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An Empirical Examination of the Relationships between the Dimensions of Culture and E-service Quality Perceptions

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Abstract

E-services are diffusing rapidly in the developing economies. E-service quality plays an important role in determining the customers' satisfaction and usage behaviour. Culture, in turn, has been found to influence customers' perceptions of service quality. However, the current understanding of the influence of culture on e-service perceptions is limited. This study presents a review of prior e-service quality literature and position ease of use, responsiveness, system availability and reliability as the predictors of overall e-service quality. Furthermore, we examine Hofstede's dimensions of culture as moderators between the dimensions of dimensions of e-service quality and overall e-service quality. Our research model is empirically tested with data collected from 453 Chinese e-service customers and analyzed using PLS. The results show that all the four dimensions of culture values influence on some, but not all, dimensions of e-service quality. Finally, directions for further research are suggested.

Keywords: E-service quality, culture, SERVQUAL

1 Introduction

Today, the field of e-services is expanding rapidly in the emerging economies such as China and India. The growth is rapid in terms of both the number of users and money spent in e-services. A number of prior research has addressed the importance of e-service quality in attracting and retaining the online customers.

Prior studies have examined the influence of culture on service quality and customer satisfaction, but there are still gaps in the literature. Previous research focuses on the effect of culture on traditional service quality from the national and individual perspective, and very little research has been conducted on the e-service quality area (Tsoukatos & Rand 2007), specifically focusing on the influence of culture on the perceptions of e-service quality.

To fill in this gap in the literature, we present a review of prior e-service quality literature and position ease of use, responsiveness, system availability and reliability as the predictors of overall e-service quality. Furthermore, we examine Hofstede's dimensions of culture as moderators between the dimensions of dimensions of e-service quality and overall e-service quality.

The remainder of this paper is organized as follows. Following this introduction, a literature review on e-service quality, culture, and culture's effect on service quality is presented. Then the research model and the research hypotheses on the possible relationships between the dimensions of e-service quality and the dimensions of culture are put forward. Thereafter, the methodology of this study and the data collection are presented, followed by measurement validity and results from the data analysis. Finally, the findings as well as the limitations are discussed, and suggestions for further research are presented.

2 Literature Review

2.1 Service quality

Traditional service quality refers to the quality of all non-Internet based customer interactions and experiences with companies (Parasuraman et al. 1988). Service quality is determined by the difference between expected service and perceived service from companies (Zeithaml 1998). It is generally agreed that service quality is more difficult for customers to evaluate as compared to the quality of tangible goods (Kueh & Voon 2007). As a result, there is a variety of service quality determinants developed by researchers, from service performance to service delivery as well to interaction. The SERVQUAL instrument developed by Parasuraman et al. (1985; 1988) provides a generic instrument for measuring service quality across a broad range of service categories, and is widely adapted and tested conceptualization of service quality. The SERVQUAL instrument uses 22 questions to measure service quality covering five dimensions, namely, tangibles, reliability, responsiveness, assurance and empathy (Parasuraman et al. 1988). The five dimensions in turn are originally based on the ten dimensions of service quality put forward by Parasuraman et al. (1985).

- Tangibles: The appearance of physical facilities, equipment, personnel and communication materials;

- Reliability: The ability to perform the promised service dependably and accurately;
- Responsiveness: The willingness to help customers and provide prompt services;
- Assurance: The knowledge and courtesy of employees and their ability to convey trust and confidence;
- Empathy: Care and individualized attention provided to customers.

The SERVQUAL instrument has been widely applied to measure service quality in various service contexts, including e.g. banks, credit card companies, telephone operators as well as travel agencies. Moreover, researchers have applied the SERVQUAL scale to measure service quality in the context of e-services. However, using SERVQUAL for e-service quality evaluation has been found problematic because of three reasons: the absence of sales staff, the absence of traditional tangible element, and self-service of customers. In this light it is meaningful to develop an alternative instrument for measuring e-service quality.

2.2 Development of E-service Quality Measurements

Followed by the increasing adoption of e-service adoption, the importance of measuring and monitoring e-service quality has been recognized, and e-service quality posits to be an emergent research topic. Some research has been conducted to develop e-service quality measurement. Much of the studies in e-service quality have taken a combination of traditional service quality dimensions and web interface quality dimensions as the starting point. Yoo and Donthu (2001) developed a 4-dimension scale called SITEQUAL to measure online service quality of website, and the four dimensions are ease of use, aesthetic design, processing speed, and interactive responsiveness (Yoo & Donthu 2001). Cox and Dale (2001) set up 6 dimensions of online retailing service quality, namely website appearance, communication, accessibility, credibility, understanding and availability with comparison to the traditional dimensions of service quality. Wolfinbarger and Gilly (2002) developed an e-service quality scale which was initially titled COMQ and later was progressed to eTailQ with the following four dimensions: website design, reliability, security and customer service (Wolfinbarger & Gilly 2002, 2003). Lociacano et al. (2002) introduced an e-service quality scale called WEBQUAL, which is composed of 12 dimensions.

There is growing recognition of different variety in the outcome of e-service quality studies in terms of the quality dimensions (Waite 2006; Kim et al. 2006). Recent research on e-service quality has introduced different dimensions in e-service quality (Santos 2003; Field et al. 2004; Yang & Jun 2002; Yang & Fang 2004; Zeithaml 2000, 2002; Parasuraman et al. 2005; Kim et al. 2006; Sohn & Tadisina 2008). Santos (2003) argued that both active and incubative dimensions are important in e-service quality, and both of the dimensions should be taken into account in e-service quality assessment. Field et al. (2004) developed a process model for assessing and improving service quality by identifying e-service system entities and transactions between those entities and mapping key quality dimensions onto them. Yang (2002) identified the differentiation among dimensions between online-purchaser and non-purchaser (Yang & Jun 2002), and Yang and Fang (2004) further examined the differentiation of dimensions to online service satisfaction and dissatisfaction. They suggested that there are four salient quality dimensions leading to both satisfaction and dissatisfaction: responsiveness, reliability, ease of use and competence (Yang and Fang 2004).

Zeithaml et al. (2000, 2002) and Parasuraman et al. (2005) carried out a study on Internet service quality based on their earlier research on service quality in the traditional distribution channels, and developed an E-S-QUAL scale based on the 7 dimensions proposed by Zeithaml (Zeithaml 2000, 2002; Parasuraman et al. 2005). The E-S-QUAL scale comprises 11 dimensions in e-service quality, and later Parasuraman et al. (2005) develop the E-S-QUAL into to a seven dimensions scale, the seven dimensions namely, efficiency, reliability, fulfillment, privacy, responsiveness, compensation, and contact (Parasuraman et al. 2005). Kim et al. (2006) extended the dimensions developed by Parasuraman et al. (2005) into a nine-dimension scale (efficiency, system availability, fulfillment, privacy, responsiveness, compensation, contact, information and graphic style) of e-service quality in order to use them for content analysis and evaluation of websites in the apparel retailing sector. Sohn and Tadisina (2008) put forward a 6-dimension model for e-service quality assessment based on their empirical study in Internet-based financial institutions (Sohn & Tadisina 2008).

2.3 Culture and its effect on service quality

To understand culture, we turn to the work of Hofstede (Hofstede 1980, 1991, and 1994). Hofstede defines culture as “the collective programming of the mind which distinguishes the members of one human group from another” (Hofstede 1994), and he initially defined culture in terms of four dimensions: Individualism/Collectivism, Masculinity/Femininity, Power Distance and Uncertainty Avoidance (Hofstede & Bond, 1988), and later a fifth dimension of long-term orientation is added based on the Bond’s Chinese Value Survey (Hofstede 2001). Hofstede (1980, 1991) identified culture with nation and conducted his research in different countries and regions. Later, Donthu and Yoo (1998) argued that culture is not necessarily identified to nations, and they apply the concept of culture to individuals (Donthu & Yoo 1998).

There is evidence to suggest that the dimensions of culture have significant influence on consumer’s perception of service quality. Douthu and Yoo (1998) have conducted research to test the effect of culture on bank consumer’s expectations of service quality. Hofstede’s cultural dimensions and the five dimensions of SERVQUAL instrument have been applied in their study. Their study results shows that customers who are short-term oriented, individualistic, low on power distance and high on uncertainty avoidance have higher service quality expectations, and low power distance consumers have higher expectations of reliability and responsiveness while individualistic customers have higher expectations of empathy and assurance.

Mattila (1999) has examined cultural differences between Western and Asian customers in terms of individualism, power distance and high versus low-context communication in personalized service and pleasant physical environment in luxury hotels. In her study she found out that Western customers rely on the tangible cues of physical environment and value the dimensions of service that are related with pleasure, more than those of Asian background (Mattila 1999).

Furrer et al. (2000) extended Douthu and Yoo’s (1998) research and investigate the relationships between Hofstede’s cultural dimensions and SERVQUAL dimensions in banking service. They argue that the importance of SERVQUAL dimensions varies across people from different cultural backgrounds, and produce correlations between all pairs of

dimensions of culture (Hofstede 1980, 1991) and of service quality (Parasuraman et al. 1988), substantiating positive or negative relationships. Their study focuses on weak and frequent customers served often by female employees. Their results shows that power distance, individualism, uncertain avoidance and long-term orientation has positive or negative relationships with the SERVQUAL dimensions, and masculinity had no significant effect on service quality.

Tsoukatos and Rand (2007) conduct a similar study as Furrer et al (2000) in the retail insurance in Greece. They focus on infrequent and weak customers served by female employees. Their study investigates the relationships between Hofstede's culture dimensions and four dimensions of the SERVQUAL, excluding tangible in the SERVQUAL instrument. In their study they find that power distance, masculinity and uncertainty avoidance are inversely related to reliability, responsiveness and assurance, and long term orientation is only significantly related to reliability.

Kueh and Voon (Kueh & Voon 2007) examined the influence of individual level cultural dimensions on Generation Y consumers' expectation of service quality in Malaysia. They argue that service quality expectations are positively related to uncertainty avoidance and long-term orientation but negatively related to power distance, and no significant relationships with masculinity and collectivism.

Overall, these studies provide evidence that culture has an impact on service quality. However, there is no investigation on the effect of culture on e-service quality and thus, a significant gaps exist in the literature. This study closes the gap by investigating the relationships between all pairs of dimensions of culture by Hofstede and of e-service quality.

3 Research model and hypotheses

This study investigates the relationships between all pairs of dimensions of culture and of e-service quality. In our study we adopt Hofstede's original four culture dimensions, namely, individualism, masculinity, power distance and uncertainty avoidance. Grounded on the review of prior literature, we suggest that there are four key dimensions of e-service quality, namely, ease of use, system availability, responsiveness and reliability. As discussed in the literature review, though there is a series of research on e-service quality dimensions, no generic instrument for determining e-service quality has thus far been put forward. In our research model, the dimensions of culture are positioned as moderators between the dimensions of e-service quality and the dependent variable, e-service quality.

Based on previous literature review on e-service quality dimensions, we put forward a four-dimension scale to evaluate e-service quality. The four dimensions are ease of use, system availability, responsiveness and reliability.

- Ease of use: How easy it is for customers to use the website.
- System availability: The correct technical functionality of the website.
- Responsiveness: The effective handling of problems and returns via the internet.
- Reliability: The consistency of performance and dependability of the website.

Accordingly, we postulate the following set of hypotheses:

H1. Ease of use positively relates to customer's perception of e-service quality.

H2: System availability positively relates to customer's perception of e-service quality.

H3: Responsiveness positively relates to customer's perception of e-service quality.

H4: Reliability positively relates to customer's perception of e-service quality.

Individualism/collectivism captures social behaviour towards the groups. The ties between individuals are loose, whereas the ties between groups are strong and cohesive (Tsoukatos & Rand 2007). It is considered important to maintain social harmony and to avoid direct confrontation. In general terms, Chinese culture can be considered a collectivistic one. Collectivist individuals tend to prefer harmony and interdependence in social relationships (Hofstede & Hofstede, 2005). They will therefore be more tolerant to mistakes and have lower expectations for reliability, but will have a greater need for the service provider to show empathy, assurance and responsiveness. They will also have a greater need to be assured by the quality of service by using tangibles as surrogate evidence. There is no study on the relationships between individualism and e-service quality dimensions. Thus we hypothesize that:

H5a: Collectivism positively moderates the relationship between ease of use and e-service quality.

H5b: Collectivism positively moderates the relationship between system availability and e-service quality.

H5c: Collectivism positively moderates the relationship between responsiveness and e-service quality.

H5d: Collectivism positively moderates the relationship between reliability and e-service quality.

Masculinity and femininity are defined as referring to "the dominant gender role patterns" (Hofstede 2001) in society. Individuals with a high score in masculinity expect women to be tender, caring for others and concerned for the quality of life, whereas they expect men to be tough, assertive and focused on material success (Hofstede 1980, 1991). Furrer et al. (2000) hypothesized that masculinity would affect service expectations depending on whether the service provider is male or female. In e-service encounter there is no face-to-face interaction between customer and service providers, and there is no study result in previous research to explain the relationships between masculinity and e-service quality dimensions. Thus, we suggest that:

H6a: Masculinity positively moderates the relationship between reliability and e-service quality.

H6b: Masculinity positively moderates the relationship between system availability and e-service quality.

H6c: Masculinity positively moderates the relationship between responsiveness and e-service quality.

H6d: Masculinity positively moderates the relationship between reliability and e-service quality.

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" (Hofstede & Hofstede 2005). People with a high score in power distance accept centralization and formalization of authority and tolerate the lack of autonomy. Moreover, there tends to be more inequalities in power and wealth (Hofstede 1980). The powerful are

entitled and expected to have status symbols and privileges while the less powerful are expected to be dependent on the more powerful. Prior research offers no results to explain the relationship between power distance and the dimensions of e-service quality. Thus, we propose that:

H7a: Power distance positively moderates the relationship between reliability and e-service quality.

H7b: Power distance positively moderates the relationship between system availability and e-service quality.

H7c: Power distance positively moderates the relationship between responsiveness and e-service quality.

H7d: Power distance positively moderates the relationship between reliability and e-service quality.

Uncertainty avoidance refers to the extent to which the members of a culture feel threatened by uncertain or unknown situations (Hofstede 1991). High uncertainty avoidance is associated with intolerance with uncertainty and avoidance of risk-taking. People with high uncertainty avoidance have a need for rules to reduce ambiguity, prefer structure in organizations and relationships, whereas they have low tolerance for behaviors and ideas that are different and have more resistance to change. Furrer et al. (2000) claim that in culture with strong uncertainty avoidance, all dimensions of service quality are very important to reduce uncertainty, especially during infrequent situations, and customers seek to reduce perceived risks of service failure rather than to reduce ambiguity (Furrer et al. 2000). In previous research, there is no result to explain the relationship between uncertainty avoidance and the dimensions of e-service quality. Thus, the following hypotheses are postulated:

H8a: Uncertainty avoidance positively moderates the relationship between reliability and e-service quality.

H8b: Uncertainty avoidance positively moderates the relationship between system availability and e-service quality.

H8c: Uncertainty avoidance positively moderates the relationship between responsiveness and e-service quality.

H8d: Uncertainty avoidance positively moderates the relationship between reliability and e-service quality.

All the hypotheses of the study are presented in the research model (See Figure 1).

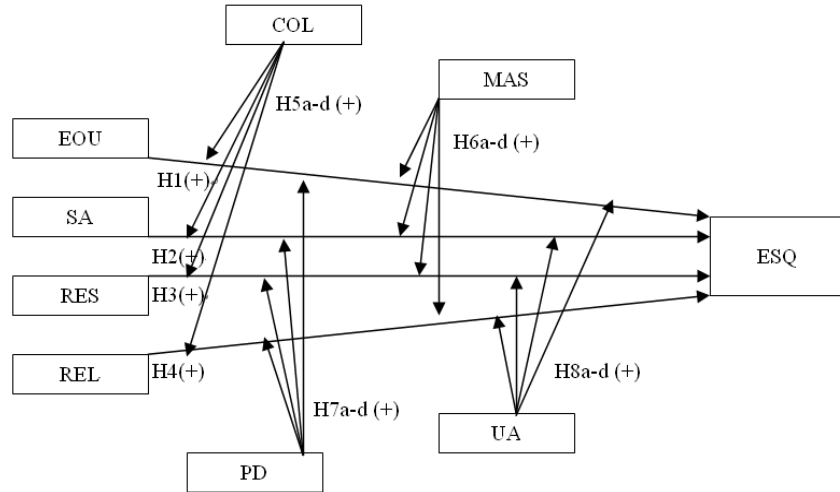


Figure 1: Research Model

4 Research Method and Results

4.1 Data collection

The data was collected with a questionnaire from the customers of a group of Chinese online travel agencies. The sample was chosen since we believe that the customers of online travel agencies have also experience with e-services. Thus, they are likely to have their own perceptions on e-service quality as well as their individual cultural backgrounds. The respondents were asked to indicate their perceptions on e-service quality dimensions and the culture dimensions. The questionnaire was developed mainly based on the scales from previous research with minor rewordings to match the online travel service context. The measurement items are presented in Table 2. A five-point Likert-scale ranging from strongly disagree (1) to strongly agree (5) was used to measure each item.

In total, 1500 questionnaires were mailed to the customers of online travel agencies. We received 503 responses of which 453 were included in the analysis. The response rate of our study is 30%, which can be considered acceptable. Generally the response rate for questionnaires in information systems domains is between 8 and 15%. The age profile of the respondents represents most age groups with the majority (58%) being in the 18 to 35 age range and 62.7% of the respondents are male. And 65.5% of the respondents use Internet more than 10 hours per week (See Table 1).

Demographic profile		Frequency	Percent (%)
Gender	Male	284	62.7
	Female	169	37.3
	Total	453	100.0
Age	18-25	121	26.7
	26-35	142	31.3
	36-45	138	30.5
	46-55	32	7.1
	56-65	20	4.4
	Total	453	100.0
Frequency of using Internet (hours per week)	Less than 5 hours	105	23.2
	5 to 10 hours	51	11.3
	More than 10 hours	297	65.5
	Total	453	100.0

Table 1: Demographic Information of Participants

4.2 Measurement Validity

We adopted Partial Least Squares, in practice SmartPLS software (Ringle et al. 2005), to obtain estimates for the measurement and structural parameters in our structural equation model. PLS has enjoyed the increasing popularity in recent years because of its ability to model latent construct under the conditions of non-normality. Moreover PLS has proven useful when the theoretical framework is not fully crystallized (Chin 1998; Sosik et al. 2009.)

Convergent validity indicates the extent to which the measures of a construct that are theoretical related are also related in reality. Convergent validity can be evaluated by inspecting the factor loadings of the measures on their respective constructs (Chin 1998; Hulland 1999; Tenenhaus et al. 2005), and the reliability of the measures can be assessed using composite reliability (CR) and average variance extracted (AVE). In our study most of the factor loading satisfy the cut-off value above 0.7, except that the factor loading of four items are acceptable with the cut-off value between 0.6 and 0.7 (Hair et al. 2006), and the values of composite reliability (CR) and average extracted variance (AVE) also satisfy the threshold value of 0.7 and 0.5 respectively (See Table 2). The results demonstrate good internal consistency in this study, and suggest good convergent validity and reliability of the measures (Fornell & Larcker 1981).

Constructs and items	Loading	Std. Error	t-value
Ease of use (EOU) CR= 0.877 AVE=0.705			
EOU1 It is easy to look for travel information.	0.873	0.013	68.546
EOU2 It is easy to move around the website.	0.855	0.012	74.128
EOU3 It is easy to do what I want to do, for example searching information, making an order.	0.789	0.023	33.652
System availability (SA) CR=0.792 AVE=0.573			
SA1 System is always available for business.	0.981	0.202	4.849
SA2 System does not crash.	0.634	0.201	3.156
SA3 System runs smoothly in the transaction process.	0.600	0.256	2.331
Responsiveness (RES). CR=0.794 AVE=0.667			
RES1 Prompt service.	0.965	0.015	62.779
RES2 Timely response.	0.635	0.070	9.115
Reliability (REL) CR=0.845 AVE=0.732			
REL1 The travel service provider always keeps service promise.	0.869	0.020	44.384
REL2 The travel service provider is truthful about its offering.	0.842	0.021	39.293
COL (COL) CR=0.852 AVE=0.591			
COL1 Being accepted as a member of a group is more important than having autonomy and independence.	0.752	0.025	29.729
COL2 Being accepted as a member of a group is more important than being independent.	0.850	0.024	36.120
COL3 Group success is more important than individual success.	0.775	0.024	32.762
COL4 Being loyal to a group is more important than individual gain.	0.690	0.031	22.471
Masculinity (MAS) CR=0.899 AVE=0.748			
MAS1 It is preferable to have a man in high level position rather than a woman.	0.884	0.017	51.012
MAS2 It is more important for men to have a professional career than it is for women to have a professional career.	0.911	0.008	117.050
MAS3 Women do not value recognition and promotion in their work as much as men do.	0.800	0.017	45.650
Power Distance (PD) CR=0.907 AVE=0.830			
PD1 Decision making power should stay with top management in the organization and not be delegated to lower level employees.	0.904	0.015	59.129
PD2 Employees should not question their manager's decisions.	0.918	0.010	95.487
Uncertainty Avoidance (UA) CR=0.828 AVE=0.619			
UA1 Rules and regulations are important because they inform workers what the organization expects of them.	0.723	0.044	16.630
UA2 Order and structure are very important in a work environment.	0.906	0.007	128.723
UA3 Providing opportunities to be innovative is more important than requiring standardized work procedures.	0.717	0.039	18.479
E-service quality (ESQ) CR=0.924 AVE=0.859			
ESQ1 Based on my previous online booking experience, I feel the online travel service quality is good.	0.918	0.011	86.083
ESQ2 The online service quality is better than I expected.	0.935	0.006	151.500

Table 2: Psychometric Properties of Measures

Discriminant validity can be verified with the square root of the average variance extracted for each construct higher than any correlation between this construct and any other construct (Fornell & Larcker 1981). As shown in Table 3, each construct in our research model shares a greater variance with its own measures than with any other construct. It reveals that each construct in our research model is more closely related to its own measures than to those of other constructs. Therefore, the discriminant validity of our study is supported (Fornell & Larcker 1981).

	EOU	SA	RES	REL	COL	MAS	PD	UA	ESQ
EOU	0.840								
SA	0.234	0.757							
RES	0.262	0.331	0.817						
REL	0.270	0.337	0.139	0.856					
COL	-0.395	0.022	0.090	-0.049	0.769				
MAS	-0.436	-0.181	-0.114	-0.135	0.440	0.865			
PD	-0.381	-0.246	-0.253	-0.145	0.361	0.528	0.911		
UA	0.455	0.338	0.113	0.408	-0.175	-0.276	-0.200	0.787	
ESQ	0.474	0.396	0.281	0.511	-0.199	-0.253	-0.192	0.558	0.927

Note: The bolded items on the diagonal represent the square roots of the AVE, and off-diagonal elements are the correlation estimates.

Table 3: Correlations between Constructs

4.3 Results

In this study a bootstrapping procedure was adopted to test the effects and the statistical significance of the parameters in the structural model. The findings in this study provide significant support for some of the hypotheses proposed in this study (See Table 4).

Ease of use, system availability, reliability and responsiveness are supported to be positively related to customer's perception of e-service quality, and reliability is the most important factor in e-service quality evaluation ($\beta=.283$, $p<.001$). The proposed research model explains 49.6% of e-service quality. The results are shown in Figure 2.

	Relationship	Path Coefficient	t-value	Conclusion	R2
1	Ease of use and e-service quality.	0.179***	3.500	H1 supported	0.496
	System availability and e-service quality.	0.131**	2.724	H2 supported	
	Responsiveness and e-service quality.	0.149***	4.627	H3 supported	
	Reliability and e-service quality.	0.283***	7.634	H4 supported	
2	Collectivism as a moderator between ease of use and perceived e-service quality.	-0.467***	9.601	H5a rejected Negative moderator	0.201
	Collectivism as a moderator between system availability and perceived e-service quality.	0.062	0.407	H5b not supported	
	Collectivism as a moderator between responsiveness ease of use and perceived e-service quality.	0.187***	4.102	H5c supported	
	Collectivism as a moderator between reliability and perceived e-service quality.	0.031	0.655	H5d not supported	
3	Masculinity as a moderator between ease of use and perceived e-service quality.	-0.423***	8.336	H6a rejected Negative moderator	0.197
	Masculinity as a moderator between system availability and perceived e-service quality.	-0.090	0.663	H6b not supported	
	Masculinity as a moderator between responsiveness ease of use and perceived e-service quality.	0.026	0.531	H6c not supported	
	Masculinity as a moderator between reliability and perceived e-service quality.	0.006	0.132	H6d not supported	
4	Power distance as a moderator between ease of use and perceived e-service quality.	-0.317***	7.388	H7a rejected Negative moderator	0.184
	Power distance as a moderator between system availability and perceived e-service quality.	-0.128	1.140	H7b not supported	
	Power distance as a moderator between responsiveness ease of use and perceived e-service quality.	-0.128**	2.894	H7c rejected Negative moderator	
	Power distance as a moderator between reliability and perceived e-service quality.	0.002	0.046	H7d not supported	
5	Uncertainty avoidance as a moderator between ease of use and perceived e-service quality.	0.361***	9.935	H8a supported	0.325
	Uncertainty avoidance as a moderator between system availability and perceived e-service quality.	0.191**	3.203	H8b supported	
	Uncertainty avoidance as a moderator between responsiveness ease of use and perceived e-service quality.	-0.081	2.149	H8c not supported	
	Uncertainty avoidance as a moderator between reliability and perceived e-service quality.	0.258***	6.294	H8d supported	

Note: ***: p-value<0.001, and **: P-value<0.01.

Table 4: Results of Hypotheses Test

In total, 6 of the 16 hypotheses on the relationships between all pairs of dimensions of culture and of e-service quality were supported (See Table 4). Collectivism was found to be positively moderate the relationship between responsiveness and perceived e-service quality ($\beta=0.187$, $p<0.001$), but negatively moderate the relationship between ease of use and perceived e-service quality ($\beta=-0.467$, $p<0.001$). The proposed research model explains 20.1% of the variance in collectivism. Masculinity had no moderating effect on the relationships between system availability, responsiveness, reliability and perceived e-service quality, but appears to have a negative moderating effect on the relationship between ease of use and perceived e-service quality, contrary to our hypothesis ($\beta=-0.423$, $p<0.001$). The proposed research model explains 19.7% of masculinity. Power distance is not supported to have positive moderating effect on the relationships between system reliability, responsiveness, reliability and perceived e-service quality, but has a negative impact on the relationship between ease of use and perceived e-service quality ($\beta=-0.317$, $p<0.001$) and responsiveness ($\beta=-0.128$, $p<0.01$). The explanatory power for power distance is 18.4%. Uncertainty avoidance is supported to have positive moderating effect on the relationships between ease of use ($\beta=0.361$, $p<0.001$), system availability ($\beta=0.191$, $p<0.01$), reliability ($\beta=0.258$, $p<0.001$) and perceived e-service quality, but no moderating effect on the relationship between responsiveness and perceived e-service quality. The proposed research model explains 32.5% of uncertainty avoidance. The results are shown in Table 4 and Figure 2.

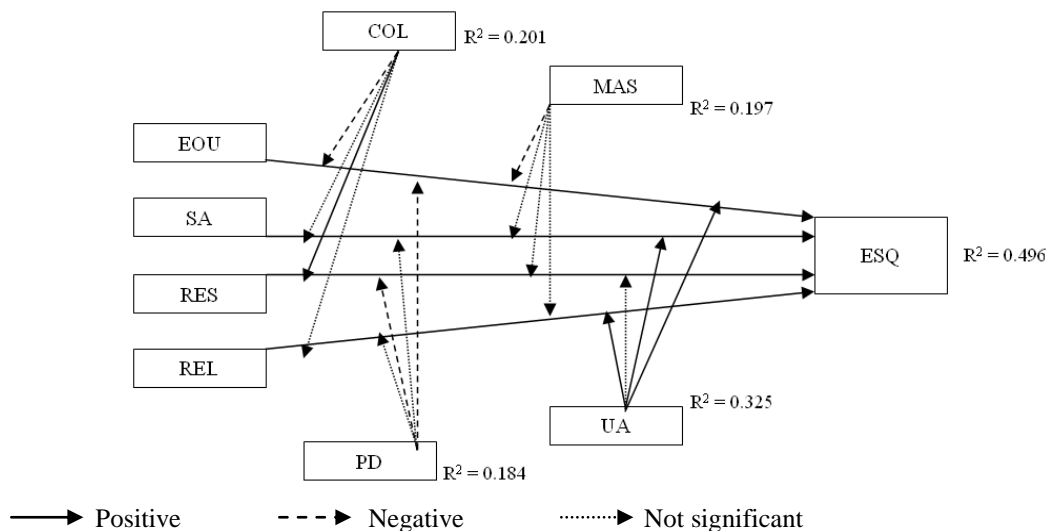


Figure 2: Structural Analysis of the Research Model

5 Discussion and Conclusions

The results in this study show that reliability is the most important dimension in customers' perception of e-service quality, and that ease of use, system availability and responsiveness are all important dimensions of e-service quality. In e-services, since there is no face-to-face service encounter in the service process, it is vital for customers to make sure that e-service providers will keep their service promises and they are trustworthy. Thus, in line with prior research, reliability is ranked as the most important dimension in customers' e-service quality evaluation.

In addition, we have extended the previous studies of Ferrer et al (2000), Tsoukatos and Rand (2007), Kueh and Voon (2007) and developed a study on the relationships between the culture and e-service quality by testing a set of hypotheses relating each of the four Hofstede's dimensions of culture to each of the four e-service quality dimensions. The results show that all the four dimensions of the culture values have significant, yet in many cases different than hypothesized, relationship with the dimensions of e-service quality. Taken together, the present study provides evidence that e-service quality is affected by culture. However, many of the initial hypotheses were either not supported or even rejected, indicating the somewhat explorative nature of the research.

The customers with high collectivism place more importance on the responsiveness dimension of e-service quality, whereas those with high individualism place more importance on ease of use. It can be explained by the characteristics of individualist and collectivist defined by Hofstede & Hofstede (2005). As Hofstede and Hofstede (2005) argued, individualist are more self-oriented based on the individual, low-context communication, emotional independence. E-service is a kind of self-service. For those with individualism, ease of use is quite important dimension in s-service. Moreover, our findings confirm the findings of (Hofstede & Hofstede 2005) that collectivist customers are more tolerant of mistakes and have lower expectations of reliability but will have a greater need for the service provider to show assurance and responsiveness.

The results show that customers with low masculinity view ease of use as an important dimension of e-service. In e-service, as mentioned before, there is no face-to-face interaction in the process. Interestingly, masculinity was not found to have a significant impact on other dimensions of e-service quality. Hence, support features are important not only in assisting but also in encouraging customers in e-service encounters.

Furthermore, the results demonstrate that customers with low power distance rank ease of use as the most important dimension of e-service, and responsiveness as the following one. It can be possible explained that customers understand very well of the service offered by e-service providers since they have been informed of nearly all the needed information about e-service provider's service. Thus, how easy it is to use e-service and how fast their response is will be quite vital in their evaluation of e-service quality. This implies that Chinese customers are therefore likely to be lower in power distance. As Hofstede and Hostede (2005) suggested, power distance declines as wealth and education levels increases.

Uncertainty avoidance has the strongest impact on ease of use followed by reliability and system availability. With three statistically significant relations, uncertainty avoidance is an important dimensions culture in terms of perceptions of e-service quality. Hence, ease of use can be viewed to reduce the perceived risks associated with doing mistakes when using e-services.

We draw three main conclusions from the present research. First of all, ease of use, system reliability, responsiveness and reliability are all valid dimensions in customer's evaluation of e-service quality. Secondly, individual level culture was found to moderate the impact of e-service quality dimensions on the overall evaluation of e-service quality. Thirdly, all the four dimensions of culture have significant relationship with at least some dimensions of e-service quality among Chinese customers.

We have not found prior research on the relationship between all pairs of dimensions of culture and of e-service quality. Thus, the present study provides new insight into the research on culture and e-service quality.

6 Limitations and Future Research

The present study involves several limitations that need to be acknowledged. Firstly, in this study the empirical data includes only Chinese e-service customers. Therefore, we suggest replicating the study in different nations to overcome the limitations of using data collected from a single national culture. Secondly, our sample consists solely of customers of online travel services. Including different e-services in the scrutiny would provide a more reliable and comprehensive picture of the impact of culture on e-service quality. Thirdly, in the present study we only investigate the four dimensions of culture as moderators, some other aspects of individual level culture, such as age, gender and education, were not included in the analysis. Further research uncovering these aspects would substantially increase the understanding of the role of culture in e-service quality.

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