

EFFECTS OF CULTURE ON ONLINE INITIAL TRUST:
INDIVIDUAL LEVEL ANALYSIS

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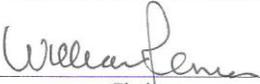
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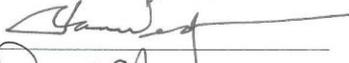
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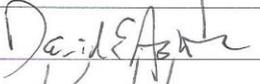
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ABSTRACT

This is an exploratory work on the relationship between online initial trust and culture. Little work has been done on how culture influences one's online trust perceptions. In IS research, culture is mostly studied either at the national or at the organizational level. This study captures culture at the individual level on a website. Four culture dimensions (masculinity/femininity, individualism/collectivism, power distance and uncertainty avoidance) proposed by Hofstede (1980) are investigated. The McKnight et al. trust model (2002) is used as the basis of this study. Subjective norm (SN) is also integrated in the trust and culture model. Structural equation modeling was used in the model analysis.

First, the initial online trust model of McKnight et al. was successfully replicated in a tourism context. Then, the McKnight et al. trust model was augmented by subjective norm. I propose from the 'Theory of Reasoned Action' (Fishbein and Ajzen 1975) that SN is a critical variable in trust formation and trust intention. My data showed that SN directly impacted all four trust constructs (disposition to trust, institutional trust, trusting beliefs, and intention to trust). Furthermore, SN is found to be a positive covariate of all culture variables; thus, all culture variables indirectly affect trust formation and intention through SN. Two culture dimensions (power distance and uncertainty avoidance) also directly affected three trust constructs, but not intention to trust. The dimensions of masculinity/femininity and individualism/collectivism had no direct effects on trust formation.

My results showed that SN, in particular peer perception, has the most significant effects on initial online trust formation. Furthermore, a person high in uncertainty avoidance (UA) has the strongest association with SN. Thus, not only does s/he take cues from others more, but also has a more trusting disposition and forms trusting beliefs more easily than a person low in UA.

The unequivocal properties of the UA construct were also discussed. Two types of UA are proposed; “UA need for structure” and “UA need for avoiding uncertainty”. The UA construct that the most literature refers to is analyzed as “UA need for structure”. Further investigation of UA construct is suggested.

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1. Introduction

This dissertation is an exploratory, theory-driven study of the relationship between *online trust formation* and cultural influences. Little work has been done on the relationship between trust and culture (McKnight & Chervany 2006). Furthermore, no work has examined culture and trust at the individual level in an online context.

Trust is central to human activities. Without trust our lives would be extremely restricted. Trust is a complex subject, and culture is an equally broad and complex subject. Trust formation and its development and decline can be studied over time. However, this study is limited to the *initial stage* of trust formation when an individual, a trustor, encounters a website, i.e. the trustee, for the first time without prior knowledge of that particular website. In this study, culture is defined by the four cultural dimensions that Hofstede identified, namely, masculinity/femininity, individualism/collectivism, power distance, and uncertainty avoidance dimensions (1980). These cultural dimensions are most often used in academic management literature (Leidner & Kayworth 2006).

My research questions are: What makes someone trust a website? Does culture manifested in an individual have an impact on trust formation? Or is the initial online trust formation a universal and uniform phenomenon across cultures? What are the necessary components for a website to be perceived as being trustworthy?

These questions are important in today's e-commerce context. Not only are more and more businesses migrating to online environments (Weill & Vitale 2001), but an increasing number of people with diverse cultural backgrounds is interacting on websites. As of November 2008, about 21.9% of the world's population, 1.4 billion people, used the Internet.¹ However, the penetration rate of the Internet was a mere 15.3% in Asia and 5.3% in Africa. However, the growth rate has been 406.1 % and 1,031.2% respectively over the last eight years (from 2000 to 2008) (Appendix A). Understanding how Internet properties and cultures interplay is crucial for the digital economy. This paper is an attempt to contribute to the body of knowledge from the perspective of culture and trust formation on websites.

My dissertation study will explore how users perceive and form initial online trust. First, I will empirically validate McKnight et al.'s previously proposed online initial trust model and instruments (2002), with a new set of subjects and new tasks in a new context, i.e. a tourist website. Second, I will extend McKnight et al.'s trust model by including a subjective norm variable based upon the Theory of Reasoned Action. Third, employing the cultural instrument that Srite and Karahanna (2006) used, this study will examine the relationships among trust, subjective norm, and culture manifested in an individual. Exploring how these factors interplay and affect perception and formation of online trust, I will propose the newly integrated trust and culture model by further extending the trust model developed in this study.

¹ <http://www.internetworldstats.com/stats.htm> "World Internet Usage" retrieved on November 15, 2008.

This dissertation is organized as follows: In Section 2: Trust Literature Review, I will introduce the definition of trust and the types of trust that previous literature has identified. Then, I will discuss McKnight's trust model, which my research is based upon. I will also touch upon the role of subjective norm in the Theory of Reasoned Action, in which McKnight et al.'s trust model is framed. In Section 3: Culture Literature Review, I will discuss key culture theories, Hofstede's cultural dimensions, and the findings of Triandis and his associates which became the impetus to the culture analyses at an individual level. I will briefly touch upon the genesis of Srite and Karahanna's (2006) survey instruments. In addition, I will introduce previous literature on culture and subjective norm at the end of Section 3. In Section 4: Pilot Study, I will report the results of my pilot study.

Section 5: the Final Study, which I conducted over late spring and summer 2008, will follow the pilot study section. The final study section consists of the following sections: 5.1 Research Question and Hypotheses, 5.2 Data Collection Method, 5.3 Participants, 5.4 Interview, 5.5 Survey Instruments, and 5.6 Data Analysis. The 5.6 Data Analysis section will describe the findings of this study and include the following sections: Analysis Plan, Descriptive Statistics, Reliability Testing, and Principal Component Analysis and Confirmatory Factor Analysis of the McKnight et al. Trust Model, and the analysis of the Srite and Karahanna's Culture Instrument. Section 5 will conclude with the proposal of the newly integrated trust and culture model. Section 6: Discussion and Results will summarize the findings of the final study, and will discuss its practical implications and limitations. In Section 7, I will discuss contributions of this study.

2. Trust Literature Review

2.1 Why Trust?

Trust is the underpinning of all human activities. We rely upon others to achieve what is otherwise not possible to achieve – almost everything in life. Trust is faith and confidence in the unknowns in everyday life. In today's rapidly changing society, trust is more critical than ever in all facets of our lives.

Prior research has found many benefits of trust, for example, that trust lubricates relationships, like how gears turn the wheels of organizations and commerce (McKnight & Chervany 2006). Trust has become critically important during an organizational crisis (Mishra 1996) and when supporting structures are not fully existent in the organization. Balasubramanian et al. (2003) reported that perceived trustworthiness of an online broker is a significant antecedent to investors' satisfaction, and that perceived security and operational competence impact the formation of trust. In addition, trust promotes efficiency and productivity, and reduces transaction cost. Thus, trust creates value (Dyer and Chu 2003).

In e-commerce situations, trust may be difficult to form due to the inherent uncertainty associated with online interaction. The online medium is not as rich as face-to-face interactions. Buyers and sellers are separated in time and space. The traditional environment that gives off cues that help one to evaluate the trustworthiness of the

vendor, such as physical appearance of stores, employees, employees' responsiveness and empathy, are not observable (Gefen and Straub 2004). Trust is called on more in e-commerce situations in order to overcome this inherent uncertainty.

2.2 Definition of Trust

The concept of trust is complex. Trust literature shows, for the most part, no unified definition of trust, but rather confusing definitions differing across disciplines.

Economists tend to define trust as a social virtue, a capital and a social commodity.

Sociologists tend to talk about characteristics of the institutional environments.

Psychologists write from an interpersonal perspective, whereas social psychologists discuss trust from the perspective of cognitive process.

For example, in his suggestive book, titled *Trust: The Social Virtues and The Creation of Prosperity*, Francis Fukuyama approached trust from a social capital view. Traditionally economists do not include trust as part of the market economy equation. However, Fukuyama argued that the level of trust is tied to economic prosperity (1995):

Trust is the expectation that arises within a community of regular, honest, and cooperative behavior, based on commonly shared norms, on the part of other members of that community. Those norms can be about deep "value" questions like the nature of God or justice, but they also encompass secular norms like professional standards and codes of behavior. (p. 26)

Fukuyama extends his arguments to national differences of high-trust and low-trust cultures. From historical evidence of respective countries, he argues that high-trust societies like the U.S., Germany, and Japan would enjoy economic prosperity, since the people can easily form or dissolve association with other social entities beyond a family unit. Meantime in other low-trust societies such as China, Italy, and France, economic prosperity might be hindered by distrust of others than family networks.

Hardin (1993), in an article called “The Street-Level Epistemology of Trust”, states that trust is inherently subject to the risk that the other could abuse the power of discretion but the benefit of trust in the aggregate may far outweigh the losses. He maintains that past experiences define the capacity to trust and that trust must be learned. Therefore, those who grew up in an abusive relationship or have experienced a hardship are often stuck in a perpetually vicious cycle, because they would fail to trust when trusting is clearly beneficial for them.

In the article, “Trust as a Commodity”, Partha Dasgupta (1988) asserts that economists rarely discuss trust as central to all transactions, but trust is not dissimilar to commodities such as knowledge or information. She points out that trusting someone is a calculative process, and that the inability to *monitor* others’ actions is a crucial component of the definition of trust. Dasgupta goes on to write that the problem of trust would not arise if we were all trustworthy. To trust a person, we need to know whether that person is of a positive disposition as well as something of the circumstances.

Departing from Erickson's concept of "basic trust as the healthy personality" (1950, p. 247-251), interpersonal psychologist, Rotter, defines trust as "an expectancy" by people (1967):

The efficiency, adjustment, and even survival of any social group depends upon the presence or absence of such trust. Interpersonal trust is defined here as an expectancy held by an individual or a group that the word, promise, verbal or written statement of another individual or group can be relied upon. (p. 651)

The Academy of Management Review devoted a special issue to trust research in 1998. In the introduction to the special topic forum articles, Rousseau gives readers an overview of recent and past trust research. Having reviewed various fields of trust research, she states that a widely held definition of trust across fields is as follows:

Trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another.
(Rousseau 1998).

In defining what trust is, Rousseau writes that the "*risk, interdependence and 'willingness to be vulnerable'*" that Mayer, Davis, and Schoorman (1995) proposed are the key conditions for trust to emerge. "Trust is not a behavior (e.g., cooperation), or a choice (e.g., taking a risk), but an underlying psychological condition that can cause or result from such actions." If there is no uncertainty, there is no room for trust to develop. Trust emerges when one party needs another party to achieve what otherwise is not possible to

achieve, and the trustor is willing to take risk and is willing to be vulnerable in the face of uncertainty.

The willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party. (Mayer et al. 1995)

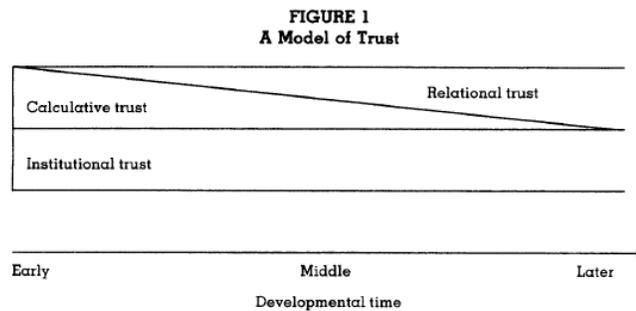
This article, by Mayer, Davis, and Schoorman, has been cited 2050 times in Google Scholar as of April 3, 2008. The McKnight et al. model which my study is based upon, also adopts this definition.

The key contribution from previous literature on trust was the differentiation of trusting beliefs from trusting behaviors. Trust is defined not as a behavior, or a choice, but as an underlying psychological condition that can cause or result from such actions. If there is no uncertainty, there is no room for trust to develop. Trust emerges when one party needs another party to achieve what otherwise is not possible to achieve, and the trustor is willing to be vulnerable and take the chance in the unknown, expecting positive returns.

2.3 Types of Trust

Trust research asserts that trust changes over time. Trust develops, is built, declines and even resurfaces in long relationships (Figure 2.1). Most scholars focus on one stage of trust evolution and trust is understood in a particular context. Lewicki points out that in

understanding trust, the context is important. “The question is not so much ‘How much do I trust?’ but ‘In what areas and in what ways do I trust?’” (Lewicki, McAllister et al. 1998).



<Figure 2.1. Rousseau, Sitkin et al. Model of Trust (1998) >

Rousseau identifies the several types of trust that appeared in literature: deterrence-based trust, calculus-based trust, relational trust, institution-based trust, and network-based trust (1998).

Deterrence-based trust arises when the cost of the breach of trust exceeds the benefits from opportunistic behaviors, and one sees that the partner will be trustworthy. Some scholars say that deterrence-based trust is not what we can call trust (Sitkin & Roth 1993). This deterrence-based trust seems more like one type of calculus-based trust, as the parties involved weigh the pros and cons of the opportunistic cost.

Calculus-based trust emerges when the trustor believes that, based upon economic exchange, the trustee intends to perform an action that is beneficial for him/her and

makes a rational choice. “Here, parties *trust but verify* under conditions where willingness to trust is limited to specific exchanges”.

Relational trust is nurtured through repeated interactions over time among the parties involved, and from information available *from within the relationship itself*. Due to the reciprocal nature of interaction, emotions and attachments to one another are the characteristics of relational trust. Relational trust is sometimes called “affective trust” (McAllister 1995) or in a broader scope, “identity-based trust” (Coleman 1990) .

Institution-based trust includes reputation, and supports from a legal system. Van de Ven and Ring (2006) maintains that one relies on institutional trust – the security of rules, structures and organizations – when interpersonal trust is fragile. Institution-based trust can enhance the formulation of both calculus-based and relational trust. On the other hand, an institutional mechanism could reduce the opportunity for interpersonal trust to emerge (Zucker 1986). Rousseau cites Shapiro (1987) to point out the fundamental issue of whether institutional trust is a control or a form of trust support.

In the article by Rousseau et al. (1998), initial trust was not listed as one of the trust types. This is probably because trust was traditionally believed to emerge over time, from the knowledge of that particular situation. However, for the last decade, scholars identified a rapidly developing trust called “swift trust” often found in a temporal collaborative team (Meyerson et al. 1996; Jarvenpaa et al. 1998, 2004). These teams are formed and work together over short periods of time without much previous knowledge of each other. The

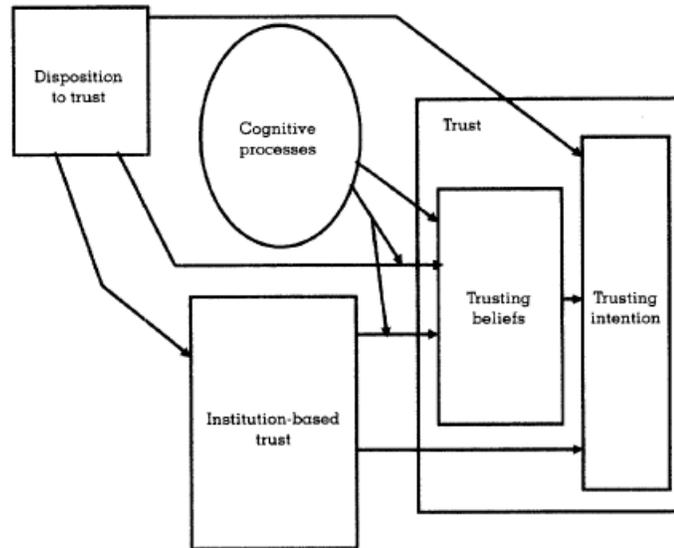
situation where professional teams work together in a virtual space is an example of the context of this type of trust. These teams display the attributes of trust that cannot be explained in the traditional knowledge-based trust theories.

This line of cognitive-based trust literature states that trusting beliefs could form rather quickly without acquiring meaningful information on partners. Trustors base their trust on “social categorization, reputation, illusions (irrational thinking), disposition, institutional roles and structures, or out of the need to immediately cooperate on a task” (McKnight et al. 2002).

Since the Internet was introduced to a wider audience and the opportunities of collaborative works across national borders have dramatically increased, this type of “swift” or initial trust drew the attentions of researchers (McKnight et al. 1998, 2001, 2002; Koufaris 2004; Bhattacharjee et al. 2002; Wakefield et al. 2004; Hampton-Sosa & Koufaris 2005). Such leading initial trust scholars, McKnight, Cummings and Chervany introduced the multi-level integrated initial trust building model in 1998 (Figure 2.3.1). I will begin my study based upon their trust model and will further develop it by incorporating subjective norm and culture variables.

A detailed comprehensive review of past trust research is found in Bechtold’s 2007 study.

FIGURE 1
High-Level Model of Initial Formation of Trust



<Figure 2.3.1. McKnight, Cummings & Chervany High-Level Model of Initial Formation of Trust Model (1998) >

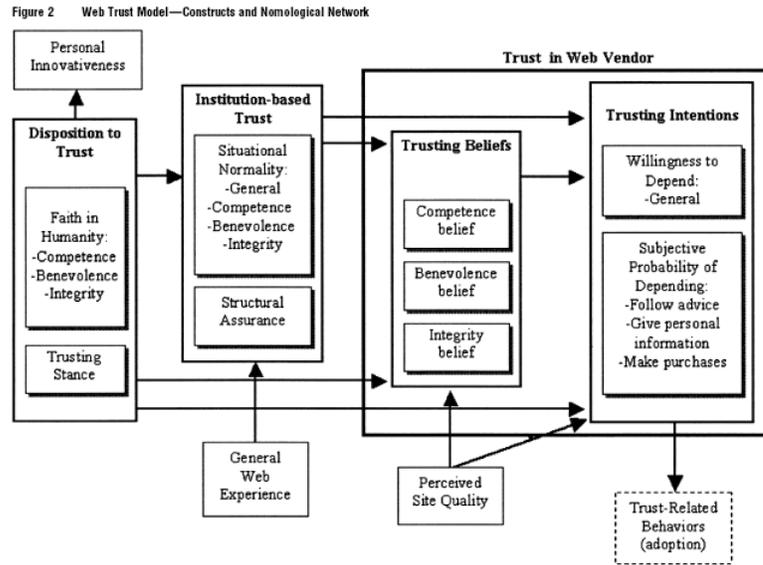
2.4 The McKnight, Choudhury and Kacmar 2002 Trust Model

McKnight et al. introduced a *measurable* multidimensional trust building model in 2002 (Figure 2.4.1). This model focuses on initial trust. Initial trust means trust in an unfamiliar trustee, “a relationship in which the actors do not yet have credible, meaningful information about, or affective bonds with, each other” (Bigley & Pierce 1998). The 2002 trust model is the same as their 1998 trust model, but without the component of cognitive processes. The cognitive processes component was dropped from the model, because it is not possible to measure. I believe that the 2002 McKnight model is to date the most comprehensive initial *online* trust formation model in the management literature. Many initial trust models exist but they are often bound to

specific situations and are not as comprehensive as what can be generalized across various contexts.

Prior to the McKnight et al. (2002) study, the field of trust research was rather confusing. Scholars used diverse, incomplete, and inconsistent definitions of trust construct, and the inconsistency of trust measures made comparing and analyzing existing empirical trust studies in a systematic manner impossible. In hopes that they could bring “more rigor to research and allow research to be conducted in a more systematic manner” and “make research results more interpretable and clear”(p. 148), McKnight et al. proposed and validated measures for a multidisciplinary, and multidimensional model of trust construct. Four higher trust constructs were identified in their model: Disposition to trust, Institution-Based Trust, Trusting Beliefs, and Trusting Intentions. Within these four higher constructs, there are sixteen measurable, literature-grounded subconstructs in the e-commerce context (Figure 2.4.1).

The McKnight et al. trust model (1998) integrated various trust constructs within the broad framework of the Theory of Reasoned Action (TRA) (Fishbein and Ajzen 1975). TRA maintains that beliefs lead to attitudes, which lead to behavioral intentions, which lead to the behavior itself. Attitudes fell out of the TRA model empirically (Davis et al. 1989). McKnight et al. used this parsimonious version of TRA for their trust model. They write that “trusting beliefs (perceptions of specific Web vendor attributes) lead to trusting intentions (intention to engage in trust related behaviors with a specific Web vendor)”, which would result in trust-related behaviors beyond the model.



<Figure 2.4.1. McKnight, Choudry & Kacmar Trust Model (2002)>

Brief descriptions of the McKnight’s four higher trust constructs are as follows:

- Disposition to Trust

“*Disposition to trust* is the extent to which a person displays a tendency to be willing to depend on others across a broad spectrum of situations and persons.” This construct is divided into two subconstructs: faith in humanity and trusting stance. *Faith in humanity* means one assumes that generally people are upright, well meaning, and dependable. *Trusting stance* means that one assumes better outcomes result from dealing with people as though they are well meaning and reliable (McKnight et al. 1998; Riker 1971).

- Institution-Based Trust

Institution-Based trust is comprised of two subconstructs: *structural assurance* and *situational normality*. Institution-Based trust is the belief that the structural conditions to enhance probability of successful outcomes are present. That is, necessary structural features are present in the Internet.

Guarantees, regulations, promises, legal recourse, or other procedures are considered to be *structural assurance* (Shapiro 1987; Zucker 1986). “For example, one with high Web-related structural assurance would believe that legal and technological Internet protections like data encryption safeguard one from loss of privacy, identity, or money.” (p. 339)

Situational normality entails the proper order of the environment, and success is likely because the situation is normal (Baier 1986; Garfinkel 1963; Lewis and Weigert 1985). One would perceive that “the Internet environment is appropriate and well ordered for conducting business. One would think that, *in general, vendors in the environment* have the attributes for successful transaction.

- Trusting Beliefs

Trusting beliefs include the confident trustor perception that the trustee has attributes that are beneficial to the trustor. Having extensively reviewed the previously published thirty two trust articles (Bhattacharjee 2002; Gefen 1997; Mayer et al. 1995, etc.), McKnight et al. identified that three trusting beliefs that are most frequently utilized include

“competence (ability of the trustee to do what the trustor needs), benevolence (trustee caring and motivation to act in the trustor’s interests), and integrity (trustee honesty and promise keeping)”. They applied these three concepts also to both “disposition to trust” and “institution-based trust” constructs.

- Trusting Intentions

Trusting intentions mean that the trustor is “securely willing to depend, or intends to depend, on the trustee”. Two subconstructs of trusting intentions are: “*willingness to depend* (volitional preparedness to make oneself vulnerable to the trustee) and *subjective probability of depending* (the perceived likelihood that one will depend on the other)”.

The McKnight model involves three specific risky behaviors of the “subjective probability of depending”; providing personal information, engaging in a transaction, and acting on the information provided.

- Relationships Among Trust Constructs

Disposition to trust influences trust in vendors (Gefen 2000). Also, disposition to trust is assumed to positively influence perceptions of the institutional context, which directly influences institution-based trust. “The impact of disposition to trust on trusting beliefs will be largely mediated by institution-based trust.”

Institution-based trust is thought to correlate positively with both trusting beliefs and trusting intentions. When one is comfortable with the web situation, perception of

contextual security will enhance trusting beliefs and intentions. Trusting beliefs will relate positively to trusting intentions. “Perceptions that the vendor is honest, for example, encourage the consumer to provide personal information.” Also, past TRA research empirically proved this positive link. Trusting beliefs strongly predict the intentions (Davis et al. 1989).

Various research has confirmed the strong link between behavioral intentions and actual behaviors (Venkatesh & Davis 2000). Trusting intention is believed to lead to trust-related behaviors that are not measured in the model.

There are three non-trust related constructs in the McKnight model in order to obtain nomological construct validity: personal innovativeness, web experiences and perceived site quality. Disposition to trust is considered to positively affect personal innovativeness. Past research showed that personal innovativeness reflects confidence in the adoption of new ideas or technologies. General web experience is another important component in verifying the validity of trust constructs in the nomological network, because experience conquers uncertainty and is positively correlated to trust beliefs. “One of the most basic of trust-building tenets is that experience with the object of trust promotes trust in the object.” (Blau 1964, Luhmann 1979; McKnight et al. 2002) Website quality is equally important in creating trust. People make assumptions on “whatever they know” (McKnight et al. 1998). If the website is of high quality, one would conjecture that the website vendor has high positive attributes and will form trusting beliefs and intentions.

The McKnight et al. study (2002) used a hypothetical legal website for their experiment. 724 students at three large U.S. universities participated in the study, and were given extra credit for the participation. The task involved looking up their rights over apartment A/C malfunctions on the legal website. The scenario was meant to replicate what likely happens in a students' life. The study administered an online questionnaire before and after the website task. The average time needed to complete the study was 29.3 minutes.

Using principal component analysis, confirmatory factor analysis and structural equation modeling for the data analysis, McKnight and colleagues found that high-level constructs were discriminant. The model generally showed a good fit. Second-order model and internal and external nomological analysis showed adequate internal and external nomological validity. The McKnight study showed that trust is indeed a multi-dimensional construct, and they empirically validated their trust model.

2.5 Trust and Subjective Norm

Having introduced the McKnight et al. trust model in the previous section, I would like to introduce a new construct, i.e. subjective norm, to the trust model. I will delineate here why subjective norm is an important variable in trust formation. Subjective norm refers to the social pressure that one might perceive regarding a certain behavior; it is a commonly used variable in behavioral research. However, subjective norm is not included in the McKnight et al. trust model.

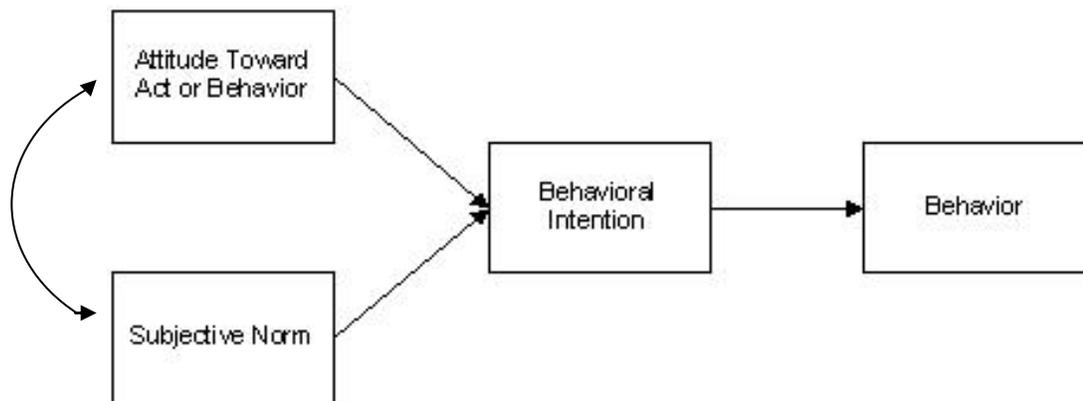
McKnight et al. maintained that the trust constructs of their model (Figure 2.4.1) are placed within the broad framework of the Theory of Reasoned Action (TRA) (Fishbein & Ajzen 1975; Ajzen & Fishbein 1980). McKnight et al. write that:

TRA posits that beliefs lead to attitudes, which lead to behavioral intentions, which lead to the behavior itself. Davis et al. (1989) found that attitudes fell out of the model empirically, making their model more parsimonious. Applying this more parsimonious version of TRA, we posit that trusting beliefs (perceptions of specific Web vendor attributes) lead to trusting intentions (intention to engage in trust related behaviors with a specific Web vendor), which in turn result in trust-related behaviors (extending McKnight et al.). (McKnight et al. 2002, p. 336)

The Theory of Reasoned Action (Figure 2.5.1) is a widely used behavioral prediction theory developed out of Dulany's theory of propositional control (1968), which addressed

the relationship between intentional and subsequently overt behavior. TRA has received considerable attention in the fields of behavior modification research, i.e. health research, technology acceptance, and consumer behavior. Also, TRA has been empirically supported in numerous studies (Hale et al. 2002). The Theory of Reasoned Action (TRA) concerns the influence of attitude on *behavioral intention*.

TRA has three constructs: 1) attitude (the degree to which performance of the behavior is positively or negatively valued), 2) subjective norm (the perceived social pressure to engage or not to engage in a behavior),² and 3) behavioral intention (an indication of a person's readiness to perform a given behavior, and considered to be the immediate antecedent of behavior).³



² The normative beliefs and motivation to comply lead to normative pressures. The totality of these normative pressures may be termed “subjective norm” (Fishbein & Ajzen 1975, p. 16).

³ Theory of Reasoned Action can be expressed in the following mathematical formula:

$$BI = (AB) W1 + (SN) W2$$

BI = behavioral intention, AB = one’s attitude toward performing the behavior,

SN = one’s subjective norm related to performing the behavior,

W = empirically derived weights (Hale et al. 2002).

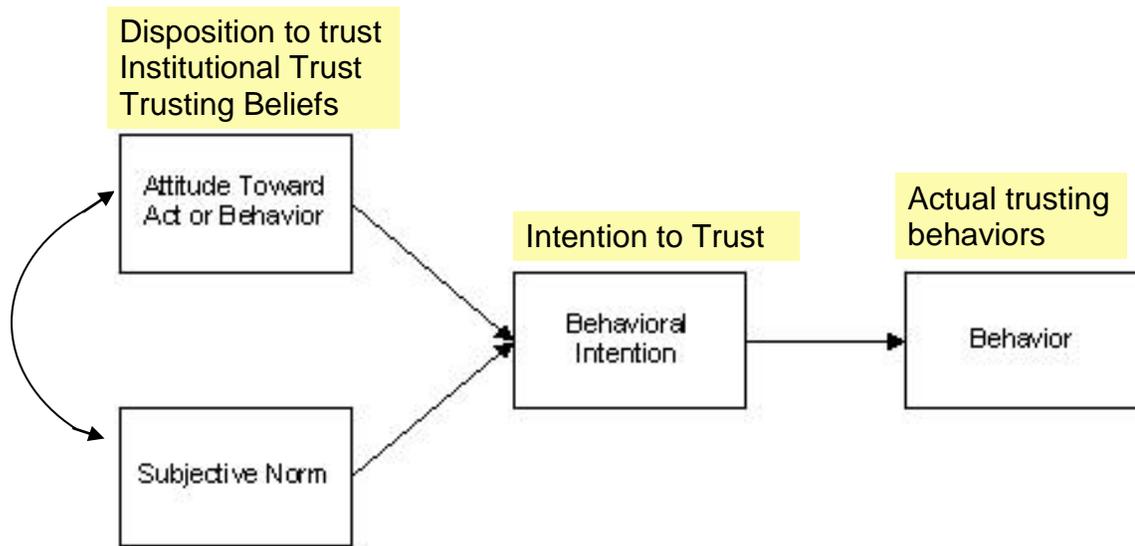
<Figure 2.5.1. Theory of Reasoned Action⁴>

Ajzen's Theory of Planned Behavior (TPB) later extended TRA by incorporating another component, "perceived behavioral control", into the model, since in not all situations a person has the control necessary to exercise his or her intention (Ajzen 1991). TRA does not clearly address the interactive relationship between attitude and subjective norm, but this subsequent Theory of Planned Behavior indicates this interaction. Therefore, I have added this interactive relationship in Figure 2.5.1.

The McKnight et al. 2002 model has four higher trust constructs as seen in the previous section: disposition to trust, institutional trust, trusting beliefs, and trusting intention. "Disposition to trust" is the characteristics of an individual person. "Trusting beliefs" are related to "beliefs about consequences of the behavior" that lead to attitude. In addition, McKnight et al. write that institution-based trust "refers to an individual's perceptions of the institutional environment—in this case, the Internet; perceptions of the structural characteristics of the Internet, such as safety and security" (McKnight 2002, p. 336). Therefore, the "institution-based trust" component also belongs to the attitudinal component in TRA.

⁴ The diagram is retrieved on November 2, 2008 from http://www.fsc.yorku.ca/york/istheory/wiki/index.php/Theory_of_reasoned_action. I have added the arrow between subjective norm and attitude.

Lastly, “intention to trust” is to “intention” in TRA that leads to actual trusting behaviors. Figure 2.5.2 shows a summary of the relationship between TRA and the McKnight et al. trust model, which show how each construct corresponds to one another.



<Figure 2.5.2. Correspondence of TRA & McKnight et al. Constructs>

If the McKnight et al. trust model is placed within TRA’s framework as the authors claim, then subjective norm should be another component to influence trusting intention. Thus, subjective norm is a missing variable in McKnight et al.’s trust model when considered in the TRA framework. Furthermore, existing literature points out the relationship between cultural variables and subjective norms. I will discuss this culture-subjective norm relationship in a later section of this paper (3.5). Therefore, in the final part of my study, I will include and test subjective norm in the trust model. I will adapt the instrument for subjective norm from Mathieson (1991).⁵

⁵ The subjective norm questions that I use in this study are: 1) people (peers and friends) important to me support my use of online vendors, 2) people (family members, significant others) who influence my behavior want me to use online vendors instead of other means, 3) people whose opinions I value prefer that I use online vendors for purchasing products and planning a travel.

3. Culture Literature Review

3.1 Why Culture?

Today, large numbers of people from diverse cultural backgrounds contact each other *virtually*. We have already seen professionals regularly collaborate in a virtual team and ordinary people interact daily in social networking sites, which mushroomed in recent years. Amazon.com operates on several continents and delivers items all over the world.⁶

While e-commerce is a global phenomenon, and understanding the cross-cultural aspects of online trust creation is inevitably crucial for its success, little work has been done on studies of the online trust and culture mix. For example, *Handbook of Trust Research* published in 2006, contains twenty-two articles, but no entries for the topic of trust and culture. Gefen writes that winning customers trust is key to e-commerce success, yet “research on trust and trust beliefs in e-commerce has mostly ignored the possible effects of national culture” (2006).

Beginning with the works by Boas (1911) in anthropology, the last century has witnessed how widely human behaviors, values, attitudes, and perceptions differ across societies.

Evidence is abundant. In addition to overt behavioral and cultural differences among the world communities, researchers have pointed out that cognition differs across societies.

⁶ For example, I regularly order various items from Amazon Japan, ship them to Hawai‘i and receive them in several days. Delivery time is often shorter than from U.S. Amazon on the mainland.

For instance, the Sapir-Whorf hypothesis tells us that the nature of a particular language influences the thoughts and perceptions of its speakers. A strong version of this linguistic relativism theory maintains that our world view is governed by the language we speak. In social psychology, Markus & Kitayama (1991) showed how the self-construal/self-concept of Japanese differs from their U.S. counterparts. Culture is intrinsically related to cognition and emotion. Cognition affects how we create our values, attitudes, and behaviors. A University of Hawai'i professor, Min-Sun Kim also reported that Asian communication styles differ from American (2002). Asians value silence more often. These are just a few examples that show how differently people from diverse backgrounds might perceive things, process information and behave. Also, research says that culture is not a clear-cut all or nothing, but continuous and dynamic; that even among individuals from the same cultures what they espouse may vary (Triandis 1994).

Furthermore, from the view of technological constructivism, that is, technology does not determine human action, but rather, human action shapes technology (Bijker 1997), it is reasonable to expect that the Internet, or e-commerce model, is shaped and will be shaped by respective people and society. In this context, simply assuming the universal, i.e. western/U.S. set of *online values, attitudes, perceptions, and online behaviors* might prove to be potentially naïve interpretations of the digital world. Nonetheless, to date, only a handful of articles have focused on the topic of online trust formation and culture.⁷ Research to understand online behaviors *across cultures* is needed.

⁷ Jarvenpaa et al. (1999) found the generalizability of their trust model among Australian and Israeli subjects. With Israel and U.S. subjects, Gefen and Heart (2006) reported, "trust beliefs might be a

3.2 Definition of Culture and Relevant Theories

Culture is the framework of how a person understands the world and processes incoming information. However, knowledge of or about the culture is not necessarily explicit for the members of that culture. Culture is often implicit and assumed, which makes it more difficult for a researcher to observe.

There seem to exist as many definitions of culture as there are culture scholars. These scholars agree on one fact: “There is no agreed upon definition among social scientists for the term culture...Generally speaking, culture is used by social scientists to refer to a set of parameters of collectives that differentiate the collectives from each other in meaningful ways. The focus is on the “sharedness” of cultural indicators among members of the collective” (House, Javidan et al. 2002, p. 5). Some well-known definitions of culture are listed in Table 3.2.1.

Geert Hofstede is the most often cited culture theorist in organizational literature. Having studied 117,000 IBM employees in 64 countries, Hofstede defined culture as follows:

“Culture is always a collective phenomenon, because it is at least partly shared with people who live or lived within the same social environment, which is where

‘relatively unvarying aspect of e-commerce’’. But they found differences in effects of predictability and familiarity.

it was learned. It is *the collective programming of the mind which distinguishes the members of one group or category of people from another.*” (1980, p. 5, my emphasis)

<Table 3.2.1. Definitions of Culture>
(cited in Erez & Earley 1993, p. 41)

Authors	Key Defining Characteristic
Herskovits (1955)	Culture is the man-made part of the environment.
Parsons & Shils (1951)	On a cultural level we view the organized set of rules or standards as such, abstracted, so to speak, from the actor who is committed to them by his own value-orientations and in whom they exist as need-dispositions to observe these rules. Thus a culture includes a set of <i>standards</i> . An individual’s value-orientation is his commitment to these standards.
C. Kluckhohn (1954)	Culture consists in patterned ways of thinking, feeling and reacting, acquired and transmitted mainly by symbols, constituting the distinctive achievements of human groups, including their embodiments in artifacts; the essential core of culture consists of traditional (i.e., historically derived and selected) ideas and especially their attached values.
Hofstede (1980)	[Culture consists of] a set of mental programs that control an individual’s responses in a given context.
Triandis (1972)	[Culture is] a subjective perception of the human-made part of the environment. The subjective aspects of culture include the categories of social stimuli, associations, beliefs, attitudes, norms and values, and roles that individuals share.
D’Andrade (1984) & Geertz (1973)	A culture is viewed as a pattern of symbolic discourse and shared meaning that needs interpreting and deciphering in order to be fully understood.

Hofstede identified four dimensions of culture and ranked countries according to the scores obtained by questionnaires. Even though his methodology received criticism (Dorfman 1988), four dimensions that Hofstede identified make sense (Triandis 1982) and are the most widely used cultural dimensions in IS research (Leidner & Kayworth 2006). These dimensions are power distance, individualism/collectivism, uncertainty avoidance, and masculinity /femininity (1980). Later, long/short-term orientation was

added to the Hofstede's cultural dimensions later. Michael Bond, in collaboration with Chinese scholars, created and conducted the Chinese Value Survey (CVS) in 23 countries around the world (1988). This long/short-term orientation dimension reflected Confucian teachings. Confucius was the most influential Chinese philosopher, who lived around 500 B.C., and his teaching is believed to have a strong influence in the cultures of the East Asian countries. Short descriptions of each dimension are listed in Table 3.2.2.

<Table 3.2.2 Descriptions of Hofstede's Five Culture Dimensions>

<ol style="list-style-type: none">1. Power Distance (PDI) — related to the different solutions to the basic problem of human inequality; the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally.2. Individualism/Collectivism (IDV) — related to the integration of individuals into primary groups; Individualism pertains to societies in which the ties between individuals are loose; everyone is expected to look after himself or herself and his or her immediate family. Collectivism as its opposite pertains to societies in which people from birth onwards are integrated into strong, cohesive in-groups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty.3. Uncertainty Avoidance (UAI) — related to the level of stress in a society in the face of an unknown future; the extent to which the members of a culture feel threatened by uncertain or unknown situations. This feeling is, among other things, expressed through nervous stress and in a need for predictability: a need for written and unwritten rules.4. Masculinity/Femininity (MAS) — related to the division of emotional roles between men and women; masculinity pertains to societies in which social gender roles are clearly distinct (i.e., men are supposed to be assertive, tough, and focused on material success whereas women are supposed to be more modest, tender, and concerned with the quality of life); femininity pertains to societies in which social gender roles overlap (i.e., both men and women are supposed to be modest, tender, and concerned with the quality of life)5. Long/Short Time Orientation (i.e. Confucian dynamism) (LTO) — related to the choice of focus for people's efforts: the future or the present; values associated with Long Term Orientation are thrift and perseverance; values associated with Short Term Orientation are respect for tradition, fulfilling social obligations, and protecting one's "face". <p style="text-align: right;">(Summarized from Hofstede 2001)</p>
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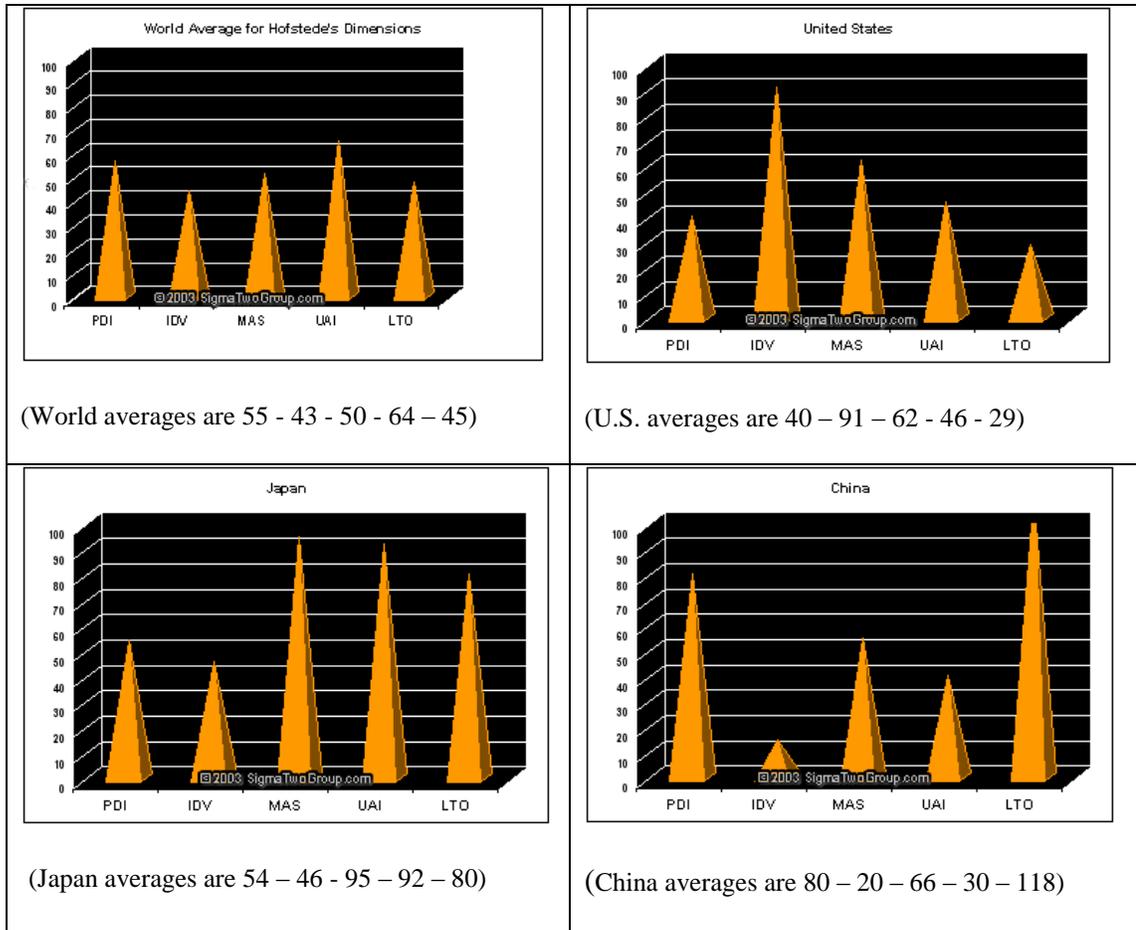
According to these dimensions, the U.S. has the highest score in IDV (91) among all nations, indicating a society with relatively loose bonds with others, whereas the U.S. belongs to the lowest in LTO dimension (29). The U.S. is also low in PDI score (40). Second to Slovakia (110)⁸, Japan scored the highest in MAS (95) and also scored high in UAI (92). China's LTO (118) was the highest even among other East Asian countries, whose scores were around 80s (Figure 3.2.1).

Studies by Hofstede and his colleagues were concerned with aggregated characteristics of nations by these five dimensions. They are macro-level snapshots of respective country's cultural ecologies. Therefore, when the researcher uses these cultural findings at the national level to interpret individual behavior, "an ecological fallacy" is committed. Also, when the researchers construct cultural traits of the nation based on the personality dynamics of individuals, they are committed to "a reverse ecological fallacy" (Kim et al. 1994).

Triandis (1982) noted that the four dimensions identified by Hofstede make sense and are important cultural characteristics and refined further the cultural notion that Hofstede created. Triandis explained culture from two perspectives; the "human-made part of the environment" (Herskovits 1950) and "subjective culture, the shared perceptions of the social environment" (Triandis 1972).⁹ Triandis points out that the culture orientations of people vary within a nation. He maintains that within a culture there are individuals who

⁸ Slovakia's score was an estimate.

⁹ Subjective culture results in an automatic processing of information, because it specifies what is worth noticing, for which the language provides a label; how that is to be evaluated; what are desirable or



<Figure 3.2.1. Country Characteristics by Hofstede
retrieved April 4, 2008 from <http://www.geert-hofstede.com>>

are *idiocentric*, i.e. think, feel, and behave like people in individualist cultures, as well as individuals who are *allocentric*, i.e. think, feel, and behave like people in collectivist cultures (1994). These two constructs; *idiocentric* and *allocentric*, allow us to see and investigate cultures within a society at the individual level.

proscribed behaviors for members of the culture (norms); what are desirable or proscribed behaviors for those holding positions in the social structure (roles); and what are important goals and principles in life (values).

Furthermore, Triandis and colleagues introduced another aspect to the individualism/collectivism cultural dimension: Individuals, who can be more idiocentric or allocentric in a particular culture group, also differ within themselves according to the social contexts in which they are placed (Triandis 1989). Singelis, et al. made a further distinction within these constructs using the concept of equality (1995). Individualism and collectivism can be either “horizontal”, that is, emphasize equality of people, or they can be “vertical”, that is, emphasize hierarchy. With these additional dimensions, individualism/collectivism dimensions can be either a) HI—horizontal individualist, b) VI – vertical individualist, c) HC – horizontal collectivist, or d) VC –vertical collectivist.

Triandis writes, “The power of culture theory is that it predicts attitudinal, values, and behavioral results in diverse parts of the world. It shows that the phenomena that are not obviously linked, ... follow the same social science laws, just as the behaviors of falling apples and asteroids follow similar physical laws” (1994).

Understanding the “online trust” social science laws is to discern what are universal (i.e. etic) components of web trust formation, and what are culture-specific (i.e. emic) components. If we understand the optimal mix of etic and emic components on the web, our online existence will be the most effective.

Dorfman and Howell (1988), who studied cultural dimensions of leadership, criticized Hofstede’s methodology and developed culture scales at the individual level. They asserted that Hofstede’s scales were not valid, but rather were a “hodgepodge” of items.

There were items with significant cross loadings. They wrote that the ecological level of analysis— i.e. “mean responses” for each country rather than individual responses as the unit of analysis – severely restricts the meaningfulness and the usefulness of the scales for those researchers who operate at the micro level of analysis.

Dorfman acknowledged and agreed with Triandis that the four dimensions that Hofstede identified make sense and are important cultural characteristics. Thus, Dorfman and Howell extended the measurement of culture built upon Hofstede’s work to the individual level. They wrote, “Our goal is to extend the measurement of culture, usually conceived as an attribute at the societal level, to the individual level.”

3.3 Srite and Karahanna’s Survey Instrument

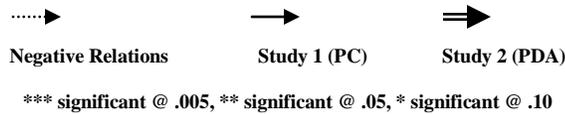
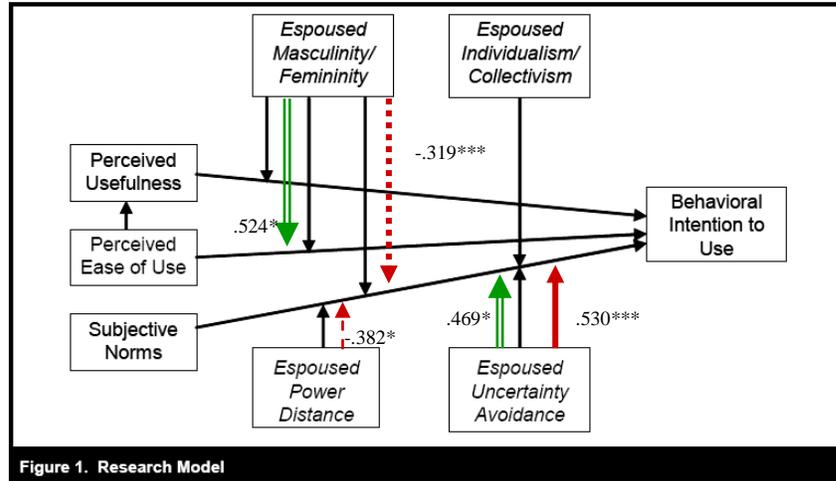
In the article, “The Role of Espoused National Cultural Values in Technology Acceptance,” published in *MIS Quarterly* in 2006, Srite and Karahanna measured the influence of culture on the Technology Acceptance Model (TAM). TAM is the most robust parsimonious technology diffusion model in IS literature. (Davis 1986). TAM has been extended in many ways in the field (Venkatesh et al. 2003). Srite and Karahanna attempted to identify “espoused national cultural values as an important set of individual difference moderators in technology acceptance.” In survey they mostly adapted the culture scales that Dorfman and Howell created (Appendix G).

Srite and Karahanna defined espoused national culture values in their article as “the degree to which an individual embraces the values of his or her national culture” (2006, p. 681). What they attempted to measure was, though not mentioned in the article, individual subjects’ *idiocentricity* and *allocentricity* in Triandis’ terms.

Srite and Karahanna reported two studies in this paper. They conducted Study 1 on the usage of personal computers, and collected 181 usable responses at a U.S. university with students from 30 countries (PC experience of U.S. students – 10 years, Non-U.S. Students – 7 years). Study 2 involved 116 MBA students, on a usage of PDA (average usage of 4.7 months).

Contrary to their expectations, Srite and Karahanna found no significance in the individualism dimension in both studies. Instead they found the negative moderating effect of masculinity/femininity dimensions on the relationship of subjective norm to behavioral intention to use (-.319***) in Study 1; that is, that feminine cultural orientation places an importance on other’s opinions. In study 2, masculinity affected the relationship between perceived ease and behavioral intention (.524*), pointing out that masculine culture place an importance on ease of use. Power distance was found to negatively moderate the relationship between subjective norm and behavioral intention (-.382*); showing that for the low power distance oriented, subjective norm has stronger effects on behavioral intentions. Among these four culture dimensions, Srite and Karahanna reported that uncertainty avoidance was a consistent significant moderator (.530*** & .469*) on the relationship between subjective norm and behavioral intention

(Figure 3.3.1). The finding of the stronger effects of uncertainty avoidance is consistent with other studies (Lee 2007).



<Figure 3.3.1. Srite & Karahanna’s Research Model and Results>

3.4 Individual Level Analysis

Leidner and Kayworth (2006) extensively reviewed how IS research covers culture. They reviewed 82 articles from the major IS journals and found that 51 articles examined culture at the national level and 31 articles examined culture at the organizational or subunit level. Among IT’s national culture studies, more than 60 % utilized one or more of Hofstede’s dimensions. Of the organizational culture and IT studies, 85 % considered culture at the organizational level whereas 15 % considered culture at the group level. In

this article, there was no report on the IS research that investigated cultural effects at the individual level.

In search of culture effects on online trust formation in e-commerce, I argue that the level of analysis is most appropriate at the individual level. Not only are online activities individually oriented, but culture can only manifest itself through the individual (Robinson 1950; Straub et al. 2002). Also, the data analyzed at the individual level keep its variance. Therefore, in my dissertation study, the relationships among culture, subjective norm and trust will be investigated at the individual level. Students will be recruited from the University of Hawai‘i at Mānoa campus. Hawai‘i is a unique place in the Pacific, and the University of Hawai‘i reflects Hawai‘i’s demography. More than half of the student body is of Asian and Pacific Island descent, and about 10% of students are from foreign countries. Students also come from the U.S. mainland (18%), and the campus reflects these diverse cultures. (Appendix B).¹⁰

The State of Hawai‘i has diverse ethnic groups coexisting. Local people, whose families have lived in Hawai‘I for several generations, have often preserved cultural values of the countries of their ancestors. Issues from the often-discussed cross-cultural experiment; that is, whether the instrument created by westerners is valid for other cultures; whether the translation reflects the concept well; or whether the concept itself is valid; might be *minimized*. Thus, the ecology of this study might provide an ideal context for cultural studies.

¹⁰ <http://www.hawaii.edu/cgi-bin/iro/maps?semaf07.pdf> (pages 15, 16, 18; retrieved on November 16, 2008)

3.5 Culture and Subjective Norms

In Section 2.5: Trust and Subjective Norm, I delineated how subjective norm plays an important role in the Theory of Reasoned Action, and that subjective norm is a missing variable in McKnight et al.'s trust model. Numerous studies in various contexts (Hale et al. 2002) have supported the influence of family members and close friends upon one's behaviors both theoretically and empirically. Thus, subjective norm variable is an important component in my trust and culture model.

Triandis writes, "the more homogeneous the culture, the more the norms will be clear and deviation from normative behavior can be punished" (1989, p. 514). This implies that societies with collectivist orientation place more importance on others' opinions.

Hofstede also maintains that societies with a high uncertainty avoidance defer to authorities and value opinions of people in higher status, e.g. teachers, parents, bosses, etc., more than societies with a low uncertainty avoidance (2001, p. 162).

Choi and Geisfeld studied online shopping decision-making between U.S. and Korea (2004). They reported that culture values are antecedents to perceived risk, perceived self-efficacy, and subjective norm, and found that the relationship between subjective norm and intention is twice as big in Korea than in the U.S. The results of this study are similar to Pavlou and Chai's study (2002) that looked into e-commerce adoption between China and the U.S. Pavlou and Chai used three cultural dimensions; individualism/collectivism, power distance, and long/short-term orientation to test the

predictability of Theory of Planned Behavior. They found only collectivism affects the relationship between subjective norms to intention. However, the number of the subjects in this study was rather small, 55 for China and 58 for the U.S.

Trafimow, Finlay, and their colleagues found that some people are increasingly under normative control than attitudinal control, and the difference was associated with the collective self (where thoughts about group membership are stored) (1996; 1997; and 1999). Also, health literature indicates the relationship between norm and adoption of health-related behaviors (Terry & Hogg 1996; Bresnahan et al. 2008).

However, the relationships between subjective norm and culture are far from conclusive. Some studies found no relationship between collective-self and subjective norm (Fekadu & Kraft 2008; Srite & Karahanna 2006). In the meta-analysis of the technology acceptance model, Schepers and Wetzels reported large effects on subjective norm on intention, but found stronger effects of subjective norm in western cultures than non-western cultures (2007). This is an interesting discovery because the results point against other literature that demonstrates positive association of collectivism with subject norm.

In addition, existing literature indicating the relationship between subjective norm and culture is mostly concerned with the individualism/collectivism culture dimension. The other three cultural dimensions – masculinity/femininity, power distance, and uncertainty avoidance – have rarely been studied in relation to subjective norm. Some of the existing

literature on the relationship between subjective norm and culture are summarized in the Table 3.5.

The inclusion of subjective norm will allow me to augment the McKnight et al. trust model and to fully validate the model in the framework of the Theory of Reasoned Action with all the components that that theory suggests. Also, investigating the interrelationship between subjective norm and culture variables in my trust and culture model should reveal new and interesting findings that contribute to pertinent literature. Therefore, I will include the subjective norm variable in my trust model.

<Table 3.5 Literature on Subjective Norm and Culture>					
Authors	Year	Culture Dimensions	Context of Study	# of Subjects	Findings
Fekadu & Kraft	2008	descriptive and group norm, collective-self	contraceptive use by female adolescents in Ethiopia	N=354	Subjective norm was the most important predictor of contraceptive intentions. Collective-self did not emerge to have either a direct effect upon intention, or a moderation effect upon the social norms-intention relationships.
Chen, Wasti & Triandis	2007	allocentrism and idiocentrism	perceived group norm and group identity influence individual cooperative behavior in U.S. and China	N=316 (China), N=292 (U.S.)	Allocentrism are not cooperative in every context but are rather highly sensitive to social cues, whereas idiocentrism, while tending to behave in a way that maximizes personal outcomes at the expense of the group, are also somewhat aloof to the situation.
Choi & Geisfeld	2004	subjective norm, uncertainty avoidance, individualism/collectivism	Online shopping decision making in US & Korea	N=386 (Korea), N=369 (U.S.)	SN to intention link is twice as big in Korea than U.S. 0.238 (p<.001) vs. 0.102 (p<.05), Individ/Coll to SN link is both same strength in significant. UA to perceived risk significant in Korea but not in U.S. Culture values are antecedents to perceived risk, perceived self-efficacy, and subjective norm.
Pavlou & Chai	2002	collectivism/individualism, power distance, long/short term orientation	e-commerce adoption in China and US	N=58 (China), N=55 (U.S.)	Only collectivism supported moderating effects of subjective norm and attitude to intention relationship.
Terry & Hogg	1996	the role of norms from social identity/self-categorization theory	intend to exercise and use sun protection	N=133 univ students, N=95 female students	The perceived norms of a behaviorally relevant reference group influenced intentions to engage in regular exercise, only for subjects who identified strongly with the group (Study 1). Effects of group norms was evident only for high identifiers, also the perceived group norm predicted subjects attitude (Study 2).
Trafimow & Finlay	1996	collective self vs. private self	subjects were asked to indicate their intentions, attitudes, and subjective norms toward performing 30 behaviors	N=148 psych students	Some people are more under normative control or attitudinal control. This difference was associated with the collective self. The strength of the subjective norm-intention relationship varies with changes in the strength of the collective self.
Lee & Green	1991	validating Theory of Reasoned Action in different culture	consumer behaviors in Korea and U.S.: evaluation of the product included price, style, reputation, peer group response to the product	N=217 (Korea), N=212 (U.S.) univ. students	Fishbein's model is valid in Korea as well as US. Stronger effects found on subjective norm to intention in Korea (.52) than US (.06).

4. PILOT STUDY

4.1 Objectives

The objectives of the pilot study were many. First, it examined the reliabilities and validities of the instruments in a new context. Second, it explored whether McKnight's trust model was robust enough so that a new model of trust and culture could be built upon it. Third, it probed the appropriateness and compatibility of the tasks to the website, instruments, and participants. Fourth, with a limited number of samples, the pilot study attempted to explore whether new links between trust and culture constructs exist.¹¹ Fifth, the pilot study served to identify any potential issues in the design, instruments, and experimental procedures. It made possible troubleshooting and anticipating any issues before the final study. Lastly, it served the researcher as a training session necessary to smoothly conduct the experiment. The pilot study provided the opportunity to become familiarized with research procedures, such as creating an online questionnaire, administering the experiments, using the statistical software, and interpreting the outputs. Thus, the pilot study laid the foundation for the final study.

4.2 Method

Prior to my conducting the experiment, the Institutional Review Board on campus approved the study (Appendix C). All participants received the Informed Consent Form

¹¹ The survey questions used in the pilot study didn't have subjective norm questions. It was added later in the final study data collection.

and were told of their rights in the experiment (Appendix D). The participating student signed and returned the form.

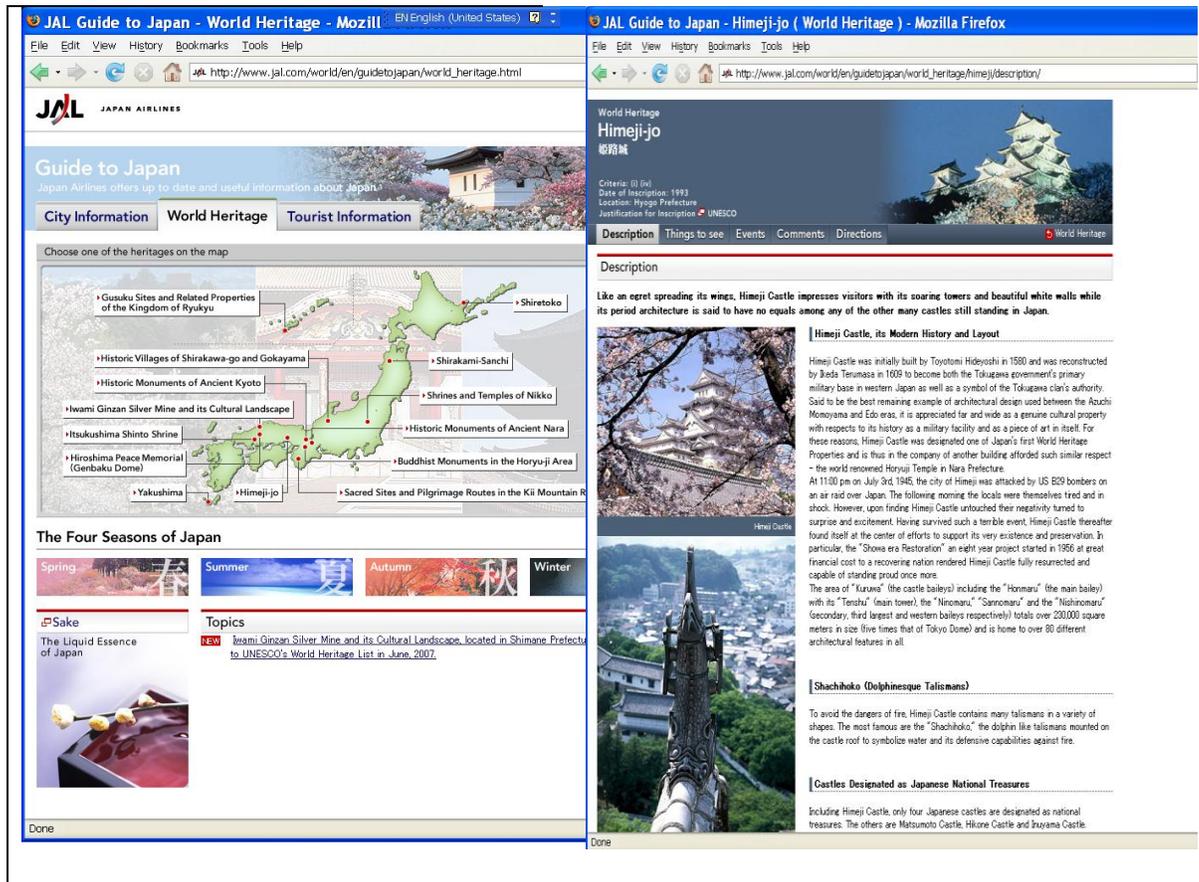
A university computer lab served as an experimental site. The computer lab was well maintained, and subjects encountered no technical difficulties. Students from three Japanese classes were recruited for the experiment. I conducted three different experimental sessions of the same content in a computer lab, and gave the students were given two extra-credit points toward their final grade for this participation. Participation was voluntary and no individual was identified in the study. Each experiment was about 30 minutes.

In the experiment, I introduced participants to the “Guide to Japan” website <http://www.jal.co.jp/en/guidetojapan/> (Figure 4.2.1) and asked them to navigate the website in order to complete four tasks: They gathered pertinent information required in the tasks and wrote down answers on the task sheet. (Appendix D) I demonstrated the first task. While subjects followed what I demonstrated on the projected screen, they completed their first task at individually assigned computer terminals. There were no questions from the participants regarding navigation or finding answers. Having finished the first demonstrated task, subjects moved onto completing the rest of the tasks.

They were also instructed to turn in the task sheet at the end of the experiment. All subjects seemed to take the tasks seriously. Most subjects completed the four tasks within ten minutes. A couple of participants took more than fifteen minutes. Briefly

going over their answers as participants turned in the task sheet, I found that they answered all questions correctly.

Having completed tasks, subjects were instructed to go to the online survey site. Most subjects completed the online questionnaire in 15 to 20 minutes (Appendix H). The SurveyMonkey site commonly used among graduate students and researchers was used to collect the data (<http://www.surveymonkey.com/>). No technical problems were encountered while conducting the experiments. Later I downloaded the raw data in an Excel file from the SurveyMonkey website for analysis.



<Figure 4.2.1. "Guide to Japan" Website>

4.3 Participants

I recruited participants for the pilot study from three different Japanese courses (one section of JPN102, and two sections of JPN301) at the University of Hawai‘i at Mānoa. All, except one graduate student, were undergraduates. Fifty-five students participated in this pilot study. Out of 55 participants, 31 were male and 24 were female. The average age of the participants was 20.4 years old (Tables 4.3.1 & 4.3.2).

As for ethnicity, more than half of participants were of Japanese descent in Hawai‘i (54.5%). Another 23.6% were of Asian Americans such as Filipinos, Chinese, and Korean. The combined constituted 78.2% of individuals, who identified as Asian Americans. 14.5% identified as Caucasians (Table 4.3.3). All participants were U.S. citizens who grew up speaking English as a dominant language, however many grew up speaking or were exposed to other languages as children. Some grew up with more than two languages. The second or third languages they listed were Chamorro, Chinese, Filipino/Tagalog, Japanese, Hawai‘i Creole English (Pidgin English), Korean, Palauan, Spanish, and Vietnamese. Participants were from diverse cultural backgrounds.

Participants were also best described as web savvy (Table 4.3.4). Thirty-one students spent more than two hours a day on web activities. The average time spent on web activities was 3.6 hours. Eighteen students answered that they spent from two to four hours, and nine students reported spending from four to six hours on web activities per

day. Surprisingly, four people claimed spending on the web more than eight hours a day. These responses revealed how integral a part of their daily life the Internet was.

The use of students should not pose any major issues in this research. Students are often interested in traveling abroad. In particular, the interest in Japan among the students was high, and the tasks were relevant to their interest. Some had already visited Japan. Also the young people are current and future cohorts of online customers, thus these subjects can easily represent e-commerce customers. I judged that the use of undergraduate students posed no significant threats to the generalizability of the present research.

< Table 4.3.1. Demographics of Pilot Study Participants >

Average Age	20.4 years old	Average Daily Web Use	3.6 hours	
Gender	Male 31	Female	24	
Ethnicity	Japanese American 54.5% N=30	Asian American (other than Japanese) 23.6% N=13	Caucasian 14.5% N=8	Other 7.3% N=4

< Table 4.3.3. Breakdown of Ethnicity >

<Table 4.3.2. Age Distribution>

Age Distribution	
18 years old	14
19 years old	9
20 years old	15
21 years old	4
22 years old	5
Older than 22 years old	8
Total	55

Breakdown of Ethnicity	
Asian American	4
Black	1
Caucasian	8
Chinese	3
Filipino	4
Japanese (incl. Okinawan 1)	30
Korean	1
Latino	1
Mixed	1
Pacific islander	1
Vietnamese	1
Total	55

<Table 4.3.4. Time Spent on Web per Day>

Average Time Spent	3.6 hrs
0-30 minutes	4
30-60 minutes	8
1-2 hours	12
2-4 hours	18
4-6 hours	9
8+ hours	4
Student Number	55

4.4 Survey Instruments

For trust constructs, I adopted all questions, except web experience questions from the McKnight et al. article (2002) in the pilot study by modifying some words to suit this study (Appendix F&H). The term, “LegalAdvice.com”, in McKnight’s was replaced with the “Guide to Japan website”. Other terms such as “legal issue”, and “legal advice” were replaced with “travel issue”, “travel advices” and so forth. Including questions for three non-trust exogenous constructs, there were sixty four questions in all.

For this study, I significantly modified McKnight’s Question #6 in the section of “subjective probability of depending—follow advice (FA)” —“Based on the advice I just read, I would serve notice, wait, go ahead and get the repair done, and then deduct the cost of the repair from my rent.” as follows:

*“Based on the advice I just read, I would make a reservation with credit card over the Internet.”*¹²

In addition, the questions in the “general web experience” exogenous factor were adapted from Georgia Institute of Technology’s graphics, visualization, and usability surveys of web usage in the McKnight et al.’s article, but this site no longer exists. Therefore, it was not possible to update the web experience questions from the same website that McKnight used in 2002. Six years in the information society is substantial, and the original questions would not accurately reflect today’s web use reality. In this pilot study, all questions were reduced into one general question: “On average, how much time PER DAY do you spend on web activities?”¹³

I took culture questions from the article that Srite and Karahanna published in the *MIS Quarterly* in 2006 (Appendix G). They maintain that they adopted these culture questions mostly from Hofstede (1980) and Dorfman and Howell (1988). From Srite and Karahanna’s survey questions, I adopted twenty four questions relevant to four cultural dimensions: masculinity/femininity, individualism/collectivism, power distance, and uncertainty avoidance. I did not modify these culture questions in my study.

¹² However, this question item did not cleanly load with other questions in the ‘follow advice’ construct. The new rephrased question as shown below will be used in the final study: *“Based on the advice I just read, I would purchase a Japan Rail Pass before leaving for Japan because I would save money.”* The task of the final study included a question on Japan Rail Pass.

¹³ In the final study several questions were asked for the web experience.

4.5 Data Analysis

I did not eliminate any of the data points in the analysis of the pilot study, and I conducted the pilot study in a closely controlled environment. I found no irregular data set. One participant reported that she had visited the study website the “Guide to Japan” previously. However, she reported that the visit was very brief and was not purposeful. Therefore, despite her prior knowledge of the website, I included this data point in the analysis.

4.5.1 Descriptive Statistics

Mean scores of fifty-four trust question items from McKnight’s instrument ranged from 3.16 (MP2) to 5.67 (TBC4) on a seven-point Likert scales (1 being strongly disagree, 7 being strongly agree), while standard deviations ranged from 0.733 (DC2) to 1.709 (IG2) (Appendix I). Most of the standard deviation scores clustered around one standard deviation, which indicated that despite extreme data points identified by the statistical tools available on the SurveyMonkey website, the pilot study data points were located relatively close to one another. Thus, this dataset is a good sample.

The question item that obtained the highest mean score 5.67 was TBC4: *“In general, the “Guide to Japan” website is very knowledgeable about the information that a tourist is looking for.”* This showed participants’ confidence in the website. The lowest mean score, 3.16, was from the question item involving credit card information: MP2 – *“I*

would be willing to provide credit card information on the 'Guide to Japan' website."

This question revealed an interesting aspect of the relationship between trusting beliefs and trusting intentions, in that they were still apprehensive of giving out the credit card information, even though they had confidence in the website.

This seemingly discrepant attitude, or cautious attitude, toward giving out personal information, was clearly observed in low mean scores of all MP (making purchase) items; MP1=3.38, MP2=3.16, and MP3=3.35. These means were the lowest three of fifty-four items of the McKnight scale. Also, the difference of aggregated average mean scores of trusting belief items and trusting intentions, 0.77, also indicated this cautious trend.

The above finding might have a practical implication for e-commerce practitioners. The data might be telling that winning customers' trust might not be enough and not necessarily translate into the business transaction.

Mean scores of twenty-four question items from the Srite and Karahanna's instrument ranged from lowest 2.04 (MF5: *"Women do not value recognition and promotion in their work as much as men do"*) to highest 5.94 (UA2: *"Order and structure are very important in a work environment"*) on a seven-point Likert scales (Appendix I) .

Standard deviations spread from the lowest 0.741 (UA1: *"Rules and regulations are important because they inform workers what the organization expects of them."*) to the highest 1.874 (MF2: *"There are some jobs in which a man can always do better than a woman"*).

The standard deviations of culture items were bigger than the SD of trust items from McKnight. Masculinity/femininity and power distance questions had bigger standard deviations than other two dimensions. Uncertainty avoidance questions had the smallest standard deviations, only one item (UA4) being higher than 1.0 standard deviation (1.226), indicating that the responses were tightly clustered without much deviation. When it came to the attitudes of avoiding uncertainty, participants seemed to think alike, but differed when gender and social hierarchical issues were raised.

4.5.2 Reliability Testing

I conducted Cronbach's alpha test to examine the reliabilities of question items in each subconstruct in the trust model and culture constructs. As shown in Table 4.5.2.1, the McKnight instrument yielded high reliabilities of more than 0.80 for most subconstructs. The lowest reliabilities were 0.626 and 0.644 for "disposition to trust—faith in humanity-competence" and "trusting stance" respectively. A close look at these two subconstructs revealed that DC1 item contained 15 extreme data points according to the Survey Monkey tools, where the skewness was 0.168 and kurtosis 0.315. "Trusting stance" questions also contained combined 14 extreme data points that could contribute to the lower reliabilities. Institution-based trust and trusting beliefs subconstructs showed strong reliabilities.

Srite and Karahanna's culture instrument showed lower reliabilities compared to McKnight's. The highest value was 0.801 for five items of masculinity/femininity dimension. This can be attributed to the difficulty of defining culture constructs in psychometric measures compared to trust constructs.

Uncertainty Avoidance (UA) items showed the lowest reliabilities. Srite and Karahanna reduced UA questions down to two items from six items. My data showed the reliabilities of 0.109 for six items and 0.691 for three items (questions #1-3), which was slightly higher than the two-item reliability of 0.686. This might indicate that the psychometric properties of UA questions might need to be reexamined.

<Table 4.5.2.1. Reliabilities of McKnight's and Srite & Karahanna's Instruments>

RELIABILITIES MCKNIGHT'S TRUST ITEMS	Cronbach's Alpha
Disposition to Trust	
Faith in Humanity—Benevolence	0.847
Faith in Humanity—Integrity	0.811
Faith in Humanity—Competence	0.626
Trusting Stance	0.644
Institution-Based Trust	
Situational Normality—General	0.802
Situational Normality—Benevolence	0.848
Situational Normality—Integrity	0.940
Situational Normality—Competence	0.930
Structural Assurance	0.948
Trusting Beliefs	
Trusting Beliefs—Benevolence	0.913
Trusting Belief—Integrity	0.936
Trusting Belief—Competence	0.952
Trusting Intentions	
TI—Willing to Depend	0.899
TI—Willing to Act on Advice	0.908
TI—Willing to Share Information	0.734
TI—Willing to Pay for Advice	0.919
Comparison Constructs	
Personal Innovativeness	0.794
Perceived Site Quality	0.804
SRITE & KARAHANNA'S INSTRUMENT	
Masculinity/Femininity (5 items)	0.801
Masculinity/Femininity (3 items)	0.727
Individualism/Collectivism	0.729
Power Distance (7 items)	0.781
Power Distance (4 items)	0.702
Uncertainty Avoidance (6 items)	0.109
Uncertainty Avoidance (2 items)	0.686
Uncertainty Avoidance (3 items1-3)	0.691

4.5.3 McKnight et al. Instrument – Principal Component Analysis

One of the purposes of the pilot test was to see whether the instruments used in other studies still hold water in a new subject pool and with new tasks and new websites. In order to verify the validity of McKnight's and Srite & Karahanna's instruments, I conducted principal component factor analysis (PCA) and factor analysis (FA) with the statistical analysis software SPSS version 15.0.

First, I analyzed *all* 54 survey items in McKnight's instrument by PCA with direct oblimin rotation without specifying the number of factors.¹⁴ The software generated eleven components. The first three components explained 56% of total variance, and eleven components accounted for 80% of variance (Appendix K).

All of the trusting beliefs and trusting intentions items, except "making purchase" items, loaded in the first component together with institution-based structural assurance items and the one institution-based benevolence item.

Next, I conducted PCA according to the respective four higher constructs of the McKnight model: disposition to trust, institution-based trust, trusting beliefs, and trusting intentions.

¹⁴ According to McKnight's model, there are sixteen measurable subconstructs.

4.5.3.1 Disposition to Trust

SPSS analyzed the PCA of twelve items in the “disposition to trust” construct with direct oblimin rotation (Table 4.5.3.1.1). There are four subconstructs within it. PCA generated four components, but “disposition to trust –benevolence” loaded together with “disposition to trust – integrate”. “Disposition to trust – competence” was a problematic subconstruct because the DC1 data set had 15 extreme data points. DC items cross-loaded over three components. “Disposition to trust – trusting stance” items cleanly loaded under one component.

<Table 4.5.3.1.1. Disposition to Trust PCA>

Component Matrix(a)

	Component			
	1	2	3	4
DB1_WellBeOthrs	.677	.281	-.404	.213
DB2_ConcernOthrs	.816	.231	-.218	.021
DB3_Helpful	.710	.213	-.370	.302
DI1_KeepPromise	.757	-.181	.154	-.303
DI2_WordAction	.730	-.206	.121	-.353
DI3_Honest	.802	-.061	-.084	-.138
DC1_ProfGoodJob	.378	-.694	-.065	-.005
DC2_ProfKnowldge	.504	-.428	.305	.487
DC3_ProfCompetn	.398	-.263	.672	.292
DST1_UntilNot	.340	.682	.227	-.010
DST2_BefntDoubt	-.043	.686	.224	.403
DST3_NewAcqUntil	.294	.633	.384	-.398

DB=disposition to trust
benevolence
DI=disposition to trust integrity
DC=disposition to trust
competence
DST=disposition to trust trusting
stance

Extraction Method: Principal Component Analysis.
A 4 components extracted.

These twelve “disposition to trust” items were analyzed again with the Maximum Likelihood method with promax rotation (Table 4.5.3.1.2). Except DC1, items cleanly loaded together according to the respective subconstruct with high coefficient numbers.

<Table 4.5.3.1.2. Disposition to Trust by Maximum Likelihood >
Pattern Matrix(a)

	Factor			
	1	2	3	4
DB1_WellBeOthrs	.792	-.020	.044	-.027
DB2_ConcernOthrs	.698	.278	.086	-.099
DB3_Helpful	.825	-.019	-.037	.001
DI1_KeepPromise	.044	.752	.016	.055
DI2_WordAction	.049	.732	-.015	.052
DI3_Honest	.347	.500	-.005	.070
DC1_ProfGoodJob	.022	.416	-.488	.130
DC2_ProfKnowldg	.025	.008	-.009	.987
DC3_ProfCompetn	-.154	.268	.128	.453
DST1_UntilNot	.187	.010	.606	.048
DST2_BefntDoubt	.127	-.391	.579	.151
DST3_NewAcqUnti	-.182	.366	.789	-.044

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a Rotation converged in 6 iterations.

4.5.3.2 Institution-Based Trust

The institution-based trust construct has five subconstructs, made up of fifteen items.

PCA with direct oblimin extracted three components. Institution-based general, integrity, and competence loaded together under the first component (Table 4.5.3.2.1). Five-factor solution PCA was also conducted (Table 4.5.3.2.2). All items, but one item – IG2 that asked “*I am comfortable making purchases on the Internet.*” – loaded in an appropriate construct.

<Table 4.5.3.2.1. Institution-Based Trust PCA >
Pattern Matrix(a)

	Component		
	1	2	3
IG1_FeelGoodNet	.779	-.088	.090
IG2_ComfortblNet	.839	-.163	.163
IB1_VdrCstmrInterest	.579	.511	-.060
IB2_VdrDoBest	-.075	.834	.297
IB3_VdrCstmrWellbng	.054	.903	-.088
II1_MeetObligtn	.807	.015	.120
II2_FulfillAgrmnt	.896	-.039	.088
II3_DoVdrsPart	.765	-.067	.240
IC1_Compotent	.934	.164	-.184
IC2_Capable	.895	.171	-.079
IC3_GoodAtWhat	.378	.339	.357
ISA1_Safeguards	.166	.102	.802
ISA2_LegalStrctr	-.076	-.014	.975
ISA3_EncrypSafe	.113	.076	.846
ISA4_NetRobstSafe	.293	.036	.699

IG=Situational Normality-General

IB= Situational Normality-Benevolence

II= Situational Normality-Integrity

IC= Situational Normality-Competence

ISA=Structural Assurance

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.
 a Rotation converged in 8 iterations.

<Table 4.5.3.2.2. Institution-Based Trust PCA– a five-factor solution>
Pattern Matrix(a)

	Component				
	1	2	3	4	5
IG1_FeelGoodNet	.159	.134	.318	.652	-.125
IG2_ComfortblNet	.591	-.058	.200	.212	-.167
IB1_VdrCstmrInteres	.452	.583	-.072	.036	-.120
IB2_VdrDoBest	.128	.733	.151	-.340	-.093
IB3_VdrCstmrWellbn	-.149	.980	-.020	.155	-.012
II1_MeetObligtn	.555	.069	.123	.120	-.258
II2_FulfillAgrmnt	.756	.051	.071	.083	-.164
II3_DoVdrsPart	.834	.011	.171	-.043	-.050
IC1_Compotent	.173	.049	-.159	.155	-.841
IC2_Capable	.234	.075	-.067	.129	-.748
IC3_GoodAtWhat	-.150	.043	.265	-.152	-.895
ISA1_Safeguards	.247	.075	.737	-.066	-.061
ISA2_LegalStrctr	-.118	-.041	.983	.095	-.044
ISA3_EncrypSafe	.145	.088	.828	.047	.002
ISA4_NetRobstSafe	.369	.016	.625	-.078	-.085

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.
 a Rotation converged in 13 iterations

4.5.3.3 Trusting Beliefs

Initial PCA didn't differentiate among trusting belief benevolence, integrity, and competence (Table 4.5.3. 3.1). Specifying a three-factor solution, respective subconstruct items cleanly loaded together (Table 4.5.3.3.2). This exactly replicated McKnight's study. The coefficient of most items was higher than 0.80, the lowest was 0.516. High coefficient values showed that these items were good measurements for trusting beliefs.

<Table 4.5.3.3.1. Trusting Beliefs PCA >

Component Score Coefficient Matrix	
	Component
	1
TBB1_webMyInterst	.105
TBB2_webHelpful	.108
TBB3_webMywelBng	.102
TBI1_webTrustful	.108
TBI2_webHonest	.113
TBI3_KeepCommit	.096
TBI4_webGenune	.104
TBC1_webComptEffct	.111
TBC2_webPfmRole	.113
TBC3_webCapable	.109
TBC4_webKnowldg	.098

TBB=Trusting Beliefs—Benevolence
 TBI=Trusting Beliefs—Integrity
 TBC=Trusting Beliefs—Competence

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.

<Table 4.5.3.3.2. Trusting Beliefs PCA– a three-factor solution >
Pattern Matrix(a)

	Component		
	1	2	3
TBB1_webMyInterst	.146	-.036	-.838
TBB2_webHelpful	.041	.090	-.853
TBB3_webMywelBng	-.061	.130	-.857
TBI1_webTrustful	-.005	.814	-.182
TBI2_webHonest	.332	.516	-.191
TBI3_KeepCommit	-.019	.974	.073
TBI4_webGenune	.068	.855	-.037
TBC1_webComptEffct	.732	.203	-.085
TBC2_webPfmRole	.803	.008	-.222
TBC3_webCapable	.713	-.048	-.326
TBC4_webKnowldg	1.014	.039	.154

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.
 A. Rotation converged in 13 iterations.

4.5.3.4 Trusting Intentions

PCA split sixteen items of “trusting intentions” constructs into three components (Table 4.5.3.4.1). “Willingness to depend” and “subjective probability of depending – follow advice” loaded together. Specifying a four-factor solution allowed respective subconstruct items to load together, except two items: FA1 and FA6 (Table 4.5.3.4.2).

FA1 asked whether the survey respondent would use the site again if they had a challenging travel issue. McKnight reported that this item was later reclassified as a “willingness to depend” sub-construct item, for the nature of the question was more of “willingness to depend” rather than “follow advice”. I modified FA6 from the original question. Still, the pilot study results indicated that this question was not formulated well. I will use different question in the final study, as discussed in the section of 5.5 Survey Instruments chapter.

<Table 4.5.3.4.1. Trusting Intention PCA>

	Component		
	1	2	3
GN1_ComfortableInfo	.809	.188	.025
GN2_CanRelyOn	.777	-.061	.058
GN3_CanCountOn	.756	-.227	.133
GN4_WouldUse	.730	-.022	.138
FA1_UseAgain	.874	-.148	-.118
FA2_ActingonINFO	.924	.055	-.133
FA3_UseInfo	.803	.065	.118
FA4_ConfidentAct	.849	.108	.036
FA5_FeelSecure	.840	.100	.020
FA6_ReservWCard	.224	-.047	.760
GI1_NameAdrs	-.131	.047	.954
GI2_CreditCard	-.030	-.018	.850
GI3_ShareSpecs	.214	.057	.512
MP1_Pay4Info	-.012	.935	.080
MP2_ProvCreditCard	.050	.909	.032
MP3_Pay4Consult	-.006	.914	-.068

GN=Willingness to Depend

FA=Subjective Probability of Depending—Follow Advice

GI=Subjective Probability of Depending—Give Information

MP= Subjective Probability of Depending—Make Purchase

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.
 a Rotation converged in 4 iterations.

<Table 4.5.3.4.2. Trusting Intention PCA – a four-factor solution>

	Pattern Matrix(a)			
	Component			
	1	2	3	4
GN1_ComfortableInf	.323	.227	.020	.569
GN2_CanRelyOn	.165	.007	.043	.705
GN3_CanCountOn	-.107	-.101	.098	.968
GN4_WouldUse	.028	.072	.113	.794
FA1_UseAgain	.168	-.070	-.131	.803
FA2_ActingonINFO	.847	-.009	-.099	.160
FA3_UseInfo	.819	-.006	.148	.066
FA4_ConfidentAct	.797	.047	.064	.133
FA5_FeelSecure	.955	.002	.060	-.038
FA6_ReservWCard	.342	-.086	.760	-.056
GI1_NameAddrs	.012	.035	.937	-.110
GI2_CreditCard	-.152	.019	.820	.168
GI3_ShareSpecs	.108	.066	.500	.154
MP1_Pay4Info	.013	.935	.073	-.055
MP2_ProvCreditCar	-.098	.942	.016	.126
MP3_Pay4Consult	.075	.901	-.067	-.118

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.
 a. Rotation converged in 11 iterations.

4.5.3.5 Trust Exogenous Factors

McKnight adopted three non-trust constructs for the nomological validity: personal innovativeness, perceived site quality, and web experience. Since the pilot study used only one web experience question, I conducted analysis for two exogenous constructs. I used varimax rotation, since these two constructs are considered not correlated. PCA analysis cleanly discriminated these properties as seen in the following table, except item PI4 of which I formed the question in a negative structure. Questions in negative structure are known to be problematic in the statistical analysis.

The PCA analyses points out that McKnight's trust instruments are valid and reliable with this study's subjects and the tasks.

<Table 4.5.3.5. Exogenous Factors PCA:
Perceived Site Quality & Personal Innovativeness >

Rotated Component Matrix ^a		
	Component	
	1	2
PSQ1_Technical	.327	.777
PSQ2_ResembleSite	.195	.642
PSQ3_SimpleNavi	.069	.867
PSQ4_Easy2FindInfo	-.087	.813
PI1_Like2ExplorNewSite	.782	.304
PI2_VisitNewSite	.849	-.039
PI3_First2Try	.730	.226
PI4_NotInterestd	.331	.383
PI5_IfTimeExplore	.856	.063

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

PSQ=Perceived Site Quality

PI=Personal Innovativeness

4.5.4 Srite and Karahanna Culture Instrument – Factor Analysis

I used all twenty-four items from four cultural dimensions in the Srite and Karahanna article for the pilot study and for the analysis. The initial factor analysis, using Maximum Likelihood with Promax rotation, extracted seven factors (Appendix L). Items cross-loaded except Masculinity/Femininity. The first four factors explained 52.7% of the total variance. The seven factors explained 69.6% of the total variance (Appendix M).

Srite and Karahanna eliminated ten out of twenty-four question items from their final analysis due to its poor psychometric properties. With the subjects of this pilot study, factor analysis showed a better convergence. The four-factor-solution analysis showed that the items loaded in the appropriate subconstructs, except two items: KIC1¹⁵ and UA5. KIC1 asked whether the respondent agreed with this statement: *“Being accepted as a member of a group is more important than having autonomy and independence”*. UA5 is a reverse-scored item: *“Providing opportunities to be innovative is more important than requiring standardized work procedures”*. Besides these two questions, Srite and Karahanna’s scales seemed to measure what they intended to measure (Table 4.5.4).

¹⁵ The notation of “KIC” was used here for the individualism/collectivism questions that Srite and Karahanna used: Similarly, “UA” was used here for uncertainty avoidance, “PD” for power distance and “MF” for masculinity/femininity.

<Table 4.5.4. Srite & Karahanna Factor Analysis – a four-factor solution >

Pattern Matrix^a

	Factor			
	1	2	3	4
MF1_ManHighPtn	-.055	.863	-.364	-.118
<i>MF2_ManBetter</i>	-.080	.735	-.090	.052
MF3_MenCareer	-.071	.817	.086	-.182
MF4_SolvByForcibleMen	.217	.555	.086	.016
<i>MF5_WomenNotValueRe</i>	.221	.398	.237	.165
KIC1_MembrOvAutonm	.005	.169	.558	.194
KIC2_MembreOvIndep	.122	.296	.330	.334
KIC3_GroupSuccess	-.136	-.067	.060	.691
KIC4_LoyalOvIndGn	.041	-.072	.118	.789
KIC5_GrpWelfare	-.198	.162	.065	.563
KIC6_LoyalDuty	.313	-.181	-.240	.514
PD1_DecisnwoSub	.382	.150	-.027	-.009
PD2_NotAskSubAdv	.621	-.108	.423	-.325
PD3_DecisinStayTop	.789	-.080	-.165	-.010
PD4_EmplrSdNotAsk	.632	.087	-.232	.020
<i>PD5_MgrDelegtRepWk</i>	.418	.096	.103	.022
<i>PD6_MrBenefit4Mgr</i>	.542	.120	-.562	.086
<i>PD7_NotAskSubOpn</i>	.766	-.136	-.070	-.076
UA1_RulesRegltn	.307	.038	-.608	.033
UA2_OrderStrctur	.179	.103	-.429	.059
<i>UA3_SpellDetails</i>	.022	.012	-.340	.015
<i>UA4_BadStnBetter</i>	-.018	-.093	.467	.174
<i>UA5_OpprtInnovatv(negQ)</i>	.036	.284	.046	-.321
<i>UA6_AvoidChange</i>	.381	.068	.638	-.027

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

The italicized and blue color items were dropped from Srite and Karahanna's final analysis due to poor psychometric properties.

4.5.5 Demonstration that Culture Impacts Trust – Simple Regression Analysis

In order to explore the relationships between trust constructs and culture constructs, I conducted simple regression analysis for each path from four culture constructs to each of the sixteen trust subconstructs. Simple regression analysis showed that uncertainty avoidance (UA) affects “disposition to trust integrity” and “institution-based trust benevolence”. Individualism/Collectivism (KIC) negatively affects “trusting beliefs benevolence” and “trusting intention follow advice”. In addition, power distance (PD) negatively affects “personal innovativeness” external non-trust factor. All residual statistics showed satisfactory results (Appendix N).

The regression equations below express the results of the regression analyses:

Uncertainty Avoidance positively affects Disposition to Trust Integrity (DI):

$$DI=9.572 - 0.44MF - .165KIC - .153PD + .285UA* \quad (*p=.051) \quad (1)$$

This finding seems to indicate that a person high in uncertainty avoidance has higher disposition for integrity. They tend to believe that people are honest and keep their promises.

Uncertainty Avoidance positively affects Institution-Based Benevolence (IB):

$$IB=3.203 + .026MF - .138KIC - .114PD + .307UA* \quad (*p=.036) \quad (2)$$

The relationship of UA to IB is the strongest in the regression analysis of trust-related constructs. This finding shows that people high in UA seem to believe that *in general most Internet vendors would act in a customer's best interest.*

Individualism/Collectivism negatively affects Trusting Beliefs Benevolence (TBB):

$$\text{TBB} = 5.002 + .204\text{MF} - .284\text{KIC}^* - .123\text{PD} + .126\text{UA} \quad (*p=.053) \quad (3)$$

This is an interesting finding. I/C dimensions, which actually measure the extent of collectivistic attitude, is negatively correlated to trusting beliefs benevolence. A person who is high in collectivistic attitude would not believe that *a particular* online vendor would act in his/her best interest. This seems to be contradictory to the findings in (2), since UA is reported to be associated with collectivistic societies like Japan, according to Hofstede's study (1980). This finding will be followed up in the final study.

Individualism/Collectivism negatively affects Trusting Intention Subjective Probability of Depending—Follow Advice (FA):

$$\text{FA} = 30.569 + .237\text{MF} - .284\text{KIC}^* - .270\text{PD}^{**} + .124\text{UA} \quad (*p=.048, **p=.062) \quad (4)$$

This finding combined with two previous findings, is interesting and needs to be followed up. It shows that a person with a collectivistic attitude might not be willing to follow advice given by the website. Also, FA seems to be negatively associated with power distance orientation. A person who readily accepts power distance might not follow or act on the information given in the web.

Power distance negatively affects an exogenous factor, Personal Innovativeness (PI):

$$PI = 25.479 + .083MF - .131KIC - .342PD* + .122UA \quad (*p=.021) \quad (5)$$

PI is a non-trust construct in the McKnight model. A person who readily accepts social power distance might not be interested in trying out new websites.

The regression analysis was a preliminary exploration of the data, and the results indicated that some relationships exist between trust and culture variables.

4.6 Conclusions of Pilot Study

The analysis of the pilot study data showed that there seems to be some relationship between culture and trust formation. A series of PCA showed that constructs used in the McKnight model seemed to be valid; if at all, some constructs might be converged.

However, that is not in the scope of this study. The purpose of this study is to find out whether a relationship exists between trust and culture (and subjective norm). Srite and Karahanna's culture instrument showed lower reliabilities in some items. These items might be eliminated for the final study.

Simple regression analysis showed that there seemed to be relationships between trust and culture. It indicated the relationships between uncertainty avoidance and disposition to trust integrity and institution-based trust benevolence, and between

individualism/collectivism and power distance with trusting beliefs benevolence and follow advice.

Furthermore, the pilot study identified some troubling questions, which I will revise in the final study.

4.7. Research Plan for the Final Study

The pilot study prepared me to conduct the final study. I could proceed with the final study with confidence and with the expectation of finding some positive outcomes between trust and culture. Moving forward, I decided that the research design and procedures of the final study would be the same as the pilot study. I plan to collect a minimum of 230 data points for the final study. There are twenty variables in the study. Using a rule of thumb of ten, the study requires a minimum of 200 subjects. I will recruit subjects again from students of the University of Hawai'i at Mānoa.

I will use McKnight et al.'s and Srite and Karahanna's survey instruments (in addition to three subjective norm questions adapted from Mathieson) in the final study with some revisions in the web experience and "follow advice" question items. I will use the full version of confirmatory factor analysis and structural equation modeling (SEM) analysis, in addition to principal component analysis, factor analysis and basic descriptive statistics. The benefits of this SEM analysis are:

- Full replication of the McKnight et al. trust model
- Augmentation of the McKnight et al. trust model with subjective norm construct
- The investigation of relations between latent trust constructs of “disposition to trust”, “institution-based trust”, “trusting beliefs” and “intention to trust”, and subjective norm and latent culture constructs of “masculinity/femininity”, “power distance”, “individualism/collectivism” and “uncertainty avoidance”.
- An increase number of subjects will make the test more sensitive and powerful
- A modification of the model to fit the data
- The development of a new, integrated trust and culture theory

In the following sections, I will describe how I conducted my final study, in addition to the methodology, the data analysis, and the results of my replication of the McKnight et al. trust model. I will propose the augmented trust model that includes subjective norm. Finally, I will describe the exploration of a new, integrated trust and culture model.

5. Final Study

5.1 Research Questions and Hypotheses

As demonstrated in the previous sections, two overall research questions are guiding this study: whether my data can empirically validate the robustness of the McKnight et al. trust model; whether culture impacts online trust formation; and thus, whether an integrated trust and culture model can be developed.

McKnight et al. conducted their study by using a legal advice website with information search tasks. They recruited the subjects from undergraduate and graduate students of three large universities on the U.S. mainland. The number of participants was 724.¹⁶ They conducted the study in 2002. My study is concerned with a tourism website with fact-search tasks. Participants were undergraduates from the University of Hawai'i at Mānoa. Two hundred and seventy-six students participated in the study over spring and summer 2008.

Despite the differences in the methodology, including subject characteristics, website types, tasks, and a six-year time gap between the two studies, McKnight et al.'s multilevel trust model should demonstrate a good fit to my dataset, and prove its robustness across various contexts. Therefore, my research questions are as follows:

¹⁶ The total number of usable data point was 1403 in McKnight et al.'s study but 679 data points were a hold-out data set.

Is the McKnight et al. trust model robust enough to fit the data for an online tourism website? (Research Question 1)

Also, having empirically validated McKnight et al.'s trust model with my dataset, I will examine whether culture impacts trust formation, and will attempt to integrate trust, culture and subjective norm into one "trust and culture" integrated model. Therefore, the second research question is:

Does culture impact trust formation? If so, can an integrated initial online trust and culture model be developed? (Research Question 2)

In relation to Research Question 2, I expect to find relationships among trust, subjective norm, and culture in my study. I posit five specific hypotheses for these relationships as described below.

Subjective norm is expected to directly affect online trust formation and trust intention. Subjective norm should positively influence all four trust constructs, "disposition to trust", "institutional trust", "trusting beliefs" and "trusting intentions". Subjective norm is a critical component in the Theory of Reasoned Action (Fishbein & Ajzen 1975). Thus, it is a missing variable in the McKnight et al. model. Therefore, I expect subjective norm to fully execute the trust model.

Hypothesis 1: Subjective norm positively affects initial online trust formation.

Hypothesis 2: Subjective norm positively affects initial online trust intention.

Existing literature indicates that culture is associated with subjective norm. Individuals with collective orientation tend more to the contexts (Masuda et al. 2008) and look to others' opinions (Trafimow & Finlay 1996; Davidson et al. 1976). People high in UA tend to rely more on personal relationships than unfamiliar/new relations (Doney, Cannon & Mullen 1998; Fukuyama 1995). House et al. (2004) report that culture dimensions are correlated to each other. Power distance correlates to collectivism and uncertainty avoidance. Uncertainty avoidance correlates to collectivism and "gender egalitarianism (masculinity/ femininity)". Literature on the relationship between subjective norm and culture is limited; however I expect the four culture variables to interrelate and significantly associate with the subjective norm, even on the web.

Hypothesis 3: Culture is significantly associated with subjective norm on the website.

Even when I have accounted for the impact of culture on subjective norm, I expect some culture dimensions to *directly* affect trust constructs. Culture is the "software of the mind" (Hofstede 1997), and is intrinsically related to how people process incoming information and organize their thoughts and emotions. The fundamental principle of psychology may depend on culture (Triandis 2007). Thus, culture should have direct impacts on how one forms initial trust and trust intention on the web.

For example, trust and uncertainty are closely linked. Where there is no uncertainty, one does not need to trust (Mayer, Davis & Schoorman 1995). Where uncertainty exists, trust comes into play. Thus, trust and uncertainty are intrinsically related. Therefore, the dimension of uncertainty avoidance might have the largest impact on trust formation among the four cultural dimensions tested on the website. People high in UA might avoid trusting unfamiliar situations. Thus UA might have negative impacts on trusting beliefs and trusting intentions.

In addition, power distance might directly influence trust, in particular, institutional trust. People high in power distance might more readily accept power differences in society, and thus might readily accept the institution as legitimate. Also, Hofstede noted that an individual's likelihood of supporting technology reflects of an uncritical attitude (2001).

Literature indicates that people from countries rated high in the Hofstede's PD index tend to agree that the increasing development of technology is desirable (Inglehart 1997; Helmreich and Merritt 1998).¹⁷ Since the online activities are still perceived as new technology in society, people high in PD might perceive online trust as part of the equation that "the more development of technology is desirable". Thus people high in PD might form higher institutional trust than those who are in low in PD. Therefore, PD dimension might directly influence e-vendor "institutional-based trust".

¹⁷ Preference for technology by countries high in power distance can be explained as a mechanism of reducing 'an arbitrary and absolute exercise of power' and facilitator of the reduction of traditional power distance (House et al. 2004).

Also, collectivist societies are reported to trust outsiders less than individual societies (Huff & Kelley 2003; Yamagishi & Yamagishi 1994). Thus, collectivism might have negative effects on disposition to trust and trusting beliefs. Meantime, the masculinity/femininity dimension addresses the work, gender equality, and quality of life orientation. My first principle argument is that masculinity/femininity dimension is not related to the concept of trust. Therefore, the dimension of masculinity/femininity might not have direct effects on online initial trust formation.

These evidences suggest that culture directly impacts trust as well as indirectly affects trust via subjective norm. Thus, I posit two hypotheses on culture's direct effects on trust:

Hypothesis 4: (In addition to that culture indirectly affects trust via its impact on subjective norm) Culture directly affects initial trust formation on the web.

Hypothesis 5: (In addition to that culture indirectly affects trust via its impact on subjective norm) Culture directly affects initial trust intention on the web.

I have posited here two general research questions and five specific hypotheses to guide my study. Overall research questions center on how my data might support the McKnight et al. trust model, and how an integrated trust and culture model can be developed by extending from McKnight et al.'s trust model. Hypothesis 1 and Hypothesis 2 posit that subjective norm will positively affect online trust formation and

intention. Hypothesis 3 states the important relationship between subjective norm and culture. Hypothesis 4 and Hypothesis 5 address the direct impact of culture on trust formation and trust intention, even after the indirect impact of culture on trust through subjective norm is accounted for.

Next, I will proceed with the methodology sections of the final study, and the data analysis section. I will discuss whether my findings illustrate an acceptance or a rejection of these hypotheses in Section 6. Discussion and Results.

5.2 Data Collection Method

I collected data for the study during the spring and summer semesters of 2008. A total of 361 undergraduate students participated from various courses on the University of Hawai'i at Mānoa campus in this study.¹⁸ I recruited the subjects from business statistics, business ethics, social science statistics and methodology, psychology, Japanese linguistics, and Japanese-language courses. Students received extra credit for their participation in the experiment.¹⁹ Out of 361 data points, 85 points indicated that the students had previously visited the website used for the experiment. Therefore, these 85 were excluded from analysis, resulting in 276 data points for the analysis of my study, the *initial* trust formation on the website. However, I only used 194 out of 276 data

¹⁸ Students from BUS 301, 310, 311, NREM310, FAMR380, PSY100, JPN350, 301, 217 participated in this final study. I thank the following professors for allowing me to use their class for data collection: Professors F Abou-Sayf, Meiko Arai, David Bechtold, Andy Curry, John Haig, Louise Lo, Dale Fryxell, Richard Worthley, and John Reardon.

¹⁹ They were generally awarded two points toward their final grade.

points for the analysis that included subjective norm, because I added subjective norm questions later in the data collection stage.

5.3 Participants

Out of 276 participants, 114 were male and 162 were female. The average age of the participants was 22.2 years old. As for participants' ethnicity, 73.5% were Asians, and 67.4% of all participants (186 people), identified themselves as a Hawai'i "local"²⁰ (Table 5.3.1 & 5.3.2). In answering the question; *which ethnic group do you identify with most?*²¹ Large body of students identified themselves as Japanese (40.6%), followed by Chinese (14.5%), Caucasians (14.1%), Filipinos (8.3%), and Koreans (6.5%) (Table 5.3.3). More than half were born in Hawai'i (55.1%). Other participants were born on the U.S. mainland (19.6%), in Japan (7.2%), in China (6.9%), in Korea (2.9%), in Philippines (2.5%), and in other locations (Table 4).

²⁰ The term, a "local", refers to a person who grew up in Hawai'i or who has lived in Hawai'i for a long time regardless of their racial or ethnic identity. Sometimes the word, *kamaaina* is used in a similar manner.

²¹ It is not uncommon in Hawai'i that people have multiethnic backgrounds. Over many years people have intermarried across ethnic lines.

< Table 5.3.1. A Snapshot of Final Study Participants >

Average Age	22.2 years old	
Average Daily Web Use	3.5hours	
Gender	Male 114	Female 162
Identifying as a Hawai'i "Local"	186 people 67.4%	
Shopped Online	208 people 75.4%	
# of Items Bought Online for Last 3 Months	168 people 60.9% one to five items	

<Table 5.3.2. Age Distribution of Participants >

Age Distribution	Number of People
18 years old	9
19 years old	27
20 years old	53
21 years old	68
22 years old	41
23 years old	20
24 years old	16
25 years old	9
26-35 years old	26
Older than 35 years old	7
Average Age	22.2
Total	276

< Table 5.3.3. Breakdown of Ethnicity >

Breakdown of Ethnicity		
Japanese	112	40.6%
Chinese	40	14.5%
Caucasian	39	14.1%
Filipino	23	8.3%
Korean	18	6.5%
Other Asian	10	3.6%
Pacific Islander (incl. Hawaiian)	17	6.2%
Hispanic	5	1.8%
African American	2	0.7%
Other	10	3.6%
Total	276	100%

<Table 5.3.4. Breakdown of Birth Place >

Birth Place		
State of Hawai'i	152	55.1%
U.S. Mainland	54	19.6%
Japan	20	7.2%
China (incl. H.K. Taiwan)	19	6.9%
Korea	8	2.9%
Philippines	7	2.5%
Vietnam	3	1.1%
Other Asian Countries	3	1.1%
Pacific Islands except Hawai'i	5	1.8%
Other	5	1.8%
Total	276	100%

79% of participants grew up speaking standard English, however many grew up speaking or being exposed to other languages as children. Some grew up with more than two languages. The extent of languages that the respondents reported were collectively exposed to as children was impressive. There were twenty-two different languages in addition to Standard English that participants claimed to be exposed to as they grew up. Hawai‘i Creole English, often referred to as “Pidgin”, was used in almost 20% of participants’ households, followed by Japanese 16.3% and Chinese 12.7% (Table 5.3.5). Languages spoken in the household are good indicators of participants cultural backgrounds along with their ethnicity. The data surely indicate that participants of this study came from diverse cultural backgrounds.

<Table 5.3.5. Languages Spoken at Home as Child>

Languages Used at Home		
Standard English	218	79%
Hawai‘i Creole English (Pidgen)	55	19.9%
Japanese	45	16.3%
Chinese	35	12.7%
Korean	21	7.6%
Filipino/Ilocano/Tagalog	13	4.7%
Spanish	10	3.6%
French	6	2.2%
Vietnamese	5	1.8%
Hawaiian	4	1.4%
Thai	2	0.7%
German	2	0.7%
Other languages listed once: Arabic, Egyptian, Farsi, Greek, Indonesian, Linguala, Mauritian Creole, Palauan, Portuguese, Samoan, Swahili		

<Table 5.3.6. Time Spent on Web per Day>

Time Spent on Web per Day Average: 3.5 Hours		
0-30 minutes	13	4.7%
30-60 minutes	24	8.7%
1-2 hours	59	21.4%
2-3 hours	58	21%
3-4 hours	45	16.3%
4-5 hours	33	12%
5-6 hours	21	7.6%
6-7 hours	11	4%
7-8 hours	7	2.5%
8+ hours	5	1.8%
Total	276	100%

I also found that participants were web savvy. Their average time spent on web activities per day was 3.5 hours. About 65% of students spent more than two hours, and 23 students reported that they spend more than six hours on web activities every day. Surprisingly, five people claimed that they spent more than eight hours a day. These responses revealed how integral the Internet has become in students' lives today (Table 5.3.6).²²

The use of students should not pose any major issues in this research. Young people are current and future cohorts of online customers, thus these subjects can easily represent e-commerce customers. In fact, this survey revealed that 75.4% of all participants (208 people) purchased merchandise online during the previous three months of the survey, usually purchasing one to five items during that period (Table 5.3.7). Surprisingly, the most popular item purchased online were airline tickets, not books or CDs. Forty-four percent of the people who engaged in online shopping purchased airline tickets. The next most popular item was clothing/shoes (37%), followed by books (30.3%), and electronics (27%) (Table 5.3.8).

In addition, I found that students are often interested in traveling abroad. The interest in Japan among the students in Hawai'i is generally high, due to the geographical proximity of Hawai'i to Japan, its economic influence, and the strong Japanese cultural heritage on the Islands. Therefore, the tasks in this study were relevant to students' interest. I judged

²² The McKnight et al. study reported that their subjects used the web 1.6 hours a *week* on average.

that the use of undergraduate students posed no significant threats to the generalizability of the present research to the wider audience.

<Table 5.3.7. Amount of Merchandise Purchased Online in the Last Three Months ²³ >

Number of Items Purchased Online during the past three months	
Never	38
1-5 items	168
6-10 items	29
11-15 items	7
16-20 items	1
21-25 items	2
26-30 items	1
Total Response	246

<Table 5.3.8. Merchandise Purchased Online in the Last Three Months >

Merchandise	Response count	Response Percent
Airline Tickets	92	44.2%
Clothing/Shoes	77	37%
Books	64	30.8%
Electronics	56	27%
Music (CDs)	37	17.8%
Movies (DVDs)	32	15.4%
Accessories	26	12.5%
Hotel Reservation	24	11.5%
Automobile Parts	20	9.6%
Games	19	9%
Other Items: food 8, medicines 8, toys 5, tools 5, cosmetics 5, reservation at destination 4, tuition 2, camera lenses, supplements, surfboard, automobile accessories, luggage, art supplies, flowers, cell phone, ornament, etc.		

5.4.1 Interviews

I organized a brief interview session in order to gain insight into how one forms trust on websites. I conducted four interviews in the beginning of May 2008, and recruited interviewees from participating students in the study on a voluntary basis. These interviews were done one-on-one. They were awarded a ten-dollar Starbucks gift certificate for their time. Each interview took about 20 minutes. All subjects were female undergraduates, and the brief descriptions of interviewees are summarized in Table 5.4.1.

²³ This question was asked among those who have the pay method, such as a credit card or debit card, on the Internet.

<Table 5.4.1. Descriptions of Interviewees>

Subject #	Gender	Age	Characteristics
Subject 1	Female	22	Hawai‘i local, ethnic Korean, family resource major, experienced traveler; purchase online, clothing, compare price, look for bargains; self-described as a “trusting” person because of her faith
Subject 2	Female	35	African American, family resource major, military wife, and mother of three, a career student; traveled various places in particular on the mainland, plans ahead in details, look for bargains
Subject 3	Female	25	Japanese national, foreign student, second language studies major, self-described as a non-tech person; never purchased online, didn’t have Internet in home town, but created a social website to make friends since she came to Hawai‘i
Subject 4	Female	21	Hawai‘i Local, ethnic Japanese, tourism industry major, Japanese minor, traveled extensively; only use Internet for airline reservations, never purchased other items online, self described a “cautious” planner; will study in Japan for one year

I conducted these interviews in open-ended question format, and I asked participants to share their impressions on the “Guide to Japan” website that they just navigated, and to tell me how they usually travel. I used the questions in Table 5.4.2 as a guideline, but I did not necessarily asked them all or ask them in this particular order. I created these questions listed in the Table.

<Table 5.4.2. Interview Guideline Questions>

1. Have you ever visited this website before?
2. Tell me anything about what you thought about the website.
3. What did you like about this website?
4. What didn't you like about this website?
5. Compared with other travel guide sites you know, what did you think of this website?
6. If this website offered a package tour or hotel accommodation reservation, would you purchase it?
7. What makes you think it is O.K. to give out your personal information and credit card information to this website vendor?
8. Do you like traveling? What is your travel habit? For example, do you plan everything before you leave home?
9. Where have you traveled? Do you have any travel plans in the near future? How are you preparing to travel?
10. Tell me what you think of purchasing things online in general. How often do you purchase online?
11. Do your family members or your friends purchase online?
12. Tell me about yourself. Where were you born and grew up? What is your major and your background? Is there anything you would like to add about yourself?

Themes that are common in the stories by four interviewees emerged as follows:

All interviewees mentioned that the "Guide to Japan" was easy to navigate and the interface was very user-friendly. A couple of them mentioned that the mixture of pop-up picture and text interface was easy to follow. They agreed that the graphics were pretty and attractive. Information was clearly described. Every interviewee noticed as they completed the tasks, that the website, "Guide to Japan", was part of the Japan Airlines

websites. Subject 3 mentioned that she wished to see more comprehensive information on various locations of Japan.

In answering Question #6, “*If this website offered a package tour or hotel accommodation reservations, would you purchase it?*” (Table 5.4.2), two interviewees mentioned that they would, and the other two mentioned that they would consider it. All of them said they would go to other websites and compare prices first.

In relation to Question #7, “*What makes you think it is O.K. to give out your personal information and credit card information to this website vendor?*” two mentioned that they would look for secure signs on the website. Subject 1 mentioned that if the site had more payment methods, including PayPal, she would be more willing to purchase items or the site.

All respondents except Subject 3 had purchased airline tickets online before, a method that is their primary means of purchasing airlines tickets when traveling. Subject 3 mentioned that even if a company has a website, she would prefer to talk to the sales person on the phone and purchase the items from the sales office. She didn’t trust the web vendor in general and mentioned: “*I do not want to lose money for nothing*”.

All of the respondents were rather cautious when it comes to online purchasing. All subjects (except subject 3 who would not purchase online across-the-board) would not purchase anything on a new website *unless* it either carried a brand name that they were

familiar with or trust already; or unless a friend had already had a successful experience with that particular online vendor. Subject 4 added “if I trust *that* friend, then I would *consider* purchasing it from that website.” This subject, family members made most of her travel arrangements in the past, but she has purchased an airline ticket herself before. Subject 1 and 2 mentioned that they had planned their travel itinerary online, purchased airline tickets and hotels on the web, and that they would look for good deals and better prices.

In summary, all interviewees were careful consumers, especially when it comes to online shopping. I got the impression that the respondents were in general more proactive and organized than average students. When it came to web vendors that they had never experienced before, they all tended to defer to friends’ opinions. From what they described, airline websites seemed to be the most trusted websites. Because they were all price-conscious consumers, they would do comparison shopping.

5.5 Survey Instruments

I used all of the same survey items in the final study, as in the pilot study, with minor modification. In addition, I added subjective norm questions in the final study.

I adopted all trust construct questions from the McKnight et al. article (2002) in the final study by modifying words described in the pilot study section (4.4 Survey Instruments).

I changed one question in the section of “subjective probability of depending—follow advice (FA)” —“*Based on the advice I just read, I would serve notice, wait, go ahead and get the repair done, and then deduct the cost of the repair from my rent.*” — to “*Based on the advice I just read, I would make a reservation with credit card over the Internet.*” However, this question item did not cleanly load under the “follow advice” construct. I used the newly rephrased question in the final study:

“Based on the advice I just read, I would purchase a Japan Rail Pass before leaving for Japan because I would save money.”

One of the tasks that I used in the final study included questions on the Japan Rail Pass. The task sheet for the final study is in Appendix O.

In addition, I originally adapted the questions in the “general web experience” exogenous factor from the Georgia Institute of Technology’s graphics, visualization, and usability surveys of web usage, but this site no longer exists. In the pilot study, all web experience

questions were reduced into one general question: “*On average, how much time PER DAY do you spend on web activities?*” In the final study, in addition to the “per day use” question, I used several questions on social networking sites, and online shopping experiences. However, I only used the “per day use” item for the final analysis.

<Table 5.5.1. Web Experience Questions >

Web Experience Questions in the Final Study:			
a) On average, how much time PER DAY do you spend online altogether? (revised from “web activities”)			
0 to 30 mins	30 to 60 mins	1 to 2 hrs	2 to 3 hrs
3 to 4 hrs	4 to 5 hrs	if more than 5 hrs specify the hrs_____	
b) On average, how much time per day do you spend on social networking sites like Facebook, MySpace, Friendster, Orkut, etc.?			
0 to 30 mins	30 to 60 mins	1 to 2 hrs	2 to 3 hrs
3 to 4 hrs	4 to 5 hrs	if more than 5 hrs specify the hrs_____	
c) Do you have some way you can pay for items you purchase on the Internet such as credit cards, pay pal account, etc.?			
Yes/No			
If yes, go to the questions (d) and (e)			
d) How many products did you purchase online within last three months?			
None	1 to 5	6 to 10	10 to 15
	if more than 15 items _____specify		
e) What were the items you purchased within last three months on the Internet? Check off as many as necessary.			
* Airline tickets * hotel reservations * Any reservations other than hotels at destinations			
*Books *Music (CDs) *Movies (DVDs/Videos) * Games *Electronics *Clothing			
*Accessories (include watches) *Toys *Furniture *Tools *Automobile Parts *Automobile *If Other (specify) _____			

I used the same culture questions that I used in the pilot study, and included all twenty-four questions were included in the final survey. Though Srite and Karahanna had subjective norm questions in their study, I used the SN instrument from the Mathieson

(1991) because that the instrument seemed more appropriate for my study. Mathieson compared the predictive power of two theories, technology acceptance model (TAM) and the theory of planned behavior (TPB) on behavioral intentions in his study. His original subjective norm questions and my questions are listed in Table 5.5.2. The survey items that I used for the final study are listed in Appendix P.

<Table 5.5.2. Subjective Norm Questions>

	Mathieson 1991	My Final Study
1	Those people who are important to me would (strongly support/strongly oppose) my using [the spreadsheet] rather than my calculator for the assignment.	People (peers and friends) important to me support my use of online vendors.
2	I think that those people who are important to me would want me to use [the spreadsheet] rather than my calculator for the assignment.	People (family members, significant others) who influence my behavior want me to use online vendors instead of other means.
3	People whose opinions I value would prefer me to use [spreadsheet] rather than my calculator for the assignment.	People whose opinions I value prefer that I use online vendors for purchasing products and planning a travel.

5.6 Data Analysis

5.6.1 Analysis Plans

I analyzed the data of my final study in the following order: First, Section 5.6.2 reported descriptive statistics on each subconstruct calculated by SPSS 15.0. This shows the centrality of data by means, standard deviations and variances. Then, I tested the reliability of each subconstruct with Cronbach's alpha for the psychometric properties (Section 5.6.3).

In Section 5.6.4, I analyzed sixteen measurable subconstructs in the McKnight et al.' model by principal component analysis to see whether these subconstructs load together on the pertinent component while discriminating other subconstructs. Then, in Section 5.6.5, I conducted confirmatory factor analysis in order to see the structures and relationships of these subconstructs in the trust model. These sections report the replication of the McKnight et al. trust model.

In section 5.6.6, I analyzed Srite and Karahanna's culture instrument by factor analysis. In addition, I conducted the detailed analysis of uncertainty avoidance survey items in this section, since the psychometric properties of uncertainty avoidance were less than satisfactory.

In Section 5.6.7, I used structural equation modeling, to test the proposed trust and subjective norm augmented model. Then, I tested the newly integrated trust and culture theory by structural equation modeling with my data.

These data analyses sections precede Section 6: Discussion and Results.

5.6.2 Descriptive Statistics

Descriptive statistics of two instruments demonstrated surprisingly similar patterns to the results of the pilot study.

- McKnight et al. Trust Survey Items

Mean scores of fifty-four trust question items from McKnight's instrument ranged from 2.99 (MP2) to 5.56 (TBC4) on a seven-point Likert scales (1 being strongly disagree, 7 being strongly agree), while standard deviations ranged from 0.980 (TBI4) to 1.715 (GI2) (Appendix Q). Both ranges of means and standard deviations were larger than the pilot study's. But the patterns of these two descriptive statistics were very similar. Largest values of standard deviation were located in trusting intention items; especially questions related to giving personal information, credit card information, and making purchase questions. The standard deviation of many of these items ranged around 1.7 with variance of around 2.9. The lowest values of standard deviations were in the questions of trusting beliefs. Most of the standard deviation scores of trusting beliefs clustered around one standard deviation.

The question item that obtained the highest mean score was TBC4 (5.56), the same as the pilot study (5.67): TBC4 – *In general, the “Guide to Japan” website is very knowledgeable about the information that a tourist is looking for.*” This showed participants’ confidence in the website. The lowest mean (2.99) was from the question item involving credit card information: MP2 – *I would be willing to provide credit card information on the “Guide to Japan” website.* Again this was also the case in the pilot study (3.16).

In both studies, the pattern was clear. My results revealed an interesting aspect of the relationship between trusting beliefs and trusting intentions, in that even though respondents had confidence in the website, they were still apprehensive about giving out their credit card information.

I observed this seemingly discrepant or cautious attitude toward giving out personal information in the low mean scores of all MP (making purchase) items: MP1=3.20 (pilot study 3.38), MP2= 2.99 (pilot study 3.16) and MP3= 3.16 (pilot study 3.35). Again, these means were the lowest cluster of fifty-four items of the trust scales (Appendix Q). The mean score of all three MP items was 3.12, whereas the mean of trusting beliefs items was 5.25 out of the seven-point Likert scale.

- Srite and Karahanna Culture Instrument

Mean scores of twenty-four question items from Srite and Karahanna’s instrument ranged from lowest 2.24 (the two items had the same value [MF5 – *“Women do not value*

recognition and promotion in their work as much as men do”, and PD2 – “*Managers should not ask subordinates for advice, because they might appear less powerful*”]) to highest 5.93 (UA2 – “*Order and structure are very important in a work environment*”) on seven-point Likert scales (1 being strongly disagree, 7 being strongly agree) (Appendix Q). Again, this result was the same as the results of my pilot study. Standard deviations spread from lowest 0.992 (UA2 – “*Order and structure are very important in a work environment*”) to largest 1.810 (MF2 – “*There are some jobs in which a man can always do better than a woman*”). In the pilot study, the lowest value of standard deviation was UA1 item, and the survey item of the largest standard deviation was also MF2. Therefore, again, the results were very similar to the pilot study.

Also as the pilot study, standard deviations and variance of culture items were bigger than SD of trust items from McKnight et al.’s study. Uncertainty avoidance questions had the smallest standard deviations. The standard deviations of UA2 and UA3 were 0.992 and 0.996 respectively, indicating that the responses were tightly clustered without much deviation, which means that participants answered these questions very similarly. When it came to the attitudes of avoiding uncertainty, participants thought alike and responded in a similar way, but differed when the study raised gender and social hierarchical issues.

- Subjective Norm Survey Items

I used three subjective norm questions in the final study, also measured by the seven-point Likert scales. I had not included subjective norm questions in my pilot study. So,

there is no data against which to compare these new findings. The means of three questions were 4.59, 3.98, and 4.46 respectively. Standard deviations were around 1.2 (Table 5.6.2).

<Table 5.6.2. Descriptive Statistics for Subjective Norm Survey Items>

(Adapted from Mathieson 1991) (N=194)

Descriptive Statistics			
	Mean	Std. Deviation	Variance
SN1_Peer	4.59	1.145	1.310
SN2_Family	3.98	1.269	1.611
SN3_Valued	4.46	1.272	1.617

The descriptive statistics of these three instruments showed no irregularities in the dataset. The patterns of descriptive statistics in trust and culture scales were very similar to the pilot study, which also indicates the dataset of the final study comes from a good sample.

5.6.3 Reliability Testing

I concluded Cronbach's alpha test to examine the reliabilities of question items in each construct in the trust model, and in the culture and subjective norm constructs.

- McKnight et al. Trust Instrument

As shown in Table 5.6.3.1, McKnight's instrument yielded high reliabilities at more than 0.80 for most subconstructs. The results were very comparable to the reliabilities of McKnight et al.'s study. The lowest reliability was 0.78 for the subconstruct "willingness to share information". These values show that survey items are very reliable.

- Srite and Karahanna Culture Instrument

Srite and Karahanna’s culture instrument showed lower reliabilities than McKnight’s.

This can be attributed to difficulties of defining culture constructs in psychometric test.

Table 5.6.3.2 shows the reliabilities of all survey items in Srite and Karahanna’s instrument. The highest value was 0.79 for power distance, and the lowest was with uncertainty avoidance (at 0.38).

<Table 5.6.3.1. McKnight et al.’s Trust Survey Item Reliability (Cronbach’s Alpha)>

Construct	Subconstruct (# of items)	My Study (N=276)	McKnight (N=724)
Disposition to trust	Faith in Humanity – Benevolence (3)	0.86	0.84
	Faith in Humanity – Integrity (3)	0.81	0.82
	Faith in Humanity – Competence (3)	0.83	0.88
	Trusting Stance (3)	0.79	0.90
Institution-Based Trust	Situational Normality – General(2)	0.85	0.85
	Situational Normality – Benevolence (3)	0.83	0.96
	Situational Normality – Integrity (3)	0.92	0.88
	Situational Normality – Competence (3)	0.92	0.92
	Structural Assurance (4)	0.92	0.94
Trusting Beliefs	Trusting Belief – Benevolence (3)	0.86	0.91
	Trusting Belief – Integrity (4)	0.91	0.92
	Trusting Belief – Competence (4)	0.93	0.95
Trusting Intentions	Willing to Depend (5)	0.92	0.92
	Willing to Act on Advice (5)	0.90	0.92
	Willing to Share Information (3)	0.78	0.70
	Willing to Pay for Advice (3)	0.88	0.84
Non-Trust Exogenous Constructs	Personal Innovativeness – Web (5)	0.81	0.89
	General Web Experience (2)	0.73	0.69 (4 items)
	Site Quality (4)	0.86	0.86 (5 items)

Uncertainty Avoidance (UA) items showed the lowest reliabilities. Srite and Karahanna reduced UA questions from six items to two items. My data showed the reliabilities of 0.38 for six items. Psychometric properties of some UA questions might need to be reexamined. Therefore, I will analyze UA items closely and will discuss them in Section 5.6.6.3.

<Table 5.6.3.2. Srite & Karahanna Culture Instrument Reliability for All Items>

Reliability Test: Cronbach's Alpha		Final Study (N=276)	Pilot Study (N=55)
Masculinity/Femininity	5 items (all)	.79	.80
Individualism/Collectivism	6 items (all)	.75	.73
Power Distance	7 items (all)	.79	.78
Uncertainty Avoidance	6 items (all)	.38	.11

- Subjective Norm Survey Items

Cronbach's alpha for three subjective norm questions came out to 0.77, which indicates a very good reliability of items.

<Table 5.6.3.3. Subjective Norm Item Reliability>
(N=194)

Reliability Statistics

Cronbach's Alpha	N of Items
.77	3

Like the descriptive statistics of my final study, the patterns of pilot study reliabilities were reproduced in the final study. McKnight et al.'s Cronbach's alpha indicated an

excellent reliability of the scales: However, uncertainty avoidance items in Srite and Karahanna's culture instrument showed a poor reliability and a need to be further examined for the psychometric properties. The other three culture dimensions demonstrated good reliabilities. Three subjective norm questions showed a good reliability.

5.6.4 McKnight et al. Trust Instrument – Principal Component Analysis

The next step of the data analysis is to see if my data yield similar principal component analysis results to McKnight et al.'s study. Principal component analysis (PCA) is a statistical technique applied to a set of variables to find which sets of variables form coherent subsets. At times PCA is used to reduce the number of variables in a study. These subsets of variables represent underlying latent factors that researchers cannot directly observe. McKnight et al.'s trust model identified four latent higher-trust constructs, i.e., disposition to trust, institutional trust, trusting beliefs and trusting intention, that consist of sixteen subsets of factors. These sixteen subconstructs are estimated by actual 54 survey questions. Upon PCA analysis, my data should also form sixteen coherent subsets of factors as the model specifies. The replication by PCA analysis is the first phase of the empirical verification of the trust model.

First, following what McKnight et al. did, I analyzed all 54 question items trust instrument in one principal component analysis (PCA) using the SPSS 15.0 software. The PCA analysis was set at eigenvalues above 1.0 and oblimin rotation delta value of zero. Just like the study of McKnight et al., the PCA results for the final study generated ten components.²⁴ Though in McKnight et al.'s study, there was no cross-loading above 0.4, my data showed two cross-loadings in the "intention to trust" variables, but all other items loaded together on respective components (Appendix R).

²⁴ My pilot study loaded on eleven components.

Having done the overall 54-item PCA, I examined the items within each of four latent constructs, one construct at a time, by specifying the number of factors that the theory suggests. The results of my PCA are reported below according to the four higher trust constructs: disposition to trust, institutional based trust, institutional trust, and intention to trust. First I will describe the results of the overall 54-item PCA by each of the four higher constructs. Then, I will report the results of the second analysis, which I will perform just within its respective construct specified by the number of the factors that the model suggests.

5.6.4.1 Disposition to Trust

Just as McKnight et al. reported, my overall 54-item analysis of “disposition to trust” formed three factors with no cross-loadings above 0.4 coefficient. Benevolence (DB) and integrity (DI) factored together, and competence (DC) and trusting stance (DST) loaded separately (Appendix R). When I specified a four factor solution, all items strongly loaded on the right constructs, replicating the results of the McKnight et al. study (Tables 5.6.4.1a & 5.6.4.1b).

<Table 5.6.4.1a. Disposition to Trust – a four-factor solution pattern matrix >

Pattern Matrix

	Component			
	1	2	3	4
DB1_WellBeOthrs	.887	.057	.063	-.048
DB2_ConcernOthrs	.874	.005	-.067	.084
DB3_Helpful	.725	-.005	.083	.171
DI1_KeepPromise	.186	-.081	.095	.695
DI2_WordAction	-.055	.068	.015	.888
DI3_Honest	.248	.016	.007	.691
DC1_ProfGoodJob	-.052	.008	.741	.278
DC2_ProfKnowldge	-.088	.022	.883	.099
DC3_ProfCompetn	.192	.009	.847	-.184
DST1_UntilNot	-.044	.795	.175	.011
DST2_BefntDoubt	.052	.838	-.124	-.061
DST3_NewAcqUntil	.018	.873	-.017	.073

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.
 a. Rotation converged in 8 iterations.

<Table 5.6.4.1b. Disposition to Trust– a four-factor solution structure matrix >

Structure Matrix

	Component			
	1	2	3	4
DB1_WellBeOthrs	.895	.237	.341	.428
DB2_ConcernOthr	.895	.176	.251	.496
DB3_Helpful	.837	.168	.385	.567
DI1_KeepPromise	.549	.039	.418	.817
DI2_WordAction	.409	.148	.358	.873
DI3_Honest	.600	.135	.363	.820
DC1_ProfGoodJob	.330	.137	.835	.545
DC2_ProfKnowldg	.253	.147	.896	.406
DC3_ProfCompetn	.376	.156	.838	.248
DST1_UntilNot	.176	.814	.285	.137
DST2_BefntDoubt	.147	.824	-.005	-.001
DST3_NewAcqUntil	.222	.882	.149	.162

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.

5.6.4.2 Institution-Based Trust

My 54-item PCA analysis on institutional trust replicated the results of McKnight’s study. That is “institution-based trust” items split into two: situational normality (IG, IB, II, IC) items and structural assurance (ISA) items²⁵ (Appendix R). The five-factor solution also replicated the McKnight et al. study with two cross-loadings. The items loaded on the right five components but showed two cross-loadings in IB and II items. However, these two items also showed strong loadings on the right components in the structure matrix.²⁶

<Table 5.6.4.2a. Institution-Based Trust– a five-factor solution pattern matrix >

Pattern Matrix(a)

	Component				
	1	2	3	4	5
IG1_FeelGoodNet	-.046	.116	.004	.831	.079
IG2_ComfortblNet	.046	.037	-.063	.867	.088
IB1_VdrCstmrIntere	-.008	.032	.114	.279	.720
IB2_VdrDoBest	.279	.121	.118	-.026	.627
IB3_VdrCstmrWellb	-.049	.124	.877	-.096	.145
II1_MeetObligtn	.240	.023	.510	.267	.131
II2_FulfillAgrmnt	.363	-.034	.293	.441	.082
II3_DoVdr'sPart	.407	.078	.412	.323	-.183
IC1_Competent	.864	-.047	.153	.015	.004
IC2_Capable	.883	.038	.021	-.032	.080
IC3_GoodAtWhat	.876	.116	-.159	.023	.049
ISA1_Safeguards	.168	.507	.099	.334	-.082
ISA2_LegalStrctr	.039	.907	-.019	-.071	.093
ISA3_EncrypSafe	.009	.924	.058	-.025	-.003
ISA4_NetRobstSafe	-.040	.882	-.002	.093	-.035

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.
 a Rotation converged in 10 iterations

²⁵ McKnight reported that there was one factor cross loaded at -0.42 on structural assurance. In my data, there was no cross-loading on structural assurance above 0.4. The highest loading on a “wrong” construct was ISA1 (“*The Internet has enough safeguards to make me feel comfortable using it to transact personal business.*”) loaded at 0.386 with situational normality items.

²⁶ A structure matrix shows correlations between variables and factors, whereas a pattern matrix shows standardized regression coefficients.

<Table 5.6.4.2b. Institution-Based Trust – a five-factor solution structure matrix >

Structure Matrix

	Component				
	1	2	3	4	5
IG1_FeelGoodNet	.523	.591	.400	.901	.426
IG2_ComfortblNet	.562	.557	.366	.922	.424
IB1_VdrCstmrIntere	.521	.539	.543	.612	.885
IB2_VdrDoBest	.646	.573	.571	.486	.833
IB3_VdrCstmrWellb	.477	.479	.927	.356	.515
II1_MeetObligtn	.722	.573	.809	.672	.556
II2_FulfillAgrmnt	.781	.567	.681	.778	.507
II3_DoVdr'sPart	.772	.574	.710	.696	.314
IC1_Compotent	.929	.493	.590	.544	.408
IC2_Capable	.929	.538	.517	.530	.453
IC3_GoodAtWhat	.889	.553	.376	.541	.397
ISA1_Safeguards	.648	.791	.502	.722	.371
ISA2_LegalStrctr	.514	.920	.397	.486	.460
ISA3_EncrypSafe	.521	.939	.444	.519	.409
ISA4_NetRobstSafe	.472	.897	.375	.549	.358

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.

5.6.4.3 Trusting Beliefs

In McKnight et al.’s study, trusting beliefs items “all loaded strongly together into a single factor” when they performed the overall 54-item analysis.²⁷ However, in my final study, trusting beliefs split into two: benevolence (TBB) and integrity (TBI) loaded together, and competence (TBC) loaded separately (Appendix R).

When McKnight et al. specified a three-factor solution to trusting belief items, all items cleanly loaded on the intended three subconstructs. My study split into three constructs,

²⁷ This was also the case in my pilot study.

but the first item of trusting beliefs integrity, TBI1,²⁸ cross-loaded with benevolence (TBB) while also loading strongly on integrity. Thus, my analysis replicated the results of the original authors' study except one crossloading.

<Table 5.6.4.3a. Trusting Beliefs – a three-factor solution pattern matrix >
Pattern Matrix

	Component		
	1	2	3
TBB1_webMyInterst	.900	-.025	.037
TBB2_webHelpful	.815	-.154	.042
TBB3_webMywelBng	.814	.024	-.096
TBI1_webTruthful	.533	.085	-.491
TBI2_webHonest	.243	-.145	-.581
TBI3_KeepCommit	-.003	-.044	-.895
TBI4_webSincrGenuine	-.028	-.091	-.889
TBC1_webComptEffct	.008	-.806	-.117
TBC2_webPfmRole	-.041	-.940	-.014
TBC3_webCapable	-.002	-.871	-.077
TBC4_webKnowldg	.087	-.902	.089

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.
 a Rotation converged in 10 iterations.

<Table 5.6.4.3b. Trusting Beliefs – a three-factor solution structure matrix >
Structure Matrix

	Component		
	1	2	3
TBB1_webMyInterst	.889	-.555	-.608
TBB2_webHelpful	.881	-.629	-.628
TBB3_webMywelBng	.866	-.540	-.649
TBI1_webTruthful	.824	-.563	-.809
TBI2_webHonest	.739	-.673	-.846
TBI3_KeepCommit	.650	-.625	-.921
TBI4_webSincrGenuine	.650	-.653	-.929
TBC1_webComptEffct	.586	-.887	-.647
TBC2_webPfmRole	.548	-.924	-.598
TBC3_webCapable	.589	-.920	-.643
TBC4_webKnowldg	.580	-.897	-.559

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization

²⁸ TBI 1 item asked, “The ‘Guide to Japan’ website is truthful in its dealings with me.”

5.6.4.4 Trusting Intentions

Among the four latent trust constructs, my PCA on the intention to trust differed the most from McKnight et al.'s results. Their 54-item PCA analysis found intention items loaded into three factors; (1) "willingness to depend" and "follow advice" together, and (2) "give information", and (3) "make purchases". My 54-item PCA analysis showed that trusting intention items split into two factors; (1) "willingness to depend" (GN) and "follow advice" (FA) loaded under one factor,²⁹ and (2) "willingness to give information" (GI) and "make purchase" (MP) loaded under the other factor (Appendix R).

When specifying a four factor solution only to "intention" items, McKnight et al. reported, that "Trusting intentions split cleanly into the four subconstructs in the model" except FA1 that later classified to GN items. My PCA four-factor solution didn't show as clean loadings as theirs. My "follow advice" (FA) items loaded on two factors. The first four FA items loaded with "willingness to depend" (GN) items, and FA5 and FA6 loaded together on fourth component by themselves in pattern matrix³⁰ (Tables 5.6.4.4a & 5.6.4.4b). FA items didn't differentiate themselves well from GN items, indicating that GN and FA might be closely related factors.

²⁹ However, GN1 and FA6 cross-loaded.

³⁰ In addition, the coefficients of FA3, FA4, and FA5 cross-loadings were above 0.40.

<Table 5.6.4.4a. Intention to Trust – a four-factor solution pattern matrix >
Pattern Matrix

	Component			
	1	2	3	4
GN1_ComfoInfo	.811	-.041	.042	.057
GN2_CanRelyOn	.820	.009	.042	-.002
GN3_CanCountOn	.972	.030	-.045	-.164
GN4_Would Use	.864	-.004	.016	-.003
FA1GN5_UseAgn	.873	.113	-.101	-.041
FA2_ActingonINFo	.711	.012	.022	.291
FA3_UseInfo	.518	-.098	.207	.402
FA4_ConfidentAct	.504	.009	.207	.441
FA5_FeelSecure	.446	.002	.200	.469
FA6_BuyJRpass	-.006	.173	-.018	.788
GI1_NameAddr	-.005	.057	.863	-.017
GI2_CreditCard	.092	.432	.567	-.198
GI3_ShareSpecs	-.037	-.068	.874	.068
MP1_Pay4Info	.052	.892	-.049	.062
MP2_ProvCreditCd	.074	.807	.187	-.071
MP3_Pay4Consult	-.044	.875	-.043	.133

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.
 a Rotation converged in 7 iterations.

<Table 5.6.4.4b. Intention to Trust – a four-factor solution structure matrix >
Structure Matrix

	Component			
	1	2	3	4
GN1_ComfoInf	.841	.245	.371	.434
GN2_CanRelyOn	.839	.289	.378	.385
GN3_CanCountOn	.888	.303	.322	.274
GN4_Would Use	.867	.280	.365	.396
FA1GN5_UseAgn	.849	.351	.287	.351
FA2_ActingonINFO	.857	.292	.387	.624
FA3_UseInfo	.755	.206	.479	.676
FA4_ConfidentAct	.793	.314	.524	.724
FA5_FeelSecure	.743	.290	.498	.722
FA6_BuyJRpass	.404	.279	.238	.806
GI1_NameAddr	.358	.379	.879	.201
GI2_CreditCard	.371	.647	.719	.046
GI3_ShareSpecs	.328	.259	.850	.255
MP1_Pay4Info	.348	.899	.324	.203
MP2_ProvCreditCd	.378	.891	.505	.126
MP3_Pay4Consult	.282	.863	.301	.229

Extraction Method: Principal Component Analysis.
 Rotation Method: Oblimin with Kaiser Normalization.

However, since factor loading is partially a function of the analysis method, I conducted another analysis with the Maximum Likelihood (ML) method using promax rotation. The Maximum Likelihood method is another common estimation method that maximizes the likelihood function of the entire sample. In ML, correlations are weighted by each variable's uniqueness. And my ML analysis *did* show cleaner loadings and replicated McKnight et al.'s loadings. Both matrices of the ML method showed the items loaded on the right subconstructs except FA1 (Tables 5.6.4.4c & 5.6.4.4d). McKnight et al. reported the same crossloading on FA1. They later reassigned FA1 to GN items for their Confirmatory Factor Analysis.³¹ Thus, with the ML method, my analysis of intention items replicated the study of the original authors.

³¹ McKnight examined FA1 item to find that "it had been worded to be closer to willingness to depend. Thus, this item was reassigned for the CFA" (2002, p. 346).

<Table 5.6.4.4c. Intention to Trust: Maximum Likelihood pattern matrix >

	Factor			
	1	2	3	4
GN1_ComfortableInf	.650	.216	-.035	-.003
GN2_CanRelyOn	.742	.055	-.057	.101
GN3_CanCountOn	.994	-.136	-.040	.013
GN4_Would Use	.806	.070	-.046	.021
FA1GN5_UseAgain	.803	.043	.114	-.124
FA2_ActingonINFO	.474	.499	.043	-.084
FA3_UseInfo	.158	.726	-.072	.082
FA4_ConfidentAct	.124	.784	.045	.059
FA5_FeelSecure	.056	.806	.040	.053
FA6_BuyJRpass	.137	.370	.104	-.013
GI1_NameAddr	-.027	.098	-.058	.759
GI2_CreditCard	.103	-.181	.228	.712
GI3_ShareSpecs	-.070	.210	-.086	.628
MP1_Pay4Info	.043	.009	.895	-.093
MP2_ProvCreditCd	-.005	-.026	.762	.219
MP3_Pay4Consult	-.073	.102	.829	-.085

Extraction Method: Maximum Likelihood.
 Rotation Method: Promax with Kaiser Normalization.
 a Rotation converged in 7 iterations.

<Table 5.6.4.4d. Intention to Trust: Maximum Likelihood structure matrix >

	Factor			
	1	2	3	4
GN1_ComforInfo	.794	.685	.309	.376
GN2_CanRelyOn	.806	.634	.335	.435
GN3_CanCountOn	.883	.595	.343	.386
GN4_Would Use	.848	.663	.331	.399
FA1GN5_UseAgain	.826	.620	.394	.334
FA2_ActingonINFO	.823	.826	.359	.390
FA3_UseInfo	.704	.857	.285	.448
FA4_ConfidentAct	.752	.918	.393	.505
FA5_FeelSecure	.696	.886	.363	.475
FA6_BuyJRpass	.450	.501	.278	.284
GI1_NameAddr	.372	.409	.414	.757
GI2_CreditCard	.394	.301	.634	.811
GI3_ShareSpecs	.339	.419	.327	.641
MP1_Pay4Info	.384	.295	.861	.461
MP2_ProvCreditCd	.400	.326	.881	.657
MP3_Pay4Consult	.314	.285	.782	.421

Extraction Method: Maximum Likelihood.
 Rotation Method: Promax with Kaiser Normalization.

5.6.4.5 Trust Exogenous Factors

I also conducted Principal Component Analysis with varimax rotation³² on three exogenous variables: personal innovativeness, perceived site quality, and web experience. McKnight et al. identified these three existing e-commerce constructs related to trust. Personal innovativeness reflects “confidence or optimism regarding adoption of new ideas or technologies” (Agarwal 1998). A well-known developmental psychologist, Erik Erikson argued that trust allows one to adapt and to learn new things (Erikson 1950; 1968). In other words, a person high in trust is usually more innovative. Thus, disposition to trust positively influences personal innovativeness. McKnight et al. argued that perceived website quality is positively related to trusting beliefs and intentions, because one would assume if the quality of a website was high, the web vendor would have positive attributes, and one would form trusting intentions (McKnight et al. 1998).

Web experience is also considered to be positively related to institution-based trust because “experience with the object of trust promotes trust in the object” (Blau 1964 & Luhmann 1979). General Internet experience will promote “a feeling that dealing with the Web is proper and normal” (McKnight et al. 2002).

In my PCA analysis, these three items strongly loaded under the respective factors at higher than 0.739 except the PI4 that loaded at 0.559.³³ (Table 5.6.4.5) The PI4 question was negatively phrased and thus reverse coded. It is often reported that

³² Varimax rotation is used for factors that are considered not correlated each other.

³³ PI4 item asked, “*In general, I am not interested in trying out new websites.*”

negatively phrased items have lower loading than other items. Thus, PCA analysis confirmed that these three constructs are of clearly different properties. These three constructs are used to verify nomological validities of the trust model.

<Table 5.6.4.5. Exogenous Factors Principal Component Analysis>
Rotated Component Matrix(a)

	Component		
	1	2	3
PI1_Like2ExplorNewSite	.228	.790	.040
PI2_VisitNewSite	.103	.866	-.005
PI3_First2Try	-.002	.755	.125
PI4_NotInterestd	-.001	.559	-.060
PI5_IfTimeExplore	.175	.764	.110
PSQ1_Technical	.842	.116	.014
PSQ2_ResembleSite	.739	.139	-.043
PSQ3_SimpleNavi	.897	.029	.007
PSQ4_Easy2FindInfo	.863	.102	-.052
WebExpDay	-.040	.121	.877
SocialNetDay	-.020	-.008	.894

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 4 iterations.

5.6.4.6 Summary of Principal Component Analysis

The results of my PCA analysis replicated McKnight et al.'s 2002 study. Fifty-four trust-question items proved to appropriately load on the right factors. A closer look at each higher trust construct within itself (disposition to trust, institution-based trust, trusting beliefs, and trusting intentions) showed cross-loadings only on a small number of items.

Here are a summary of the results:

- “Disposition to trust” items strongly loaded with right components and no crossloading. The four subconstructs of “disposition to trust” (benevolence, integrity, competence, and trusting stance) were cleanly differentiated in both pattern and structure matrices.
- “Institution-based trust” items showed clean and strong loadings of above 0.80 coefficient in most items. Structural assurance items loaded high at around 0.90. There were only two crossloadings in benevolence and integrity items.
- All “trusting beliefs” items loaded at above the absolute value of 0.8, showing strong cohesiveness among trusting belief items, except one item that loaded both on benevolence and integrity at about 0.5.³⁴
- “Trusting intentions” items from three subconstructs strongly loaded together mostly at above 0.80 upon a PCA four-factor solution. Items from “follow advice” subconstruct showed cross-loadings. However, these cross-loadings were resolved when I performed another estimation method, Maximum Likelihood, to “trusting intention” items. The ML results clearly separated each subconstruct. Thus my results replicated the 2002 original study.
- Three exogenous factors, which are related to trust factors, separately loaded and I found no cross-loading. The lowest loading item was 0.559 for the negatively phrased personal innovativeness question item. The PCA demonstrated these exogenous factors were three distinctive separate factors.

³⁴ In my pilot study, all three trusting belief items cleanly loaded on intended subconstructs.

As shown above, my study successfully replicated the PCA results of McKnight et al. and empirically demonstrated that these sixteen trust subconstructs are indeed sustainable, differentiating subconstructs even in a different context (a tourism context) from McKnight et al.'s original study.

5.6.5 McKnight et al. Trust Model – Confirmatory Factor Analysis

Having conducted the principal component analysis, McKnight et al. performed Confirmatory Factor Analysis (CFA). CFA is a type of structural equation modeling and is often used for model testing. CFA examines patterns of interrelationships among several latent constructs. In a CFA, no specific directional relationships are assumed between the constructs, only that these constructs are potentially correlated with one another (Raykov & Marcoulides 2006).

Thus, I performed CFA with my data to see the structure of each latent trust construct (disposition to trust, institutional trust, trusting beliefs, and intention to trust) suggested by the McKnight model. The analysis assessed convergent and discriminant validities of the subconstructs within each of the four high-level latent-trust constructs.³⁵ The results of my confirmatory factor analysis should show that the structural relationships or

³⁵ Convergent validity is the “measures of constructs that theoretically *should* be related to each other are, in fact, observed to be related to each other”. Discriminant validity is the “measures of constructs that theoretically should *not* be related to each other are, in fact, observed to not be related to each other”. (<http://www.socialresearchmethods.net/kb/constval.php> retrieved on February 17, 2009)

analogous to the McKnight et al. model. If so, the results would empirically validate their 2002 trust model with a new data set, that is, with my data from a tourism context.

The following sections compare the McKnight et al.'s CFA results to my results. For each of the four latent constructs, I will discuss McKnight's results, then the results of my CFA analysis. McKnight et al. used LISREL 8.3 statistical software to analyze their data. I analyze my data by using EQS version 6.1. The original authors set the criteria of fit indices shown in Table 5.6.5.

The lower values of chi-square indicate a better fit for the model testing. The chi-square value is not a reliable fit index for model testing, as the sample size influences the significant *p*-value. The higher the sample size, the more chance of rejecting the model, due to the chi-square test statistic formula (Raykov & Marcoulides 2006, p. 41).³⁶ On the other hand, a *root mean square error of approximation* (RMSEA) index is one of the indices not affected by sample size, and is popularly used for assessment of model fit. A value of the RMSEA of less than 0.05 is indicative of the model's being a reasonable approximation of the data. The description of each fit index is in Appendix S.

³⁶ $T = (N-1)F_{min}$, where *N* is the sample size and F_{min} denotes the minimum value of the fit function for the parameter estimation method used.

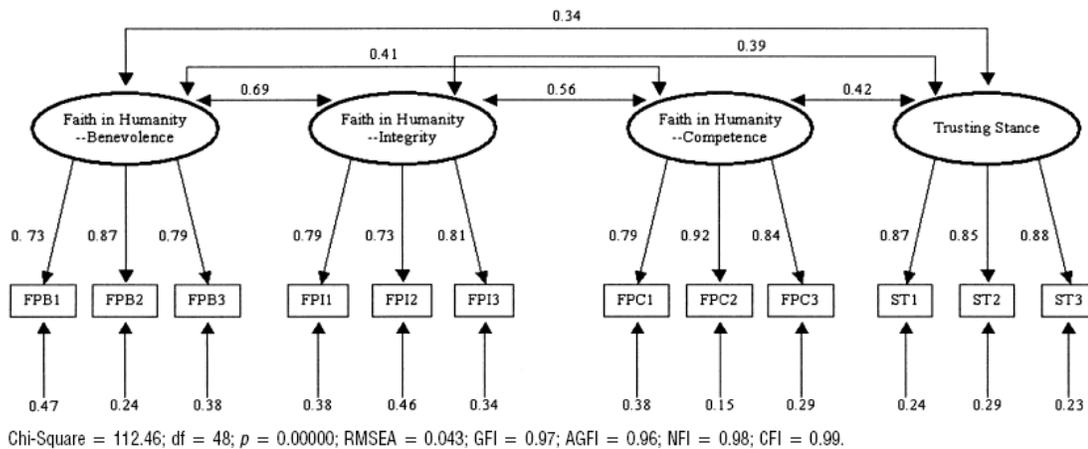
<Table 5.6.5. Criteria of Fit Indices Used by McKnight et al. >

Goodness-of-Fit Index (GFI)	greater than 0.90
Normed Fit Index (NFI)	greater than 0.90
Adjusted Goodness-of-Fit Index (AGFI)	greater than 0.80
Comparative Fit Index (CFI)	greater than 0.90
Root Mean Square of Approximation (RMSEA)	less than 0.05 for an excellent fit lower than 0.08 for a good fit

5.6.5.1 Disposition to Trust

McKnight et al. showed that all path coefficients of “disposition to trust” were significant at $p \leq .05$, and all fit indices indicated good fits. That is, Chi-square = 112.46, df = 48, RMSEA = 0.043, GFI = 0.97, AGFI = 0.96, NFI = 0.98, and CFI = 0.99 (Figure 5.6.5.1a).

In particular, RMSEA of 0.043 indicates an excellent fit for this model. Each path coefficient between an observed item and respective subconstruct was higher than 0.73. The covariances among subconstructs was 0.69 at the highest and 0.34 at the lowest. Covariance of benevolence and integrity was 0.69, indicating these two subconstructs were highly related, and the covariance of benevolence and trusting stance was 0.34.

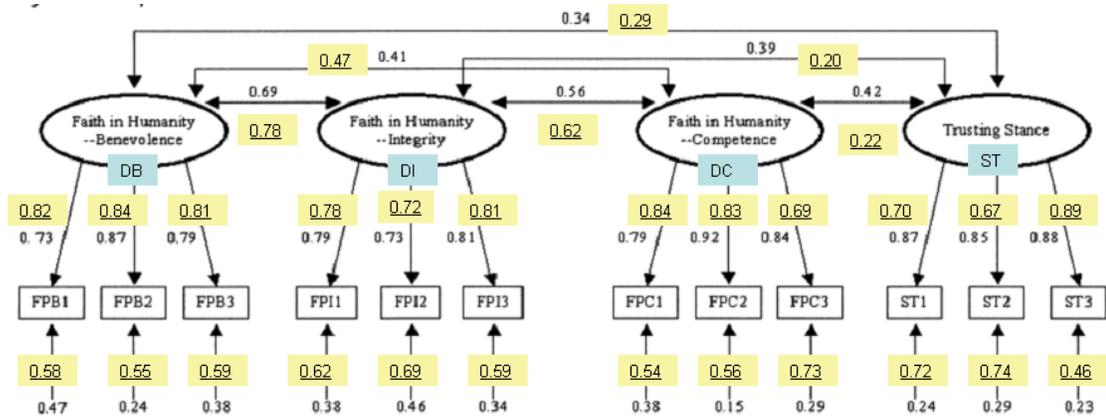


<Figure 5.6.5.1a. McKnight et al. Disposition to Trust Model>

My CFA with the “disposition to trust” construct also showed a good fit (Figure 5.6.5.1b & Table 5.6.5.1). RMSEA was 0.051, slightly above McKnight et al. (0.043). The 90% confidence interval of RMSEA (0.031; 0.069) indicates an excellent fit.³⁷ Chi-square was 82.141 based on 48 degrees of freedom. Other fit indices also showed a very good model fit. That is, GFI = 0.951, AGFI = 0.92, NFI = 0.948, and CFI = 0.978. All paths were also significant just as the original authors’.

The relationships between the observable items to the subconstructs are very similar to McKnight et al.’s results. Coefficients of the first two items of the trusting stance were a little lower than the original authors’, but the rest of the path coefficients between observable items and subconstructs replicated the patterns of the McKnight’s et al. model. The covariance among subconstructs also showed similar patterns. Benevolence and integrity had a 0.777 coefficient, the highest covariance among subconstructs just like the original authors’ study. The error variances in my study are higher than McKnight et al.’s study. Thus, my “disposition to trust” model replicated the structures of the McKnight et al.’s corresponding model with no problem.

³⁷ McKnight et al. 2002 doesn’t report the 90% confidence interval of RMSEA.



Chi-Square = 112.46; df = 48; $p = 0.00000$; RMSEA = 0.043; GFI = 0.97; AGFI = 0.96; NFI = 0.98; CFI = 0.99.

Chi-Square = 82.14 ($p = .00156$), df = 48, RMSEA = 0.051, GFI = 0.95, AGFI = 0.92, NFI = 0.95, CFI = 0.98

Underscored numbers are my results. All paths are significant at the significant level of $p \leq .05$.

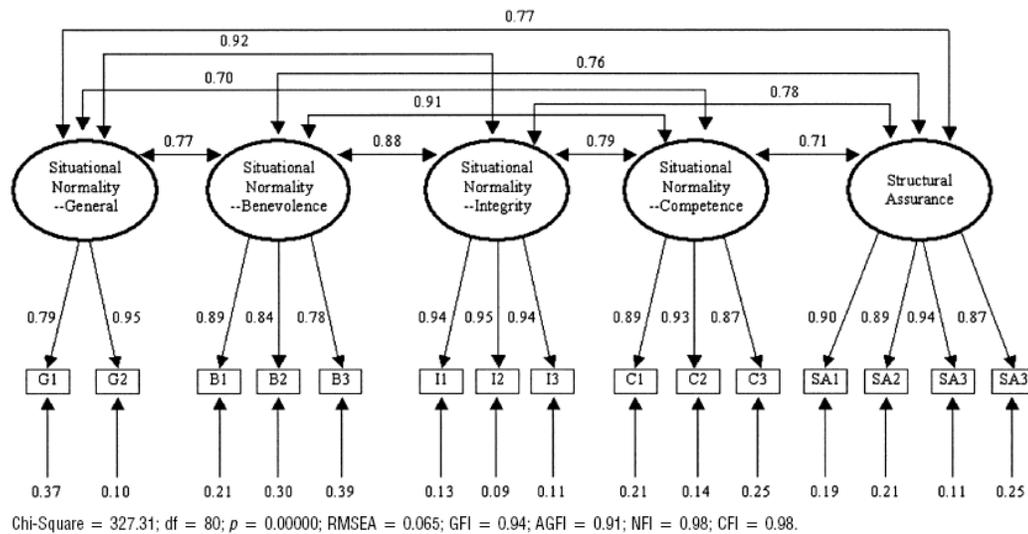
<Figure 5.6.5.1b. My Disposition to Trust Model>

<Table 5.6.5.1. My “Disposition to Trust” Model Goodness of Fit Summary >

GOODNESS OF FIT SUMMARY FOR METHOD = ML	
INDEPENDENCE MODEL CHI-SQUARE = 587.263 ON 66 DEGREES OF FREEDOM	
INDEPENDENCE AIC = 1455.263 INDEPENDENCE CAIC = 1150.316	
MODEL AIC = -13.859 MODEL CAIC = -235.638	
CHI-SQUARE = 82.141 BASED ON 48 DEGREES OF FREEDOM	
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS .00156	
THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 85.710.	
FIT INDICES	
BENTLER-BONETT	NORMED FIT INDEX = .948
BENTLER-BONETT NON-NORMED FIT INDEX	= .969
COMPARATIVE FIT INDEX (CFI)	= .978
BOLLEN'S (IFI) FIT INDEX	= .978
MCDONALD'S (MFI) FIT INDEX	= .940
JORESKOG-SORBOM'S GFI FIT INDEX	= .951
JORESKOG-SORBOM'S AGFI FIT INDEX	= .920
ROOT MEAN-SQUARE RESIDUAL (RMR)	= .067
STANDARDIZED RMR	= .046
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)	= .051
90% CONFIDENCE INTERVAL OF RMSEA	(.031, .069)
RELIABILITY COEFFICIENTS	
CRONBACH'S ALPHA	= .856
RELIABILITY COEFFICIENT RHO	= .918

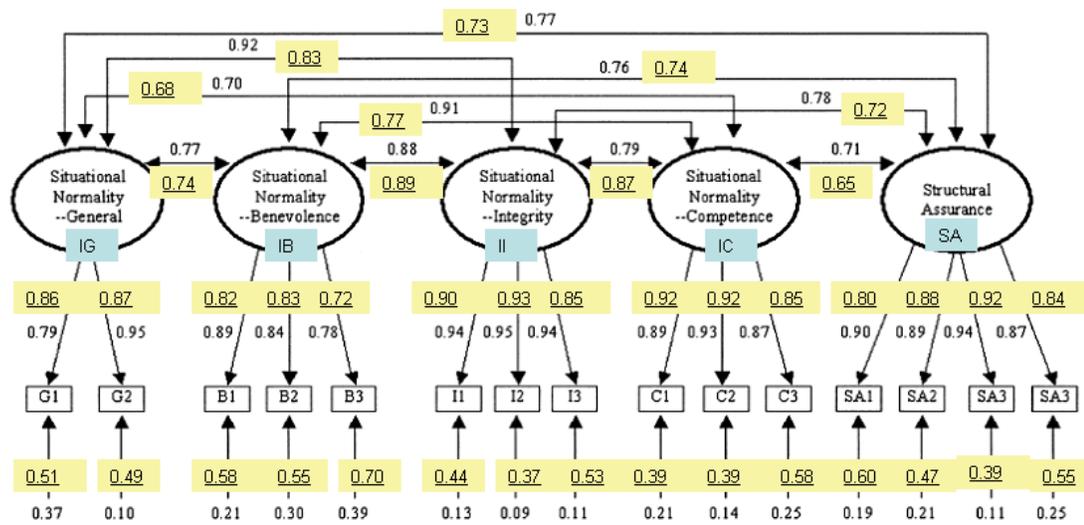
5.6.5.2 Institution-Based Trust

“Institution-based trust” construct consists of five subconstructs—“institution general”, “benevolence”, “integrity”, “competence” and “structural assurance”. The first four subconstructs measure situational normality and the last subconstruct measures structural assurance of the institution. McKnight et al. reported a chi-square of 327.31 and a df of 80, along with RMSEA of 0.065 for the institution-based trust model. An excellent fit index of RMSEA is lower than 0.05, and a good fit is lower than 0.08 (Raykov & Marcoulides 2006). Therefore, the RMSEA of 0.065 for the institution-based trust model indicates a good fit. Other fit indices in the McKnight model also proved that this as a good fit; that is, GFI = 0.94, AGFI = 0.91, NFI = 0.98, and CFI = 0.98. All path coefficients were significant at $p \leq .05$ and all above 0.70 coefficients. The five subconstructs of institution-based trust were also highly related at above a 0.70 covariance coefficient.



<Figure 5.6.5.2a. McKnight et al. Institution-Based Trust Model>

My institution-based trust CFA showed structurally analogous results to McKnight et al. All path coefficients were significant at $p \leq .05$ level and at above a 0.70 coefficient except one path of 0.679. The structures and patterns of relations among subconstructs and survey items were very similar to the original authors'. Chi-square was 291.917 with a $df = 80$. The RMSEA of my institution-based trust model was 0.098, with a 90% confidence interval of RMSEA (0.086; 0.110), indicating slightly less than a good fit. However, other fit indices showed relatively good fit; that is, that GFI = 0.881, AGFI = 0.821, NFI = 0.925, and CFI = 0.944. Therefore, overall the goodness of fit indices were satisfactory and indicated that the institutional trust model is also a robust model in a tourism context.



Chi-Square = 291.92 ($p = 0.00001$), $df = 80$, RMSEA = 0.098, GFI = 0.88, AGFI = 0.82, NFI = 0.93, CFI = 0.94

Underscored numbers are my results. All paths are significant at the significant level of $p \leq .05$.

<Figure 5.6.5.2b. My Institution-Based Trust Model>

<Table 5.6.5.2. My “Institution-Based Trust” Model Goodness of Fit Summary >

```

GOODNESS OF FIT SUMMARY FOR METHOD = ML

INDEPENDENCE MODEL CHI-SQUARE= 3873.781 ON 105 DEGREES OF
FREEDOM

INDEPENDENCE AIC =3663.781    INDEPENDENCE CAIC = 3178.639
MODEL AIC =131.917          MODEL CAIC = -237.715

CHI-SQUARE =291.917 BASED ON 80 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS .00000

THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS
279.475.

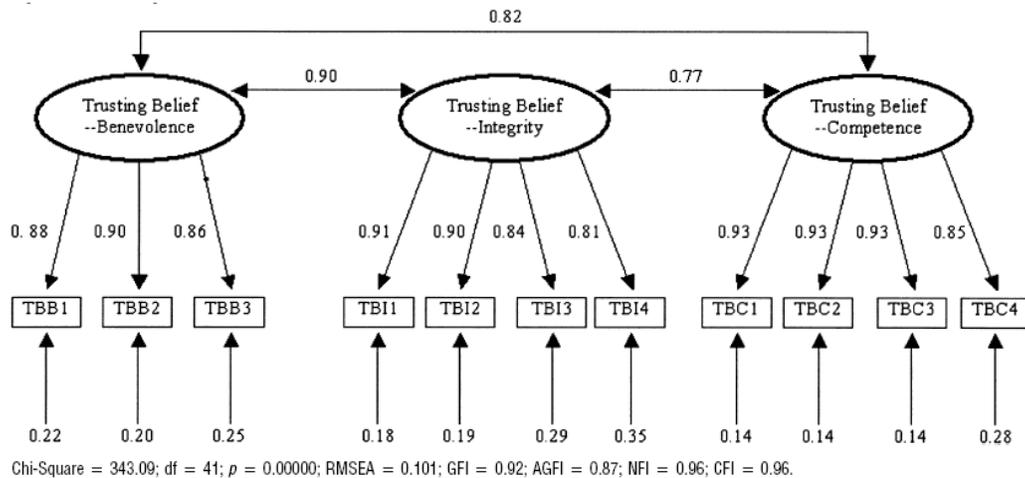
FIT INDICES
-----
BENTLER-BONETT      NORMED FIT INDEX =      .925
BENTLER-BONETT NON-NORMED FIT INDEX =      .926
COMPARATIVE FIT INDEX (CFI) =      .944
BOLLEN'S           (IFI) FIT INDEX =      .944
MCDONALD'S         (MFI) FIT INDEX =      .681
JORESKOG-SORBOM'S GFI FIT INDEX =      .881
JORESKOG-SORBOM'S AGFI FIT INDEX =      .821
ROOT MEAN-SQUARE RESIDUAL (RMR) =      .103
STANDARDIZED RMR =      .052
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) =.098
90% CONFIDENCE INTERVAL OF RMSEA (.086, .110)

RELIABILITY COEFFICIENTS
-----
CRONBACH'S ALPHA =      .955
RELIABILITY COEFFICIENT RHO =      .971
    
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5.6.5.3 Trusting Beliefs

The “trusting beliefs” construct consists of three subconstructs: “benevolence”, “integrity” and “competence”. “Trusting beliefs” is concerned with specific trusting beliefs toward a particular e-vendor. In my study, this is the specific trusting beliefs toward the “Guide to Japan” website.

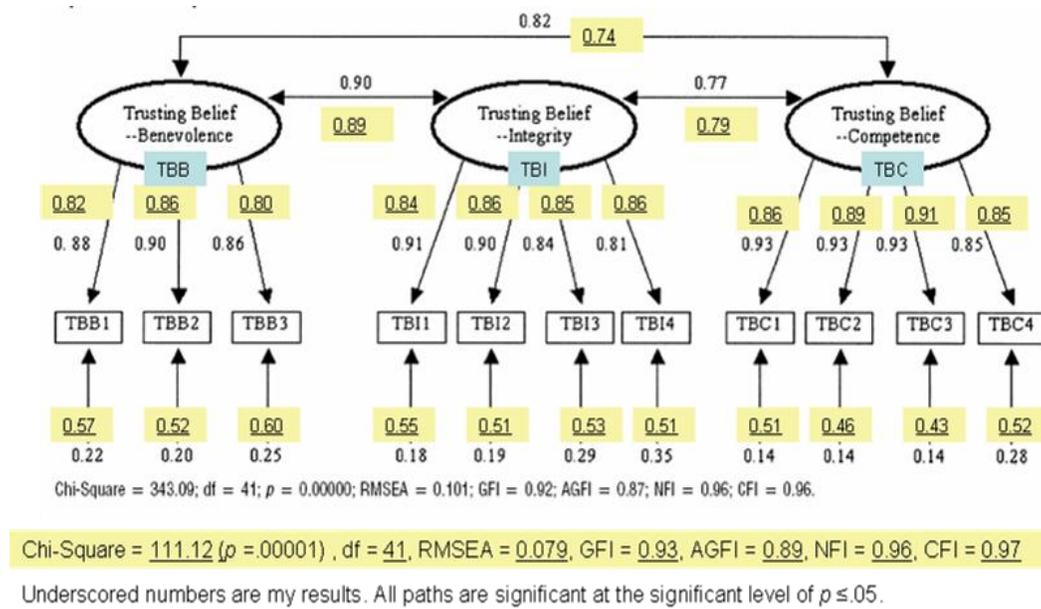
The McKnight et al. study showed a good fit of the trusting beliefs model with indices of GFI=0.92, AGFI=0.87, NFI=0.96, and CFI=0.96 and a chi-square of 343.09 with 41 degrees of freedom (Figure 5.6.5.3a). All coefficients were significant at $p \leq .05$ level and high above 0.80, but their RMSEA was 0.101, indicating the fit was slightly off from a “good fit”.



<Figure 5.6.5.3a. McKnight et al. Trusting Beliefs Model>

My results for the “trusting beliefs” model showed a better fit than McKnight et al. My chi-square was 111.121 with 41 degrees of freedom, whereas McKnight’s chi-square of trusting beliefs was 343.09, i.e. three times higher than my results. For model testing, the smaller the chi-square value, the better fit the data is to the model. In addition, my RMSEA=0.079 with 90% confidence interval of RMSEA (0.061; 0.096) was within the range of a “good fit”, and other goodness of fit indices (GFI = 0.933, AGFI = 0.892, NFI = 0.958, CFI = 0.973) indicated that the model had a good fit (Figure 5.6.5.3b & Table 5.6.5.3). The patterns and the structure of survey items and subconstructs within the trusting construct were very much like McKnight et al.’s model as shown below (Figure

5.6.5.3b). Thus, my CFA results not only replicated McKnight et al.'s results but showed a better fit to the model.



<Figure 5.6.5.3b. My Trusting Beliefs Model>

<Table 5.6.5.3. My “Trusting Beliefs” Model Goodness of Fit Summary >

```

GOODNESS OF FIT SUMMARY FOR METHOD = ML

INDEPENDENCE MODEL CHI-SQUARE = 2635.226 ON 55 DEGREES OF
FREEDOM

INDEPENDENCE AIC = 2525.226 INDEPENDENCE CAIC =2271.104
ODEL AIC = 29.121 MODEL CAIC = -160.315

CHI-SQUARE = 111.121 BASED ON 41 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS.00000

THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS
109.010.

FIT INDICES
-----
BENTLER-BONETT NORMED FIT INDEX = .958
BENTLER-BONETT NON-NORMED FIT INDEX = .964
COMPARATIVE FIT INDEX (CFI) = .973
BOLLEN'S (IFI) FIT INDEX = .973
MCDONALD'S (MFI) FIT INDEX = .881
JORESKOG-SORBOM'S GFI FIT INDEX = .933
JORESKOG-SORBOM'S AGFI FIT INDEX = .892
ROOT MEAN-SQUARE RESIDUAL (RMR) = .035
STANDARDIZED RMR = .030
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) = .079
90% CONFIDENCE INTERVAL OF RMSEA (.061, .096)

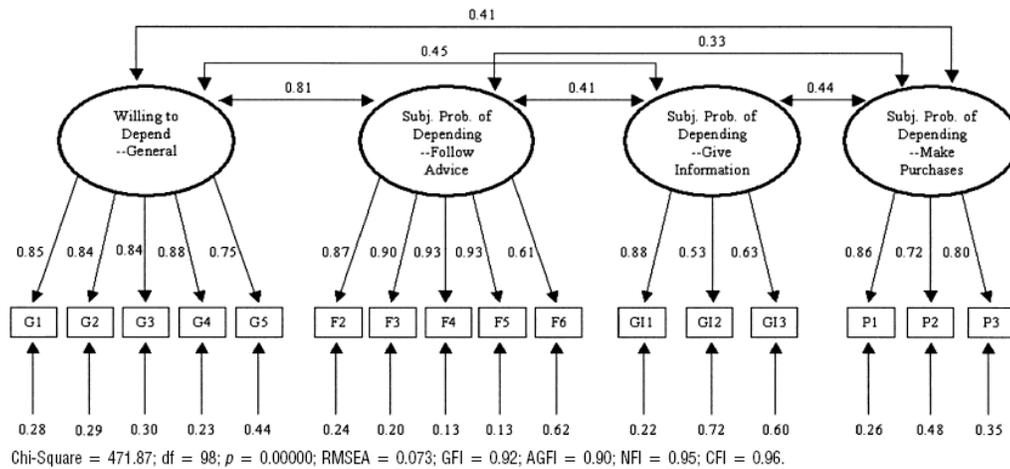
RELIABILITY COEFFICIENTS
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CRONBACH'S ALPHA = .948
RELIABILITY COEFFICIENT RHO = .962

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5.6.5.4 Trusting Intentions

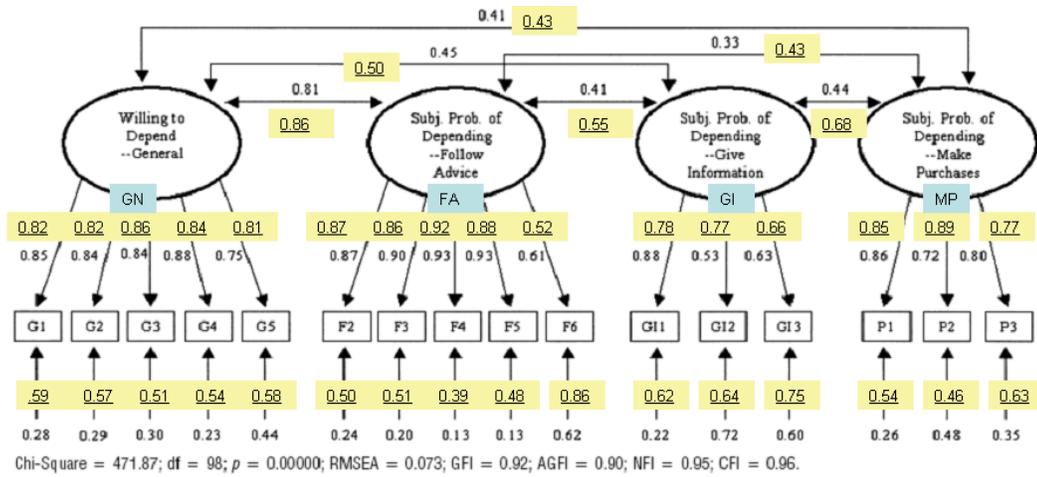
McKnight’s “trusting intentions” model demonstrated a good fit”: RMSEA=0.073, GFI=0.92, AGFI=0.90, NFI=0.95, and CFI=0.96. The chi-square was 471.87 with 98 degrees of freedom (Figure 5.6.5.4a). All paths were significant, but the coefficients of these paths among subconstructs themselves were lower than other subconstructs. Five

of six covariance coefficients were below 0.50, indicating properties of these subconstructs were more discriminant than other subconstructs in the three prior latent trust constructs.



<Figure 5.6.5.4a. McKnight et al. Trusting Intentions Model>

My “intention to trust” model demonstrated results very similar to McKnight’s (Figure 5.6.5.4b). My RMSEA was 0.089 with 90% confidence interval of (0.78, 0.100); that is not an excellent fit, but close to a good fit of 0.08. The chi-square was 310.656 with 98 degrees of freedom. Other indices indicated a satisfactory fit; GFI = 0.881, AGFI = 0.834, NFI = 0.908, and CFI = 0.935. The structures and patterns produced very similar results to McKnight et al.’s. My covariance coefficients were also relatively low, and where coefficients were low relative to other paths in McKnight’s, my results were also low. Thus, my data also supported the fourth latent trust construct of McKnight’s theoretical model.



Chi-Square = 310.66 ($p = .00001$) , df = 98, RMSEA = 0.089, GFI = 0.88, AGFI = 0.83, NFI = 0.91, CFI = 0.94

Underscored numbers are my results. All paths are significant at the significant level of $p \leq .05$.

<Figure 5.6.5.4b. My Trusting Intentions Model>

<Table 5.6.5.4. My “Trusting Intentions” Model Goodness of Fit Summary >

GOODNESS OF FIT SUMMARY FOR METHOD = ML	
INDEPENDENCE MODEL CHI-SQUARE = 3373.693 ON 120 DEGREES OF FREEDOM	
INDEPENDENCE AIC = 3133.693 INDEPENDENCE CAIC = 2579.244 MODEL AIC = 114.656 MODEL CAIC = -338.144	
CHI-SQUARE = 310.656 BASED ON 98 DEGREES OF FREEDOM PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS .00000	
THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 298.054.	
FIT INDICES	

BENTLER-BONETT	NORMED FIT INDEX = .908
BENTLER-BONETT	NON-NORMED FIT INDEX = .920
COMPARATIVE FIT INDEX (CFI)	= .935
BOLLEN'S (IFI) FIT INDEX	= .935
MCDONALD'S (MFI) FIT INDEX	= .680
JORESKOG-SORBOM'S GFI FIT INDEX	= .881
JORESKOG-SORBOM'S AGFI FIT INDEX	= .834
ROOT MEAN-SQUARE RESIDUAL (RMR)	= .096
STANDARDIZED RMR	= .045
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)	= .089
90% CONFIDENCE INTERVAL OF RMSEA	(.078, .100)
RELIABILITY COEFFICIENTS	

CRONBACH'S ALPHA	= .919
RELIABILITY COEFFICIENT RHO	= .951

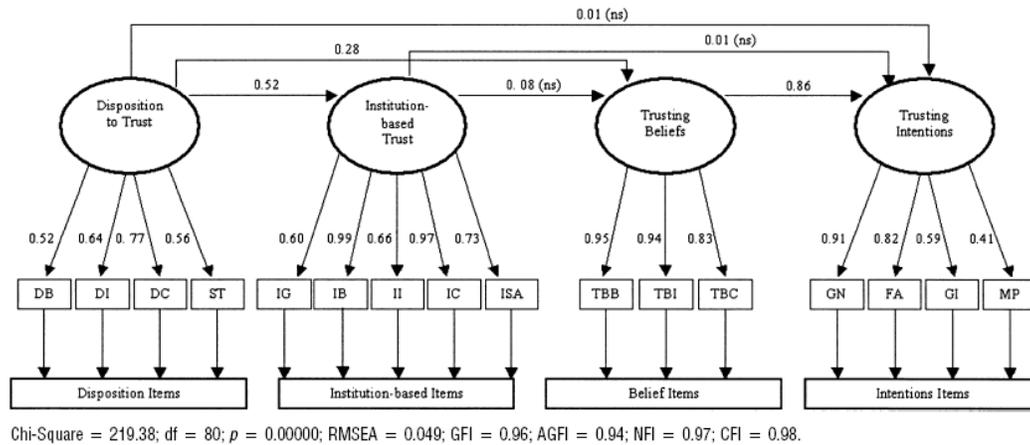
5.6.5.5 Second Order Model

McKnight et al.'s second order model considers all four higher latent trust constructs as one integrated trust model. It examines the structure and relationships among these four trust constructs. Contrary to the previous four confirmatory factor analysis to each higher trust construct, the directionality of the relationship is specified in the second order model according to the theory. The theory suggests the linear causal relationships among these four trust constructs. The theory maintains that, for a person to come to trust a webpage (in this study, "intend to trust" is a surrogate construct in lieu of actual behaviors), "disposition to trust" (the person's level of trust across various situations) will influence the formation of the "institution-based trust" (how the person trusts e-vendors in general). Accordingly, "disposition to trust" and "institution-based trust" influence specific trusting beliefs toward the e-vendor in question, which subsequently influences the formation of the person's "trusting intentions". "Disposition to trust" is considered to influence all of the other three trust constructs, and "institutional trust" is considered to influence both "trusting beliefs" and "trusting intentions".

McKnight et al.'s second order model showed an excellent fit: that is, chi-square = 219.38, $df = 80$, RMSEA = 0.049, GFI = 0.96, AGFI = 0.94, NFI = 0.97, and CFI = 0.98 (Figure 5.6.5.5a).³⁸ However, contrary to what their theory suggested, path coefficients from "institution-based trust" to "trusting beliefs", and from "disposition to trust" to "trusting intentions", and from "institution-based trust" to "trusting intentions", were *not*

³⁸ McKnight et al.'s study reported the degrees of freedom as 80 for the second order model. My analysis showed the degrees of freedom 98.

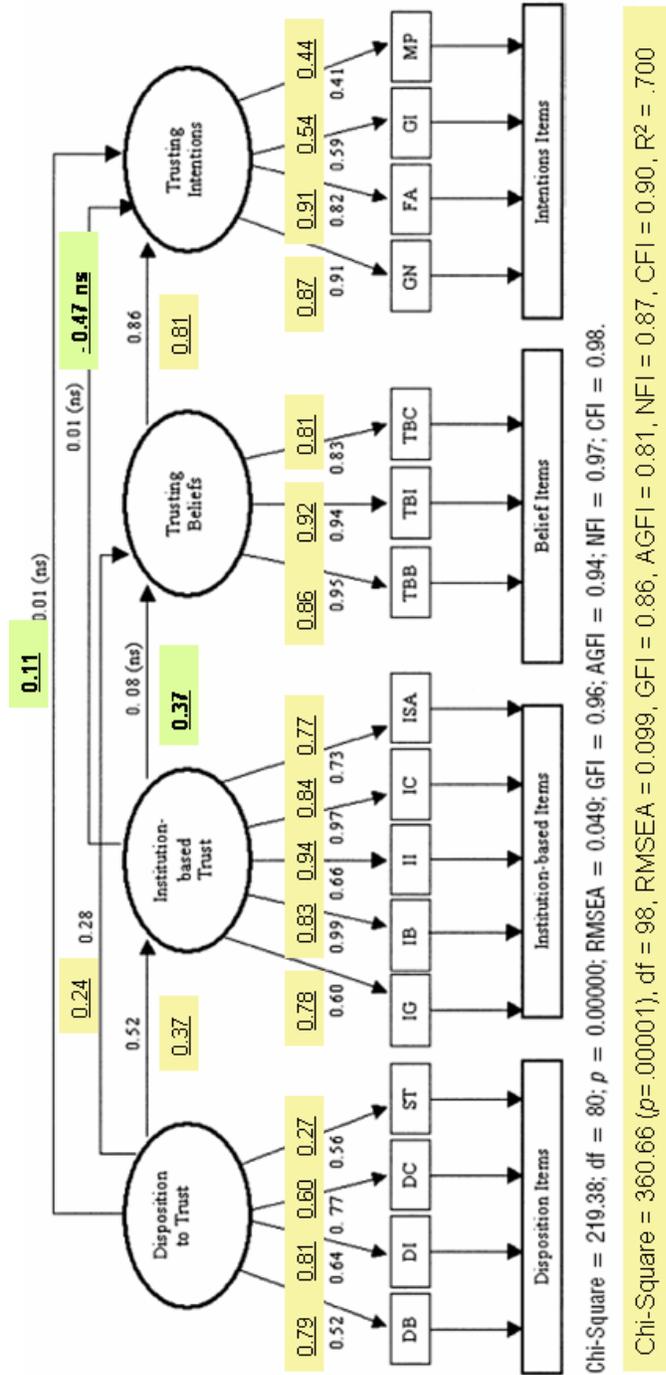
significant. However, the path coefficient from “trusting beliefs” to “trusting intentions” was 0.86 at significant level.



<Figure 5.6.5.5a. McKnight et al. Second Order Model>

The structure of my second order model was more supportive of the McKnight theory than McKnight’s results (Figure 5.6.5.5b & Table 5.6.5.5). I found only one non-significant path in between “institution-based trust” and “trusting intentions” with a negative value of -0.47 (ns). All other paths that the theory suggests were significant at a $p \leq .05$ level in my study. Two other non-significant paths in the McKnight et al. study showed significant levels in my study: 0.368 and 0.110 for “institution trust to trusting beliefs” and “disposition to trust to trusting intentions” paths respectively. My results showed the chi-square of 360.661 based on 98 degrees of freedom. My model fit was not as good as McKnight’s; RMSEA = 0.099, 90% Confidence interval of RMSEA (0.088; 0.109), GFI = 0.863, AGFI = 0.811, NFI = 0.872, and CFI = 0.903. However, my empirical data supported all of the relationships among constructs in the model, except

the relationship between “institution-based trust” and “trusting intention” constructs that the McKnight et al. study also found non-significant.



Underscored numbers are my results. All paths are significant at the significant level of p ≤ .05.

<Figure 5.6.5.5b. My Second Order Model>

<Table 5.6.5.5. My “Second Order Trust Model” Goodness of Fit Summary >

GOODNESS OF FIT SUMMARY FOR METHOD = ML	
INDEPENDENCE MODEL CHI-SQUARE = 2824.171 ON 120 DEGREES OF FREEDOM	
INDEPENDENCE AIC = 2584.171	PENDENCE CAIC = 2029.723
MODEL AIC =164.661	MODEL CAIC = -288.138
CHI-SQUARE = 360.661 BASED ON 98 DEGREES OF FREEDOM	
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS .00000	
THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 347.787.	
FIT INDICES	

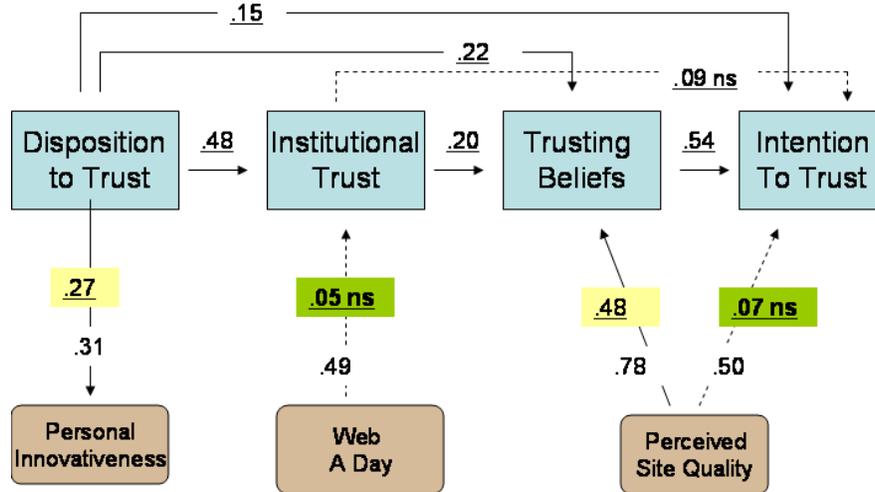
BENTLER-BONETT	NORMED FIT INDEX = .872
BENTLER-BONETT	NON-NORMED FIT INDEX = .881
COMPARATIVE FIT INDEX (CFI)	= .903
BOLLEN'S	(IFI) FIT INDEX = .904
MCDONALD'S	(MFI) FIT INDEX = .621
JORESKOG-SORBOM'S	GFI FIT INDEX = .863
JORESKOG-SORBOM'S	AGFI FIT INDEX = .811
ROOT MEAN-SQUARE RESIDUAL (RMR)	= .114
STANDARDIZED RMR	= .079
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)	= .099
90% CONFIDENCE INTERVAL OF RMSEA	(.088, .109)
RELIABILITY COEFFICIENTS	

CRONBACH'S ALPHA	= .886
RELIABILITY COEFFICIENT RHO	= .921

5.6.5.6 Trust Exogenous Factors

The McKnight et al. trust model has three exogenous variables: personal innovativeness, web experience, and perceived site quality. I consider these three non-trust constructs to be related to online trust formation from the past literature, and established the

nomological validity of the model.³⁹ McKnight et al. demonstrated that these three constructs are positively related to trust constructs.



The number in black are from the McKnight et al. study. My results are underscored.
 Df = 11 , Chi-square= 57.89 , Fit Indices CFI= .886, RMR= .124, RMSEA=.125, Cronbach's alpha= .598
 GFI= .944 , AGFI= .857

<Figure 5.6.5.6. Exogenous Variables – Confirmatory Factor Analysis>

Figure 5.6.5.6 shows the results of my confirmatory factor analysis of exogenous variables with trust constructs. I found the same positive relationships as McKnight’s in the relationships between disposition to trust and personal innovativeness, and between perceived site quality and trusting beliefs. Disposition to trust was a positive predictor of personal innovativeness, and perceived site quality positively contributed to trusting beliefs.

³⁹ Nomological validity is a way to establish construct validity using nomological network, within which constructs should behave in the way they should according to the theory (Cronbach & Meehl 1955).

However, web experience didn't show any significant link to institutional trust in my study. My study measured web experience by the hours that the subjects used the Internet per day. My participants used the Internet 3.5 hours a day on average, whereas the participants in the year 2002 were on the Internet 1.6 hours *a week* on average. Also, perceived site quality showed non-significant relationship to intention to trust in my study.

Since Internet environments rapidly change, the nomological network of the Internet constructs can be a moving target. Therefore, the fact that my results did not replicate McKnight et al.'s study does not necessarily mean that my data or the model is not valid. The noticeably large difference in web use between my participants and McKnight et al.'s participants (today they use 15.3 times more) might indicate that mere web experience might no longer be a good nomological construct of the Internet model with today's population.

5.6.5.7 Summary of Confirmatory Factor Analysis

As I have shown above, the results of my confirmatory factor analysis showed *better* support for the trust model than the original investigators. Thus, my study empirically demonstrated the robustness of McKnight et al.'s trust model in a different context, i.e. with different subjects, different tasks, a different website, and in a different time in history, i.e. six years later than the original publication of the study.

Below is the summary of my confirmatory factor analyses of its four higher trust constructs and the second order model where all four trust constructs are integrated into one trust model.

- “Disposition to Trust” Confirmatory Factor Analysis

My CFA with the “disposition to trust” construct showed an excellent fit to the model.

My RMSEA was slightly higher (0.051) than McKnight et al. (0.043), but all paths were significant just as were the original authors'. The relationships and the patterns between my survey items and their relationship to the subconstructs were very similar to

McKnight et al.'s. The covariance among subconstructs also showed similar patterns.

Thus, my “disposition to trust” model cleanly replicated the structures and relationships of the McKnight et al. “disposition to trust” model.

- “Institution-Based Trust” Confirmatory Factor Analysis

My CFA on institution-based trust also showed structurally similar results to McKnight et al. All path coefficients were significant mostly at above 0.70. The structures and patterns of relationships among subconstructs and survey items replicated the original authors’. The RMSEA of my institution-based trust model was 0.098, indicating not such a “good fit”. However, other fit indices showed a relatively good fit. Therefore, my results also indicated that the institutional trust model is also a good model in a tourism context.

- “Trusting Beliefs” Confirmatory Factor Analysis

My results on the “trusting beliefs” model showed a *better* fit than McKnight et al. My RMSEA=0.079 was better than McKnight et al.’s (0.101) and within the range of a “good fit”. Other goodness of fit indices (NFI = 0.958; CFI = 0.973) indicated that the model had an excellent fit. The patterns and the structures of survey items and subconstructs were very much like McKnight et al.’s “trusting beliefs” model. Thus, my “trusting beliefs” results replicated and supported the trust model better than the original authors’.

- “Intention to Trust” Confirmatory Factor Analysis

Again, my “intention to trust” model was very similar to McKnight’s. My RMSEA was 0.089; not an excellent fit, but close to a good fit of 0.08. The structures and patterns showed very similar results to that of McKnight et al. Thus, my data also supported the fourth latent trust construct of McKnight’s theoretical model.

- “Second Order Trust Model” Confirmatory Factor Analysis

The structure of my second-order model was *more* supportive of the McKnight theory than McKnight’s own study. Only one path that the theory suggests to be significant turned out non-significant in my results. McKnight et al. found three non-significant paths that the model suggests should be significant. Neither study showed the path between “institutional trust” and “intention to trust” to be significant.

Two non-significant paths in the McKnight et al. results proved to be significant in my study: the “institution trust” to “trusting beliefs” and “disposition to trust” to “trusting intentions” paths. Even though my model fit (RMSEA = 0.099) was not as good as McKnight’s (RMSEA = 0.049), my dataset was a better approximation of the trust model in terms of path significance and relationships among constructs.

Thus, my data empirically supported all the constructs’ relationships in the model, except the link between “institution-based trust” and “trusting intention”.

5.6.5.8 Summary of the McKnight et al. Replication

Previous sections in this dissertation demonstrated that my dataset successfully replicated McKnight et al.’s findings, and sometimes my results came out better than the original author’s. Principal component analysis demonstrated fifty-four trust survey items loaded on the sixteen subconstructs while discriminating one another. Cross-loadings were only

on a small number of items. Loadings were generally strong. The PCA with trusting intentions had some cross-loadings, but they were resolved by conducting another analysis with maximum likelihood.

Confirmatory factor analysis tested theories that the model suggests. Each higher trust construct was tested and finally all four trust constructs were integrated into the second order trust model. Testing each higher trust construct showed very similar patterns and relationships to McKnight et al.'s. My second order model supported their trust model better than McKnight et al.'s. Two non-significant paths in McKnight et al.'s model were significant with my data.

Some nomological links replicated McKnight et al.'s findings, but the web experience differed. Likewise, perceived site quality did not show a positive link to "intention to trust" any longer. I consider the growth of internet usage to have caused these differences, but the differing results are not to discount the validity of the model.

My results demonstrated that the McKnight et al. trust model is robust and valid in a different context; i.e. with a tourism website, with different subjects, and with tasks in a different time in history.

Having successfully replicated the trust model, next I will show the results of my analysis with the culture dataset that Srite and Karahanna's instrument collected.

5.6.6 Srite and Karahanna Culture Instrument

The objective of my research is to examine the effects of culture on online initial trust, and extend McKnight et al.'s trust model into one integrated trust and culture model. Therefore, in order to measure culture in my study, I used Srite and Karahanna's instrument (2006). Srite and Karahanna stated that their instrument was *mostly* derived from Hofstede (1980a) and Dorfman and Howell (1988), and that their instrument measures culture at an individual level. As discussed in the literature section earlier this paper, the culture scales developed by Hofstede measure the dimensions of individualism/collectivism, power distance, uncertainty avoidance, and masculinity/femininity.⁴⁰ The Hofstede's culture dimensions are the most widely used culture measures in academic research, and more than 61 replications of his study have been conducted throughout the world (Søndergaard 1994). These dimensions are also commonly used in IT studies involving culture (Leidner & Kayworth 2006).

Hofstede conducted his original study through the IBM subsidiaries in 40 countries (1980a). The results were aggregated as an average of the respective country index on the dimensions of culture: individualism/collectivism, power distance, uncertainty avoidance, and masculinity/femininity. Therefore, The level of the analysis was at the national level. Robinson (1950) argues that applying a result from the national

⁴⁰ The long- versus short-term orientation, also called, the Confucius dimension, was added to the Chinese Value Survey (CVS) in 1985 as a fifth dimension of national culture.

(population-level or ecological) data to an individual level may be a misuse of statistical data.⁴¹

Dorfman and Howell (1988), who studied cultural dimension of leadership, criticized Hofstede's methodology and his scales. They argued that Hofstede's scales have significant cross loading, and that the ecological level of analysis— i.e. “mean responses” for each country rather than individual responses as the unit of analysis – “severely restricts the meaningfulness and the usefulness of the scales for researchers” who operate at the individual level. However, Dorfman agreed with Triandis (1982) in that the four dimensions identified by Hofstede make sense and are important cultural characteristics. Building upon Hofstede's work, Dorfman and Howell extended the scales to the individual level. And Srite and Karahanna adapted many of their survey items from these Dorfman and Howell's scales.

In order to examine the validity of Srite and Karahanna's culture instrument with my data, I performed reliability tests and factor analysis. I used Cronbach's alpha test for reliability testing.⁴² I performed factor analysis with the maximum likelihood method with oblimin rotation in order to see if the survey items represent the same underlying

⁴¹ We commit “ecological fallacy” when we deduce conclusions about individuals from population-level data. For example, if the math score in school A is higher than school B on average, the math score of a student from school A is not necessarily higher than the score of a student from school B. When we make an assumption on a math score of an individual from a school's overall score, we are committing an “ecological fallacy”. On the other hand, if we make a generalization about a group based on an individual from that group, we are making a hasty generalization.

⁴² Cronbach's alpha test is the most commonly used test for reliability. Cronbach's alpha test is an index of the internal consistency reliability of the instrument that measures the extent that it produces stable, consistent measurement. Alpha coefficients range in value from 0 to 1.0. The higher the score, the more reliable the scale is.

constructs that they intend to measure. In the following sections, I will report the results of Cronbach's alpha reliability test and the results of factor analysis. At the end of this chapter, I will discuss the analysis of the uncertainty avoidance variable.

5.6.6.1 Reliability Test

Table 5.6.6.1.1 shows the results of the reliability tests with my data only for the survey items that Srite and Karahanna used for their analysis. The reliability of uncertainty avoidance was 0.67, but the other reliability alpha coefficients were above 0.75. Nunnally stated 0.7 to be an acceptable reliability coefficient and sometimes lower thresholds are used in the literature (1978). Therefore, Srite and Karahana's culture instrument showed a good reliability with my data.

<Table 5.6.6.1.1 Final Study Reliability Cronbach's Alpha for the Items Srite & Karahanna Used>

Reliability Test: Cronbach's Alpha (N=276)		
Masculinity/Femininity (MF)	*3 items (MF 1,3,4)	.779
Individualism/Collectivism (KIC) ⁴³	*6 items (all items)	.754
Power Distance (PD)	*5 items(PD1-5)	.779
Uncertainty Avoidance (UA)	*2 items (UA1,2)	.670

Table 5.6.6.1.2 shows the reliabilities for all survey items for both my final study and pilot studies. As we can see in the table, the items that Srite and Karahanna selected for their analysis do not necessarily have the highest alpha in both of my studies. The

⁴³ The notation, KIC, is used for the individualism/collectivism dimension in my paper rather than Hofstede's IC notation, since IC is already used for the 'institution-competence' in the McKnight et al. trust model.

Masculinity/Femininity (MF) reliability would have been higher if the MF item 1 through 4 (.791), or all MF items (.787) were selected than the subset Srite and Karahanna selected (.779). The Power Distance (PD) reliability (.779) would have slightly improved if six (.789) or all (.788) items were selected. For the Uncertainty Avoidance (UA) reliability, the UA items 1 through 3 would have performed better (.775) than the items (UA1&2) Srite and Karahanna used for their final analysis (.670).

<Table 5.6.6.1.2. Final & Pilot Studies Reliability for All Culture Items>

Reliability Test: Cronbach's Alpha		Final Study (N=276)	Pilot Study (N=55)
Masculinity/ Femininity	5 items (all)	.787	.801
	*3 items (MF 1,3,4)	.779	.727
	4 items (MF1-4)	.791	.787
	3 items (MF1-3)	.749	.768
Individualism/ Collectivism	*6 items (KIC 1-6)	.754	.729
Power Distance	7 items (all)	.788	.781
	6 items(PD1-6)	.789	.724
	*5 items(PD1-5)	.779	.690
	4 items(PD1-4)	.776	.702
Uncertainty Avoidance	6 items (all)	.383	.109
	*2 items (UA1,2)	.670	.686
	3 items (UA1-3)	.775	.691
	4 items (UA1-4)	.681	.338
	5 items (UA1-5)	.504	.011
	3 items (UA 4-6)	-.016	.106

(* denotes the items that Srite and Karahanna used for their final analysis. Shaded shows the highest alpha in the respective culture dimension.)

Therefore, for my analysis I will use all the items in the scale to analyze masculinity/femininity, individualism/collectivism, and power distance dimensions, rather than just the subset selected by Srite and Karahanna. As shown in this section, the

reliabilities are higher for the full scale with my data in the first three culture dimensions than the subset Srite and Karahanna selected.

However, UA reliability is not satisfactory when all six items are included. Therefore, I will further discuss the psychometric properties of UA items in a later section of this chapter, after Factor Analysis.

5.6.6.2 Factor Analysis

Having done reliability testing, I performed factor analysis using Maximum Likelihood with oblimin rotation on all 24 culture items. Factor analysis helps to determine whether the survey items represent underlying constructs that they are supposed to measure, and to see whether pertinent survey items load together while respective constructs are differentiated from one another. I performed two factor analyses: the first factor analysis with eigenvalues set at 1.0,⁴⁴ and the second by specifying the four-factor solution, which is the number of factors that the culture theory suggests. I chose oblimin rotation, since four-culture factors are considered to be correlated (House et al. 2004).

In the first factor analysis set at eigenvalues 1.0, six factors were extracted. (Tables 5.6.6.2a & 5.6.6.2b: Bracketed italicized items are what Srite and Karahanna dropped from their final analysis.) All of the masculinity/femininity-dimension items in both the pattern and structure matrices cleanly loaded together. The items from individualism and collectivism loaded onto the same two factors in both matrices. Power distance items loaded together with the exception of one item (PD6). Uncertainty avoidance items loaded together except the last items (UA5; UA6). The first three UA items loaded together strongly at above 0.7, but the rest of the UA items had low loadings in both matrices, and two loaded on wrong factors in the structure matrix.

⁴⁴ Eigenvalue is the variance in a set of variables explained by a factor or component, and denoted by lambda. An eigenvalue is the sum of squared values in the column of a factor matrix. $|R-\lambda| = 0$ (<http://www.siu.edu/~epse1/pohlmann/factglos/>). A factor with an eigenvalue less than 1 is not as important from a variance perspective as an observed variable (Tabachnick & Fidell 2007, p. 644). In factor analysis, eigenvalue is the proportion of variance explained by each factor. Eigenvalue 1.0 is a default of SPSS.

<Table 5.6.6.2a Culture Instrument Factor Analysis Pattern Matrix>

	Factor					
	1	2	3	4	5	6
MF1	-.048	.920	.045	.024	.086	-.297
(MF2)	.020	.631	.071	.019	-.099	.001
MF3	-.031	.706	-.091	-.073	.036	.140
MF4	.108	.559	-.092	.031	.054	.149
(MF5)	.084	.297	-.156	.053	.051	.287
KIC1	.714	.001	-.008	.090	.018	.116
KIC2	1.023	-.023	.004	-.016	-.007	-.109
KIC3	.295	.115	.024	.499	-.051	-.129
KIC4	.108	.019	.036	.759	-.061	-.022
KIC5	-.141	-.050	-.087	.857	.005	.113
KIC6	.054	-.013	.207	.272	.229	-.063
PD1	-.063	.051	-.121	.102	.682	-.067
PD2	.121	-.045	-.166	-.031	.744	-.004
PD3	-.007	.063	.045	-.037	.559	.259
PD4	-.012	.008	.076	-.017	.740	-.108
PD5	-.015	.301	.047	.022	.311	.213
(PD6)	.025	.174	.373	.022	.089	.315
(PD7)	-.035	.016	.175	-.029	.474	.178
UA1	.007	-.049	.702	-.026	-.038	.039
UA2	-.034	-.014	.765	.012	-.115	-.004
(UA3)	-.080	-.011	.757	.006	-.043	-.203
(UA4)	.091	.028	.271	.031	.069	.083
(UA5)	-.100	-.074	-.141	.022	-.045	-.103
(UA6)	.178	.040	-.088	-.026	.332	-.025

Extraction Method: Maximum Likelihood. Rotation Method:

Oblimin with Kaiser Normalization.

a Rotation converged in 8 iterations.

(Bracketed italicized items were dropped from Srite and Karahanna's final analysis)

<Table 5.6.6.2b Culture Instrument Factor Analysis Structure Matrix>

	Factor					
	1	2	3	4	5	6
MF1	.244	.844	.100	.166	.338	.032
(MF2)	.204	.609	.124	.104	.149	.194
MF3	.201	.739	-.027	-.003	.314	.378
MF4	.330	.661	-.015	.125	.338	.357
(MF5)	.243	.434	-.088	.089	.268	.395
KIC1	.763	.289	.067	.297	.284	.219
KIC2	.993	.267	.063	.290	.271	.032
KIC3	.447	.216	.104	.605	.117	-.088
KIC4	.320	.128	.138	.791	.079	-.056
KIC5	.109	.050	.019	.792	.086	.020
KIC6	.208	.123	.249	.348	.271	.008
PD1	.178	.266	-.082	.172	.672	.112
PD2	.316	.252	-.130	.080	.752	.190
PD3	.218	.355	.096	.037	.649	.440
PD4	.205	.248	.099	.097	.710	.105
PD5	.220	.491	.110	.094	.483	.401
(PD6)	.189	.357	.427	.095	.270	.437
(PD7)	.147	.252	.209	.040	.522	.327
UA1	.028	.009	.697	.052	-.014	.082
UA2	-.016	-.001	.757	.082	-.094	.027
(UA3)	-.070	-.056	.729	.083	-.092	-.159
(UA4)	.163	.139	.296	.101	.148	.149
(UA5)	-.157	-.167	-.164	-.036	-.136	-.170
(UA6)	.277	.203	-.062	.068	.388	.099

Extraction Method: Maximum Likelihood.

Rotation Method: Oblimin with Kaiser Normalization.

(Bracketed italicized items were dropped from Srite and Karahanna's final analysis)

I performed another factor analysis by specifying the four factors as the theory suggests (Tables 5.6.6.2c & 5.6.6.2d). Masculinity/femininity items cleanly loaded just as before. Individualism/collectivism items cleanly loaded together this time without splitting into two. However, power distance cross-loaded on three factors. The first four items loaded together but the rest loaded separately. The results of uncertainty avoidance items came

out similar to the first analysis. The first three UA items loaded strongly together but the rest of the three UA items loaded at low coefficients (.271, -.142, and .368), and the last UA loaded on its own with power distance items.

In the four-factor solution, there were several items that did not load properly. However, if we exclude the items Srite and Karahanna deleted for their final analysis, these problems disappear.

<Table 5.6.6.2c Culture Instrument – a four-factor solution pattern matrix>

Pattern Matrix				
	Factor			
	1	2	3	4
MF1	-.018	.045	-.072	-.725
<i>(MF2)</i>	<i>-.152</i>	<i>.080</i>	<i>-.049</i>	<i>-.656</i>
MF3	.016	-.068	.108	-.787
MF4	.064	-.074	-.062	-.661
<i>(MF5)</i>	<i>.106</i>	<i>-.134</i>	<i>-.051</i>	<i>-.436</i>
KIC1	.175	-.029	-.429	-.163
KIC2	.159	-.043	-.473	-.136
KIC3	-.087	.015	-.683	-.098
KIC4	-.115	.053	-.803	.027
KIC5	-.055	-.036	-.663	.086
KIC6	.205	.210	-.309	.077
PD1	.638	-.118	-.073	.008
PD2	.783	-.175	-.035	.045
PD3	.615	.061	.075	-.136
PD4	.713	.071	.005	.070
PD5	.341	.067	.021	-.353
<i>(PD6)</i>	<i>.154</i>	<i>.393</i>	<i>.029</i>	<i>-.271</i>
<i>(PD7)</i>	<i>.516</i>	<i>.192</i>	<i>.095</i>	<i>-.054</i>
UA1	-.031	.707	.029	.047
UA2	-.138	.768	-.015	.039
<i>(UA3)</i>	<i>-.124</i>	<i>.734</i>	<i>-.010</i>	<i>.108</i>
<i>(UA4)</i>	<i>.103</i>	<i>.274</i>	<i>-.081</i>	<i>-.055</i>
<i>(UA5)</i>	<i>-.081</i>	<i>-.142</i>	<i>.019</i>	<i>.133</i>
<i>(UA6)</i>	<i>.368</i>	<i>-.099</i>	<i>-.078</i>	<i>-.051</i>

Extraction Method: Maximum Likelihood.

Rotation Method: Oblimin with Kaiser Normalization.

a Rotation converged in 9 iterations.

(Bracketed italicized items were dropped from Srite and Karahanna's final analysis)

<Table 5.6.6.2d Culture Instrument – a four-factor solution structure matrix>

Structure Matrix				
	Factor			
	1	2	3	4
MF1	.333	.128	-.236	-.738
<i>(MF2)</i>	.165	.143	-.170	-.606
MF3	.342	.003	-.065	-.762
MF4	.374	.007	-.217	-.696
<i>(MF5)</i>	.306	-.073	-.159	-.482
KIC1	.351	.054	-.505	-.336
KIC2	.332	.040	-.537	-.310
KIC3	.125	.101	-.685	-.213
KIC4	.072	.138	-.775	-.107
KIC5	.065	.031	-.626	-.035
KIC6	.262	.256	-.367	-.108
PD1	.643	-.059	-.213	-.286
PD2	.757	-.113	-.194	-.302
PD3	.663	.115	-.113	-.405
PD4	.686	.120	-.162	-.261
PD5	.502	.129	-.150	-.510
<i>(PD6)</i>	.302	.430	-.117	-.376
<i>(PD7)</i>	.533	.228	-.066	-.288
UA1	-.003	.696	-.039	-.006
UA2	-.091	.754	-.065	.018
<i>(UA3)</i>	-.113	.714	-.044	.086
<i>(UA4)</i>	.170	.298	-.151	-.149
<i>(UA5)</i>	-.157	-.164	.086	.188
<i>(UA6)</i>	.402	-.055	-.167	-.226

Extraction Method: Maximum Likelihood.

Rotation Method: Oblimin with Kaiser Normalization.

(Bracketed italicized items were dropped from Srite and Karahanna’s final analysis)

As shown here in my factor analysis of the Srite and Karahanna culture instrument, overall the survey items loaded together as suggested by Hofstede’s culture dimensions. Therefore, having taken a look at the results of both reliability testing and factor analysis, in my model testing (in which I combined trust, subjective norm, and culture constructs), I will use in my analysis all culture survey items, including the items that Srite and

Karahanna excluded from their analysis. This decision was made because these scales were largely derived from theory. However, though theory driven, my reliability test and factor analysis indicated that UA items might not be optimal scales to include all items in my model-testing analysis. Therefore, in the following section, I will discuss the equivocal properties of UA items as seen in both analyses, and how I resolved the issue. In my final analysis, I will discuss how I analyzed UA items.

5.6.6.3 Analysis of Uncertainty Avoidance

I showed the results of both reliability testing and factor analysis of Srite and Karahanna's culture instrument in previous sections and pointed out how uncertainty avoidance scales performed less than satisfactorily in either case. Therefore, I would like to closely examine the uncertainty avoidance survey items here.

See the excerpts of the results of both reliability test and factor analysis below (Tables 5.6.6.3.1 & 5.6.6.3.2). The first three UA items showed a good reliability of .775 Cronbach's alpha and factor loadings of higher than .707 in factor analysis. These numbers indicate that the first three UA items have very good psychometric properties, and the results of the test that these three items measure are reliable and test what they intend to test.

However, UA items 4, 5, and 6 are problematic. The reliabilities of these three items were -.016 for my final study and .106 for the pilot study, whereas factor loadings

ranged from .188 to .402. Cronbach’s alpha of .70 or higher is desirable for reliability (Nunnally 1978), and a factor loading of .45 or higher is considered fair (Comrey and Lee 1992).⁴⁵

<Table 5.6.6.3.1. Reliability of Uncertainty Avoidance>

Reliability Test: Cronbach’s Alpha		Final Study (N=276)	Pilot Study (N=55)
Uncertainty Avoidance	6 items (all)	.383	.109
	*2 items (UA1,2)	.670	.686
	3 items (UA1-3)	.775	.691
	4 items (UA1-4)	.681	.338
	5 items (UA1-5)	.504	.011
	3 items (UA 4-6)	-.016	.106

< Table 5.6.6.3.2. UA Excerpts from Culture Instrument Factor Analysis
a four-factor solution structure matrix>

UA1	-.003	.696	-.039	-.006
UA2	-.091	.754	-.065	.018
(UA3)	-.113	.714	-.044	.086
(UA4)	.170	.298	-.151	-.149
(UA5)	-.157	-.164	.086	.188
(UA6)	.402	-.055	-.167	-.226

Therefore, I reviewed questions used for uncertainty avoidance in Srite and Karahanna’s study (Table 5.6.6.3.3). These six questions seem to represent two different ideas/constructs. For convenience, I name these two UA constructs as “need for structure” for items UA1 through UA3, and “need for avoiding uncertainty” for items UA4 through UA6.

⁴⁵ Comrey and Lee (1992) suggest that loadings in excess of .71 are considered excellent, .63 very good, .55 good, .45 fair, and .32 poor (Tabachnick & Fidell 2007, p. 649).

<Table 5.6.6.3.3 Srite & Karahanna Uncertainty Avoidance Survey Items>

UA1	<u>Rules and regulations</u> are important because they inform workers what the organization expects of them.
UA2	<u>Order and structure</u> are very important in a work environment.
UA3	It is important to have job requirements and instructions <u>spelled out in detail</u> so that people always know what they are expected to do.
→	“Need for Structure”
UA4	It <u>is better to have a bad situation</u> that you know about, than to have an uncertain situation which might be better.
UA5	Providing <u>opportunities to be innovative</u> is more important than requiring standardized work procedures. (Reverse scored)
UA6	People should <u>avoid making changes</u> because things could get worse.
→	“Need for Avoiding Uncertainty”

As we can see, the “need for structure” questions are concerned with rules, regulations, order, structure, and detailed instructions, whereas the “need for avoiding uncertainty” questions are concerned with avoiding uncertainty, reinforcing status quo, and avoiding change. From the first principle argument, we can tell these are two different ideas. Also, my data shows that these two UAs have a low correlation of .03 (Table 5.6.6.3.4), suggesting that these two are neither closely related nor the same construct.

<Table 5.6.6.3.4. Culture Variables Correlation Matrix with Two UAs>

	MF	KIC	PD	UA_Struct	UA_Avoid
MF	1.00				
KIC	0.27	1.00			
PD	0.46	0.27	1.00		
UA_Struct	-0.05	0.08	0.03	1.00	
UA_Avoid	0.11	0.16	0.20	0.03	1.00

Hofstede used three questions to measure uncertainty avoidance in his IBM study (Table 5.6.6.3.5). Each of these three questions represents three different types of uncertainty avoidance: one for how nervous one gets in the face of uncertainty, one for employment stability, and one for rule orientation. Hofstede then used the following formula to produce one value of uncertainty avoidance: $UAI = 300 - 30 \times (\text{mean score rule orientation}) - (\text{percentage intending to stay less than 5 years}) - 40 \times (\text{mean stress score})$ (Hofstede 2001, p. 150). These three different concepts were mathematically converged into one concept of uncertainty avoidance. As Dorfman and Howell stated, how Hofstede calculated a UA value may not be statistically supported.

Dorfman and Howell used five questions to measure uncertainty avoidance (Table 5.6.6.3.6). These questions are all concerned with “need for structure”.

< Table 5.6.6.3.5. Hofstede’s Uncertainty Avoidance Questions (2001, p. 467) >

A37 How often do you feel nervous or tense at work? (Stress)
A43 How long do you think you will continue working for this company? (Employment Stability)
B60 Company rules should not be broken – even when the employee thinks it is in the company’s best interests. (Rule Orientation)

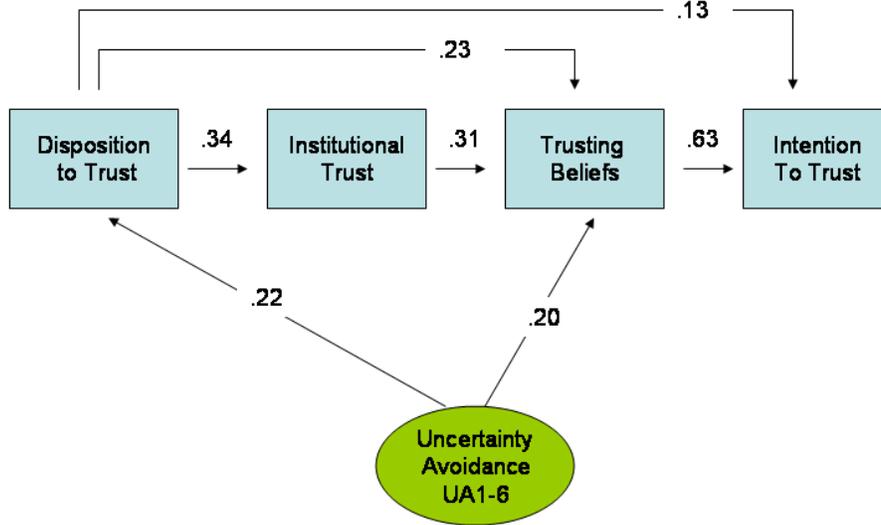
<Table 5.6.6.3.6. Dorfman & Howell's Uncertainty Avoidance Questions (1988)>

1. It is important to have job requirements and instructions spelled out in detail so that employees always know what they are expected to do.
2. Managers expect employees to closely follow instructions and procedures.
3. Rules and regulations are important because they inform employees what the organization expects of them.
4. Standard operating procedures are helpful to employees on the job.
5. Instructions for operations are important for employees on the job.

When I analyzed four trust constructs and six items of uncertainty avoidance together with my dataset, the results showed that UA directly influenced disposition to trust and trusting beliefs at .221 and .196 respectively at the significant level of $p \leq .05$ (Figure 5.6.6.3.1). When six items UA were split into two – “need for structure” and “need for avoiding uncertainty” – UA “need for structure” indicated a much stronger relationship to disposition to trust and trusting beliefs at .250 and .304 respectively (Figure 5.6.6.3.2). The UA “need for avoiding uncertainty” items showed no significance in any of the four trust constructs.

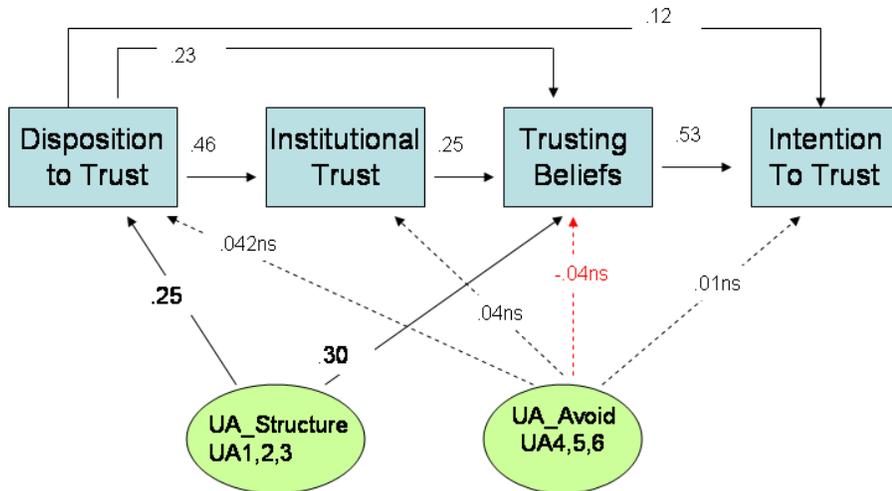
Thus, my UA analysis demonstrated the duality of the uncertainty avoidance construct that Srite and Karahanna's instrument used. The first three UA questions represent the construct, as I call in this paper, the “need for structure”. The latter three items represent the “need for avoiding uncertainty”. However, these questions have poor psychometric properties and are not suited for testing. Dorfman and Howell's UA questions are also

concerned with “need for structure”. Therefore, I will only use UA “need for structure” items, which included UA1 through UA3, in my final analysis.



Chi-square=2.35 ($p = .12524$), Df =1, Fit Indices RMR=.176, RMSEA=.070, CFI=1.00, GFI=1.00, AGFI=.95
 All paths are significant at $p \leq .05$.

<Figure 5.6.6.3.1. Trust & Uncertainty Avoidance>



Chi-square=.216 ($p = .64235$), Df =1, Fit Indices CFI=1.0, RMR=.005, RMSEA=.00001, Cronbach's alpha=.671, GFI=1.0, AGFI=1.00, $p \leq .05$ All paths are significant at $p \leq .05$ unless stated as 'ns'.

<Figure 5.6.6.3.2. Trust & Two Uncertainty Avoidances>

5.6.7 Integrated Trust and Culture Model – Structural Equation Modeling

Having successfully replicated the McKnight et al. trust model and validated the culture instruments with my data set in previous sections, in this section, I integrate trust, subjective norm and culture constructs into one model. First, I integrate subjective norm in the McKnight et al.'s trust model. Then, I integrate culture constructs in a newly augmented trust model.

A statistical technique called structural equation modeling (SEM) is used to test and estimate causal relationships in my integrated trust and culture model. Structural equation modeling is a collection of statistical techniques that include factor analysis, path analysis, confirmatory factor analysis, and structural regression modeling. SEM estimates structural relationships between latent variables (which are not measured directly but are assumed constructs) and tests the theory in question. SEM provides a comprehensive method for the quantification and testing of theories and potential interrelationships among the constructs, as well as the relationships among measures themselves (Raykov & Marcoulides 2006). Therefore, the model needs to be specified first in order to use SEM.⁴⁶

In my analysis, I computed four higher trust constructs (disposition to trust, institutional trust, trusting beliefs, and trusting intention) by aggregating all values of pertinent sub-

⁴⁶ There are six basic steps of SEM. 1. Specify the model, 2. Determine whether the model is identified, 3. Select measures of the variables and collect, prepare, and screen the data, 4. Conduct the analysis, evaluate model fit, interpret the parameter estimates, and consider equivalent models, 5. If necessary, re-specify the model and evaluate the fit, 6. Write reports accurately and completely. (two optimal steps: 7. Replicate the results, 8. Apply the results.) (Kline 2005: 63-65)

constructs as dependent variables. I computed subjective norm and four-culture constructs as independent variables, aggregating the values of relevant survey questions. I used the EQS program version 6.1. for the analysis.

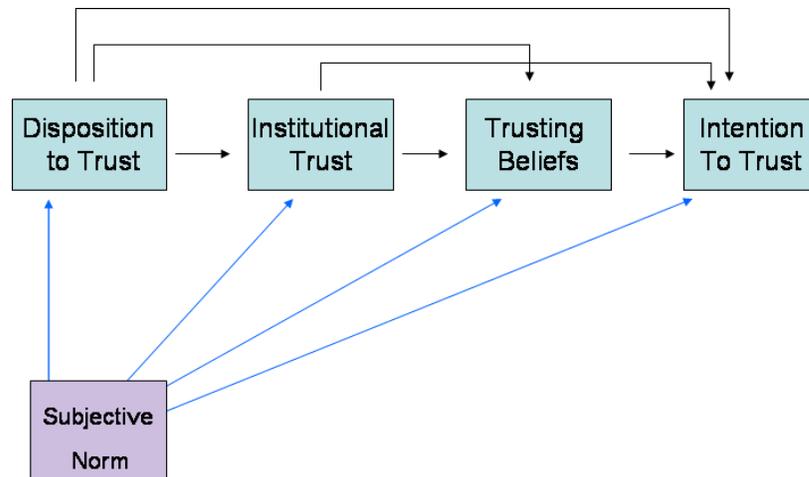
5.6.7.1 Augmented Trust Model – Trust Model with Subjective Norm

As discussed in Sections 2.5 and 3.5, subjective norm is a critical component in Theory of Reasoned Action (TRA) and it also has cultural implications. I proved that subjective norm is a missing variable in the McKnight et al. trust model in light of the TRA framework, and thus I will include subjective norm in my integrated model. Before I include culture constructs into the trust model, I will first augment McKnight et al.'s trust model by including subjective norm in order to show how subjective norm is directly related to trust constructs.

In my study, I measured subjective norms from Mathieson's three (1991):

- People (peers and friends) important to me support my use of online vendors.
- People (family members; significant others) who influence my behavior want me to use online vendors instead of other means.
- People whose opinions I value prefer that I use online vendors for purchasing products and planning a travel.

The augmented trust model is shown in Figure 5.6.7.1.1. Theory suggests all paths exist in the direction of each path shown.

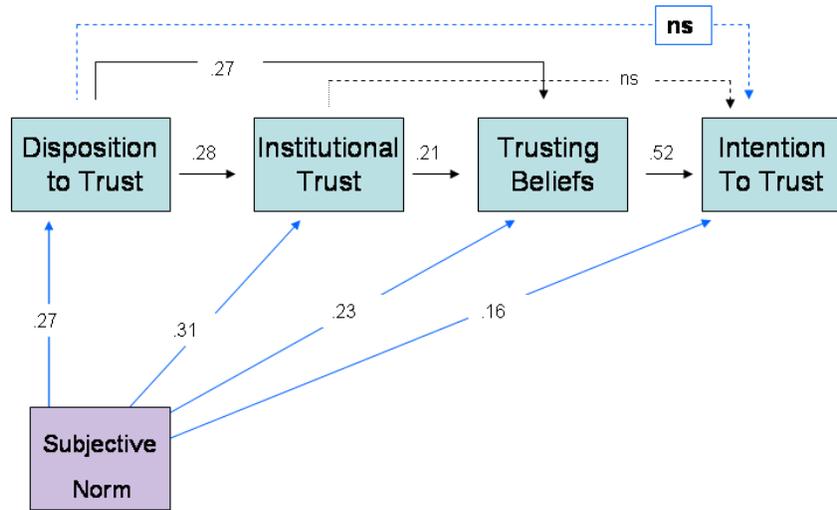


<Figure 5.6.7.1.1. Augmented Trust Model: All Possible Paths >

I conducted this analysis with a data set comprised of 194 data points. The N=194 data set is a subset of the N=276 data set used for principal component analysis, confirmatory factor analysis, and factor analysis in my replication of the McKnight et al. study.⁴⁷ The results showed the direct, significant effects of subjective norm on all four trust constructs at the significant level of $p \leq 0.05$ (Figure 5.6.7.1.2). All relationships were positive; that is, as subjects believed that important people in their lives support online use, trust increased. In particular, subjective norm has the strongest direct effect on “institutional trust” (coefficient = .309), as well as “disposition to trust” (.27), and “trusting beliefs” (.23). The coefficient from subjective norm to “intention to trust” was .16. The paths between the higher-order trust constructs were as discussed in my analysis done in Section 5.6.5.5 and in McKnight et al. With the introduction of subjective norm, the path from “disposition to trust” to “intention to trust” (that were

⁴⁷ I added subjective-norm survey questions later in the data collection phase. Therefore, any analysis that included subjective norm was done with N=194 dataset.

previously significant with my dataset (Figure 5.6.5.5b) but not significant in McKnight et al.'s study), turned out to be non-significant.



Df = 1, Chi-square = .547, (p=.45938), Fit Indices CFI=1.0, RMR=.009, RMSEA=.000, GFI=.999, AGFI=.983, Cronbach's alpha= .751

<Figure 5.6.7.1.2. Augmented Trust Model Results>

The fit indices of the augmented trust model showed an excellent fit of the model (Table 5.6.7.1.1). RMSEA was .000. Standard RMR was .009. CFI was 1.000. The standardized solution indicated that 39.8% of variance of the “intent to trust” was accounted for this model (Table 5.6.7.1.2). Another analysis that I conducted with only trust constructs showed that 38.1% of variance was accounted for in the trust only model; that is, though small, more explanatory power was demonstrated with subjective norm in the model.

Thus, the results supported subjective norm is a critical construct in trust formation and trust intention, and how subjective norm is a missing variable in McKnight et al.'s trust model, as suggested by the Theory of Reasoned Action.

<Table 5.6.7.1.1. Trust and Subjective Norm Fit Indices EQS Output>

```

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
GOODNESS OF FIT SUMMARY FOR METHOD = ML

INDEPENDENCE MODEL CHI-SQUARE = 225.065 ON 10 DEGREES OF
FREEDOM

INDEPENDENCE AIC = 205.065    INDEPENDENCE CAIC = 162.387
MODEL AIC = -1.453           MODEL CAIC = -5.720

CHI-SQUARE =.547 BASED ON 1 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS .45938

THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION
IS.547.

FIT INDICES
-----
BENTLER-BONETT      NORMED FIT INDEX =      .998
BENTLER-BONETT NON-NORMED FIT INDEX =      1.021
COMPARATIVE FIT INDEX (CFI) =      1.000
BOLLEN'S            (IFI) FIT INDEX =      1.002
MCDONALD'S          (MFI) FIT INDEX =      1.001
JORESKOG-SORBOM'S  GFI FIT INDEX =      .999
JORESKOG-SORBOM'S  AGFI FIT INDEX =      .983
ROOT MEAN-SQUARE RESIDUAL (RMR) =      .009
STANDARDIZED RMR =      .009
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) = .000
90% CONFIDENCE INTERVAL OF RMSEA (.000, .171)

RELIABILITY COEFFICIENTS
-----
CRONBACH'S ALPHA =.751

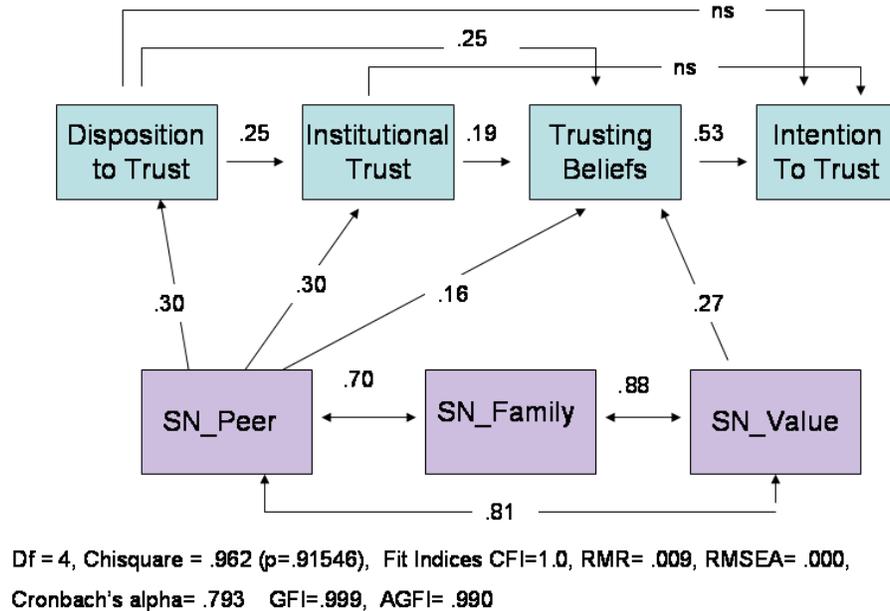
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<Table 5.6.7.1.2. Trust and Subjective Norm Model Standardized Solution>

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)	
STANDARDIZED SOLUTION:	R-SQUARED
DISP =V1 = .274*V5 + .962 E1	.075
INST =V2 = .277*V1 + .309*V5 + .884 E2	.219
BELIEF=V3 = .272*V1 + .209*V2 + .229*V5 + .847 E3	.282
INTENT=V4 = .057*V1 + .522*V3 + .164*V5 + .776 E4	.398

All relationships are significant at $p \leq .05$ except italicized.

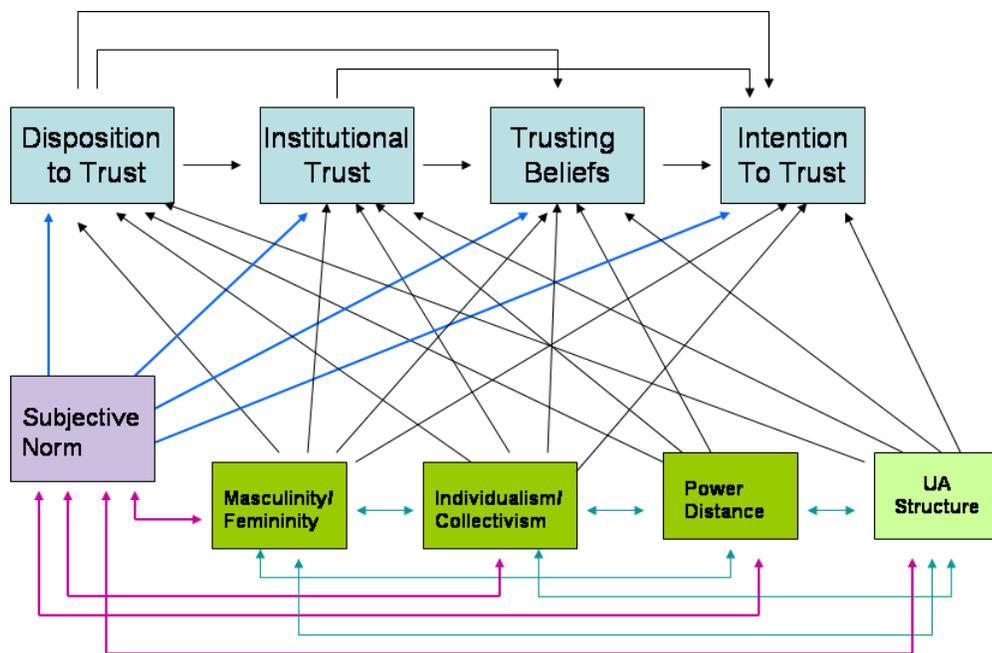
Among three SN questions, the SN “peer” question was the most influential to trust (Figure 5.6.7.1.3). This result is consistent with the interview results: The interviewee would ask friends for their opinions of a new website. In online environments, the opinions of peers and friends might matter more than the opinions of families or other people who the participants value.



<Figure 5.6.7.1.3 Three Types of Subjective Norm & Trust>

5.6.7.2 Integrated Trust and Culture Model –Trust Model with Subjective Norm and Culture

I tested all variables of interest in the integrated trust and culture model. I placed the four higher trust constructs (disposition to trust, institutional trust, trusting beliefs, and trusting intentions), subjective norm, and four culture constructs (masculinity/femininity, individualism/collectivism, power distance and uncertainty avoidance) in the newly integrated trust model (Figure 5.6.7.2.1). All possible relationships in this new integrated trust and culture model are shown in Figure 5.6.7.2.1. I conducted this analysis with the data set of 194 subjects.



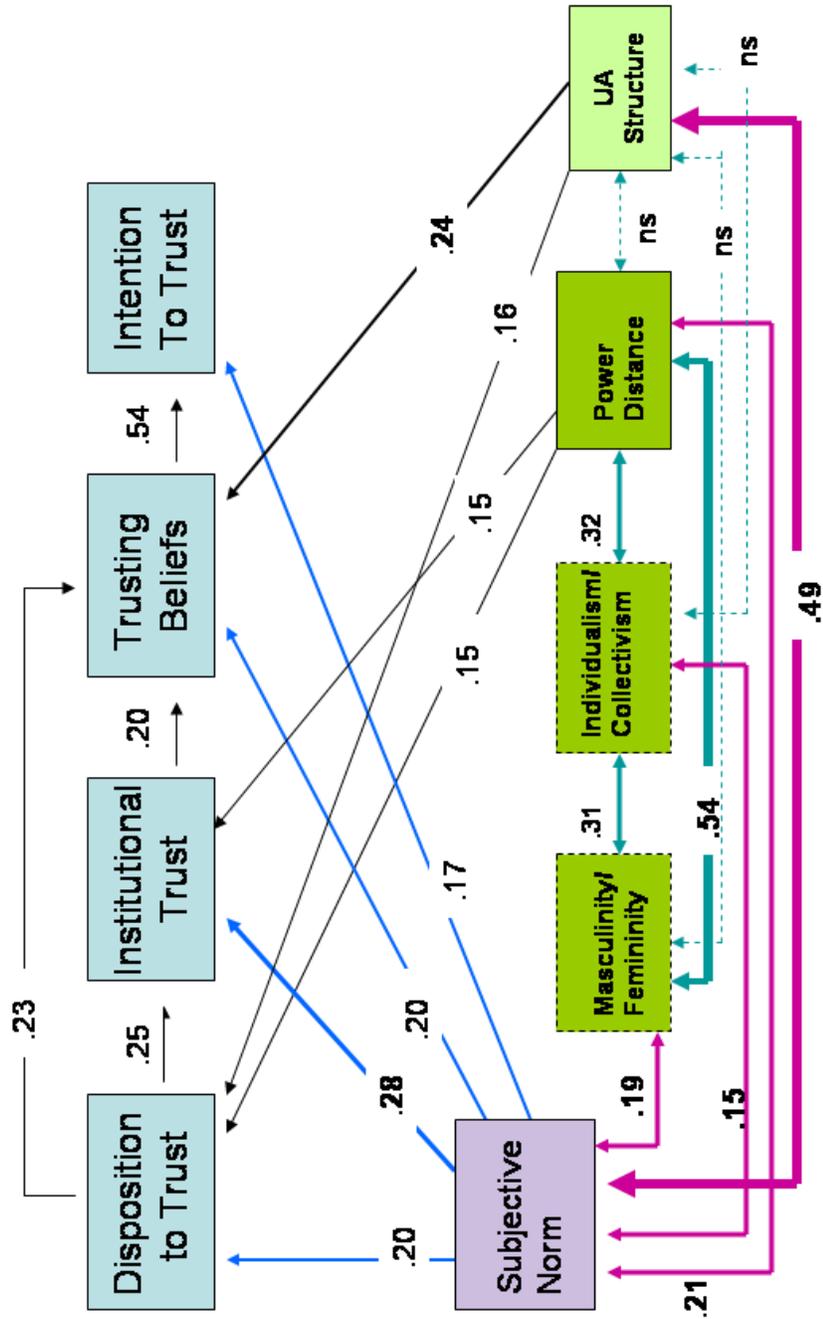
<Figure 5.6.7.2.1. Hypothetical Integrated Trust & Culture Model: All possible relationships>

Interesting results emerged with this analysis. The results showed that the relationship between trust constructs and subjective norm was intact even with the addition of cultural

variables. Culture variables revealed interesting relationships among themselves and with the subjective norm (Figure 5.6.7.2.2). All lines in the figure show significant relationships at $p \leq .05$.

The goodness-of-fit indices showed an excellent fit for the integrated trust and culture model (Table 5.6.7.2.1). RMSEA is .000. Standardized RMR is .018. NFI is .986.

The standardized solution showed that this model explains 39.5% of total variance (Table 5.6.7.2.2). The explanatory power is almost the same as the augmented trust model (39.8%). However, considering higher degrees of freedom in the integrated model ($df = 12$) (whereas the low degrees of freedom in the augmented model produce $df = 1$), 0.395 R-squared is considered to be a good number.



Chi-square = 4.774 (p=.96511), Df = 12, Fit Indices RMR= .018, RMSEA=.00001, CFI=1.00, GFI=1.00,

AGFI= .98, R² =.395 All paths are significant at p<.05.

<Figure 5.6.7.2.2. Integrated Trust & Culture Model>

<Table 5.6.7.2.1. Integrated Trust and Culture Model Fit Indices>

```

GOODNESS OF FIT SUMMARY FOR METHOD = ML

INDEPENDENCE MODEL CHI-SQUARE=353.241 ON 36 DEGREES OF
FREEDOM

INDEPENDENCE AIC = 281.241 INDEPENDENCE CAIC = 127.598
MODEL AIC = -19.226 MODEL CAIC = -70.440

CHI-SQUARE = 4.774 BASED ON 12 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS .96511

THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS
4.791.

FIT INDICES
-----
BENTLER-BONETT NORMED FIT INDEX = .986
BENTLER-BONETT NON-NORMED FIT INDEX = 1.068
COMPARATIVE FIT INDEX (CFI) = 1.000
BOLLEN'S (IFI) FIT INDEX = 1.021
MCDONALD'S (MFI) FIT INDEX = 1.019
JORESKOG-SORBOM'S GFI FIT INDEX = .995
JORESKOG-SORBOM'S AGFI FIT INDEX = .979
ROOT MEAN-SQUARE RESIDUAL (RMR) = .019
STANDARDIZED RMR = .018
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) =.000

RELIABILITY COEFFICIENTS
-----
CRONBACH'S ALPHA =.626

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<Table 5.6.7.2.2. Integrated Trust & Culture Model Standardized Solution>

```

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED SOLUTION: R-SQUARED

DISP = V1 =.196*V5 +.117*V7 +.146*V8 +.160*V9 +.925E1 .144
INST = V2 =.248*V1 +.284*V5 +.153*V8 +.872 E2 .240
BELIEF=V3 =.233*V1 +.204*V2 +.199*V5 +.238*V9 +.816E3 .334
INTENT=V4 =.542*V3 +.174*V5 -.017*V6 + .778E4 .395

Bold typed is significant at p≤.05
V5=SN, V6=M/F, V7=Ind/Col, V8=PD, V9=UA_structure

```

The results of structural equation modeling showed that only two out of four culture constructs, power distance and uncertainty avoidance (structure), directly effected trust constructs (Figure 5.6.7.2.2). The Masculinity/Femininity and Individualism/Collectivism dimensions did not have any significant effect on trust constructs. Uncertainty avoidance (UA structure) positively affected “disposition to trust” and “trusting beliefs”, and power distance positively affected “disposition to trust” and “institutional trust”.

UA structure had largest direct effects on “trusting beliefs” with a .238 coefficient; UA structure also had a large direct effect on “disposition to trust” at .160. This means that an individual with rule orientation has a higher tendency to trust people and also readily forms trusting beliefs toward a particular online vendor. Power distance influenced “disposition to trust” with a coefficient of .146 and “institutional trust” with a coefficient of .153. Thus, one who accepts and observes power difference in society is more trusting in nature and readily forms trust toward Internet vendors in general.

In addition, three culture variables (masculinity/femininity [MF], power distance [PD], individualism/collectivism [IC]) are correlated. The covariance between MF and PD is .538; that is, these variables share of variance of 29%. This implies that although MF does not directly affect trust constructs, MF indirectly affects trust constructs through the power distance construct. Similarly, the covariance between MF and IC is .310, and IC and PD is .320. Thus, these three cultural variables interact with one another in a

significant way. Interestingly, I did not find the UA structure to be a covariate of other culture variables.

Subjective norm is a positive covariate of all four culture variables. This means that subjective norm positively links culture variables to trust constructs. In particular, the UA need for structure has the strongest covariance with the subjective norm and also has a direct effect on trust constructs. The covariance between the subjective norm and the UA need for structure is the largest at .489; that is, 24% of variance is shared between SN and UA structure. The covariance of PD and SN is .213, IC and SN is .154, and MF and SN is .187. These interesting findings show that all four cultural variables affect trust through subjective norm, although by themselves these variables might not directly influence trust.

5.6.7.3 Summary of Integrated Trust and Culture Model

First, I proposed an augmented trust model that includes subjective norm. I then demonstrated that how one perceives what others (peers, family, and people the respondent values) think of his/her use of online vendors has significant effects on initial online trust formation. I proved that subjective norm was both theoretically and empirically a critical variable in the model. Next, building upon the augmented trust model, I showed how culture plays a role in online trust formation.

Culture variables added complexity to the model. Power distance and uncertainty avoidance had direct effects on three trust constructs (disposition to trust, institutional trust, and trusting beliefs). The dimensions of masculinity/femininity and individualism/collectivism had no direct effects on trust formation. However, I found subjective norm is a positive covariate of all culture variables, allowing cultural variables to influence trust formation indirectly. In particular, uncertainty avoidance need for structure had the strongest covariance to subjective norm and also had direct effects on trust constructs. Furthermore, I found three culture variables – masculinity/ femininity, power distance and individualism and collectivism –to interact among themselves, while uncertainty avoidance did not show any interaction with the other cultural variables.

My analysis of trust, subjective norm, and culture variables revealed not only that subjective norm was a missing variable in the trust model, but also that trust formation was positively related to all four cultures through subjective norm.

6. Discussion and Results

In this section, I will discuss the results of my study according to the research questions and the hypotheses that I posited earlier in this paper. The two research questions concerned whether the McKnight et al.'s trust model fits my data, i.e. the data for online tourism website (RQ1); whether culture affects online trust formation; and whether an integrated trust and culture model could be developed (RQ2). In relation to Research Question 2, I posited five specific hypotheses, the first two hypotheses concerned the relationship between subjective norm and trust; Hypothesis 3 predicted the relationship between subjective norm and culture; the last two hypotheses focused on the direct effects of culture on trust.

6.1 Results of the McKnight et al. Trust Model Replication

First, I proposed that the McKnight et al. trust model (2002) was a robust model across various different contexts. I replicated their 2002 trust model with new subjects, new tasks, and a new website. The task scenario that McKnight et al. used was of legal advice, and my study was of information-gathering on a tourism website. I conducted a principal component analysis to see the properties of scales, and I ran a confirmatory factor analysis to see the structure and relationships of related constructs. The research question I posited for the McKnight et al. trust model was:

Is the McKnight et al. trust model robust enough to fit the data for online tourism website? (Research Question 1)

Indeed, my results supported and validated McKnight et al.'s trust model. My data shows a good fit and better replicates the original study. My principal component analysis shows that survey items loaded together under the relevant subconstructs, while differentiating each other among sixteen different theoretically driven subconstructs. My confirmatory factor analysis supports the structures and relationships of subconstructs within a higher trust construct of the model.

My second order analysis (where I combined all four higher-latent-trust constructs) shows that this multilevel trust model is indeed robust. As a matter of fact, my data supports the model better than McKnight et al.'s study.⁴⁸ My study demonstrates that disposition to trust leads to institutional-based trust, which leads to trusting beliefs and, finally, trusting intentions. The McKnight et al. study failed to support the link from institutional trust to trusting beliefs, even though the theory suggests the relationship. My data suggests that disposition to trust also directly leads to trusting beliefs. Even though the model suggests the link, just as the results of McKnight et al.'s study, my study does not support the direct link from institutional trust to intention to trust. Thus, my data not only fully replicates the McKnight et al. 2002 study but also supports it better. My study

⁴⁸ My second-order analysis demonstrated a better fit to the theory than McKnight et al.'s study. As I compared my results against the results of McKnight et al.'s second-order analysis, I found a discrepancy in degrees of freedom. The degree of freedom in McKnight et al.'s study was 80 but mine showed 98. Upon my recalculation of parameters and the consultation with a statistician, I concluded that the degrees of freedom for the second-order analysis should be 98. Thus my analysis is valid.

verifies and demonstrates the robustness of McKnight et al.'s trust model across different contexts.

I will address the other research questions regarding whether culture affects online trust formation, and whether an integrated trust and culture model can be developed (RQ2), as I proceed with the discussions of the hypotheses. The summary section for Research Question 2 is in Section 6.5 Integrated Trust and Culture Model.

6.2 Effects of Subjective Norm on Trust

I argued in this paper that subjective norm needs to be included in McKnight et al.'s trust model. This multidimensional trust model exists within the frame of Theory of Reasoned Action, in which subjective norm is a critical component (Fishbein & Ajzen 1975).

However, subjective norm is missing from McKnight et al.'s trust model. In addition, literature suggests that a relationship between subjective norm and culture exists.

Therefore, I posited two hypotheses on SN and trust.

Hypothesis 1: Subjective norm positively affects initial online trust formation.

→ *Accept*

Hypothesis 2: Subjective norm positively affects initial online trust intention.

→ *Accept*

Both Hypothesis 1 and 2 were empirically supported and validated. Subjective norm positively affects all four trust constructs: disposition to trust, institutional trust, trusting beliefs, and trusting intentions. The strongest effects are on institutional trust. The SN survey questions concern how others perceive the participant's use of Internet vendors in general. Therefore the strongest effect on institutional trust is understandable.

The important implication of the results is that others' opinions count when it comes to trusting an unfamiliar online vendor. As seen in the interview section, when an individual has never experienced the vendor before, word of mouth significantly weighs

in on the trusting equation. Furthermore, my data indicates the importance of peer subjective norm on the use of an e-vendor.

My study fully supports how the subjective norm is a critical component in trust formation and needs to be included in the model. Therefore, I propose an Augmented Trust Model, including the subjective norm, in the McKnight et al. trust model.

6.3 Interrelationship Between Subjective Norm and Culture

Though limited, literature indicates the relationship between subjective norm and culture. For instance, people with a collectivist orientation often place more importance on others' opinions (Trafimow & Finaly 1996; Davidson et al. 1976), and people high in uncertainty avoidance often rely more on personal relationships than on developing new relations (Doney, Cannon & Mullen 1998; Fukuyama 1995). Therefore, subjective norm appears to be a covariate of culture variables. Thus, I posited:

Hypothesis 3: Culture is significantly associated with subjective norm on the website.

→ Accept

Hypothesis 3 was empirically supported and validated. My data shows that all four culture variables are significantly associated with subjective norm (Figure 5.6.7.2.2). In particular, uncertainty avoidance need for structure have the strongest association with subjective norm.

The survey questions about the UA need for structure center on rules, regulations, and how much one prefers structure in a workplace. Subjective norm includes others' opinions on a certain behavior. In other words, SN associates with both implicit and explicit social rules of the group to which one belongs (from a personal conversation with Dr. Bhawuk in November 2008). Therefore, people high in UA structure look for social cues, i.e. SN, more than those low in UA structure.

My data also shows that cultural variables, except UA structure, are interrelated. Masculinity/femininity are strongly associated with power distance. Collectivism is associated with both masculinity and power distance. This relationship has been supported in off-line literature (House et al. 2004). Interestingly, UA structure was not associated with any of these three culture variables, but has the strongest association with subjective norm.

In the analysis of two types of uncertainty avoidance, I delineated how Hofstede converged three different constructs – stress, employment stability, and rule orientation – into one construct called uncertainty avoidance. Dorfman and Howell came up with uncertainty avoidance individual scales using the questions of “rule orientation” construct only. Srite and Karahanna used only two UA scales that concerned rule orientation. They eliminated four scales out of six UAs; all three scales that represent the concept I called need for avoiding uncertainty, and one question from need for structure in their final analysis.

I argued that the current uncertainty avoidance construct used both in Dorfman and Howell (1988) and House et al. (2004) is actually a construct better called need for structure. Another construct, need for avoiding uncertainty is a viable cultural construct but, at this writing, the reliable scales that can measure this construct do not seem to exist.⁴⁹ In future studies, the development of scales for the need for avoiding uncertainty construct is necessary.

Culture feeds into subjective norm and indirectly influences trust formation. Therefore, subjective norm plays a critical role bridging between culture and trust formation.

6.4 Direct Effects of Culture on Trust Constructs

Not only is culture associated with subjective norm and thus indirectly impacts trust, culture may directly impact trust formation. Thus, I posited two hypotheses in regard to the direct relationships between culture and trust.

Hypothesis 4: (In addition to that culture indirectly affects trust via its impact on subjective norm) Culture directly affects online initial trust formation.

→ Accept

⁴⁹ The further investigation of this UA issue is not in the scope of this paper, and I will relegate it to future studies.

Hypothesis 5: (In addition to that culture indirectly affects trust via its impact on subjective norm) Culture directly affects online initial trust intention.

→ Reject

Hypothesis 4 was supported, but Hypothesis 5 was rejected. My data shows that culture directly impacts initial trust formation but does *not directly* impact trusting intention. Out of four culture dimensions, uncertainty avoidance and power distance directly impacted trust, but the masculinity/femininity, and individualism/collectivism dimensions have no direct effects on trust.

UA structure directly impacts both trusting beliefs and disposition to trust. The coefficient between UA structure and trusting beliefs is the largest among all direct paths from culture to trust. This shows that a person high in UA structure is more trusting. This may appear to be an interesting result because we might think that when a person is high in uncertainty avoidance, s/he should not trust a new website that s/he has never experienced. But my results shows otherwise. However, as discussed earlier, I used only three of the six UA questions that actually measure one's need for structure. Therefore, people high in UA structure might be looking for structure by trusting the website.

Power distance directly impacted on institutional trust. An individual who is willing to accept power distance forms more trust toward Internet vendors in general. This finding also supports existing off-line literature (Hofstede 2001). In addition, my data shows

that an individual high in power distance has a trusting disposition. Also, power distance has an indirect effect on trust via subjective norm: MF, IC and PD are significantly correlated with MF and IC, so the PD effects noted by others are still manifested on the trust.

Interestingly, individualism/collectivism do not demonstrate any direct impact on trust with my data. This result is contrary to existing literature. For example, Yamagishi and Yamagishi maintained that Japanese (collectivists) have a low trust of new relations and may not be as trusting as Americans (1994).

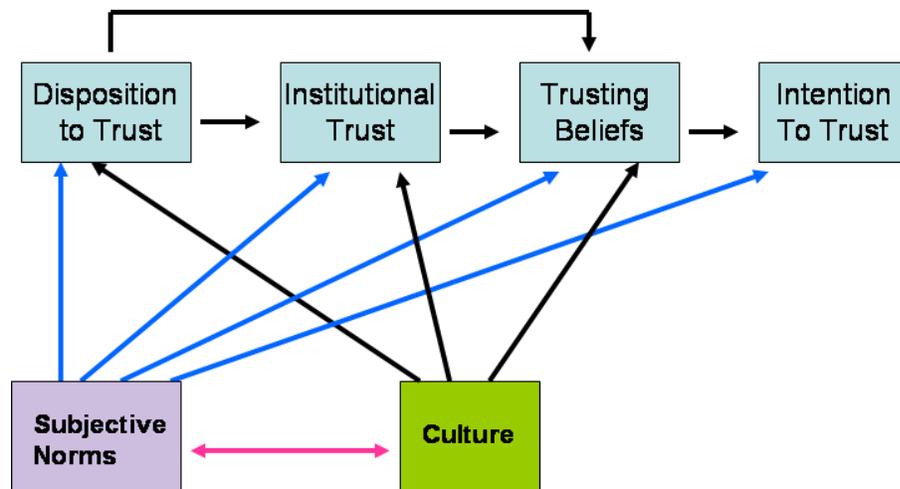
Culture's direct impact on trust is a mixed result. Some relationships make sense in light of past literature, but some findings are not consistent with existing findings. Further research on the direct impact of culture on online trust is needed to clarify these relationships in the future.

6.5 Integrated Trust and Culture Model

My data shows that subjective norm is a critical component in the trust model but is a missing variable in the McKnight et al. model. In addition, the data demonstrate that culture both directly and indirectly affects trust. Thus, Research Question 2 was positively answered.

Does culture impact the trust formation? If so, can an integrated initial online trust and culture model be developed? (Research Question 2)

Figure 5.6.7.2.2 Integrated Trust and Culture Model on page 155 shows all of the relationships found among nine variables with coefficients. When four cultural dimensions were placed under one culture variable, the simplified Integrated Trust and Culture Model is depicted as Figure 6.5. Subjective norm positively affects all four trust variables. Culture directly affects three trust variables, excluding intention, in addition to culture indirectly affecting trust through subjective norm.



<Figure 6.5. Simplified Integrated Trust and Culture Model>

My study raises another new question: which cultural dimensions are associated with online initial trust and can be called “culture”. The data that I gathered online showed a discrepancy with existing literature. Notably the UA structure showed no significant association with three other culture variables, where existing literature shows that

uncertainty avoidance is positively correlated with power distance and individualism/collectivism (House et al. 2004). In the online environment, my data suggest that the UA structure can be a culture-free factor, yet strongly associated with the subjective norm. Further research is needed to find out more about whether the UA structure is a universal cultural construct in online situations.

6.6 Practical Implications

The results of my study demonstrate the strong influence of friends, families, and those whose opinions participants value on, in particular, peer influence, on online initial trust formation. This finding also goes with the results of various studies that support the importance of “word of mouth” in consumers’ behaviors (Bearden et al. 1989; Forman et al. 2008). Because time and space are separated, online shopping inherently involves more risk-taking than traditional shopping. In particular when a customer visits a web vendor for the first time, uncertainty increases. My data show that, in order to reduce uncertainty and possible risks, consumers rely more on the opinions of those they trust.

Therefore, if an e-vendor wants to attract a new customer, the company should maximize the existing customers’ “word-of-mouth” networking effect. For example, an e-vendor can give an incentive to existing customers to give referrals or to recommend the online store to friends. The company can incorporate a point system that not only keeps track of how much a customer has purchased, but also of how many friends the customer has referred to the e-store, and whether those friends purchased items. For instance, the

website could have a feature where an e-customer could easily send out store coupons to friends saying, “I just purchased [fill in the blank] at this store and I liked the product very much, so I thought you might like this store too. Visit this store by clicking this link. Here’s a discount coupon for you”. This type of marketing would be easy to incorporate and is an effective way to tap the existing customers’ network as their own customer base.

This study also found that people with different cultural orientations form initial online trust differently. For instance, people high in power distance (i.e. people who readily accept inequality in society) tend to be more trusting, and they assume that people are generally honest and sincere, much more so than those who do not readily accept inequality.⁵⁰ In addition, people high in power distance develop institutional trust more easily than people low in power distance. In other words, people who are low in power distance do not form institutional trust as easily as people high in power distance.

My results also show that high uncertainty avoidance is positively associated with disposition to trust and trusting beliefs. An e-vendor might be able to win trust easily from people high in UA initially, rather than the people low in UA. Therefore, an e-vendor needs to make more efforts to attract and create trust with e-customers low in UA.⁵¹

⁵⁰ The Globe project reported that countries like Thailand, South Korea, Russia, Spain, India, Philippines, etc. are among the high power distance group, whereas Denmark, the Netherlands, Israel, Australia, Canada, and the USA are low in power distance (practice scale) (House et al. 2004, p. 539).

⁵¹ The Globe project reports that societies high in uncertainty avoidance (practice scale) are Switzerland, Sweden, Singapore, Denmark, Germany, China, Malaysia, etc. Low in uncertainty avoidance are Russia, Hungary, Greece, South Korea, Brazil, etc. (House et al. 2004: 623).

In summary, people low in both power distance and uncertainty avoidance do not form trust toward e-vendors as easily as those who are high in both.

In addition, all culture dimensions influence subjective norm. The relationships between subjective norm and culture are positive: more masculine, more collectivistic, higher power distance, and higher UA structure influence the subjective norm strongly. My findings show that if a person is low on these cultural dimensions, s/he would not pay as much attention to friends and family's opinions as those who are high in these four culture dimensions. These individuals do not form trust easily or value friends or family's opinions much. E-vendors might initially have a more difficult time in attracting and establishing successful e-customer relationships with customers who are low in these culture dimensions. Thus, different business strategies would be required to establish online trust, depending on the e-customers' cultural orientations.

In conducting business with people high in power distance, highlighting a secure signs such as "VeriSign", "Better Business Bureau", or other associations with reputable organizations on the website would promote the consumer's trust.

Moreover, even though the results of my model testing show the positive relationship from trusting beliefs to intention to trust, a simple examination of descriptive statistics reveal an interesting aspect in the relationship between these two higher trust constructs. The mean score of all eleven trusting beliefs items was 5.25 on a seven-point Likert

scale. The mean of “making purchase” in trusting intentions was a mere 3.12. There was clearly a substantial difference between a “trusting belief” and a “trusting intention” in the scores. Even though they had trust confidence in the website, the participants were still apprehensive about giving out credit card information or personal information. The data seem to suggest that winning customers’ trust might not be enough to ensure business transactions.

Today, the Internet has become an indispensable part of our life (and has literally become an extension of young people’s bodies as seen in the iPod phenomena). Even though we conduct business and accomplish an array of daily chores online (e-mailing, video-conferencing, chatting, banking, making reservations, renewing professional licenses, tracking orders, purchasing items from a foreign country, etc.), e-commerce has been in existence for only thirteen years. Surprisingly, Amazon.com, an icon of B2C, launched the business in July 1995, and YouTube was created in February 2005.

The Internet environment moves quickly. Everyday many new vendors open businesses on the web. In turn, e-commerce has become more competitive. Users have also become sophisticated. Six years ago, the McKnight et al. study showed the positive relationship between web experience and trust. My data show that web experience is no longer positively associated with trust. There was no significant relationship between these two in my study. The difference can be explained by how users have become more discerning over the past six years, and mere web experience no longer positively contributes to trust toward the web vendor. However, perceived website quality is still

important in forming trusting beliefs (.477 for my study, .78 for McKnight's), but is no longer a significant factor for trusting intention (non-significant for my study, .50 for McKnight's).

6.7 Limitations

Although it made positive contributions to the field, this study is not free from limitations. Some of these limitations can be improved in future studies.

First, just as many studies in the IS field, this study did not measure the actual behaviors that arise from trusting beliefs, but measured only the *intention* to trust. Even though the positive correlation between intention and actual behaviors has been established (Fishbein & Ajzen 1975; Ajzen 2006), observing actual trusting behaviors could be desirable in future studies. Another interesting research topic would be to investigate how individuals from different cultures execute their trust.

Also, as McKnight et al.'s trust model, my trust and culture model is cognitive-based.

Therefore, this study addresses no affective factor in the formation of initial trust.

However, we know from experience that feelings and emotions toward a particular object are closely tied to how we form trust toward that object. There is evidence that affect has effects on IS adoption (Chen 2006), trust formation, and task performance (Neerincx & Streefkerk 2003). Also, there is evidence that "affect is culturally ordered" (Rosaldo 1984). Though there might be some methodological issues that make conducting such research difficult, research on the relationships among emotion, trust, and cultural factors in online environments would promise rich findings in future studies.

This study focused on the initial stage of trust formation when one encounters the trustee, i.e. the website in this study, without prior knowledge of that particular website.

However, the website used in this study was part of the Japan Airlines websites, and it is possible that participants' trust formation on the "Guide to Japan" website might be positively influenced by the site's association with this airline, which enjoys a good reputation. Even though the name of Japan Airlines was never mentioned during the experiment nor stated anywhere in the task sheet, participants might have noticed this association.

Furthermore, a construct that the name of "uncertainty avoidance" generally evokes in one's mind was not tested. The scale I used in this study centered on rule orientation, identified as the UA need for structure construct. The construct in question here, UA need for avoiding uncertainty, might show the significant differences among cultures in trust formation. With the instrument used here, it was not possible to measure uncertainty avoidance – need for avoiding uncertainty. Therefore, identifying the scales for uncertainty avoidance with good psychometric properties could also produce interesting results in future studies.

I identified several limitations in this study. Rather than serving as shortcomings of this study, these limitations offer rich research topics on trust, culture, and online research that promise vital findings in the future.

7. Contributions

The contributions of this dissertation are many-fold in the fields of trust, culture and e-commerce research. Major contributions are in theory construction. I validated the McKnight et al.'s trust theory, and augmented that trust theory to include subjective norm. I also introduced the newly integrated trust and culture model. The following are expansions upon the contributions that this study brings the field:

My major contribution is the development of the integrated trust and culture model. First, I augmented the McKnight et al.'s trust theory to include subjective norm from the Theory of Reasoned Action. Subjective norm had a strong direct relationship to all higher level constructs in McKnight et al. trust model. The addition of subjective norm makes the model theoretically more complete and more robust. Also, my data shows that subjective norm – peer influence – may be the strongest SN contributor in online environments.

Next, I expanded upon this augmented trust theory with culture variables, and developed a newly integrated trust and culture theory. I found that culture not only indirectly impacts trust through subjective norm but also to directly impacts trust. All four culture variables strongly associate with subjective norm. In particular, uncertainty avoidance (need for structure) influences subjective norm most significantly.

Secondly, I examined the nature of the uncertainty avoidance construct and argued that the uncertainty avoidance construct actually consists of two different constructs: UA need for structure and UA need for avoiding uncertainty. I suggested that the construct of UA be empirically validated with new scales that appropriately measure UA need for avoiding uncertainty. In existing literature, uncertainty avoidance is often measured as need for structure (or as a rule orientation) construct, rather than as need for avoiding uncertainty as the phrase “uncertainty avoidance” implies. The lack of clarity of the construct and its misleading notation contribute to the confusion surrounding what the construct represents. This confusion also renders difficult the comparison of the results of culture studies that might use the same label but be measuring something different.

In addition, the results of this study suggested that UA need for structure may be a culture-free universal construct for online initial trust formation, or possibly for online environments. To confirm this, a follow-up study on UA need for structure is desirable.

Thirdly, this dissertation analyzed culture at the individual level, something that is seldom done in organizational literature. My study captures the cultures that are manifested in individuals. Individual-level analysis is more meaningful than measuring culture according to nationality or ethnicity. Culture theory created with individual-level data is more theoretically robust and more generalizable across various contexts.

Fourth, this dissertation captured culture online, where culture is rarely measured. To my knowledge, no study has explored the relationship between initial trust formation and

culture at the individual level on a website. Thus, this is the first research on how and in what way culture intersects with online initial trust formation. The combination of how individuals form trust online and how culture intersects this formation at the individual level has not been explored prior to this study.

Last but not least, I successfully replicated and empirically validated McKnight et al.'s trust model with different tasks and subjects, and with a different website. This allowed me to expand upon the model to incorporate subjective norm and culture variables. My results, which include confirmatory factor analysis, supported McKnight et al. model *more* completely than their study. I demonstrated the McKnight et al.'s trust model is robust across various online contexts.

Also, the analysis of exogenous factors revealed that online users have become more sophisticated and discerning compared with data from six years ago. As my study shows, web experience is no longer positively associated with a trust formation, nor is perceived website quality positively associated with the trust intention. My study indicated that the change in online environment was due to the time difference between these two studies. During this time period, Internet users have, evidently, increased their web savviness significantly.

On a practical note, the study also points out that gaining a customer's trust might not necessarily lead to business transactions. The data indicate that trusting a web vendor is one thing; purchasing a product from the vendor is another. Furthermore, winning the

initial trust of people low in UA and power distance might be more difficult than those high in these culture dimensions. Therefore, this study claims that marketing strategies need to be tailored to the culture of a respective e-customer. Lastly, the study showed the importance of SN. Thus e-vendors might want to harness the influences of peers and friends in their marketing. These findings clearly have important business implications.

Thus, this study has made significant contributions to the areas of trust research, online consumer behaviors, marketing, and culture studies, while simultaneously pointing to rich areas for future research.

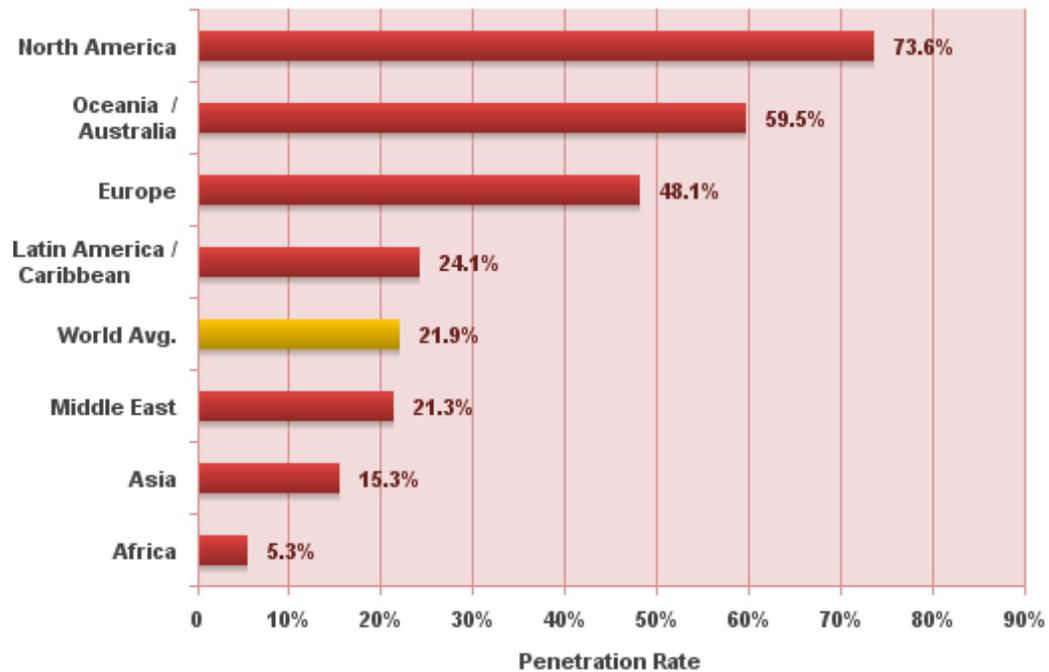
8. APPENDICES

APPENDIX A: WORLD INTERNET USAGE AND POPULATION STATISTICS

WORLD INTERNET USAGE AND POPULATION STATISTICS						
World Regions	Population (2008 Est.)	Internet Users Dec/31, 2000	Internet Usage, Latest Data	% Population (Penetration)	Usage % of World	Usage Growth 2000-2008
Africa	955,206,348	4,514,400	51,065,630	5.3 %	3.5 %	1,031.2 %
Asia	3,776,181,949	114,304,000	578,538,257	15.3 %	39.5 %	406.1 %
Europe	800,401,065	105,096,093	384,633,765	48.1 %	26.3 %	266.0 %
Middle East	197,090,443	3,284,800	41,939,200	21.3 %	2.9 %	1,176.8 %
North America	337,167,248	108,096,800	248,241,969	73.6 %	17.0 %	129.6 %
Latin America/Caribbean	576,091,673	18,068,919	139,009,209	24.1 %	9.5 %	669.3 %
Oceania / Australia	33,981,562	7,620,480	20,204,331	59.5 %	1.4 %	165.1 %
WORLD TOTAL	6,676,120,288	360,985,492	1,463,632,361	21.9 %	100.0 %	305.5 %

NOTES: (1) Internet Usage and World Population Statistics are for June 30, 2008. (2) CLICK on each world region name for detailed regional usage information. (3) Demographic (Population) numbers are based on data from the [US Census Bureau](#) . (4) Internet usage information comes from data published by [Nielsen//NetRatings](#), by the [International Telecommunications Union](#), by local NIC, and other reliable sources. (5) For definitions, disclaimer, and navigation help, please refer to the [Site Surfing Guide](#), now in ten languages. (6) Information in this site may be cited, giving the due credit to www.internetworldstats.com. Copyright © 2001 - 2008, Miniwatts Marketing Group. All rights reserved worldwide.

World Internet Penetration Rates by Geographic Regions



Source: Internet World Stats - www.internetworldstats.com/stats.htm
Penetration Rates are based on a world population of 6,676,120,288 for mid-year 2008 and 1,463,632,361 estimated Internet users.
Copyright © 2008, Miniwatts Marketing Group

<http://www.internetworldstats.com/stats.htm> (retrieved on November 15, 2008)

**APPENDIX B: UNIVERSITY OF HAWAII STUDENT ETHNICITY
BREAKDOWN 2007 FALL ENROLLMENT REPORT**

<http://www.hawaii.edu/cgi-bin/iro/maps?semaf07.pdf>

(page 18 : Retrieved on November 16, 2008)

Table 4 (cont.)

CHARACTERISTICS	TOTAL		UNDERGRADUATES				GRADUATES				NO DATA					
	No.	V%	Subtotal No.	Subtotal V%	Classified No.	Classified V%	Unclass No.	Unclass V%	Subtotal No.	Subtotal V%	Classified No.	Classified V%	Unclass No.	Unclass V%	No.	V%
ENTERING STUDENTS	6,638	33.1	4,250	30.8	3,898	29.1	352	96.7	2,360	37.9	1,676	31.4	684	76.8	28	60.9
Undergraduate	4,250	21.2	4,250	30.8	3,898	29.1	352	96.7	2,360	37.9	1,676	31.4	684	76.8	28	60.9
First-Time	1,942	9.7	1,942	14.3	1,914	14.3	28	7.7								
Freshmen	1,843	9.2	1,843	13.4	1,843	13.7										
Other Undergraduate	99	0.5	99	0.7	71	0.5	28	7.7								
Transfer 13/	2,055	10.3	2,055	15.0	1,766	13.2	289	82.1								
Returning	243	1.2	243	1.8	218	1.5	25	6.9								
Graduate	2,360	11.8							2,360	37.9	1,676	31.4	684	76.8	28	60.9
No Data	28	0.1														
HAWAIIAN ANCESTRY 14/	2,361	11.8	1,753	12.7	1,743	13.0	10	2.7	597	9.6	525	9.8	72	8.1	11	23.9
ETHNICITY: 15/	11,793	58.8	8,467	61.4	8,290	61.8	177	48.6	3,296	53.0	2,781	52.1	517	58.0	28	60.9
Asian / Pacific Islander	9,204	45.9	6,595	47.8	6,508	48.5	77	21.2	2,603	41.8	2,186	41.0	417	46.8	16	34.8
Asian	1,507	7.5	957	6.9	939	7.0	18	4.9	548	8.8	484	9.1	64	7.2	2	4.3
Chinese	1,578	7.9	1,288	9.3	1,282	9.5	6	1.6	288	4.5	225	4.2	62	7.0	2	4.3
Filipino	116	0.6	22	0.2	21	0.2	1	0.3	94	1.5	87	1.6	7	0.8		
Indian Subcontinent	3,438	17.1	2,497	18.1	2,468	18.4	29	8.0	938	15.1	757	14.2	181	20.3	3	6.5
Japanese	789	3.9	545	4.0	537	4.0	8	2.2	243	3.9	210	3.9	33	3.7	1	2.2
Korean	19	0.1	12	0.1	12	0.1			7	0.1	3	0.1	4	0.4		
Laotian	55	0.3	24	0.2	22	0.2	2	0.5	31	0.5	26	0.5	5	0.6		
Thai	239	1.2	149	1.1	147	1.1	2	0.5	88	1.4	77	1.4	11	1.2	2	4.3
Vietnamese	224	1.1	87	0.6	85	0.6	2	0.5	137	2.2	120	2.3	17	1.9		
Other Asian	1,239	6.2	1,004	7.3	995	7.4	9	2.5	229	3.7	196	3.7	33	3.7	6	13.0
Mixed Asian 15/	2,599	12.9	1,882	13.7	1,782	13.3	100	27.5	695	11.2	595	11.2	100	11.2	12	26.1
Hawaiian or Pacific Islander	63	0.4	52	0.4	51	0.4	1	0.3	31	0.5	27	0.5	4	0.4		
Guamanian or Chamorro	1,634	9.1	1,330	9.7	1,323	9.9	7	1.9	494	7.9	432	8.1	62	7.0	10	21.7
Hawaiian / Pan-Hawaiian	56	0.3	41	0.3	40	0.3	1	0.3	14	0.2	12	0.2	2	0.2	1	2.2
Micronesian	324	1.6	259	1.9	202	1.5	57	15.7	64	1.0	49	0.9	15	1.7	1	2.2
Samoa	28	0.1	22	0.2	22	0.2			6	0.1	5	0.1	1	0.1		
Tongan	137	0.7	73	0.5	43	0.3	30	8.2	64	1.0	52	1.0	12	1.3		
Other Pacific Islander	127	0.6	105	0.8	101	0.8	4	1.1	22	0.4	18	0.3	4	0.4		
Mixed Pacific Islander	484	2.4	341	2.5	332	2.5	9	2.5	142	2.3	127	2.4	15	1.7	1	2.2
Hispanic	19	0.1	9	0.1	9	0.1			10	0.2	9	0.2	1	0.1		
Puerto Rican	406	2.0	299	2.2	291	2.2	8	2.2	106	1.7	95	1.8	11	1.2	1	2.2
Other Hispanic	59	0.3	33	0.2	32	0.2	1	0.3	26	0.4	23	0.4	3	0.3		
Mixed Hispanic	5,235	25.1	3,149	22.9	3,013	22.5	136	37.4	2,074	33.3	1,834	34.4	240	26.9	12	26.1
Caucasian	23	0.1	8	0.1	8	0.1			15	0.2	15	0.3				
Middle Easterner	31	0.2	21	0.2	21	0.2			9	0.1	9	0.2				
Portuguese	5,181	25.8	3,120	22.6	2,984	22.2	136	37.4	2,050	32.9	1,810	33.9	240	26.9	11	23.9
Other Caucasian	237	1.2	168	1.2	165	1.2	3	0.8	68	1.1	62	1.2	6	0.7	1	2.2
Amer Indian / Alaska Native	93	0.5	69	0.5	66	0.5	3	0.8	24	0.4	24	0.5				
Mixed Ethnic Background	1,668	9.3	1,425	10.3	1,405	10.5	20	5.5	439	7.1	376	7.1	63	7.1	4	8.7
No Response	341	1.7	162	1.2	146	1.1	16	4.4	179	2.9	129	2.4	50	5.6		

APPENDIX C: INSTITUTIONAL REVIEW BOARD APPLICATION LETTER

January 14, 2008

To: Committee for the Protection of Human Subjects
University of Hawai'i
Spalding Hall Room 253

From: Claire Hitosugi, a PhD candidate in Communication and Information Sciences

Re: Approval for Human Research Subjects

I would like to obtain exemption status for my research that is partial fulfillment of the requirement for the degree of doctor of philosophy in Communication and Information Sciences.

Research Title: The Role of Culture in the Online Trust Model (working title)

This research will investigate how online users come to perceive that a particular website is trustworthy and how they come to trust the information provided on the site. In the past decade, a number of papers have been published on the relationship between e-customers and trust perception. Many online trust creation models have been introduced in the business literature. However, few models have addressed the role of culture in the online trust creation process. It is well documented that wide differences in behaviors and perceptions exist across cultures. Whether these differences still hold water online or make any impact on e-customers' decision-making is yet to be explored.

This researcher maintains that the cultural aspects of e-commerce need to be worked out at the individual level. Using national culture as a surrogate for the measurement of cultural differentiation is not deemed appropriate for the research of online behaviors. A user normally navigates a site individually and makes a decision on his/her own in front of the computer. In this context, culture might be best captured as an individual trait. In the existing online trust literature, if they addressed culture at all, they incorporated culture at the national level. Research that attempts to capture culture at the individual level is scarce in the trust and e-commerce literature. Therefore, cultural orientation in an individual will be investigated in the e-commerce context, and will be incorporated in the online trust model in this research.

The experiment in this research consists of two parts. First, a subject will navigate a tourism website in order to gather the information on a specified travel destination. Second, upon completion of the first task, the subject will be directed to an online survey site. The survey will have about 100 questions. Data will be gathered anonymous. No subject will be identified in the results of the data analysis. The expected number of subjects is about 230. Data will be collected during the 2008 spring semester at the UHM. The investigator will solicit participants from ICS101, PSY101, SOCS225, BUS301, and other undergraduate courses if necessary upon obtaining the cooperation from the respective instructors.

APPENDIX D: INFORMED CONSENT FORM

Agreement to Participate in
“The Role of Culture in Online Trust Model”

Claire Hitosugi
Primary Investigator
Ph. 956-9103 Email: hitosugi@hawaii.edu

This research project is being conducted as a component of a dissertation for a doctoral degree. The purpose of the project is to learn how trust is perceived and created on the website and whether culture plays any role in its process.

Participation in the project will consist of navigating a website and filling out a questionnaire on your experience of the website. No personal identifying information will be included with the research results. All data are processed as an aggregate number, and no individual data will be identified. Completion of the tasks navigating the webpage should take no more than 15 minutes. The questionnaire should take no more than 20 minutes. Approximately 230 people will participate in the study.

The investigator believes there is little or no risk to participating in this research project. However, there may be a small discomfort that you might experience when closely examining your choice of answers over the web experience questions.

Participating in this research may be of no direct benefit to you. It is believed, however, the results from this project will help us understand people’s online behaviors. Also, you will acquaint yourself with a useful site for Japan trip and learn a few facts about the country. As compensation for time spent participating in the research project, you will receive an extra credit that has been agreed upon by your instructor.

Research data will be confidential to the extent allowed by law. Agencies with research oversight, such as the UH Committee on Human Studies, have the authority to review research data. All research records will be stored in a locked file in the primary investigators office for the duration of the research project. All research records will be destroyed upon completion of the project. The data will be analyzed by about August 31, 2008 and appointments may be made after that date to receive the results of the analyses.

Participation in this research project is completely voluntary. You are free to withdraw from participation at any time during the duration of the project with no penalty, or loss of benefit to which you would otherwise be entitled.

If you have any questions regarding this research project, please contact the researcher, Claire Hitosugi at 956-9103 or hitosugi@hawaii.edu.

If you have any questions regarding your rights as a research participant, please contact the UH Committee on Human Studies at (808) 956-5007.

Participant:

I have read and understand the above information, and I have been given satisfactory answers to my inquiries concerning project procedures and other matters and that I have been advised that I am free to withdraw my consent and to discontinue participation in the project or activity at any time without prejudice.

I herewith give my consent to participate in this project.

Name (printed)

Signature

Date

APPENDIX E: PILOT STUDY TASK SHEET

Dear Students,

Your Survey ID# _____

By participating in this experiment, you will earn extra credit of two points toward your final grade. There are two parts in today's activities. The first part involves going to the JAL "Guide to Japan" site and doing some facts finding. The second part involves taking a survey on the webpage.

Now, let's begin the first task. You will be doing four small tasks on the "Guide to Japan" webpage. The instructor will demonstrate the first task. Please pay close attention. We will be discussing what you find today in the next class. Thank you for your cooperation!

Go to <http://www.jal.co.jp/en/> Click on the icon that says "Guide to Japan".

Example Task (Demonstrated by the instructor): Find out what year *Himeji* castle was built.

Click on the "World Heritage" icon. Click on "*Himeji-jo*". Click again on the *Himeji-jo* picture opened in the new window.

Now, find out the year that *Himeji* castle was built.

Answer: _____

Task 1: Find out when the capital was established in the ancient city of Nara.

Click on the "World Heritage" icon. Click on "Historic Monuments of Ancient Nara". Click again the picture opened in the new window.

Now, find out when the capital was established in Nara.:

Answer: _____

Task 2: Find out information about Tokyo.

Click on "City Information" on the 'Guide to Japan' page. Click on Tokyo and find out

The population of Tokyo

Answer: _____

One of the two dates for the Bird Market, *Torino-ichi*

Answer: _____

Task 3: Find out useful information about getting around in Japan.

Go back to the "Guide to Japan" page. Click on the "Tourist Information" tab. Find out:

The cost of a 7-day-ordinary Japan Rail Pass

Answer: _____ yen

The cost of sending a letter (up to 25 g) to the US

Answer: _____ yen

Congratulations! You are done with the first part of the experiment!

APPENDIX F: MCKNIGHT ET AL. TRUST INSTRUMENT

McKnight, Choudhury and Kacmar 2002 Original Instrument

* **Disposition to Trust** (Wrightsman 1991)

Benevolence (DB)

1. In general, people really do care about the well-being of others.
2. The typical person is sincerely concerned about the problems of others.
3. most of the time, people care enough to try to be helpful, rather than just looking out for themselves.

Integrity (DI)

1. In general, most folks keep their promises.
2. I think people generally try to back up their words with their actions.
3. Most people are honest in their dealings with others.

Competence (DC)

1. I believe that most professional people do a very good job at their work.
2. Most professionals are very knowledgeable in their chosen field.
3. A large majority of professional people are competent in their area of expertise.

Trusting Stance (ST)

1. I usually trust people until they give me a reason not to trust them.
2. I generally give people the benefit of the doubt when I first meet them.
3. My typical approach is to trust new acquaintances until they prove I should not trust.

* **Institution-Based Trust** (New Scale)

Situational Normality-General (IG)

1. I feel good about how things go when I do purchasing or other activities on the Internet.
2. I am comfortable making purchases on the Internet.

Situational Normality-Benevolence (IB)

1. I feel that most Internet vendors would act in a customers' best interest.
2. If a customer required help, most Internet vendors would do their best to help.
3. Most Internet vendors are interested in customer well-being, not just their own well-being.

Situational Normality-Integrity (II)

1. I am comfortable relying on Internet vendors to meet their obligations.
2. I feel fine doing business on the Internet since Internet vendors generally fulfill their agreements.

3. I always feel confident that I can rely on Internet vendors to do their part when I interact with them.

Situational Normality-Competence (IC)

1. In general, most Internet vendors are competent at serving their customers.
2. Most Internet vendors do a capable job at meeting customer needs.
3. I feel the most Internet vendors are good at what they do.

Structural Assurance (ISA) (New scale)

1. The Internet has enough safeguards to make me feel comfortable using it to transact personal business.
2. I feel assured that legal and technological structures adequately protect me from problems on the Internet.
3. I feel confident that encryption and other technological advances on the Internet make it safe for me to do business there.
4. In general, the Internet is now a robust and safe environment in which to transact business.

* **Trusting Beliefs** (Wrightsmann 1991 – Johnson-George & Swap 1982, Rempel et al. 1985)

Benevolence (TBB)

1. I believe that LegalAdvice.com would act in my best interest.
2. If I required help, LegalAdvice.com would do its best to help me.
3. LegalAdvice.com is interested in my well-being, not just its own.

Integrity (TBI)

1. LegalAdvice.com is truthful in its dealings with me.
2. I would characterize LegalAdvice.com as honest.
3. LegalAdvice.com would keep its commitments.
4. LegalAdvice.com is sincere and genuine.

Competence (TBC)

1. LegalAdvice.com is competent and effective in providing legal advice.
2. LegalAdvice.com performs its role of giving legal advice very well.
3. Overall, LegalAdvice.com is a capable and proficient Internet legal advice provider.
4. In general, LegalAdvice.com is very knowledgeable about the law.

* **Trusting Intentions** (adapted a scale previously McKnight et al. developed and tested. Items originally largely taken from Dobing 1993)

Willingness to Depend (GN)

1. When an important legal issue or problem arises, I would feel comfortable depending on the information provided by LegalAdvice.com.

2. I can always rely on LegalAdvice.com in a tough legal situation.
3. I feel that I could count on LegalAdvice.com to help with a crucial legal problem.
4. Faced with a difficult legal situation that required me to hire a lawyer (for a fee), I would use the firm backing LegalAdvice.com.

Subjective Probability of Depending—Follow Advice (FA) (new items)

1. If I had a challenging legal problem, I would want to use LegalAdvice.com again.*
2. I would feel comfortable acting on the landlord/tenant information given to me by LegalAdvice.com.
3. I would not hesitate to use the landlord/tenant information LegalAdvice.com supplied me.
4. I would confidently act on the legal advice I was given by Legal Advice.com.
5. I would feel secure in using the landlord/tenant information from LegalAdvice.com.
6. Based on the advice I just read, I would serve notice, wait, go ahead and get the repair done, and then deduct the cost of the repair from my rent.

Subjective Probability of Depending—Give Information (GI) (new items)

Suppose you wanted more specific information about landlord/tenant relationships and you could consult (one time only) by telephone with one of the LegalAdvice.com lawyers for 15-30 minutes (free of charge). For this service, please answer the following:

1. I would be willing to provide information like my name, address, and phone number to LegalAdvice.com.
2. I would be willing to provide my social security number to LegalAdvice.com.
3. I would be willing to share the specifics of my legal issue with LegalAdvice.com.

Subjective Probability of Depending—Make Purchases (MP) (new items)

Suppose the LegalAdvice.com site was not free, but charged to access information on the site. Answer the following questions:

1. Faced with a difficult legal situation, I would be willing to pay to access information on the LegalAdvice.com Web site.
2. I would be willing to provide credit card information on the LegalAdvice.com Web site.
3. Given a tough legal issue, I would be willing to pay for a 30-minute phone consultation with a LegalAdvice.com lawyer.

THREE EXOGENOUS CONSTRUCTS

*** Personal Innovativeness (PI)** (Agarwal & Prasad 1998)

1. I like to explore new Web sites.
2. When I hear about a new Web site, I often find an excuse to go visit it.
3. Among my peers, I am usually the first to try out new Internet sites.
4. In general, I am not interested in trying out new Web sites.
5. When I have some free time, I often explore new Web sites.

*** General Web Experience** (Georgia Institute of Technology's Graphics, Visualization, and Usability surveys of Web usage)

On average, how much time per week do you spend on each of the following Web activities? (Scale: one, 0-30 minutes, 30-60 minutes, 1-2 hours, 2-4 hours, 4-6 hours, 8+ hours)

1. ... reading newspapers on the Web?
2. ... reading and/or posting messages to news groups?
3. ... accessing information on the Web about products and services you may buy?
4. ... shopping (i.e., actually purchasing something) on the Web?

*** Perceived Site Quality (PSQ)** (Cheskin 1999)

1. Overall, this site worked very well technically.
2. Visually, this site resembled other sites I think highly of.
3. This site was simple to navigate.
4. On this site, it was easy to find the information I wanted.
5. This site clearly showed how I can contact or communicate with legalAdvice.com.

APPENDIX G: SRITE & KARAHANNA'S CULTURE INSTRUMENT

Masculinity/Femininity	
MF1	It is preferable to have a man in high level position rather than a woman.
<i>MF2</i>	<i>There are some jobs in which a man can always do better than a woman.</i>
MF3	It is more important for men to have a professional career than it is for women to have a professional career.
<i>MF4</i>	<i>Solving organizational problems requires the active forcible approach which is typical of men</i>
<i>MF5</i>	<i>Women do not value recognition and promotion in their work as much as men do</i>
Individualism/Collectivism	
KIC1	Being accepted as a member of a group is more important than having autonomy and independence.
KIC2	Being accepted as a member of a group is more important than being independent
KIC3	Group success is more important than individual success
KIC4	Being loyal to a group is more important than individual gain
KIC5	Individual rewards are not as important as group welfare
KIC6	It is more important for a manager to encourage loyalty and a sense of duty in subordinates than it is to encourage individual initiative.
Power Distance	
PD1	Managers should make most decisions without consulting subordinates
PD2	Managers should not ask subordinates for advice, because they might appear less powerful
PD3	Decision making power should stay with top management in the organization and not be delegated to lower level employees
PD4	Employees should not question their manager's decisions
<i>PD5</i>	<i>A manager should perform work which is difficult and important and delegate tasks which are repetitive and mundane to subordinates</i>
<i>PD6</i>	<i>Higher level managers should receive more benefits and privileges than lower level managers and professional staff</i>
<i>PD7</i>	<i>Managers should be careful not to ask the opinions of subordinates too frequently, otherwise the manager might appear to be weak and incompetent.</i>
Uncertainty Avoidance	
UA1	Rules and regulations are important because they inform workers what the organization expects of them
UA2	Order and structure are very important in a work environment
<i>UA3</i>	<i>It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do.</i>
<i>UA4</i>	<i>It is better to have a bad situation that you know about, than to have an uncertain situation which might be better</i>
<i>UA5</i>	<i>Providing opportunities to be innovative is more important than requiring standardized work procedures.</i>
<i>UA6</i>	<i>People should avoid making changes because things could get worse</i>

(The italicized items were dropped from the final analysis of **Srite and Karahanna's study**.)

APPENDIX H: PILOT STUDY QUESTIONNAIRE
“Using Tourism Websites—Questionnaire”

What is your survey ID? _____

“Have you already reached 18 years old.”

Yes / No

If you are not at least 18 years old, please stop here.

Please circle the item that you think best reflect you. Thank you for your cooperation!

**Strongly
Disagree**
1

2

3

**Neither disagree
nor agree**
4

5

6

**strongly
agree**
7

- 1 In general, people really do care about the well-being of others.
- 2 The typical person is sincerely concerned about the problems of others.
- 3 Most of the time, people care enough to try to be helpful, rather than just looking out for themselves.
- 4 In general, most folks keep their promises.
- 5 I think people generally try to back up their words with their actions.
- 6 Most people are honest in their dealings with others.
- 7 I believe that most professional people do a very good job at their work.
- 8 Most professionals are very knowledgeable in their chosen field.
- 9 A large majority of professional people are competent in their area of expertise.
- 10 I usually trust people until they give me a reason not to trust them.
- 11 I generally give people the benefit of the doubt when I first meet them.
- 12 My typical approach is to trust new acquaintances until they prove I should not trust.
- 13 It is preferable to have a man in high level position rather than a woman.
- 14 There are some jobs in which a man can always do better than a woman.
- 15 It is more important for men to have a professional career than it is for women to have a professional career.
- 16 Solving organizational problems requires the active forcible approach which is typical of men.
- 17 Women do not value recognition and promotion in their work as much as men do.
- 18 Being accepted as a member of a group is more important than having autonomy and independence.
- 19 Being accepted as a member of a group is more important than being independent.

- 20 Group success is more important than individual success.
- 21 Being loyal to a group is more important than individual gain.
- 22 Individual rewards are not as important as group welfare.

- 23 It is more important for a manager to encourage loyalty and a sense of duty in subordinates than it is to encourage individual initiative.
- 24 Managers should make most decisions without consulting subordinates.
- 25 Managers should not ask subordinates for advice, because they might appear less powerful.
26. Decision making power should stay with top management in the organization and not be delegated to lower level employees.
- 27 Employees should not question their manager's decisions.
- 28 A manager should perform work which is difficult and important and delegate tasks which are repetitive and mundane to subordinates.
- 29 Higher level managers should receive more benefits and privileges than lower level managers and professional staff
- 30 Managers should be careful not to ask the opinions of subordinates too frequently, otherwise the manager might appear to be weak and incompetent.
- 31 Rules and regulations are important because they inform workers what the organization expects of them.
- 32 Order and structure are very important in a work environment
- 33 It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do.
- 34 It is better to have a bad situation that you know about, than to have an uncertain situation which might be better.
- 35 Providing opportunities to be innovative is more important than requiring standardized work procedures.
- 36 People should avoid making changes because things could get worse.
- 37 I feel good about how things go when I do purchasing or other activities on the Internet.
- 38 I am comfortable making purchases on the Internet.
- 39 I feel that most Internet vendors would act in a customers' best interest.
- 40 If a customer required help, most Internet vendors would do their best to help.
- 41 Most Internet vendors are interested in customer well-being, not just their own well-being.
- 42 I am comfortable relying on Internet vendors to meet their obligations.

- 43 I feel fine doing business on the Internet since Internet vendors generally fulfill their agreements.
- 44 I always feel confident that I can rely on Internet vendors to do their part when I interact with them.
- 45 In general, most Internet vendors are competent at serving their customers.
- 46 Most Internet vendors do a capable job at meeting customer needs.
- 47 I feel the most Internet vendors are good at what they do.
- 48 The Internet has enough safeguards to make me feel comfortable using it to transact personal business.
- 49 I feel assured that legal and technological structures adequately protect me from problems on the Internet.
- 50 I feel confident that encryption and other technological advances on the Internet make it safe for me to do business there.
- 51 In general, the Internet is now a robust and safe environment in which to transact business.
- 52 I believe that the “Guide to Japan” website would act in my best interest.
- 53 If I required help, the “Guide to Japan” website would do its best to help me.
- 54 The “Guide to Japan” is interested in my well-being, not just its own.
- 55 The “Guide to Japan” website is truthful in its dealings with me.
- 56 I would characterize the “Guide to Japan” website as honest.
- 57 The “Guide to Japan” website would keep its commitments.
- 58 The “Guide to Japan” website is sincere and genuine.
- 59 The “Guide to Japan” website is competent and effective in providing travel advice.
- 60 The “Guide to Japan” website performs its role of giving travel advice very well.
- 61 Overall, the “Guide to Japan” website is a capable and proficient Internet travel advice provider.
- 62 In general, the “Guide to Japan” website is very knowledgeable about the information that a tourist is looking for.
- 63 When an important travel issue or problem arises, I would feel comfortable depending on the information provided by the “Guide to Japan” website.
- 64 I can always rely on the “Guide to Japan” website in a tough travel situation.
- 65 I feel that I could count on the “Guide to Japan” website to help with a crucial travel problem.

- 66 Faced with a difficult travel situation that required me to hire a travel agent (for a fee), I would use the firm backing the “Guide to Japan” website.
- 67 If I had a challenging travel problem, I would want to use the “Guide to Japan” website again.
- 68 I would feel comfortable acting on the accommodation information given to me by the “Guide to Japan” website.
- 69 I would not hesitate to use the accommodation information the “Guide to Japan” website supplied me.
- 70 I would confidently act on the travel advice I was given by the “Guide to Japan” website.
- 71 I would feel secure in using the accommodation information from the “Guide to Japan” website.
- 72 Based on the advice I just read, I would make a reservation with credit card over the Internet.
- 73 Suppose you wanted more specific information about destination and you could consult (one time only) by telephone with one of the “Guide to Japan” website travel agents for 15-30 minutes (free of charge). For this service, please answer the following:
- 73 a) I would be willing to provide information like my name, address, and phone number to the “Guide to Japan” website.
- 73 b) I would be willing to provide my credit card number to the “Guide to Japan” website.
- 73 c) I would be willing to share the specifics of my travel issue with the “Guide to Japan” website.
- 74 Suppose the “Guide to Japan” website site was not free, but charged to access information on the site. Answer the following questions:
- 74 a) Faced with a difficult travel situation, I would be willing to pay to access information on the “Guide to Japan” website.
- 74 b) I would be willing to provide credit card information on the “Guide to Japan” website.
- 74 c) Given a tough travel issue, I would be willing to pay for a 30-minute phone consultation with the “Guide to Japan” website travel agent.
- 75 I like to explore new Web sites.
- 76 When I hear about a new Web site, I often find an excuse to go visit it.
- 77 Among my peers, I am usually the first to try out new Internet sites.
- 78 In general, I am not interested in trying out new Web sites.
- 79 When I have some free time, I often explore new Web sites.

- 80 On average, how much time PER DAY do you spend on Web activities?
0-30 minutes 30-60 minutes 1-2 hours 2-4 hours 4-6 hours 8+ hours
- 81 Overall, this site worked very well technically.
- 82 Visually, this site resembled other sites I think highly of.
- 83 This site was simple to navigate.
- 84 On this site, it was easy to find the information I wanted.

<Demographic Section>

How old are you? _____ What is your gender? Male/Female

Which ethnic group do you identify most? _____

What language(s) were spoken in your home when you were a child? You may list more than one language

Thank you very much for taking this survey. This is the end of the survey. You will receive two points of extra credit for your class. Thank you again and have a great day!

APPENDIX I: PILOT STUDY DESCRIPTIVESTATISTICS FOR TRUST & CULTURE INSTRUMENTS

McKnight et al.			
Scale	Mean	Std.	Deviation
DB1_WellBeOthrs	5.25	1.092	
DB2_ConcernOthrs	4.71	1.149	
DB3_Helpful	4.89	1.012	
DI1_KeepPromise	4.73	1.079	
DI2_WordAction	4.93	.997	
DI3_Honest	4.62	.972	
DC1_ProfGoodJob	5.00	.882	
DC2_ProfKnowldge	5.38	.733	
DC3_ProfCompetn	5.29	.737	
DST1_UntilNot	5.53	.997	
DST2_BefntDoubt	5.27	1.394	
DST3_NewAcqUntil	5.00	1.427	
IG1_FeelGoodNet	4.45	1.288	
IG2_ComfortblNet	4.53	1.709	
IB1_VdrCstmrlInterest	4.16	1.358	
IB2_VdrDoBest	4.09	1.444	
IB3_VdrCstmrWellbng	3.76	1.186	
I11_MeetObligtn	4.07	1.425	
I12_FulfillAgrmnt	4.40	1.486	
I13_DoVdrsPart	4.15	1.483	
IC1_Competent	4.87	1.218	
IC2_Capable	4.82	1.140	
IC3_GoodAtWhat	4.65	1.190	
ISA1_Safeguards	4.11	1.583	
ISA2_LegalStrctr	3.78	1.487	
ISA3_EncrypSafe	4.11	1.499	
ISA4_NetRobstSafe	3.82	1.553	
TBB1_webMyInterst	5.31	1.034	
TBB2_webHelpful	5.11	1.133	
TBB3_webMywelBng	4.87	1.248	
TBI1_webTrustful	5.04	1.122	
TBI2_webHonest	5.27	1.130	
TBI3_KeepCommit	4.78	1.083	
TBI4_webSincrGenuine	4.98	1.114	
TBC1_webComptEffct	5.44	1.102	
TBC2_webPfmRole	5.47	1.103	
TBC3_webCapable	5.36	1.007	
TBC4_webKnowldg	5.67	1.123	
GN1_ComfortableInfo	5.22	1.083	
GN2_CanRelyOn	4.56	1.118	
GN3_CanCountOn	4.47	1.136	
GN4_WouldUse	4.38	.991	
FA1_UseAgain	4.84	1.085	
FA2_ActingonINFO	4.91	.967	
FA3_UseInfo	4.67	1.139	
FA4_ConfidentAct	4.87	.982	
FA5_FeelSecure	4.89	.975	
FA6_ReservWCard	4.45	1.358	
GI1_NameAddr	4.75	1.350	
GI2_CreditCard	3.69	1.562	
GI3_ShareSpecs	5.44	.877	
MP1_Pay4Info	3.38	1.434	
MP2_ProvCreditCard	3.16	1.525	
MP3_Pay4Consult	3.35	1.518	

Srite & Karahanna			
Scale	Mean	Std.	Deviation
MF1_ManHighPtn	2.73	1.581	
MF2_ManBetter	3.91	1.839	
MF3_MenCareer	2.42	1.370	
MF4_SolvByForcibleMen	2.60	1.226	
MF5_WomenNotRec	2.02	1.080	
KIC1_MembrOvAuto	3.44	1.259	
KIC2_MembreOvInd	3.29	1.212	
KIC3_GroupSuccess	4.345	1.2052	
KIC4_LoyalOvIndGn	4.62	1.354	
KIC5_GrpWelfare	4.60	1.180	
KIC6_LoyalDuty	4.62	1.209	
PD1_DeciswoSub	2.73	1.162	
PD2_NotAskSubAdv	2.11	1.083	
PD3_DecisinStayTop	3.24	1.587	
PD4_EmplrSdNotAsk	2.78	1.257	
PD5_WrkDelegt	3.02	1.394	
PD6_MrBeneft4Mgr	4.25	1.456	
PD7_NotAskSubOpn	3.15	1.367	
UA1_RulesRegltn	5.91	.727	
UA2_OrderStructur	5.91	.888	
UA3_SpellDetails	5.89	.809	
UA4_BadStnBetter	4.18	1.203	
UA5_OpprtInnovatv	3.27	.952	
UA6_AvoidChange	2.55	.939	

(N=55)

**APPENDIX J: PILOT STUDY MCKNIGHT'S 54-ITEM
PRINCIPAL COMPONENT ANALYSIS**

	1	2	3	4	5	6	7	8	9	10	11
DB1_WellBeOthrs	0.110	0.203	0.620		0.448			-0.315			-0.237
DB2_ConcernOthrs			0.773	0.206	0.304			-0.156			
DB3_Helpful	0.280		0.583		0.403		0.102	-0.364	-0.296	-0.116	
DI1_KeepPromise		-0.104	0.741	0.143	-0.197	0.229	0.246	0.159			
DI2_WordAction		0.101	0.742		-0.204	0.155	0.277	0.163			
DI3_Honest	0.151		0.749	0.126		0.357	-0.111			-0.181	
DC1_ProfGoodJob	0.228	0.155	0.332	-0.312	-0.468	0.248		-0.228		0.116	0.242
DC2_ProfKnowldge	0.225		0.470	-0.333	-0.202	0.131		-0.218		0.459	0.134
DC3_ProfCompetn	0.275	-0.211	0.380	-0.242		0.125	-0.274	0.281		0.500	
DST1_UntilNot		-0.141	0.317	0.258	0.548	-0.183		0.182	-0.118		0.246
DST2_BefntDoubt	-0.102		-0.131		0.704	-0.127	0.167		0.177	0.261	0.399
DST3_NewAcqUntil	-0.181	-0.224	0.311	0.336	0.418			0.456	0.129		0.169
IG1_FeelGoodNet	0.515	0.555	-0.102		0.272	-0.219			-0.137	0.146	
IG2_ComfortblNet	0.453	0.725	-0.240							0.114	0.102
IB1_VdrCstmrInterest	0.506	0.622	0.340	0.178	-0.169		0.123		0.111		0.105
IB2_VdrDoBest	0.548	0.337	0.275	0.246	-0.362				0.169	-0.138	-0.221
IB3_VdrCstmrWellbng	0.366	0.331	0.447	0.167	-0.151	-0.260	0.223		0.179		-0.254
II1_MeetObligtn	0.460	0.755	-0.119		0.112	-0.128		0.124		-0.122	0.107
II2_FulfillAgmnt	0.542	0.737									0.124
II3_DoVdrsPart	0.568	0.684				0.153		0.128			
IC1_Competent	0.535	0.645				-0.289	0.153				0.148
IC2_Capable	0.586	0.659				-0.294					
IC3_GoodAtWhat	0.642	0.501		-0.117	-0.281	-0.183			-0.222		
ISA1_Safeguards	0.723	0.459				0.212	-0.195	0.163	-0.149		
ISA2_LegalStrctr	0.652	0.298			0.125	0.158	-0.445		-0.317		
ISA3_EncrypSafe	0.830	0.305			0.111	0.177	-0.208		-0.190		
ISA4_NetRobstSafe	0.743	0.433	-0.102		0.105	0.126		0.120	-0.161		
TBB1_webMyInterst	0.714	-0.366	0.100			-0.183	-0.132	-0.186	0.182		-0.137
TBB2_webHelpful	0.697	-0.420				-0.245	-0.253				
TBB3_webMywelBng	0.753	-0.275			0.134		-0.205	-0.116	0.239	-0.175	
TBI1_webTrustful	0.729	-0.320	0.182	0.190	-0.124	-0.155	-0.180	0.156	0.256	-0.139	
TBI2_webHonest	0.781	-0.359	0.174			-0.184	-0.196		0.106		
TBI3_KeepCommit	0.661	-0.365	0.188		-0.170	0.123	-0.177	0.224	0.149	-0.113	
TBI4_webSincrGenuine	0.691	-0.328	0.429	0.125	-0.113		-0.107	0.149		-0.132	0.176
TBC1_webComptEffct	0.811	-0.329				-0.200	-0.169				
TBC2_webPfmRole	0.803	-0.364		0.111		-0.202	-0.114	-0.236	-0.119		
TBC3_webCapable	0.785	-0.411				-0.206		-0.132	-0.135		
TBC4_webKnowldg	0.730	-0.306			-0.171			-0.272			0.193
GN1_ComfortableInfo	0.726	-0.419	-0.209		-0.147		0.167	-0.128		-0.102	0.196
GN2_CanRelyOn	0.687	-0.240	-0.148	-0.219		0.164	0.157		-0.206	-0.237	0.150
GN3_CanCountOn	0.595	-0.350	-0.228	-0.350	0.200	0.339	0.158			-0.250	
GN4_WouldUse	0.600	-0.376	-0.176	-0.105	0.261	0.314	0.183			-0.112	
FA1_UseAgain	0.554	-0.432		-0.300		0.120	0.370	0.180		-0.100	0.123
FA2_ActingonINFO	0.717	-0.457			0.138	-0.124	0.149	0.204	-0.118		-0.224
FA3_UseInfo	0.770	-0.247			0.148		0.271		-0.110	0.154	-0.311
FA4_ConfidentAct	0.796	-0.270				-0.100	0.341				
FA5_FeelSecure	0.799	-0.248					0.173	0.203	-0.175	0.205	-0.221
FA6_ReserWCard	0.768	0.156	-0.148		0.137	0.140			0.201		-0.184
GI1_NameAddrs	0.580	0.377	-0.243	0.156	0.239	0.256	0.122	-0.200	0.305	0.139	
GI2_CreditCard	0.551		-0.265			0.343	-0.208	-0.161	0.435	0.138	
GI3_ShareSpecs	0.481		-0.435				0.125		0.245	0.251	
MP1_Pay4Info	0.170		-0.217	0.823	-0.201	0.221		-0.112	-0.119	0.111	
MP2_ProvCreditCard	0.157	-0.135	-0.317	0.806	-0.168	0.166					0.126
MP3_Pay4Consult		-0.165	-0.239	0.815	-0.149					0.122	

**APPENDIX K: PILOT STUDY TOTAL VARIANCE – MCKNIGHT ET AL.
TRUST INSTRUMENT**

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	17.564	32.526	32.526	17.564	32.526	32.526
2	7.609	14.090	46.617	7.609	14.090	46.617
3	5.211	9.651	56.267	5.211	9.651	56.267
4	3.051	5.650	61.918	3.051	5.650	61.918
5	2.662	4.930	66.848	2.662	4.930	66.848
6	1.726	3.197	70.045	1.726	3.197	70.045
7	1.559	2.887	72.932	1.559	2.887	72.932
8	1.380	2.556	75.488	1.380	2.556	75.488
9	1.320	2.444	77.932	1.320	2.444	77.932
10	1.155	2.139	80.071	1.155	2.139	80.071
11	1.100	2.038	82.109	1.100	2.038	82.109
12	.868	1.607	83.716			
13	.849	1.572	85.288			
14	.778	1.440	86.728			
15	.696	1.288	88.016			
16	.694	1.285	89.301			
17	.543	1.005	90.306			
18	.535	.991	91.297			
19	.476	.882	92.180			
20	.449	.832	93.011			
21	.421	.779	93.790			
22	.364	.675	94.465			
23	.341	.631	95.097			
24	.327	.605	95.702			
25	.258	.478	96.180			
26	.243	.449	96.629			
27	.222	.411	97.041			
28	.197	.366	97.406			
29	.189	.349	97.756			
30	.175	.325	98.080			
31	.158	.293	98.373			
32	.119	.221	98.594			
33	.107	.198	98.792			
34	.092	.171	98.963			
35	.088	.163	99.126			
36	.076	.141	99.267			
37	.065	.121	99.388			
38	.057	.106	99.494			
39	.048	.089	99.584			
40	.042	.078	99.662			
41	.038	.070	99.731			
42	.032	.060	99.791			
43	.027	.050	99.841			
44	.020	.038	99.879			
45	.019	.036	99.915			
46	.012	.023	99.938			
47	.012	.022	99.960			
48	.007	.013	99.972			
49	.006	.011	99.983			
50	.005	.009	99.992			
51	.002	.004	99.996			
52	.001	.003	99.999			
53	.001	.001	100.000			
54	1.79E-005	3.31E-005	100.000			

Extraction Method: Principal Component Analysis.

**APPENDIX L: PILOT STUDY FACTOR ANALYSIS – SRITE & KARAHANNA
CULTURE INSTRUMENT**

	Factor						
	1	2	3	4	5	6	7
MF1_ManHighPtn	-.089	.767	.244	-.060	-.047	-.166	-.019
MF2_ManBetter	-.091	.720	.134	.037	.061	.070	-.075
MF3_MenCareer	-.091	.746	.004	-.145	.111	-.022	.066
MF4_SolvByForciMen	.213	.632	-.078	.117	-.163	.085	.177
MF5_WomenNotRec	.371	.460	-.168	.211	.049	.029	-.179
KIC1_MembrOvAuto	-.165	-.036	.064	-.055	1.066	.020	-.011
KIC2_MembreOvInd	.056	.156	.031	.234	.682	-.123	-.048
KIC3_GroupSuccess	-.127	-.062	-.160	.761	-.082	.005	.179
KIC4_LoyalOvIndGn	.090	-.050	-.075	.811	.044	.116	-.021
KIC5_GrpWelfare	-.164	.160	-.063	.552	.060	-.020	-.026
KIC6_LoyalDuty	.207	-.186	.405	.391	.087	.098	-.068
PD1_DecisnwoSub	.450	.156	-.008	.044	-.060	-.050	-.034
PD2_NotAskSubAdv	.779	-.050	-.279	-.266	-.034	.126	-.076
PD3_DecisinStayTop	.731	-.140	.256	.002	.082	-.203	.003
PD4_EmplrSdNotAsk	.603	.126	.197	.085	-.195	-.070	.026
PD5_WrkDelegt	.031	.037	.093	.072	-.026	.087	.960
PD6_MrBenefit4Mgr	.185	.075	.831	-.063	.078	.024	.173
PD7_NotAskSubOpn	.660	-.150	.191	-.048	.018	-.104	.112
UA1_RulesRegltn	.019	.064	.798	-.150	-.023	.142	-.023
UA2_OrderStrctur	.015	.100	.482	-.043	.013	-.056	-.013
UA3_SpellDetails	.013	.087	.409	-.119	-.058	.240	-.369
UA4_BadStnBetter	-.159	.054	.030	-.014	.088	.947	.130
UA5_OpprtInnovatv	.083	.133	-.223	-.194	.136	-.546	.142
UA6_AvoidChange	.351	.042	-.189	-.105	.400	.201	.109

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a Rotation converged in 8 iterations.

**APPENDIX M: PILOT STUDY TOTAL VARIANCE – SRITE & KARAHANNA
INSTRUMENT**

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings(a)
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.610	19.207	19.207	2.645	11.021	11.021	3.230
2	3.498	14.576	33.783	1.678	6.992	18.013	3.186
3	2.482	10.343	44.127	1.593	6.638	24.651	2.588
4	2.049	8.538	52.665	2.841	11.838	36.489	2.326
5	1.570	6.540	59.205	2.145	8.937	45.426	2.832
6	1.286	5.357	64.562	1.767	7.361	52.787	1.807
7	1.219	5.077	69.639	1.443	6.013	58.800	1.837
8	.992	4.133	73.772				
9	.925	3.855	77.627				
10	.815	3.395	81.023				
11	.734	3.058	84.081				
12	.664	2.766	86.847				
13	.511	2.129	88.976				
14	.495	2.064	91.040				
15	.419	1.746	92.786				
16	.324	1.351	94.137				
17	.296	1.234	95.371				
18	.268	1.115	96.485				
19	.202	.840	97.326				
20	.201	.836	98.161				
21	.140	.582	98.743				
22	.131	.545	99.288				
23	.104	.432	99.720				
24	.067	.280	100.000				

Extraction Method: Maximum Likelihood.

a When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

APPENDIX N: PILOT STUDY SIMPLE REGRESSION ANALYSIS

Effects of Uncertainty Avoidance

(1) Disposition to Trust Integrity

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t		Sig.
		B	Std. Error	Beta	B	Std. Error	
1	(Constant)	9.572	4.246		2.254		.029
	MF	-.021	.072	-.044	-.296		.768
	KIC	-.089	.077	-.165	-1.155		.254
	PD	-.065	.061	-.153	-1.061		.294
	UA	.309	.155	.285	2.003		.051

a Dependent Variable: DI

Residuals Statistics(a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	11.7879	15.6826	14.2727	.82800	55
Std. Predicted Value	-3.001	1.703	.000	1.000	55
Standard Error of Predicted Value	.405	1.252	.750	.186	55
Adjusted Predicted Value	12.8146	16.1527	14.3063	.80450	55
Residual	-6.78787	3.55657	.00000	2.46414	55
Std. Residual	-2.651	1.389	.000	.962	55
Stud. Residual	-3.039	1.428	-.006	1.023	55
Deleted Residual	-8.91999	3.80280	-.03358	2.79056	55
Stud. Deleted Residual	-3.331	1.444	-.015	1.048	55
Mahal. Distance	.366	11.926	3.927	2.467	55
Cook's Distance	.000	.580	.028	.079	55
Centered Leverage Value	.007	.221	.073	.046	55

a Dependent Variable: DI

(2) Institution-Based Trust Benevolence

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t		Sig.
		B	Std. Error	Beta	B	Std. Error	
1	(Constant)	3.203	5.742		.558		.579
	MF	.017	.097	.026	.175		.862
	KIC	-.100	.104	-.138	-.963		.340
	PD	-.065	.082	-.114	-.787		.435
	UA	.449	.209	.307	2.150		.036

a Dependent Variable: IB

Residuals Statistics(a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	9.0946	14.1444	12.0182	1.08414	55
Std. Predicted Value	-2.697	1.961	.000	1.000	55
Standard Error of Predicted Value	.547	1.693	1.014	.251	55
Adjusted Predicted Value	9.1146	14.5095	12.0456	1.09040	55
Residual	-8.35297	6.21515	.00000	3.33198	55
Std. Residual	-2.412	1.795	.000	.962	55
Stud. Residual	-2.588	1.866	-.004	1.014	55
Deleted Residual	-9.61094	6.71946	-.02737	3.70173	55
Stud. Deleted Residual	-2.752	1.915	-.006	1.030	55
Mahal. Distance	.366	11.926	3.927	2.467	55
Cook's Distance	.000	.202	.023	.035	55
Centered Leverage Value	.007	.221	.073	.046	55

a Dependent Variable: IB

Effects of Individualism/Collectivism

(3) Trusting Beliefs Benevolence

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	15.006	5.176		2.899	.006
	MF	.120	.088	.204	1.370	.177
	KIC	-.185	.094	-.284	-1.978	.053
	PD	-.063	.074	-.123	-.853	.398
	UA	.166	.188	.126	.882	.382

a Dependent Variable: TBB

Residuals Statistics(a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	13.50851	17.35886	15.29091	.983322	55
Std. Predicted Value	-1.813	2.103	.000	1.000	55
Standard Error of Predicted Value	.493	1.526	.914	.227	55
Adjusted Predicted Value	11.90915	17.96537	15.29173	1.113506	55
Residual	-	6.917895	.000000	3.003491	55
	11.658818				
Std. Residual	-3.735	2.216	.000	.962	55
Stud. Residual	-4.073	2.541	.000	1.032	55
Deleted Residual	-	9.090853	-.000818	3.459407	55
	13.859510				
Stud. Deleted Residual	-4.932	2.695	-.012	1.108	55
Mahal. Distance	.366	11.926	3.927	2.467	55
Cook's Distance	.000	.626	.032	.099	55
Centered Leverage Value	.007	.221	.073	.046	55

a Dependent Variable: TBB

(4) Trusting Intentions – Follow Advice

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	30.569	8.682		3.521	.001
	MF	.239	.147	.237	1.629	.110
	KIC	-.319	.157	-.284	-2.029	.048
	PD	-.238	.124	-.270	-1.910	.062
	UA	.281	.316	.124	.890	.378

a Dependent Variable: FA

Residuals Statistics(a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	24.9692	32.9750	28.6364	2.01808	55
Std. Predicted Value	-1.817	2.150	.000	1.000	55
Standard Error of Predicted Value	.827	2.560	1.533	.380	55
Adjusted Predicted Value	21.4157	32.9715	28.6310	2.20112	55
Residual	-19.71542	11.85922	.00000	5.03838	55
Std. Residual	-3.765	2.265	.000	.962	55
Stud. Residual	-4.105	2.596	.000	1.034	55
Deleted Residual	-23.43685	15.58428	.00536	5.82701	55
Stud. Deleted Residual	-4.992	2.763	-.010	1.118	55
Mahal. Distance	.366	11.926	3.927	2.467	55
Cook's Distance	.000	.636	.033	.103	55
Centered Leverage Value	.007	.221	.073	.046	55

a Dependent Variable: FA

Effects of Power Distance

(5) Personal Innovativeness

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t		Sig.
		B	Std. Error	Beta	B	Std. Error	
1	(Constant)	25.479	8.576		2.971		.005
	MF	.081	.145	.083	.562		.577
	KIC	-.143	.155	-.131	-.925		.360
	PD	-.293	.123	-.342	-2.388		.021
	UA	.270	.312	.122	.865		.391

a. Dependent Variable: PI

Residuals Statistics(a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	19.4635	27.7992	24.2545	1.79015	55
Std. Predicted Value	-2.676	1.980	.000	1.000	55
Standard Error of Predicted Value	.817	2.529	1.514	.375	55
Adjusted Predicted Value	19.2950	27.8525	24.2244	1.85177	55
Residual	-9.92336	9.46916	.00000	4.97659	55
Std. Residual	-1.919	1.831	.000	.962	55
Stud. Residual	-2.007	1.973	.003	1.012	55
Deleted Residual	-11.07138	10.99766	.03013	5.50713	55
Stud. Deleted Residual	-2.072	2.034	.000	1.027	55
Mahal. Distance	.366	11.926	3.927	2.467	55
Cook's Distance	.000	.146	.022	.031	55
Centered Leverage Value	.007	.221	.073	.046	55

a. Dependent Variable: PI

APPENDIX O: FINAL STUDY TASK SHEET

Dear Participants,

By participating in this experiment, you will earn extra credit points that your instructor agreed upon. There are two parts in today's activities. The first part involves going to the "Guide to Japan" site and finding some facts and recommendations. In the second part, you will be taking an online survey regarding the webpage just navigated.

Now, let's begin the first task. You will be doing four small tasks on the "Guide to Japan" webpage. The investigator will demonstrate the first task. Please pay close attention to the tasks. Thank you for your cooperation!

Go to <http://www.jal.co.jp/en/> Click on the icon that says "Guide to Japan".

There are three icons/tabs on the "Guide to Japan" home page; *City Information*, *World Heritage*, and *Tourist Information* tabs.

Example Task (Demonstrated by the investigator): Find out in what year *Himeji* castle was built.

Click on the "World Heritage" icon. Click on "*Himeji-jo*". Click again on the *Himeji-jo* picture opened in the new window.

Now, find out the year that *Himeji* castle was built. Answer: _____

Go back to the "World Heritage" home page.

Task 1: Find out when the capital was established in the ancient city of Nara.

Click on the "World Heritage" icon. Click on "Historic Monuments of Ancient Nara". Click again the picture opened in the new window.

Now, find out when the capital was established in Nara: Answer: _____

Task 2: Find out information about Sapporo.

Click on "City Information" on the 'Guide to Japan' page. Click on Sapporo and find out

The population of Sapporo Answer: _____

<Continue on the back>

Task 3: Let's assume that you will be going to Japan during the Spring break. Now, find useful information about getting around in Japan.

Go back to the "Guide to Japan" page. Click on the "Tourist Information" tab.

1. On the current web page, "Tourism Information", suggests how you should carry your money in Japan. **According to the web site's description** on 'Money', you would do (check off your action):

- Japanese use US dollar along with Japanese Yen. I don't need to exchange dollars into Japanese Yen. I will carry dollars and a credit card just like I do in the US.
- Generally, it is safe to carry cash in Japan. I will exchange most of my dollars into Yen, or I will bring my bank debit card that I can use at the ATM machines for cash withdrawals. I will also carry credit cards as a backup.
- Japan is the most modern economy in the world, and a cash free society. Visa or Master card is the most commonly used method of payment. I can just swipe a credit card even to take a train. I will carry only a small amount of Yen for tipping.

2. Scroll down the same webpage, and find the following:

The cost of a 7-day-ordinary JR (Japan Railway) Rail Pass:

Answer: _____ yen

3. Click on 'for more information http://www.jal.com/en/travel/jr_pass/' in the JR (Japan Railway) Rail Pass section on the same page. Scroll down and find out how much you would save on train rides with a 7-day-JR pass even just making a round trip to Osaka from the Narita (Tokyo) International Airport:

If I purchase a 7-day-Japan Rail Pass, I can take a JR train all over Japan with few exceptions during the seven days. According to the web page, I would save _____yen *even* just making a round trip to Osaka from the Narita (Tokyo) International Airport.

Congratulations! You are done with the first part of the experiment!

Now, follow the instruction of the investigator for the online survey site. The completion of the online questionnaire should not take more than 20 minutes. If you can't get to the survey site, please let the investigator know. There is a paper version of the questionnaire too.

Thank you for your cooperation!

APPENDIX P: FINAL STUDY QUESTIONNAIRE

Using “The Guide to Japan” Websites—Questionnaire”

Pre-Survey Questions:

What is your survey ID? _____

Was this your first time to visit the “Guide to Japan” website? Yes/No

“Have you already reached 18 years old.” Yes / No

If you are not at least 18 years old, please stop here.

- 1 It is preferable to have a man in high level position rather than a woman.
- 2 There are some jobs in which a man can always do better than a woman.
- 3 It is more important for men to have a professional career than it is for women to have a professional career.
- 4 Solving organizational problems requires the active forcible approach which is typical of men.
- 5 Women do not value recognition and promotion in their work as much as men do.
- 6 Being accepted as a member of a group is more important than having autonomy and independence.
- 7 Being accepted as a member of a group is more important than being independent.
- 8 Group success is more important than individual success.
- 9 Being loyal to a group is more important than individual gain.
- 10 Individual rewards are not as important as group welfare.
- 11 It is more important for a manager to encourage loyalty and a sense of duty in subordinates than it is to encourage individual initiative.
- 12 Managers should make most decisions without consulting subordinates.
- 13 Managers should not ask subordinates for advice, because they might appear less powerful.
- 14 Decision making power should stay with top management in the organization and not be delegated to lower level employees.
- 15 Employees should not question their manager’s decisions.

- 16 A manager should perform work which is difficult and important and delegate tasks which are repetitive and mundane to subordinates.
- 17 Higher level managers should receive more benefits and privileges than lower level managers and professional staff
- 18 Managers should be careful not to ask the opinions of subordinates too frequently, otherwise the manager might appear to be weak and incompetent.
- 19 Rules and regulations are important because they inform workers what the organization expects of them.
- 20 Order and structure are very important in a work environment
- 21 It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do.
- 22 It is better to have a bad situation that you know about, than to have an uncertain situation which might be better.
- 23 Providing opportunities to be innovative is more important than requiring standardized work procedures.
- 24 People should avoid making changes because things could get worse.
- 25 In general, people really do care about the well-being of others.
- 26 The typical person is sincerely concerned about the problems of others.
- 27 Most of the time, people care enough to try to be helpful, rather than just looking out for themselves.
- 28 In general, most folks keep their promises.
- 29 I think people generally try to back up their words with their actions.
- 30 Most people are honest in their dealings with others.
- 31 I believe that most professional people do a very good job at their work.
- 32 Most professionals are very knowledgeable in their chosen field.
- 33 A large majority of professional people are competent in their area of expertise.
- 34 I usually trust people until they give me a reason not to trust them.
- 35 I generally give people the benefit of the doubt when I first meet them.
- 36 My typical approach is to trust new acquaintances until they prove I should not trust.

- 37 I feel good about how things go when I do purchasing or other activities on the Internet.
- 38 I am comfortable making purchases on the Internet.
- 39 I feel that most Internet vendors would act in a customers' best interest.
- 40 If a customer required help, most Internet vendors would do their best to help.
- 41 Most Internet vendors are interested in customer well-being, not just their own well-being.
- 42 I am comfortable relying on Internet vendors to meet their obligations.
- 43 I feel fine doing business on the Internet since Internet vendors generally fulfill their agreements.
- 44 I always feel confident that I can rely on Internet vendors to do their part when I interact with them.
- 45 In general, most Internet vendors are competent at serving their customers.
- 46 Most Internet vendors do a capable job at meeting customer needs.
- 47 I feel the most Internet vendors are good at what they do.
- 48 The Internet has enough safeguards to make me feel comfortable using it to transact personal business.
- 49 I feel assured that legal and technological structures adequately protect me from problems on the Internet.
- 50 I feel confident that encryption and other technological advances on the Internet make it safe for me to do business there.
- 51 In general, the Internet is now a robust and safe environment in which to transact business.
- 52 I believe that the "Guide to Japan" website would act in my best interest.
- 53 If I required help, the "Guide to Japan" website would do its best to help me.
- 54 The "Guide to Japan" is interested in my well-being, not just its own.
- 55 The "Guide to Japan" website is truthful in its dealings with me.
- 56 I would characterize the "Guide to Japan" website as honest.
- 57 The "Guide to Japan" website would keep its commitments.
- 58 The "Guide to Japan" website is sincere and genuine.

- 59 The “Guide to Japan” website is competent and effective in providing travel advice.
- 60 The “Guide to Japan” website performs its role of giving travel advice very well.
- 61 Overall, the “Guide to Japan” website is a capable and proficient Internet travel advice provider.
- 62 In general, the “Guide to Japan” website is very knowledgeable about the information that a tourist is looking for.
- 63 When an important travel issue or problem arises, I would feel comfortable depending on the information provided by the “Guide to Japan” website.
- 64 I can always rely on the “Guide to Japan” website in a tough travel situation.
- 65 I feel that I could count on the “Guide to Japan” website to help with a crucial travel problem.
- 66 Faced with a difficult travel situation that required me to hire a travel agent (for a fee), I would use the firm backing the “Guide to Japan” website.
- 67 If I had a challenging travel problem, I would want to use the “Guide to Japan” website again.
- 68 I would feel comfortable acting on the accommodation information given to me by the “Guide to Japan” website.
- 69 I would not hesitate to use the accommodation information the “Guide to Japan” website supplied me.
- 70 I would confidently act on the travel advice I was given by the “Guide to Japan” website.
- 71 I would feel secure in using the accommodation information from the “Guide to Japan” website.
- 72 Based on the web page I just read, I would purchase a Japan Rail (JR) Pass before leaving for Japan because I would save money.
- [A] Suppose you wanted more specific information about destination and you could consult (one time only) by telephone with one of the “Guide to Japan” website travel agents for 15-30 minutes (free of charge). For this service, please answer the following (#73, 74, 75):

- 73 I would be willing to provide information like my name, address, and phone number to the “Guide to Japan” website.
- 74 I would be willing to provide my credit card number to the “Guide to Japan” website.
- 75 I would be willing to share the specifics of my travel issue with the “Guide to Japan” website.
- [B] Suppose the “Guide to Japan” website site was not free, but charged to access information on the site. Answer the following questions (#78, 77, 78):
- 76 Faced with a difficult travel situation, I would be willing to pay to access information on the “Guide to Japan” website.
- 77 I would be willing to provide credit card information on the “Guide to Japan” website.
- 78 Given a tough travel issue, I would be willing to pay for a 30-minute phone consultation with the “Guide to Japan” website travel agent.
- 79 I like to explore new Web sites.
- 80 When I hear about a new Web site, I often find an excuse to go visit it.
- 81 Among my peers, I am usually the first to try out new Internet sites.
- 82 In general, I am not interested in trying out new Web sites.
- 83 When I have some free time, I often explore new Web sites.
- 84 Overall, this site worked very well technically.
- 85 Visually, this site resembled other sites I think highly of.
- 86 This site was simple to navigate.
- 87 On this site, it was easy to find the information I wanted.
- 88 People (peers and friends) important to me support my use of online vendors.
- 89 People (family members, significant others) who influence my behavior want me to use online vendors instead of other means.
- 90 People whose opinions I value prefer that I use online vendors for purchasing products and planning a travel.

- 91 On average, how much time PER DAY do you spend online altogether?
 0 to 30 mins 30 to 60 mins 1 to 2 hrs 2 to 3 hrs
 3 to 4 hrs 4 to 5 hrs if more than 5 hrs specify the hrs_____
- 92 On average, how much time PER DAY do you spend on social networking sites like Facebook, MySpace, Friendster, Orkut, etc.?
 0 to 30 mins 30 to 60 mins 1 to 2 hrs 2 to 3 hrs
 3 to 4 hrs 4 to 5 hrs if more than 5 hrs, specify the hours _____
- 93 Do you have some way you can use to pay for items you purchase on the Internet such as credit cards, pay pal account, etc.?
 Yes/No If yes, go to the questions (91) and (92)
 If no, go to demographic section.
- 94 How many products did you purchase online within LAST THREE MONTHS?
 Never 1 to 5 6 to 10 11 to 15 16 to 20 21 to 25
 If more than 25 items specify
- 95 What were the items you purchased within LAST THREE MONTHS on the Internet? Check off as many as necessary.
 * Airline tickets * hotel reservations *Any reservations other than hotels at destinations
 *Books *Music (CDs) *Movies (DVDs/Videos) * Games
 *Electronics *Clothing *Accessories (include watches) *Toys
 *Furniture *Tools *Automobile Parts *Automobile
 *If Other (specify) _____

<Demographic Section>

- * How old are you? * What is your gender? Male/Female
 * How long have you been living in Hawai'i? years
 *Where were you born and raised?
 Hawai'i the mainland US China Japan Korea Philippine
 if other, specify _____

*Which ethnic group do you identify most?

Afro-American Caucasian Chinese Japanese Korean Filipino Pacific Islander

What language(s) were spoken in your home when you were a child?

(Check more than one language if necessary)

Standard English Hawai'i Creole English (Pidgin) Chinese Japanese

Korean Filipinos Other Language Specify_____

<This is the end of the survey. Thank you very much for your cooperation!>

**APPENDIX Q-1: DESCRIPTIVE STATISTICS MCKNIGHT ET AL. SURVEY
ITEMS (N=276)**

	Mean	Std. Deviation	Variance		Mean	Std. Deviation	Variance
DB1_WellBeOthrs	4.88	1.286	1.655	GN1_Comfortabl	5.24	1.125	1.266
DB2_ConcernOthrs	4.40	1.296	1.681	GN2_CanRelyOn	4.83	1.173	1.376
DB3_Helpful	4.46	1.231	1.515	GN3_CanCountOn	4.63	1.242	1.543
DI1_KeepPromise	4.23	1.204	1.450	GN4_Would Use	4.63	1.210	1.463
DI2_WordAction	4.55	1.132	1.281	FA1GN5_UseAgain	4.88	1.154	1.332
DI3_Honest	4.22	1.235	1.526	FA2_ActingonINFO	5.03	1.102	1.214
DC1_ProfGoodJob	4.57	1.229	1.512	FA3_UseInfo	5.03	1.078	1.163
DC2_ProfKnowldge	4.92	1.140	1.300	FA4_ConfidentAct	5.05	1.064	1.132
DC3_ProfCompetn	4.83	1.192	1.422	FA5_FeelSecure	5.13	1.070	1.144
DST1_UntilNot	5.37	1.197	1.434	FA6_ReservW/Card	5.20	1.298	1.685
DST2_BefntDoubt	5.17	1.170	1.368	GI1_NameAddrs	4.28	1.613	2.602
DST3_NewAcq	5.06	1.266	1.604	GI2_CreditCard	3.19	1.715	2.941
IG1_FeelGoodNet	4.57	1.321	1.744	GI3_ShareSpecs	4.80	1.425	2.029
IG2_ComfortblNet	4.53	1.603	2.570	MP1_Pay4Info	3.20	1.587	2.519
IB1_VdrCstmrInter	4.28	1.444	2.086	MP2_ProCredit	2.99	1.710	2.924
IB2_VdrDoBest	4.20	1.439	2.071	MP3_Pay4Consult	3.16	1.715	2.942
IB3_VdrCstmWell	3.92	1.312	1.720	PI1_ExplorNewSite	5.32	1.213	1.470
II1_MeetObligtn	4.10	1.331	1.771	PI2_VisitNewSite	4.61	1.439	2.071
II2_FulfillAgrmnt	4.37	1.380	1.906	PI3_First2Try	3.74	1.493	2.230
II3_DoVdr'sPart	4.15	1.297	1.683	PI4_NotInterestd	4.72	1.386	1.920
IC1_Competent	4.57	1.150	1.322	PI5_IfTimeExplore	4.64	1.469	2.157
IC2_Capable	4.68	1.118	1.251	PSQ1_Technical	5.41	1.032	1.064
IC3_GoodAtWhat	4.65	1.113	1.240	PSQ2_ResembleSite	5.04	1.244	1.548
ISA1_Safeguards	4.08	1.574	2.477	PSQ3_SimpleNavi	5.50	1.057	1.116
ISA2_LegalStrctr	4.07	1.373	1.886	PSQ4_Easy2Find	5.64	.987	.974
ISA3_EncrypSafe	4.13	1.384	1.915	WebExpDay	4.50	2.001	4.004
ISA4_NetRobstSafe	3.92	1.408	1.983				
TBB1_webMyInterst	5.11	1.090	1.188				
TBB2_webHelpful	5.13	1.084	1.176				
TBB3_webMywel	4.98	1.149	1.320				
TBI1_webTrustful	5.08	1.110	1.233				
TBI2_webHonest	5.32	1.020	1.040				
TBI3_KeepCommit	5.01	1.041	1.083				
TBI4_webSinGenune	5.11	.980	.960				
TBC1_webCompt	5.52	1.003	1.007				
TBC2_webPfmRole	5.48	1.049	1.101				
TBC3_webCapable	5.47	1.032	1.065				
TBC4_webKnow	5.56	1.005	1.011				

**APPENDIX Q-2: DESCRIPTIVE STATISTICS FOR SRITE & KARAHANNA
CULTURE INSTRUMENT (N=276)**

Descriptive Statistics

	Mean	Std. Deviation	Variance
MF1_ManHighPtn	2.83	1.695	2.871
MF2_ManBetter	4.38	1.810	3.277
MF3_MenCareer	2.43	1.583	2.507
MF4_SolvByForcibleMe	2.74	1.441	2.077
MF5_WomenNotRec	2.24	1.438	2.068
KIC1_MembrOvAuto	3.38	1.436	2.063
KIC2_MembreOvInd	3.23	1.416	2.004
KIC3_GroupSuccess	4.07	1.539	2.370
KIC4_LoyalOvIndGn	4.57	1.388	1.926
KIC5_GrpWelfare	4.11	1.387	1.923
KIC6_LoyalDuty	4.46	1.433	2.053
PD1_Decisnw/oSub	2.80	1.333	1.777
PD2_NotAskSubAdv	2.24	1.148	1.317
PD3_DecisinStayTop	3.08	1.490	2.219
PD4_EmplrSdNotAsk	2.63	1.409	1.986
PD5_WrkDelegt	3.47	1.576	2.483
PD6_MrBenef4Mgr	4.38	1.484	2.201
PD7_NotAskSubOpn	3.42	1.553	2.412
UA1_RulesRegltn	5.67	1.195	1.428
UA2_OrderStructur	5.93	.992	.985
UA3_SpellDetails	5.87	.996	.991
UA4_BadStnBetter	4.43	1.321	1.744
UA5_OpprtInnovatv	3.20	1.157	1.338
UA6_AvoidChange	2.64	1.361	1.852

**APPENDIX Q-3: DESCRIPTIVE STATISTICS FOR SUBJECTIVE NORM
QUESTIONS**

(Adapted from Matheison 1991) (N=194)

Descriptive Statistics

	Mean	Std. Deviation	Variance
SN1_Peer	4.59	1.145	1.310
SN2_Family	3.98	1.269	1.611
SN3_Valued	4.46	1.272	1.617

APPENDIX R-1: RESULTS OF MCKNIGHT'S 54-ITEM PCA- PATTERN MATRIX

	Component									
	1	2	3	4	5	6	7	8	9	10
DB1	.131	.072	.772	-.125	.109	-.047	.112	-.048	.012	.001
DB2	.108	-.004	.841	-.012	.063	-.133	.129	.020	-.026	-.171
DB3	.007	.112	.753	.128	.049	.047	-.015	-.021	.038	-.079
DI1	-.009	-.071	.652	.075	-.091	.250	-.053	.187	-.066	.142
DI2	-.080	-.062	.578	.062	.008	.248	-.158	.207	.055	.235
DI3	.011	.082	.702	.045	-.020	.159	-.030	.013	.023	.030
DC1	-.018	.003	.090	.075	.021	.816	.073	.005	-.065	-.010
DC2	.038	-.052	-.015	-.004	.017	.909	-.055	-.061	.079	.001
DC3	.045	.102	.017	-.116	.042	.753	.118	-.064	-.025	-.026
DST1	.011	.001	-.047	.021	.766	.186	-.070	.015	.106	-.066
DST2	-.037	-.032	.029	-.035	.854	-.118	.047	-.043	-.057	.083
DST3	-.019	-.022	.076	.007	.879	.037	-.090	.005	.001	-.012
IG1	.224	.427	-.171	-.010	.086	.047	.007	.389	-.182	-.077
IG2	.101	.508	-.166	-.029	.054	.005	.007	.341	-.019	-.031
IB1	-.021	.586	.054	.048	.078	.044	.020	.176	.088	-.324
IB2	-.054	.626	.158	.017	.118	-.052	-.064	.187	.126	-.170
IB3	-.053	.665	.169	.090	.021	.132	.194	-.054	-.085	-.329
II1	-.015	.828	.043	.077	-.044	.053	-.057	.075	.075	-.149
II2	.028	.838	-.010	.008	-.004	.025	-.033	.098	.034	-.021
II3	.013	.779	-.004	.064	.061	.005	.071	.100	-.099	.064
IC1	.044	.879	.076	-.051	-.024	.000	-.004	-.042	.038	.213
IC2	.155	.764	.055	-.055	-.027	-.006	-.079	.045	.107	.203
IC3	.062	.622	-.115	-.027	-.008	.136	.023	.172	.079	.337
ISA1	-.008	.386	-.061	.023	-.028	.012	.010	.589	.034	.036
ISA2	-.012	.033	.070	-.024	.017	-.014	.020	.861	.072	.011
ISA3	.012	.046	.104	.006	.032	-.059	.033	.860	.033	-.011
ISA4	-.018	.022	.040	.034	-.042	-.020	.081	.861	-.001	.003
TBB1	.769	-.050	.022	-.021	-.018	.083	-.002	.023	.105	.005
TBB2	.604	.023	.117	-.011	.025	.032	.160	.023	.121	.062
TBB3	.766	.021	.055	.086	-.068	.030	.088	-.022	.029	-.082
TBI1	.795	.029	.098	-.095	-.007	.035	.018	.027	.107	-.011
TBI2	.637	.047	.020	.017	.064	-.036	.112	-.004	.207	.041
TBI3	.560	.031	.064	-.009	.168	.013	.154	.063	.134	.084
TBI4	.577	.082	-.004	-.011	.140	.027	.116	-.059	.210	.040
TBC1	.229	.051	-.040	.044	.045	-.045	-.015	-.018	.735	.036
TBC2	.060	.111	.008	.014	.034	.005	.091	-.035	.789	-.005
TBC3	.134	.030	-.021	.045	.033	-.023	.069	.046	.776	-.021
TBC4	.081	-.096	.040	.001	.019	.078	.088	.097	.782	-.012
GN1	-.013	.017	.029	.026	.034	.091	.436	.095	.527	-.085
GN2	.015	-.001	-.080	.068	.083	.079	.605	.083	.242	-.025
GN3	.004	-.136	-.033	.023	-.039	.082	.812	.151	.107	-.130
GN4	.111	-.038	.082	.017	-.033	.030	.818	.052	-.023	-.064
FA1	-.027	-.040	.067	.085	-.005	.034	.771	-.021	.097	-.048
FA2	.154	.101	.038	.042	-.014	.005	.726	-.050	.061	.123
FA3	.159	.093	.030	.038	.035	.062	.592	-.010	.060	.219
FA4	.196	.069	-.008	.137	.037	.045	.539	.028	.108	.290
FA5	.157	.145	.055	.133	-.059	-.021	.515	-.022	.143	.284
FA6	-.018	.054	-.034	.118	.241	-.020	.352	-.019	.033	.491
GI1	.394	-.020	-.039	.524	.105	.022	-.035	.180	-.089	-.028
GI2	.141	.038	-.006	.685	.052	.021	.102	.172	-.167	-.091
GI3	.317	.119	-.131	.463	.026	.023	-.054	.057	.039	.015
MP1	-.079	-.076	.071	.844	.035	-.024	.055	-.106	.091	-.007
MP2	-.046	-.004	.025	.853	-.012	.032	.080	.061	-.019	-.011
MP3	-.159	.033	.055	.829	-.072	-.044	.018	-.109	.125	.103

APPENDIX R-2: RESULTS OF MCKNIGHT'S 54 ITEM PCA-STRUCTURE MATRIX

	Component									
	1	2	3	4	5	6	7	8	9	10
DB1	.255	.197	.787	.041	.256	.296	.279	.147	.238	.007
DB2	.199	.148	.832	.139	.197	.226	.273	.185	.166	-.177
DB3	.150	.238	.810	.242	.194	.374	.198	.213	.174	-.082
DI1	.074	.139	.743	.186	.030	.502	.099	.280	.046	.111
DI2	.051	.147	.674	.155	.117	.481	.037	.276	.104	.210
DI3	.135	.216	.776	.161	.122	.449	.160	.209	.151	.021
DC1	.158	.180	.417	.198	.137	.861	.214	.188	.125	.026
DC2	.185	.106	.320	.086	.129	.894	.142	.087	.206	.059
DC3	.223	.231	.319	.023	.159	.782	.230	.142	.184	.020
DST1	.251	.186	.138	.119	.798	.273	.141	.146	.262	-.009
DST2	.124	.052	.082	.040	.819	-.023	.113	.003	.118	.110
DST3	.163	.131	.193	.084	.871	.153	.063	.102	.149	.019
IG1	.393	.691	-.026	.139	.200	.154	.104	.674	.035	-.089
IG2	.349	.717	-.033	.116	.177	.120	.126	.634	.137	-.033
IB1	.278	.734	.212	.186	.220	.224	.173	.564	.195	-.314
IB2	.254	.761	.272	.149	.261	.171	.114	.571	.206	-.174
IB3	.213	.694	.336	.230	.163	.321	.264	.411	.110	-.321
II1	.286	.890	.187	.194	.125	.239	.120	.575	.181	-.148
II2	.330	.907	.125	.141	.163	.204	.130	.586	.185	-.022
II3	.309	.852	.129	.210	.210	.188	.186	.564	.121	.056
IC1	.344	.873	.174	.087	.155	.204	.167	.461	.234	.215
IC2	.440	.840	.156	.091	.169	.202	.164	.508	.302	.217
IC3	.406	.762	.050	.143	.170	.283	.228	.539	.298	.355
ISA1	.309	.717	.091	.203	.114	.178	.151	.803	.154	.016
ISA2	.300	.539	.217	.194	.148	.190	.169	.891	.171	-.017
ISA3	.317	.556	.240	.227	.166	.165	.183	.908	.155	-.043
ISA4	.274	.514	.183	.247	.081	.168	.191	.883	.115	-.030
TBB1	.821	.241	.123	.151	.198	.238	.398	.242	.491	.104
TBB2	.777	.298	.230	.209	.254	.247	.530	.268	.545	.160
TBB3	.821	.284	.152	.263	.158	.207	.466	.257	.456	.015
TBI1	.867	.326	.191	.105	.228	.235	.422	.290	.521	.085
TBI2	.822	.309	.120	.221	.293	.160	.525	.250	.610	.154
TBI3	.780	.329	.193	.220	.386	.229	.530	.304	.563	.184
TBI4	.784	.314	.120	.189	.357	.208	.512	.208	.606	.156
TBC1	.612	.238	.067	.198	.261	.119	.481	.144	.858	.175
TBC2	.531	.269	.146	.191	.254	.185	.547	.141	.892	.135
TBC3	.583	.247	.113	.226	.256	.156	.548	.191	.892	.120
TBC4	.529	.156	.197	.192	.234	.254	.547	.175	.881	.125
GN1	.500	.250	.231	.287	.246	.285	.742	.240	.774	.040
GN2	.466	.206	.117	.332	.254	.227	.780	.213	.596	.085
GN3	.412	.092	.157	.317	.115	.221	.865	.203	.502	-.033
GN4	.466	.151	.240	.316	.136	.215	.870	.184	.453	.024
FA1	.367	.090	.222	.347	.147	.199	.840	.091	.490	.047
FA2	.547	.243	.188	.331	.184	.201	.865	.158	.552	.225
FA3	.532	.258	.188	.308	.225	.249	.762	.189	.521	.311
FA4	.594	.274	.158	.407	.246	.241	.782	.232	.578	.392
FA5	.540	.290	.182	.380	.151	.186	.745	.199	.565	.377
FA6	.294	.140	.059	.282	.338	.103	.485	.078	.351	.548
GI1	.504	.275	.093	.618	.249	.162	.296	.398	.202	.022
GI2	.302	.270	.137	.765	.168	.157	.331	.394	.086	-.061
GI3	.458	.306	-.015	.530	.168	.120	.270	.302	.263	.075
MP1	.107	-.014	.160	.838	.120	.084	.332	.040	.201	.048
MP2	.164	.145	.159	.886	.096	.154	.343	.249	.142	.029
MP3	.039	.041	.122	.803	.012	.053	.274	.046	.179	.145

Extraction Method: Principal Component Analysis., Rotation Method: Oblimin with Kaiser Normalization.

APPENDIX S: DESCRIPTIONS OF CONFIRMATORY FACTOR ANALYSIS FIT INDICES

Descriptions are taken from:

A first course in structural equation modeling second edition

by Raykov, Tenko and Marcoulides, George A., (2006, p.p. 43 – 47), and

Principles and practice of structural equation modeling second edition

by Kline, Rex B. (2005).

- BENTLER-BONETT NORMED FIT INDEX (NFI) & NON-NORMED FIT INDEX (NNFI)

The NFI and NNFI are based on the idea of comparing the proposed model to a model in which no interrelationships at all are assumed among any of the variables, referred as the independence model or the null model, seen as the least attractive, or ‘worst’ model that could be considered.

NFI and NNFI close to 1.0 are considered to be more plausible means of describing the data than models for which these indices are further away from 1.0 (Raykov & Marcoulides 2006).

- COMPARATIVE FIT INDEX (CFI)

CFI is defined as the ratio of improvement in noncentrality⁵² when moving from the null to a considered model, to the noncentrality of the null model. Typically, the null model has considerably higher noncentrality than a proposed model because the former could be expected to fit the data poorly. Hence, values of CFI close to 1.0 are considered likely to be indicative of a reasonably well-fitting model.

CFI’s in the mid- to 0.90 or above are usually associated with models that are plausible approximation of the data (Raykov & Marcoulides 2006).

- JORESKOG-SORBOM'S GFI & AGFI FIT INDEX

It can be loosely considered a measure of the proportion of variance and covariance that a given model is able to explain. The GFI may be viewed as an analog in the SEM field of the widely used R^2 index in regression analysis.

⁵² The noncentrality parameter (NCP) basically reflects the extent to which a model does not fit the data... The NCP can be viewed as an index reflecting the degree to which a model under consideration fails to fit the data. Thus, the larger the NCP, the worse the model; and the smaller the NCP, the better the model. (p.45)

When the number of parameters is also taken into account in computing the GFI, the resulting index is called adjusted goodness-of-fit index (AGFI). It is similar to that of the adjusted R^2 index.

The GFI and AGFI indexes range between 0.0 and 1.0, and are usually fairly close to 1 for well-fitting models. A GFI and AGFI in the mid-.90s or above may represent a reasonably good approximation of the data (Raykov & Marcoulides 2006).

- ROOT MEAN-SQUARE RESIDUAL (RMR) & STANDARDIZED RMR (SRMR)

Root mean square residual (RMR) is a measure of the mean absolute value of the covariance residuals. Perfect model fit is indicated by $RMR = 0$, and increasingly higher values indicate worse fit (i.e., it is a badness-of-fit index). RMR is computed with unstandardized variables; its range depends upon the scales of the observed variables. If these scales are all different, it can be difficult to interpret a given value of the RMR.

The standardized root mean square residual (SRMR), on the other hand, is based on transforming both the sample covariance matrix and the predicted covariance matrix into correlation matrices. The SRMR is thus a measure of the mean absolute correlation residual, the overall difference between the observed and predicted correlations. Values of the SRMR less than 0.10 are generally considered favorable (Kline 2005).

- ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)

The basis for RMSEA is the noncentrality parameter (NCP) that basically reflects the extent to which a model does not fit the data. RMSEA of less than .05 is indicative of the model being reasonable approximation to the analyzed data (Raykov & Marcoulides 2006).

A rule of thumb is that $RMSEA \leq .05$ indicates close approximate fit, values between .05 and .08 suggest reasonable error of approximation, and $RMSEA \geq .10$ suggests poor fit (Browne & Cudeck, 1993 cited in Kline 2005).

- 90% CONFIDENCE INTERVAL OF RMSEA

The width of the interval is also indicative of the precision of estimation of the parameter using the data at hand. Of special interest to the alternative approach of model testing is the left endpoint of the 90% confidence interval of the RMSEA index for an entertained model. In particular, if this endpoint is considerably small than .05 and the interval not too wide (e.g., the right endpoint not higher than .08), it can be argued that the model is a plausible means of describing the analyzed data (Raykov & Marcoulides 2006).

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