - Are you comfortable at this point to provide your credit card information? Why/why not?

Task (b) Complete the buying process in the two given websites:

Questions on decided website to make purchase:

3- What design elements influenced your decision to buy from this website?
4- Where there any design elements that you did not like on the website you would buy from but that did not affect your decision?

Questions on website not making the purchase:

5- What was it about the design elements on the website you wouldn't buy from that influenced your decision?
6- Looking at the website you would not buy from, what where the design elements that you liked and didn't like? How did these affect your decision to not buy from this site?

Appendix G – Post-task Questionnaire

Please respond to the following statements using the given scale (circle response):

QUESTIONS							
1. I found the first website easy to navigate	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
2. I found the second website easy to navigate	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
3. Navigating to the item was easy in the first website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
4. Navigating to the item was easy in the second website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
5. The navigation menu was helpful to reach the item I wanted to buy in the first website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
6. The navigation menu was helpful to reach the item I wanted to buy in the second website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
7. The images were easy to view on the first website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
8. The images were easy to view on the second website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
9. Product information was complete in the first website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
10. Product information was complete in the second website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
11. Checking out was organized on the first website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
12. Checking out was organized on the second website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree

13. The layout of the items made it easier to choose on the first website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
14. The layout of the items made it easier to choose on the second website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
15. The sizes of the images made it easier to buy an item on the first website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
16. The sizes of the images made it easier to buy an item on the second website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
17. I liked the color scheme of the first website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
18. I liked the color scheme of the second website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
19. I trusted the first website because it looked professional	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
20. I trusted the second website because it looked professional	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree

Appendix H - Post-study Semi-structured Interview

1. What websites do you tend to buy from?
2. How do you tend to pay for items online?

3. Can you tell me about the most expensive item you have ever bought online? (Can you remember the site? This question will be asked and I will bring the website up if the participant remembers the name so that the participant can remember elements of the website clearly)
    4. Did you consider buying this item from a different website? Which ones? Why did you end up choosing the website you purchased the item from?
    5. Why did you trust this website enough to give your credit card information to? If the participant uses another method of payment the question would be would you have used your credit card information with this website?
    6. Would you buy from this website again?

7. Can you tell me about the least expensive item you have ever bought online? (Can you remember the site? This question will be asked and I will bring the website up if the participant remembers the name so that the participant can remember elements of the website clearly)
    8. Did you consider buying this item from a different website? What ones? Why did you end up choosing the website you purchased the item from?
    9. Why did you trust this website enough to give your credit card information to? If the participant uses another method of payment the question would be would you have used your credit card information with this website?
    10. Would you buy from this website again?

11. Have you ever gone to a site where looking to purchase something and decided not to purchase it then because you did not trust the website enough to provide your personal information? What made you feel this way? (Can you remember the site? This question will be asked and I will bring the website up if the participant remembers the name so that the participant can remember elements of the website clearly)

12. In general, what makes you stay on a shopping website?

13. In general, what do you look for that helps you trust a website with your credit card information?

14. In general, what makes you decide that a website is not trust worthy?

15. Is there a difference of what you look for (design wise) when you buy an expensive item verses an inexpensive item?

16. Did you ever purchase a product from a website and thought you will never receive that product? What happened?

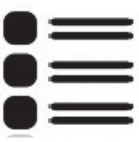
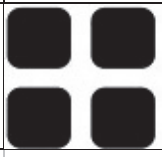
Appendix I – Survey Study AKA Post-study Questionnaire

1. Rank the top three elements that makes you trust a website with your credit card information (place a 1 beside the most important item, 2 by the next and 3 by the next):

- ☐ Clarity of item information
- ☐ Appropriate image size
- ☐ Looks professional
- ☐ General colour scheme
- ☐ Easy navigation
- ☐ Reviews and rating of the website
- ☐ Familiar with the online store or logo
- ☐ Other: _____ (please add)
- ☐ Other: _____ (please add)
- ☐ Other: _____ (please add)

2. What makes a website look professional to you?

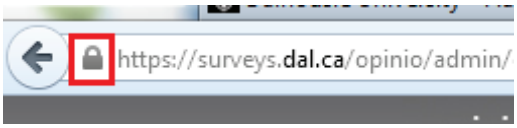
3. What kind of website layout do you prefer when buying an item online?

	List	Grid	Does not make a difference	Other (please type)
				
When buying an **expensive** item (around $ 800)	☐	☐	☐	
When buying an **inexpensive** item (around $ 30)	☐	☐	☐	

4. What is an appropriate size for images of products?

	Small images	Big images	Does not make a difference
When buying an **expensive** item (around $ 800)	☐	☐	
When buying an **inexpensive** item (around $ 30)	☐	☐	

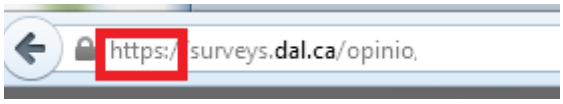
5. When making online purchases, how often do you look for the little lock



in the browser before providing your credit card information? (check one box in each category (expensive or inexpensive))

	Never (I always trust websites)	When I remember (~ 25% of the time)	Sometimes (~50% of the time)	Usually (~75% of the time)	Always (~ 100% of the time)
When buying an expensive item (around $ 800)	☐	☐	☐	☐	☐
When buying an inexpensive item (around $ 30)	☐	☐	☐	☐	☐

6. How often do you look for the word “https”



on the web page address bar before providing your credit card information ?
(check one box in each category (expensive or inexpensive))

	Never (I always trust websites)	When I remember (~ 25% of the time)	Sometimes (~50% of the time)	Usually (~75% of the time)	Always (~ 100% of the time)
When buying an expensive item (around $ 800)	☐	☐	☐	☐	☐
When buying an inexpensive item (around $ 30)	☐	☐	☐	☐	☐

Please circle the rating that best describes the statement:

Please respond to the following statements using the given scale (circle response):

7. Imagine you are making an online purchase of an expensive item that Prices about $800.You find that several websites sell the items you want for the same price, the same shipping fees and the same shipping time. You choose to purchase from one of those websites.

Assume that you will pay for your purchases using a debt or credit card and not other methods (e.g., PayPal or prepaid cards). Also, assume that you would have to provide your personal information (e.g., address, full name, phone number etc.)

Considering this scenario, please respond to the following statements using the given scale.

1. I look for the privacy policy before providing my payment information	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
2. I abandon a shopping cart (e.g., won't make the purchase) if I think the website is asking for unnecessary personal information	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
3. I feel comfortable providing my credit card information to a website when I see a familiar symbol (e.g. PayPal icon or visa symbol)	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
4. If my friends have recommended a site (e.g. via Facebook or Twitter) I am more likely to provide my payment information to the website even if I do not think the site is trustworthy	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
5. I will provide my payment information to purchase from a website even if my friends mentioned (via Facebook or Twitter for example) that they had issues or problems with this website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree

6. I am more likely to provide my payment information if there is a live chat available on the website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
7. Finding a broken link on the website will make me less likely to provide the website with my payment information	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
8. I would provide my payment information if I can see clear and accurate images of the product	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
9. I will provide my payment information to a website if product information was incorrect or incomplete	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
10. I will provide my payment information to a website even if I find spelling and grammar errors	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
11. I will provide my payment information to a website if I can navigate easily to the product I want to purchase	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
12. I will provide my payment information to a website if the menu bar (navigation bar) is inconsistent (location, colours, font etc...)	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
13. I will provide my payment information even if I think that the colours are not appropriate or do not have good contrast (e.g. yellow text on a white background)	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
14. I will provide my payment information if I am purchasing from a familiar store	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree

5. Imagine you are making an online purchase of an inexpensive item that Prices about $30.You find that several websites sell the items you want for the same price, the same shipping fees and the same shipping time. You choose to purchase from one of those websites.

Assume that you will pay for your purchases using a debt or credit card and not other methods (e.g., PayPal or prepaid cards). Also, assume that you would have to provide your personal information (e.g., address, full name, phone number etc.)

Considering this scenario, please respond to the following statements using the given scale

1. I look for the privacy policy before providing my payment information	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
2. I abandon a shopping cart (e.g., won't make the purchase) if I think the website is asking for unnecessary personal information	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
3. I feel comfortable providing my credit card information to a website when I see a familiar symbol (e.g. PayPal icon or visa symbol)	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
4. If my friends have recommended a site (e.g. via Facebook or Twitter) I am more likely to provide my payment information to the website even if I do not think the site is trustworthy	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
5. I will provide my payment information to purchase from a website even if my friends mentioned (via Facebook or Twitter for example) that they had issues or problems with this website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
6. I am more likely to provide my payment information if there is a live chat available on the website	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree

7. Finding a broken link on the website will make me less likely to provide the website with my payment information	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
8. I would provide my payment information if I can see clear and accurate images of the product	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
9. I will provide my payment information to a website if product information was incorrect or incomplete	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
10. I will provide my payment information to a website even if I find spelling and grammar errors	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
11. I will provide my payment information to a website if I can navigate easily to the product I want to purchase	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
12. I will provide my payment information to a website if the menu bar (navigation bar) is inconsistent (location, colours, font etc...)	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
13. I will provide my payment information even if I think that the colours are not appropriate or do not have good contrast (e.g. yellow text on a white background)	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree
14. I will provide my payment information if I am purchasing from a familiar store	**1** Strongly Disagree	**2** Disagree	**3** Some-what Disagree	**4** Neutral	**5** Some-what Agree	**6** Agree	**7** Strongly Agree

Appendix J – Participant Payment Receipt

My signature below confirms that I received a sum of $15 (CDN) cash from Lama Khoshaim as an honorarium payment for participating in "The Impact of Web Design on Consumer Trust in E-Commerce Websites at Different Price Ranges" research project.

I understand this honorarium is taxable income and it is my responsibility to claim it on my income tax as Dalhousie University will not be issuing a T4A for this payment.

Name (please print): _____

Signature: _____

Date: _____

Appendix K – Ethics Board Approval Letter – Survey Study

DALHOUSIE UNIVERSITY
Inspiring Minds

Social Sciences & Humanities Research Ethics Board
Letter of Approval

January 03, 2013

Ms Lama Khoshaim
Computer Science\Computer Science

Dear Lama,

REB #: 2012-2830
Project Title: The Effect of E-Commerce Website Design on Consumer Trust

Effective Date: January 03, 2013
Expiry Date: January 03, 2014

The Social Sciences & Humanities Research Ethics Board has reviewed your application for research involving humans and found the proposed research to be in accordance with the Tri-Council Policy Statement on *Ethical Conduct for Research Involving Humans*. This approval will be in effect for 12 months as indicated above. This approval is subject to the conditions listed below which constitute your on-going responsibilities with respect to the ethical conduct of this research.

Sincerely,

Dr. Sophie Jacques, Chair

Appendix L - Ethics Board Approval Letter – Scenario Based Tasks Study

DALHOUSIE UNIVERSITY
Inspiring Minds

Social Sciences & Humanities Research Ethics Board
Letter of Approval

January 02, 2013

Ms Lama Khoshaim
Computer Science\Computer Science

Dear Lama,

REB #: 2012-2879
Project Title: A Laboratory Study on the Impact of Web Design on Consumer Trust in E-Commerce Web Sites at Different Price Ranges

Effective Date: January 02, 2013
Expiry Date: January 02, 2014

The Social Sciences & Humanities Research Ethics Board has reviewed your application for research involving humans and found the proposed research to be in accordance with the Tri-Council Policy Statement on *Ethical Conduct for Research Involving Humans*. This approval will be in effect for 12 months as indicated above. This approval is subject to the conditions listed below which constitute your on-going responsibilities with respect to the ethical conduct of this research.

Sincerely,

Dr. Sophie Jacques, Chair