

2005

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### Recommended Citation

Loiacono, Eleanor T. and Lin, Huiping (2005) "A Cross-Cultural Comparison of U.S. and Chinese Website Customers," *Journal of International Technology and Information Management*: Vol. 14: Iss. 1, Article 5.  
Available at: <http://scholarworks.lib.csusb.edu/jitim/vol14/iss1/5>

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## A Cross-Cultural Comparison of U.S. and Chinese Website Customers

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### ABSTRACT

*Website quality has been given much attention as of late. In particular the factors that impact a consumer's perception of website quality is of great interest. This paper takes a currently validated measure of business-to-consumer website quality (WebQual™) and applies it to Chinese Web users in order to study the cross-cultural differences and similarities of U.S. and Chinese customers. Several cultural differences between U.S. and Chinese customers are revealed.*

### INTRODUCTION

The Internet, and in particular the Web, is a critical channel to reach customers. American companies have focused on the large domestic market, since Americans are currently the dominant Internet users. This is projected to change in the next few years as more non-U.S. citizens go online. Given the power of e-commerce to extend services to current customers and increase the bottom line, companies cannot afford to ignore this changing market. Companies focusing solely on the U.S. are missing out on 95 percent of the world's population and 75 percent of the world's purchasing power (Singh, 2003).

While Americans still lead in the number of Internet users, approximately 40 percent of the users worldwide, the rest of the world is catching up (Nath and Murthy, 2003). China for instance has the second largest Internet population at 94 million users (CNNIC, 2005). This number is projected to continue to grow to over 100 million (Zhu and Wang, 2005). As Stylianou et al. (2003) point out, China could potentially emerge as the largest Internet market in the world given its population of 1.3 billion people and double-digit economic growth (Martinsons, 2005; Zhu and Wang, 2005). Current revenues generated through e-commerce transactions in China are dismal—Internet-based transactions were a meager U.S. \$100 million for the year 2000. In contrast, U.S. online sales were \$5.26 billion for the first quarter of 2000 (Blackmon, 2000).

That said, the Internet populations of China and the U.S. are similar in a number of ways. Chinese Internet users are predominately male (60%) (CNNIC, 2005). In the U.S. a majority of Internet users (51%) are also male, though the number of male users is almost equal to that of women. Similarly, the average age of Internet users tends to be young. Sixty-three percent of Chinese Internet users are in their late teens to 30s. In the U.S., 51 percent of users are between the ages of 18 to 39 (CNNIC, 2005; Greenspan 2002a; 2002b).

They do differ in some significant ways. U.S. users tend to connect to the Internet through ISPs that charge a flat monthly fee. Most Chinese Internet users connect via China Telecom which charges users per minute and thus forces them to monitor their time online carefully (Bin et al., 2003). More surprising is that 82 percent of U.S. Internet users have made purchases, whereas only 31.9 percent of Chinese users have online buying experience. Further, while U.S. consumers tend to pay for online purchases using credit, Chinese consumers tend to pay cash upon delivery of the goods (Shao, 2001). This is consistent with China's culture of cash-based payments and the Chinese peoples' doubt in the Internet as a means of extending businesses (Bin et al., 2003).

As organizations attempt to increase their website's influence on consumer behavior (purchasing), measuring website quality in a cultural context becomes more and more critical. A company deciding "to internationalize its business through the Internet,...should identify the potential problems concerning critical differences across borders" (Bin et al., 2003). The effects of cultural differences, such as language, values, legal hurdles and infrastructure, must be considered within website evaluation (Singh, 2003).

This research is designed to study cultural differences in the evaluation of websites between U.S. and Chinese consumers. Understanding how these two groups evaluate websites will shed light on whether U.S. companies must develop significantly different websites for Chinese consumers versus their U.S. counterparts. We applied Hofstede's (1997) cultural dimensions along with Loiacono et al.'s (2002) website effectiveness factors to evaluate U.S. and Chinese consumers' website preferences. The following sections present the relevant literature, research methodology, results, and conclusions.

### **Why Compare Us. And China**

There are several reasons to compare U.S. and Chinese Web consumers. First, China's online population is growing fast—94 million (CNNIC, 2005) up from 45.8 in 2002 (World Factbook, 2002). Second, China's online trading is growing as well. It is currently at \$13 billion (NUA, 2002). Third, the U.S. has served as the western cultural reference frame (Cheng and Schweitzer, 1996; Mueller, 1987; Singh, 2003) and China as the classical eastern culture (Ralston, 1992; Hofstede, 1993; 1998; Singh, 2003). Last, previous cross-cultural research reveals significant cultural differences between the U.S. and China in organizations (Ralston, 1992), print ads (Tse, 1989), TV commercials (Cheng, 1996) and Web adoption (Singh, 2003). This study will enhance this stream of research by extending it into the consumer perceptions of websites.

## **RESEARCH MODELS AND HYPOTHESES**

Cultural research has received more attention since cultural localization became a necessary adjunct to technology transfer and global business communication (Gould, 2000). For example, Marchewka (1996) studied the cultural and political influences of IT diffusion in China. Despite recent interests in cross-cultural studies, there are still few studies available on cross-cultural comparison of U.S. and Chinese customers especially in the area of e-commerce.

### **Frameworks for Evaluating Culture**

Numerous models of evaluating culture exist in the literature. Morrden (1999) classified them into three categories: single, multiple, and historical social. While historical social classify culture at the regional level, the others classify based on the national level. Single dimensional measures include high versus low context of national culture (Hall, 1960) and high versus low trust (Fukuyama, 1995). Others, such as Lewis (1992) (monochromic versus polymorphic), Triandis (1995) (ideocentric versus allocentric), and Botzger et al. (1995) (monochromic versus polymorphic), are also discussed in Morrden (1999) as single measures. Multiple dimensional frameworks include Lessen and Neubauer (1994), who categorized culture into pragmatism-idealism and free will-determinism and Kluckhohn and Stradtbeck (1961) classified them into free will-determinism and accumulation of wealth—"just enough." Additional multiple dimensional models were developed by Newman (1977) with five dimensions, Hampden-Turner and Trompenaars (1994) with seven dimensions, and Hofstede (1980, 1997, 1998) with five.

For this research we have chosen Hofstede's (1997) five dimensions as our cultural value framework. Our primary reasons for this choice are two-fold. First, it contains multiple-dimensions of culture, which allow for a deeper understanding and richer interpretation of the findings. Analysis can be conducted on various dimensions to reveal and explain differences in consumer website perceptions that may not be seen using a single dimension of culture. Second, though Hofstede's model has been criticized (Myers and Tan, 2002; Fernandez, 1997; Huang, 1995), it is the model most applied and validated in numerous cultural contexts and management settings (Nath and Murthy, 2004). Others, such as Hall (1976) and Kluckhohn and Stradtbeck (1961) have not been so validated (Singh, 2003). Given its continued use, it has a high-degree of validity compared to other frameworks. Also, overlaps of different topologies of culture (found in other measures) are reflected in Hofstede's dimensions (Clark, 1990). Particular to the Web, Hofstede's framework is valid for analyzing regional differences that Web designers need to consider when developing "local" websites (Simon, 1999).

### **Hofstede's Culture**

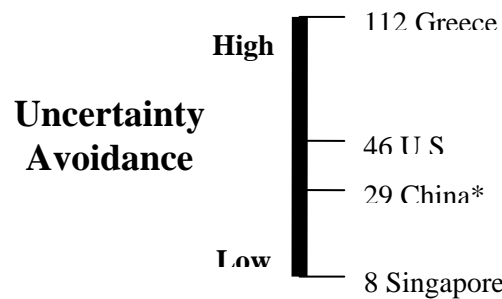
Hofstede (1997) extends the narrow definition of culture commonly meaning 'civilization' or 'refinement of the mind' to a broader anthropological one.

‘Culture’ is a catchword for all those patterns of thinking, feeling, and acting...Not only those activities supposed to refine the mind are included...but also the ordinary and menial things in life: greeting, eating, showing or not showing feelings, keeping certain physical distance from others, making love, or maintaining body hygiene...[It 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 it was learned. It is the collective programming of the mind which distinguishes the members of one group or category of people from another (Hofstede, 1997 p. 5).

He identified five national culture dimensions: uncertainty avoidance, power distance, masculinity-femininity, individualism-collectivism, and time orientation (Hofstede 1980) which are the foundation for much of the culture work performed today. A brief description of each follows.

*Uncertainty avoidance* is the extent to which the members of a culture feel threatened by uncertain or unknown situations. Using an existing index, the uncertainty avoidance index (UAI), Hofstede measured the level of uncertainty avoidance in different cultures. The UAI includes three indicators: employment stability, rule orientation, and stress. Those living in cultures with a low UAI score would have lower job stress, fewer written rules, and more activities that are less structured. The countries with the highest and lowest uncertainty avoidance scores are Greece (112) and Singapore (8). China with a score of 29 is lower than the U.S. score of 46 (Figure 1).

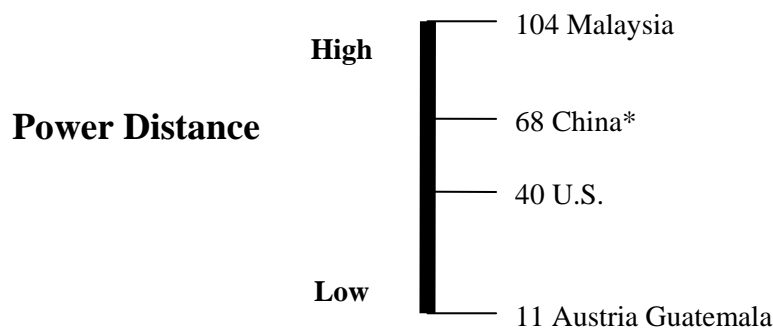
**Figure 1: Uncertainty Avoidance (UA).**



\*China’s score based on Hofstede’s measure of Hong Kong.

*Power distance* is the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally. The power distance index (PDI) (developed by Hofstede) rates approximately 140 cultures on their behavior towards power and authority. Lower power distance cultures have a PDI close to zero, while those with high power distance are closer to 100. In those countries influenced by Confucian ideas, such as Hong Kong, Taiwan, and Japan, people are more likely to accept and appreciate inequalities, though they believe that a sense of obligation should moderate the use of power (Hofstede, 1997). The countries with the highest and lowest power distance scores are Malaysia (104) and Austria (11). China with a score of 68 is higher than the U.S. score of 40 (Figure 2).

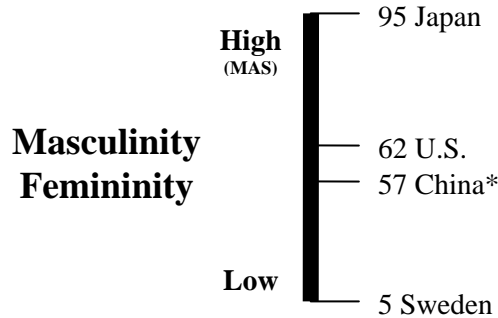
**Figure 2: Power Distance (PD).**



\*China’s score based on Hofstede’s measure of Hong Kong.

*Masculinity-femininity* is the extent to which a society demonstrates higher levels of male values, such as a predominant focus on advancement and earnings rather than on personal life. Since men and women generally measure working issues differently, Hofstede, using a masculinity index (MI), revealed that some societies were more “masculine” in nature. For example, workers in cultures with high masculinity scores were more likely to sympathize with successful people—possessing a living to work philosophy of life. This differs from more “feminine” societies (low masculinity index score) where employees feel more sympathetic to the less fortunate—possessing a working to live philosophy of life. The countries with the highest and lowest masculinity/femininity scores are Japan (95) and Sweden (5). China with a score of 62 is higher than the U.S. score of 57 (Figure 3).

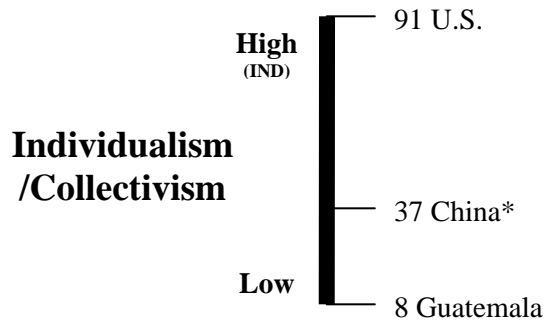
**Figure 3: Masculinity/Femininity (MF).**



\*China’s score based on Hofstede’s measure of Hong Kong.

*Individualism-collectivism* is the extent to which the members of a culture act as individuals or as members of cohesive groups. Again, to measure the level of individualism Hofstede developed the index of individualism (II). Those cultures with a low II score would value a collective approach, whereby organizations treat employees as family members. Unlike more individualistic societies where everyone should protect themselves, less individualistic (collective) societies believe families or clans should protect group members. The countries with the highest and lowest individualism/collectivism scores are the U.S. (91) and Guatemala (8). China with a score of 68 is much lower than the U.S. (Figure 4).

**Figure 4: Individualism/Collectivism (IC).**



\*China’s score based on Hofstede’s measure of Hong Kong.

*Time orientation* is the extent to which a society is focused on long-term versus short-term goals. Cultures, such as China, that are heavily influenced by Confucian ideas possess a more long-term orientation. Those with long-term orientation are taught to be more persistent, thrifty, used to ordering relations and observing that order, as well as to have sense of shame. In short-term orientated cultures, people are interested in personal stability, protecting face, respecting tradition, and reciprocity of greeting, favors, and gifts (Hofstede, 1997). Through the Long-Term Orientation Index (LTO), Hofstede was able to capture the time orientation of various countries. Those

with high-scores are more long-term oriented. Those with low scores were considered more short-term focused. The countries with the highest and lowest long-term orientation scores are China (118) and Pakistan (0). The U.S. with a score of 29 is much lower than China (Figure 5). Table 1 outlines the definitions of Hofstede’s dimensions and Table 2 reports the scores on each dimension for U.S. and China.

Figure 5: Long-term Orientation (LTO)

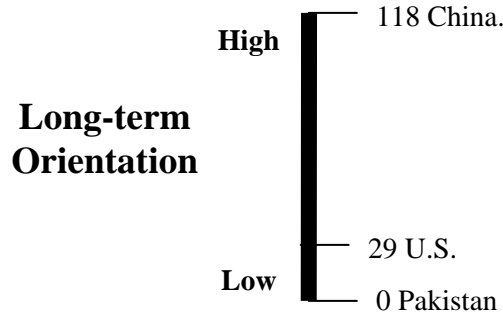


Table 1: Definition of Hofstede's cultural dimensions.

Hofstede's Dimension	Definition
<b>Uncertainty Avoidance (UA)</b>	Degree to which people in a country prefer structured over unstructured situations.
<b>Power Distance (PD)</b>	Degree of inequality among people which the population of a country considers as normal.
<b>Masculinity/femininity (MF)</b>	Degree to which “masculine” values like assertiveness, performance, success and competition prevail over “feminine” values like the quality of life, maintaining warm personal relationships, service, caring, and solidarity.
<b>Individualism/collectivism (IC)</b>	Degree to which people in a country have learned to act as individuals rather than as members of cohesive groups.
<b>Long/short-term orientation (LTO)</b>	Degree to which people in a country are oriented towards future rewards in particular perseverance and thrift.

Source: Adapted from Hofstede (1997).

Table 2: Hofstede’s Country scores for the U.S. and China.

Cultural Dimension	U.S.	China
Uncertainty Avoidance	46	29
Power Distance	40	68
Masculinity	62	57
Individualism	91	37
Long-term Orientation	29	118

Source: Hofstede (2001)

**Frameworks for Evaluating Websites**

Website evaluation by consumers is an important factor for companies looking at websites as extensions of their traditional businesses and is especially critical for companies hoping to expand globally. Software tools that simply collect customer hit rates and length of stay on a website are helpful for organizations wanting to confirm site usage, but they do not get at the heart of the website’s value to the consumer. Tools are needed that get deeper

into the customer's perceptions. Hit rates may reveal that customers do not stay long at a site, but they do not provide specific reasons why a customer's stay is so short.

This concern has led researchers to look at website evaluation from the perspective of the consumer. In particular, two special issues of *Information Systems Research* (June and September 2002) focused on measures of e-commerce net-enabled organizations. Six of the articles in these issues were dedicated to consumer evaluations of websites. Palmer (2002) presents five website evaluation constructs: Navigation, content, responsiveness, interactivity, and download time. Agarwal and Venkatesh (2002) focus on another five factors: Ease of use, content, made for the medium, emotion, and promotion. System interface, communication interface, information gathering, external security, internal security, and order processing were developed by Kim et al. (2002). McKinney et al. (2002) developed nine dimensions of website evaluation: Usability, relevance, understandability, reliability, adequacy, scope, usefulness, access, and entertainment. Koufaris' (2002) offers five additional evaluation factors (that overlap with previous ones): Ease of use, usefulness, concentration, enjoyment, and control. Lastly, Devaraj, et al. (2002) put forward 10 dimensions: Ease of use, uncertainty, empathy, reliability, assurance, time, satisfaction, channel preference, usefulness, and asset specificity.

WebQual™ (Loiacono et al. 2002) is a website evaluation instrument that not only covers the factors presented in the research discussed above, but goes beyond them by including additional dimensions not mentioned in previous instruments, such as visual appeal and innovativeness (Table 3). It is a comprehensive website quality measure that captures aspects of a website that influence a users' intention to revisit. It was developed using a four stage instrument development process: Defining the dimensions, developing the items, refining the instrument, and confirmatory assessment of validity. The first stage, defining the dimensions, consists of a literature review (both academic and practitioner oriented references), several exploratory surveys, and the use of expert judges. All of which helped determine the dimensions of website quality. During the second stage, developing the items, multiple questions for each dimension were developed. Stage 3, refining the instrument, consisted of two separate administrations of the measure (both with N > 300). The construct validities were analyzed after each administration and problem questions were pruned, modified, or replaced as necessary. Redundant dimensions were also collapsed if deemed appropriate. The final stage, confirmatory assessment of validity, tested and confirmed the content, construct, discriminant, and convergent validity of the measure. The resulting instrument was a highly valid and reliable instrument, deemed WebQual™ (Loiacono et al. 2002). For these reasons—rigorous development and explanatory power—WebQual™ was chosen as the website evaluation tool for this study.

**Table 3: Comparison of WebQual™ Factors (Loiacono, et al., 2002) and Other Factors.**

Loiacono, et al. (2002)	Palmer (2002)	Agarwal & Venkatesh (2002)	Kim, et al. (2002)	McKinney, et al. (2002)	Koufaris (2002)	Devaraj, et al. (2002)
• Ease of Understanding	•	• Ease of Use	• System Interface • Communication Interface	• Usability	• Ease of Use	• Ease of Use
• Intuitive Operation	• Navigation	•	•	•	•	
• Informational Fit-to-task	• Content • Responsiveness	• Content	• Information Gathering	• Relevance • Understandability • Reliability • Adequacy • Scope • Usefulness	• Usefulness	• Uncertainty

• Tailored Communication	• Interactivity	• Made for the medium	•	•	•	• Empathy
• Trust	•	•	• External Security	•	•	• Reliability • Assurance
• Response Time	• Download Delay	•	• Internal Stability	• Access	•	• Time
• Visual Appeal	•	•	•	•	•	•
• Innovativeness	•	•	•	•	•	•
• Emotional Appeal	•	• Emotion	•	• Entertainment	•	•
• On-Line Completeness	•	•	• Order Processing	•	•	•
• Relative Advantage	•	•	•	•	•	• Satisfaction • Channel Preference • Usefulness • Asset Specificity
• Consistent Image	•	• Promotion	•	•	•	•

WebQual™ has also served as the basis for previous cross-cultural website studies. One such study found that culture does impact consumers’ evaluations of websites. Masculinity and long-term orientation influenced customers’ perceptions of several dimensions of website quality: interactivity, ease of understanding, visual appeal, and entertainment appeal (Tsikriktsis, 2002). The findings revealed that culture did in fact impact website evaluation. This study expands upon this research in the following ways. First, it goes beyond the context of Web-banking services. Other service and product sites were included. Second, the sample size for each region (in this case the U.S. and China) was increased to over 100. Thirdly, two specific countries are the focus of this research.

WebQual™ consists of 12 dimensions of website quality: information fit-to-task, tailored communication, ease of understanding, intuitive operation, visual appeal, innovativeness, emotional appeal, online-completeness, relative advantage, consistent image, trust, and response time (Table 4). Three statements per dimension are responded to by subjects using a 7-point Likert scale (1 being strongly agreed to 7 being strongly disagreed).

**Table 4: Initial WebQual™ Dimensions.**

<b>Dimension</b>	<b>Description</b>
<b>Ease of Understanding</b>	Easy to read and understand.
<b>Intuitive Operation</b>	Easy to operate and navigate.
<b>Informational Fit-to-task</b>	The information provided meets task needs and improves performance.
<b>Tailored Communication</b>	Tailored communication between consumers and the firm.
<b>Trust</b>	Secure communication and observance of information privacy.
<b>Response Time</b>	Time to get a response after a request or an interaction with a site.



<b>Visual Appeal</b>	The aesthetics of a website.
<b>Innovativeness</b>	The creativity and uniqueness of site design.
<b>Emotional Appeal</b>	The emotional effect of using the website and intensity of involvement.
<b>On-Line Completeness</b>	Allowing all or most necessary transactions to be completed on-line (e.g., purchasing over the website).
<b>Relative Advantage</b>	Equivalent or better than other means of interacting with the company.
<b>Consistent Image</b>	The website image is compatible with the image projected by the firm through other media.

*Information fit-to-task* refers to how well the information on the website meets the needs of the customer. Does the information on the site actually help the consumer do what s/he wants to do? Some customers may wish to obtain product details, whereas others may be seeking pricing information.

Similarly, when attempting to find specific information can customers find it easily? *Tailored communication* pertains to a customer's ability to interact with the website to obtain specific information. For example, book buyers visiting Amazon.com find it helpful to perform searches on specific subject areas or authors of interest.

*Ease of understanding* and *intuitive operations* relate to how easy the site is to use. Can customers easily read and understand the text? Is the site intuitive to operate and does it include appropriate navigation buttons?

Further, *visual appeal* and *innovativeness* are two factors that relate to the creative or artistic side of the site. The visual appeal of a site affects how the consumer perceives the site's aesthetics. Does the graphic and design appeal to the customer's sense of aesthetics? Beyond simply appealing to the customers' visual sense, does the site utilize features that allow it to stand apart from others—being unique and creative. This refers to the innovativeness of the site.

*Emotional appeal* also plays a part in a customer's perception of a website. The site must keep customers involved and captivated. The customer should feel an emotional connection with the site.

Three dimensions relate to the interaction of the website with other aspects of the firm's business processes: *On-line completeness*, *relative advantage*, and *consistent image*. The first, on-line completeness refers to a customer's ability to conduct necessary transactions, such as making purchases, via the website. Similarly, relative advantage gets at how easy is it to make the purchase on-line versus over the phone or via fax. A website must be quicker and easier to use than other ordering outlets if it is to have a relative advantage over them. A website should also demonstrate a consistent image across the firm. Nike's "just do it" slogan is an example of this. It was consistently projected across multiple medias—television, radio, magazines, and billboards—including its website.

*Trust* is another factor influencing website quality. Customers must feel they can trust the company and site administrators with the personal information provided while using the website. And, that their information will be used appropriately.

Finally, the site must be prompt. Customers should perceive that the *response time* is acceptable. Pages should load quickly and information searchers should be handled quickly.

## Hypotheses

National culture factors are thought to influence website perceptions through slight nuance, thus some WebQual™ dimensional measures will vary from Chinese to U.S. consumers. In particular, Chinese and U.S. customers are hypothesized to differ on the following seven dimensions of WebQual™: informational fit-to-task, tailored communication, ease of understanding, intuitive operations trust, and response time. Using Hofstede's cultural dimensions, we hypothesize the different effects culture has on these WebQual™ dimension.

Gender has been shown to be a critical moderator variable in online commerce (Zhang and Prybutok, 2003). According to Hofstede's masculinity index, masculine societies' emphasize success and performance—getting the task accomplished quickly and efficiently. Those in a more feminine society are less driven to succeed.

Extending this concept to the Web, it is expected that the level of masculinity in a culture will affect the way individuals rate certain WebQual™ dimensions. *Informational fit-to-task* and *tailored communication* focus on the ability of a website to provide customers with the information they need to complete tasks quickly and efficiently. This is considered important for those scoring high on masculinity because they are task-oriented and these dimensions would allow them to improve the performance of their ecommerce activities. Thus it is hypothesized that:

Hypothesis 1: Chinese customers (lower masculinity) will rate informational fit-to-task **lower** than U.S. customers (higher masculinity); and

Hypothesis 2: Chinese customers (lower masculinity) will rate tailored communication **lower** than U.S. customers (higher masculinity).

Ease of understanding and intuitive operations will be affected by a country's level of femininity. Both of these factors facilitate a customer's ability to access information and navigate through a website. For example, global navigation system and menu bars make it easier and faster for customers to find what they want. Research in psychology on self-efficacy (Chan and Fishbein, 1993; Fishbein and Stasson, 1990; Sparks, 1994) and in IS on computer self-efficacy (Venkatesh and Davis, 1996) support the idea that people's judgment about their ability to use a computer system for a specific task is a determinant of perceptions of ease and difficulty. Feminine oriented people are more concerned with the ease of understanding and intuitive operations due to their focus on their surroundings. These people focus on the harmony between themselves and their environment (Hofstede, 1980; 1984; 2001), in this case, the website. Masculine oriented individuals, on the other hand, are less concerned with the ease of use issues and more concerned with the direct benefits the technology can provide. Therefore, customers from feminine cultures would want a site to be easier to use and operate than customers from masculine cultures who would be satisfied with less ease. Thus it is hypothesized that:

Hypothesis 3: Chinese customers (lower masculinity) will rate ease of understanding **lower** than U.S. customers (higher masculinity); and

Hypothesis 4: Chinese customers (lower masculinity) will rate intuitive operations **lower** than U.S. customers (higher masculinity).

Hofstede's uncertainty avoidance is also thought to influence a customer's evaluation of website quality (Tsikriktsis, 2002). Countries with high uncertainty avoidance are risk averse and have an emotional need for rules. Alternatively, low uncertainty avoidance societies are more accepting of ambiguity, risk, and disorder. The level of uncertainty a culture possesses is expected to influence a customer's perceptions of a website. In particular, it is thought to affect *trust*. The more trustworthy a site, the less uncertain and prone to stress a consumer will feel about using it. This is because high uncertainty avoidance cultures go to great lengths to avoid uncertainty. Thus it is hypothesized that:

Hypothesis 5: Chinese customers with lower uncertainty avoidance are more likely to rate trust **higher** than U.S. customers with higher uncertainty avoidance; and

Individualism is another cultural dimension thought to impact the evaluation of website quality. In individualistic cultures people believe that identity is based on the individual— independence and uniqueness is desirable. In a collective society, people are thought of as an extension of a group— membership in a group is preferred. Turning to the Web, the higher the level of individualism in a culture, the more likely innovation and uniqueness are valued on a website. *Innovativeness* which plays on a customer's sense of creativity and individualism is thought to be affected by the level of individualism in a culture. Thus it is hypothesized that:

Hypothesis 6: Chinese customers (lower individualism) will rate innovativeness **higher** than U.S. customers (higher individualism); and

Lastly, Hofstede's time orientation is thought to affect a consumer's evaluation of a website. Cultures with long-term orientation are more patient and persevering towards slow results. Conversely, cultures with short-term orientations demand quick results. Customers from short-term oriented cultures are likely to demand quicker

response time, as well as the ability to do their business completely online compared to those from long-term oriented cultures. Thus it is hypothesized that:

Hypothesis 7: Chinese customers (higher long-term orientation) will rate response time **higher** than U.S. customers (lower long-term orientation).

## METHODOLOGY

### Sample

Data were collected from 365 (254 U.S. and 111 Chinese) Web users (Table 5). The Americans were students at a large Southeastern university. Chinese Web users were students at a large Chinese university. Both groups evaluated websites using WebQual™. Subjects were given a context (e.g., “Imagine it is your friend's birthday and you are searching for a good gift—a book.”). They were asked to look at one of 12 designated website in their country as if they were considering a purchase.

**Table 5: Subject Demographics.**

	<b>U.S.</b>	<b>China</b>
<b>Number of subjects</b>	254	111
<b>Average age</b>	19.9	22.6
<b>Gender</b>	Male = 50.0% Female = 49.6%	Male = 74.8% Female = 25.2%
<b>Ever made purchase over the Web</b>	Yes = 71.7% No = 28.3%	Yes = 57.7% No = 42.3%

### Measurements

Twenty-four websites, including 12 Chinese and 12 U.S. websites, were included in the research. First, both product and service websites were included. We ensured that we had some variety in the websites by choosing three groups of websites, online products (CD, books, gifts, and etc.) shopping, hotel reservations, and airline ticketing. Second, we chose sites that would be familiar to the sample population (undergraduate students). In each country, six websites were chosen for product shopping, three were chosen for hotel reservation, and three were selected for air tickets booking. Our research was not carried out through bilingual websites (Bin 2003), because most gifts shopping and reservation services providing websites are designed for domestic users and do not have multi-language settings. Third, comparable sites were chosen in each country so that they would possess the same basic functions (Table 6). One of the researchers, a native Chinese speaker, ensuring the Chinese sites were comparable to the U.S. sites. For example, U.S. website <http://www.placestostay.com/index.html> and Chinese website <http://www.china-hotel.net> were chosen as comparable hotel reservation websites. They both offer functions such as quick searching by inputting key words such as city, hotel name, and arriving date; special offer and discount, quick link to hot destinations or hotels, membership registration and log in/out, custom service, help and so on.

**Table 6: Websites selected in the survey.**

<b>N o.</b>	<b>American Websites</b>	<b>Chinese Websites</b>	<b>Website Description</b>
1	<a href="http://www.ozelink.com/ceedees">www.ozelink.com/ceedees</a>	<a href="http://www.joyo.com">http:// www.joyo.com</a>	Buying CD, books, gifts, and etc.
2	<a href="http://www.emusic.com">www.emusic.com</a>	<a href="http://www.dangdang.com">http://www.dangdang.com</a>	
3	<a href="http://www.cdnw.com">www.cdnw.com</a>	<a href="http://www.welan.com">http://www.welan.com</a>	
4	<a href="http://www.amazon.com">www.amazon.com</a>	<a href="http://www.m18.com">http://www.m18.com</a>	
5	<a href="http://www.readersndex.com">www.readersndex.com</a>	<a href="http://www.bolchina.com">http://www.bolchina.com</a>	
6	<a href="http://www.waterstones.co.uk">www.waterstones.co.uk</a>	<a href="http://mall.sina.com.cn">http://mall.sina.com.cn</a>	
7	<a href="http://www.4airlines.com">www.4airlines.com</a>	<a href="http://www.travelsky.com">http://www.travelsky.com</a>	Booking air tickets
8	<a href="http://www.period.com/airlines">www.period.com/airlines</a>	<a href="http://www.piao.com/jiaotong/feiji/dancheng.jsp">http://www.piao.com/jiaotong/feiji/dancheng.jsp</a>	

9	www.strangeways.org	http://mall.sina.com.cn/etchina	
10	www.hotelworld.com/index.html	http://www.china-hotel.net	Hotel Reservation
11	www.hotelstravel.com/homepage.html	http://www.hotelonline.com.cn/newindex.asp	
12	www.placestostay.com/index.html	http://travel.elong.com/hotel/jrj	

In order to ensure there was no problem with the data collection due to misinterpretation of the survey, WebQual™ was translated into Chinese by a native speaking Chinese speaker and then back-translated into English by another native Chinese speaker. The retranslation was then compared to the original survey for accuracy.

Once respondents reviewed the website, they completed the WebQual™ questionnaire. The instrument collected demographic information, including gender, age, and previous purchase behavior, along with the 36 WebQual™ items. These items measured all 12 of the WebQual™ dimensions. Subjects were free to explore as much of the site as they desired and to spend as much time as they felt necessary before filling out the questionnaire. Subjects were asked to spend at least 10-15 minutes browsing the website before starting evaluating it. This was the same process followed and tested by Loiaco et al. (2002) to emulate a more natural web browsing experience.

In order to test the proposed hypotheses, the average scores for each of the 12 WebQual™ dimensions were calculated. An aggregate variable was calculated for each factor of WebQual™. For example, information fit-to-task included three items used to measure it in the survey. The score from each of these were added together. Since each dimension has a total of three items measuring it, we did not need to divide by the total number of items.

A one-way analysis of variance (ANOVA) test was conducted in which means for each dimension and the overall mean score for the website (being the sum of the average dimension scores) were analyzed and compared. An F-value was calculated for each dimension and the overall score to determine differences in the average scores of Chinese and U.S. customers. The average scores and test results are shown in Table 7.

**Table 7: F-test results between the twelve dimensions of website quality.**

Dimension	Mean Score of American Subjects	Standard Deviation American Subjects	Mean Score of Chinese Subjects	Standard Deviation Chinese Subjects	F-Value	Significance
Overall Score	185.61 (5.16)	34.55	179.89 (5.00)	28.78	2.34	.127
Informational Fit-to-Task	5.21	1.13	5.08	0.99	1.11	.293
Tailored Communication	5.28	0.99	4.92	1.03	7.32	.007*
Ease of Understanding	5.66	1.04	5.27	1.07	10.07	.002*
Intuitive Operation	5.79	1.01	5.52	1.21	5.79	.017*
Visual Appeal	4.56	1.29	4.58	1.01	.566	.452
Emotional Appeal	4.62	1.06	4.73	0.97	1.59	.209
Trust	4.67	1.40	5.09	1.15	7.88	.005*
Consistent Image	4.79	0.97	4.94	0.97	1.81	.180
Innovativeness	4.75	1.20	4.59	1.00	1.51	.220
Online Completeness	5.59	1.03	5.18	0.93	13.65	.000*
Relative Advantage	5.62	1.15	5.21	1.14	7.32	.007*
Response Time	5.33	1.18	4.86	1.16	11.70	.001*

## RESULTS

As Table 6 indicates, U.S. subjects evaluated the *informational fit-to-task, interaction, response time, design appeal, intuitiveness, innovativeness, business processes, and substitutability* more highly overall than did Chinese subjects. Whereas, Chinese subjects assessed *trust, visual appeal, emotional appeal, and integrated communications* more highly overall. Not all the relationships were found to be significant. Significant differences were identified for *interaction, trust, response time, design appeal, intuitiveness, business processes, and substitutability*. These findings support most of the hypotheses. Chinese and U.S. Web users emphasize different factors of website quality when evaluating websites.

As hypothesized, hypotheses 2 through 5 were supported. U.S. customers rated tailored communication (F-value = 7.32,  $p = .007$ ), ease of use (F-value = 10.07,  $p = .002$ ), intuitive operations (F-value = 5.79,  $p = .017$ ), and trust (F-value = 7.88,  $p = .005$ ) significantly higher than their Chinese counterparts (Table 7 and 8).

**Table 8: Hypotheses Supported.**

Hypothesis	WebQual™ Dimension	Hypothesis Supported
H1	Informational Fit-to-task	No*
H2	Tailored Communications	Yes
H3	Ease of Understanding	Yes
H4	Intuitive Operations	Yes
H5	Trust	Yes
H6	Innovativeness	No*
H7	Response Time	No**

\*Scores still in the predicted direction

\*\*Significantly different in the opposite direction

Three hypotheses were not significant. Though the mean score (mean = 5.21) of U.S. customers for information fit-to-task (H1) was higher than Chinese customers, it was not significantly different from the mean score (mean = 5.08) of Chinese customers (F-value = 1.11,  $p$  value = .293). Similarly, the mean score (mean = 5.75) of U.S. customers for innovation (H6) was higher than mean score (mean = 4.59) Chinese customers, but not significantly (F-value = 1.51,  $p$  value = .220). Strangely, not only was hypothesis 7 not supported, significance was found in the opposite direction. The mean score (mean = 5.33) of U.S. customers for response time was higher than the mean score (mean = 4.86) for Chinese customers (F-value = 11.70,  $p$  value = .001).

Two WebQual™ dimensions, not hypothesized to differ (online completeness and relative advantage) between U.S. and Chinese customers in fact did. The mean score (mean = 5.59) of U.S. customers for online completeness was higher than the mean score (mean = 5.18) for Chinese customers (F-value = 13.65,  $p$  value = .000). For relative advantage, the mean score (mean = 5.62) of U.S. customers was higher than the mean score (mean = 5.21) for Chinese customers as well (F-value = 7.32,  $p$  value = .007). These differences may be linked to uncertainty avoiding tendencies. U.S. customers tend to be less comfortable with uncertainty than their Chinese counterparts, thus they would desire higher levels of interaction, faster response to their interactions, and more intuitive and appealing forms of navigation. Similarly, U.S. customers would expect company websites to offer more opportunities to conduct their business online, instead of having to wait.

## DISCUSSION

This research reveals the cultural differences across China and the U.S. Significant differences were found to exist for seven of the WebQual™ dimensions: Ease of understanding, tailored communications, intuitive operation, trust, online completeness, relative advantage, and response time. Given these results it is clear that effective companies must develop multi-cultural websites in order to meet the cultural preferences of their customers.

U.S. consumers indicated a higher average score on ease of use. This may be due to the fact that the Web has been around much longer in the U.S. (Bin et al., 2003). Consumers are therefore more familiar with it and may feel more comfortable with website use in general.

Similarly, U.S. customers had higher average scores on tailored communication and intuitive operations than did Chinese customers. These differences may be the result of higher comfort levels with navigating through and using search functions to receive tailored information from websites. This is consistent with previous research which suggests that Chinese customers have less experience with the Web (Shao, 2001). The experience of navigating a website may be more frustrating to Chinese users due to their Internet connection. Since most Chinese consumers are charged on a per minute basis, they may be less willing to wait for the website to load or respond to a query.

Interestingly, U.S. customers, however, were less trusting than Chinese consumers. One possible reason for this difference is the higher uncertainty avoidance on the part of U.S. citizens and the higher-levels of collectivism and power-distance within the Chinese culture (Hofstede, 1980). It is less accepting to be suspicious and mistrustful of people in the Chinese culture than in the U.S. This differs from the reasoning offered by Bin et al. (2003) that Chinese consumers are more reluctant to trust business offerings via the Web.

Additionally, U.S. consumers scored online completeness and relative advantage on average higher than Chinese consumers. This is in keeping with the fact that 82 percent of U.S. consumers have experience purchasing online. Chinese consumers have very little—only 31.9 percent (Bin et al., 2003). U.S. consumers may in general feel that “allowing all or most necessary transactions to be completed online” (online completeness) is therefore more critical. Further, because Chinese consumers prefer cash-based interactions (Shao, 2001), they may not consider the need for a site to be “equivalent or better than other means of interacting with the company” (relative advantage) as critical as their U.S. counterparts do.

Though it was predicted that U.S. consumers would be more critical of response time, the opposite result was found. This may be due to the different type of Internet connections within the U.S. and China. China has only three major organizations running the Internet and bottlenecks are frequent (CNNIC, 2004). Response time may have been rated lower by Chinese consumers due to these bottlenecks.

## **LIMITATIONS AND FUTURE RESEARCH**

There are two major limitations to this research. The first is the current lack of cultural dimension data. Currently the Hofstede (1997) measures are being used in a broader national culture context. Another way to compare the two groups is through individual analysis of Hofstede’s (1997) measures, which would require collecting cultural data at the individual level. In order to gather a deeper cross-cultural understanding of these differences individual nationality data is required (McCoy, 2002). A follow-up study including individual measures of culture will help explain the differences in greater detail (Dorfman and Howell, 1988).

Secondly, the subjects used in the first round of data collection were students. Some would argue that using students as subjects limits the generalizability of our findings to the general populace of web users. Research by Voich (1995) further supports the fact that students are sufficient surrogates for working professionals. We argue that students included in our study match the general demographics of web consumers and that younger users tend to be more Web literate.

## **CONCLUSIONS AND IMPLICATIONS**

The findings of this research suggest that U.S. and Chinese consumers evaluate websites in different ways. Companies would be wise to tailor their country websites to national cultural differences, such as tailored communication, ease of understanding, intuitive operations, and trust. Changes to these aspects will enhance the customer’s experience and intention to reuse the site. Website development by simply translating U.S. sites into Chinese sites is not enough. National culture differences revealed in this study should be taken into consideration.

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