Culture, Cognition and E-Commerce Behavior

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Abstract: Existing research has given little attention to the relationship between culture characteristics and consumer's internal beliefs particularly in the pre-purchase stage, and how this relationship affects consumer's purchase decision. This paper considers the theory of cognitive dissonance and its extended model (the 3D-RAB), as a means to study the current distribution of consumer's pre-purchase cognitive dissonance, which allows us to investigate the effects of culture characteristics on this distribution. Results revealed that individualism versus collectivism and high power distance dimensions, from Hofstede's cultural model, influence consumer's pre-purchase cognitive dissonance. These dimensions must be considered in the design of e-commerce website, by tailoring motivational/influences methods and techniques to reflect targeted consumers culture.

1 INTRODUCTION

E-commerce is defined as the whole electronic transactions and interactions amongst organizations and their stakeholders; whether they are financial transactions or an exchange of information (Chaffey, 2002). Despite users internationally having increased access to the required technical infrastructures and payment methods needed to undertake e-commerce, some users fail to engage in e-commerce activity, often looking at a retailer website as a guide for the physical shop (Kukar-Kinney and Close, 2010). Researchers argue that this restricted online behavior results from the consumer's attitude, perception and reservations towards e-commerce itself; with use of e-commerce being largely dependent on the cognitive perspective of the user (Zhou et al., 2007). As consumers prefer purchasing methods that are compatible with their cognitive state, use of methods or actions that conflict with preferred methods can cause a cognitive dissonance (i.e. a discomfort caused by conflicting cognitions, often between action and belief) in the mind of users. Understanding consumer behavior and attitude towards e-commerce is therefore critical to helping designers maximize customer sales (Iversen and Pertou, 2008).

Although individual cognition and consumer behavior have been studied extensively, little is known about the relationship between the characteristic of culture and consumer's cognitive dissonance level towards e-commerce. This paper links culture characteristics to consumer cognitive dissonance level, exploring the question: should website designers consider customization for cultural characteristics when defining e-commerce web strategies.

2 CHALLENGES OF E-COMMERCE ADOPTION

E-commerce adoption is defined as the engagement of consumer's in online exchange relationships with Web vendors (Pavlou and Fygenson, 2006). It is an example of combined IT and social acceptance, which combines
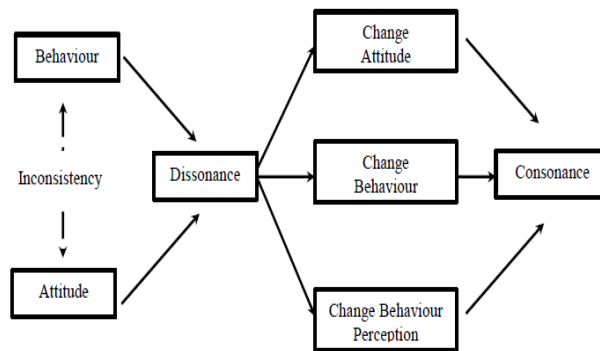
Figure 1: Cognitive Dissonance Theory Adopted from Festiger (1957)

technology and marketing elements. Due to the physical separation between consumers and Web vendors, there is often a level of uncertainty associated with product quality and / or seller identity; since e-commerce shoppers rarely 'know' the seller personally, and are practically unable to touch and feel the products before purchase (Ba and Pavlou, 2002). In addition, remote transfer of information and extensive use of IT, compound the anxiety of some users (Pavlou and Fygenson, 2006), thus creating a barrier to adoption.

In order for consumers to use e-commerce, they must undertake two steps: i) get and assess information about the products and services on offer, and ii) make a positive decision to purchase goods (Choudhury and Karahanna, 2008). The initial information assimilation stage is significant, however, as it allows consumers to learn about product specifications, seller services and agreements, as well as past user experiences; which aids in the reduction of anxiety and assists online consumers to make a well-informed decision about whether the purchase should be undertaken (Choudhury and Karahanna, 2008). This stage can be facilitated via effective website design.

Evidence shows that a high percentage of online consumers use the web to search for products services, and seller information, yet abandon their shopping cart before purchase (Kukar-Kinney and Close, 2010). It is likely, in such cases, that the information provided is either inconsistent with consumer's internal beliefs about products, services, or retailers, or that information fails to effectively address the anxiety of customers; leading to a negative purchasing decision.

The theory of cognitive dissonance proposes that inconsistency between two cognitions, i.e. the individual's attitude and behavior, creates an unpleasant psychological tension known as dissonance. The foundation of the theory states that an individual experiencing dissonance will eliminate this tension by either changing his/her belief, action or perception on an action; which implies that dissonance can motivate individuals to make change in either their attitude and/or behavior to avoid a stressful feeling and achieve consonance (Griffin and McClish, 1991).

A consumer, for example, might have a positive initial attitude towards buying a product online, but after he/she searches the Internet, might find large numbers of previous customers describing a negative experience. This information will most likely impact the consumer's pre-purchase attitude, as he/she will not wish to face a similar negative experience, which in turn will impact purchase intention. Therefore, analyzing consumer cognitive dissonance is important to understand e-commerce consumer behavior, which is critical to encouraging consumer e-commerce activity.

The theory of cognitive dissonance (see Figure 1) has been applied in several study fields. In the context of e-commerce, for example, Koller and Salzberger (2007) proposed that dissonance significantly impacted pre-purchase online decision making. Keng and Liao (2009) found that post-purchase dissonance (i.e. the disappointment that occurs when a product does not fulfill pre-purchase) negatively affects re-purchase intention. Our study aims to explore pre-purchase cognitive dissonance in the context of e-commerce by exploring the factors that lead to this dissonance, i.e. cultural norms. In the next section we explain the model that has been used to categorize cognitive states.

3 THE 3D-RAB MODEL

Wiafe et al. (2011) developed a 3-Dimensional model to support the mapping of the Relationship between Attitude and Behavior (3D-RAB), which is based on the cognitive dissonance theory. The 3D-RAB model has been used in this study as it the sole model classifies users based on the level of dissonance they experience which allow us to study how other factors influence the level of dissonance consumers have.

Wiafe et al. expanded the cognitive dissonance model and argued for the existence of four levels of dissonance, which are: strong (S), weak (W), moderate (M) and no dissonance (N).
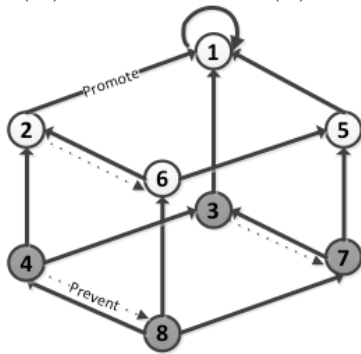

Figure 2 State transitions in the 3D-RAB, adapted from Wiafe et al. (2011).

In total, the 3D-RAB model contains eight different states, which are characterized with distinct levels of dissonance. The model emphasizes the importance of considering external environmental factors, since manipulating external factors can trigger changes to user's behavior. Figure 2 and Table1 present the set of states, and possible transitions between states.

Categorizing the cognitive dissonance states of e-commerce shoppers (i.e. current behavior, attitude towards e-commerce, and attitude toward change in behavior) is pertinent to understanding e-commerce user behavior and intention; which is key when designing applications that aim to support persuasive functionalities, since it facilitates management of motivation methods (Iversen and Pertou, 2008). In this study we classify e-commerce consumers based on their cognitive state, i.e. i) the user's current behavior (CB), ii) attitude towards the target behavior (ATTB) and iii) attitude towards changing or maintaining in their current behavior (ATCMB). The next section investigates the effect that

culture has on cognitive dissonance of e-commerce consumers.

Table 1: Possible cognitive states according to the 3D-RAB model adopted from Wiafe et al. (2011) {N=No; W=Weak; M=Moderate; S=Strong; NSTT=Natural State Transition Tendency; TSFP = Targeted State for Persuasion}.

State	CB	ATTB	ATCMB	Dissonance Level	Stability of State	NSTT	TSFP
1	+	+	+	N	Stable (+)	1	1
2	+	+	-	W	Unstable (+)	1	1
3	+	-	+	M	Unstable (-)	7	1
4	+	-	-	S	Unstable (-)	8	2 or 3
5	-	+	+	S	Unstable (+)	1	1
6	-	+	-	M	Unstable (-)	8	2 or 5
7	-	-	+	W	Unstable (-)	8	3 or 5
8	-	-	-	N	Stable (-)	8	4 or 6 or 7

4 CULTURE AND COGNITIVE DISSONANCE

Cultural elements play a significant role in technology adoption by influencing consumer's attitude and behavior towards accepting or rejecting the use of such technology (Rambo and Liu, 2010). Though marketing scholars, and Web designers, recognize the significance of culture, most research looking at pre-purchase cognitive dissonance has assumed that consumer cognition is similar, i.e. independent of nationality (e.g. Koller and Salzberger (2007)).

Hofstede et al. (2005) proposed a cultural model that helps us to understand the effects of national culture on technology adoption. The model consists of five dimensions that can be used to distinctly categorize national culture (see table 2). These dimensions are applied in many studies to explain differences in the design of websites, and prove that culture influences user preferences for specific design elements. Analysis of the

effects of Hofstede's cultural dimensions on information technology (IT) adoption shows that the individualism/collectivism dimension, and power distance dimension, most impacted differences (Triandis and Suh, 2002). Vöhringer-Kuhnt (2002) conducted a study on the IBM website to investigate the influence of Hofstede's dimensions on website usability and adoption. His study supported the idea that the individualism/collectivism dimension correlated strongly to differences in website usability and adoption. Van Everdingen and Waarts (2003) showed that high levels of UAI, MAS and PDI dimensions can negatively influence technology adoption, high levels of long-term orientation have a positive influence, and individualistic countries are more positive during the early stages of adoption.

Table 2: Hofstede's dimensions adopted from (Hofstede et al., 2005).

Culture Dimensions	Explanation
Power Distance Index (PDI)	To what extent a member of the society accepts unequal distribution of power.
Individualism versus Collectivism (IDV)	To what extent a member of the society feels responsible for others.
Masculinity versus Femininity (MAS)	To what extent society prefers achievement, heroism, assertiveness and material reward for success.
Uncertainty Avoidance (UAI)	To what extent a member of a society feel uncomfortable with uncertainty and ambiguity.
Long-Term Orientation (LTO)	To what extent society upholds and respect traditions.

Despite findings, no one has linked Hofstede's cultural dimensions to variation in consumer's pre-purchase cognitive dissonance. In our study, we investigate the effects of these dimensions on consumer's pre-purchase cognitive dissonance in order to answer two linked questions: (I). Is there a significant variation amongst consumers, in term of pre-purchase cognitive dissonance level, as a result of cultural norms or demographic factors cause this variation?, (II) (if so) Which of Hofstede cultural dimensions lead to this difference?

5 RESEARCH STUDY AND RESULTS

In order to measure consumer's cognitive dissonance, we used an online questionnaire to collect data regarding participants' current behavior (CB), attitude towards the target behavior (ATTB) and attitude towards changing or maintaining the current behavior (ATCMB) concerning e-commerce activity. The reason for using an online questionnaire was to ensure that all respondents were capable of using both computers and the Internet. Since attitude is not always explicit, and can only be measured through self-reporting, we obtain ATTB and ATCMB using three sets of questions to ensure consistency. In the case of CB, one question, with a five-point Likert scale, was used; since respondents appeared able to associate themselves with a particular behavior.

In our study, we targeted five countries (see table 2), i.e. Ghana, Malaysia, Saudi Arabia, UK, and USA. We selected these countries because they: Ii) come from distinctly disparate geographic locations; II) because they have a distinct range of Hofstede's cultural dimensions. The online questionnaire was made available in two different languages: English and Arabic. The majority of the population in the targeted countries used English as their official language; however Arabic was selected as the alternative to support respondents from Saudi Arabia. We conducted a pilot study to test the comprehension of questions amongst a range of international research students. After minor correction we distributed a final version of the questionnaire. A total of 166 responses were collected, yet 21 were discarded due to incomplete answers; thus 145 responses were left for analysis.

Table 3: Participants countries and countries culture dimensions score. H = High; L = Low.

Nationality	PDI	IDV	MAS	UAI	LTO
Ghana	80H	15L	40L	65H	NA
Malaysia	104H	26 L	50L	36L	NA
Saudi Arabia	95H	25 L	60H	80H	NA
UK	35L	89H	66H	35L	25
USA	40L	91H	62H	46L	29

Out of the 145 responses 52.4% were female and 47.6% were male. 54.5% of the respondents were aged between 26 and 35, 22.8% were aged 36-45 and 4.8% were over 45. In terms of education (i.e. highest qualification), 10.3% of respondents had a high school or higher diploma, 24.1% of respondents had an undergraduate degree or equivalent, 65.5% had at least a post-graduate degree or equivalent. 31% of the respondents were receiving a monthly salary less than $1000, 26.6% earned between $1000 and $2000, and 12.4% receives more than $5500 per month. Apart from UK and USA, all the countries have very different cultures (Hofstede et al., 2005) (see table 3). Since the questionnaire contained three sets of questions relating to ATTB and ATCMB dimensions, we were able to test the reliability of data. Results revealed that the three sets of questions were reliable.

5.1 Distribution of Consumer Pre-purchase Cognitive Dissonance

Participants were classified into different states, based on their level of cognitive dissonance, as proposed by the 3D-RAB model (see table 4). The results indicated that 46.2% were in state one, which has a positive current behavior (CB), positive attitude towards target behavior (ATTB), and a positive attitude towards maintaining behavior (ATCMB). State one is defined as a stable state (see Table 1), which implies a limited chance of change. Based on the theory of cognitive dissonance, we would expect these people to continue using e-commerce websites and maintain the same cognitive state. 22.7% of participants (4.1% in state four, 18.6% in state five) experienced a strong level of dissonance, which implies that these participants are very likely to change either their behavior or attitude to eliminate current cognitive dissonance. The fact that 18.6% of people reside in state five also supports the findings of Kukar-Kinney and Close (2010), where people often have a positive ATTB and ATCMB toward e-commerce but do ultimately perform online shopping. The number of participants found in state two was 11.7%. The number of participants found in state seven was 2.8%. Participants in these states experience only a weak level of dissonance, which is unlikely to result in a change in behavior without a strong external trigger. 2.1% of participants were currently using e-commerce, yet had a negative attitude towards their current behavior, which

implies that there is a strong possibility that these people may soon change behavior, moving towards a stable negative state (i.e. state 8).

Table 4 Classification of Participants: Against Current Cognitive State

Cognitive State	Percent
1	46.2
2	11.7
3	2.1
4	4.1
5	18.6
6	8.3
7	2.8
8	6.2

5.2 Impact of Culture Characteristics on Pre-purchase Cognitive Dissonance

After categorizing participants, based on their cognitive dissonance, we conducted analysis to test the effect of national culture on the first four Hofstede cultural dimensions (PDI, IDV, MAS, and UAI). Because of the unavailability of the LTO scores for certain targeted countries, the dimension was not considered in this study. To simplify analysis, countries were polarized as possessing either high and low level states for each dimension (see table 2). The analysis revealed that there is a positive relationship between consumer's cognitive dissonance state and both power distance and individualism Hofstede dimensions; with high individualistic and lower power distance nations having a significantly greater level of e-commerce adoption. This is justified by the fact that users in individualistic culture countries take full responsibility for current activity, and do not feel they need to rely on others before adopting a change. In addition, high power distance nations have a low level of interpersonal trust, which affects the individual's level of pre-purchase uncertainty.

We examined the relationship between cognitive dissonance and demographic factors, i.e. age, gender, marital status, education level, income, nationality, and country of residence; which are the factors that literature emphasis their impacts on a person's specific 'culture'. User's cognitive dissonance was found to be significantly affected by both the user's nationality and their country of residence; which shows that social

norms impacted by a user's base and supplemented subjective culture, impact cognitive dissonance level. Results showed that gender, age, marital status and education level do not have impact cognitive dissonance. A significant relationship was, however, found between income and individual's cognitive state, with higher income individuals showing a significantly more positive attitude towards online shopping (states one, two, five and six).

In-group analysis was conducted to investigate whether income significantly affected each of the countries considered in the study. The results showed that income affects consumers' cognitive state in Saudi Arabia and Ghana; yet this was not the case in the UK, US and Malaysia. We believe that this is linked with the level of uncertainty avoidance of these countries, which is commonly linked with issues of anxiety, trust and risk related to adopting new technology. Both Saudi Arabia and Ghana have a high level of uncertainty avoidance whilst UK, USA and Malaysia have relatively low levels (see table 2). Hence, low-income individuals in high uncertainty avoidance societies appear more likely to avoid putting their money at risk by interacting with online companies.

6 DISCUSSION AND CONCLUSION

Our findings highlight the importance of cultural norms, and how such norms can significantly impact consumer's cognitive dissonance. Results suggest that the distribution of pre-purchase cognitive dissonance is significantly affected by national culture, i.e. Individualism versus Collectivism (IC) and Power Distance (PD) dimensions. Consumers from countries with a high individualism and low power distance score were identified as being more likely to have a low level cognitive dissonance; hence, are more likely to adopt e-commerce. By focusing on support of these dimensions, we believe that consumer pre-purchase cognitive dissonance will be reduced. If we can, during the information assimilation step of e-commerce, reduce anxiety and pre-purchase cognitive dissonance, we should be able to maximize the probability of a consumer adopting e-commerce. Individuals might still need external motivation and persuasion to reduce the level of cognitive dissonance, in order for them to adopt e-

commerce. The type of persuasive messages and strategies needed to influence an individual should be crafted to target a particular cultural preference. The study implies that e-commerce applications should incorporate context relevant persuasive features, i.e. those which reflect the consumer's culture, so as to entice potential users to use their sites with less anxiety. In particular, persuasive features from countries with collectivist social norms should support social persuasion and interaction. Website designers, for instance, are recommended to apply persuasive methods and strategies that reflect collectivistic thinking by adding social support features to e-commerce applications, e.g. private chat rooms to enable friends and families to talk about items they wish to purchase. This is because consumers from collectivistic culture seek information from social networks, as the ties amongst families, relatives, and friends are strong. They place a high priority on what friends and family like, do, and think.

Future research should investigate the effects of information presentation and motivation and persuasion techniques on user's purchasing intention with consideration of culture differences. Moreover, further studies are needed to identify and establish motivation and persuasion techniques that are more effectively influence users within specific cultures when designing e-commerce websites.

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