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Abstract

A major inhibitor to e-commerce stems from the reluctance consumers have to complete transactions because of concern over the use of private information divulged in online transaction processing. Because e-commerce occurs in a global environment, cultural factors are likely to have a significant impact on this concern. Building on work done in the area of culture and privacy, and also trust and privacy, we explore the three way relationship between culture, privacy and trust. Better, more appropriate, and contemporary measures of culture have recently been espoused, and a better understanding and articulation of internet users information privacy concern has been developed. We present the results of an exploratory study that builds on the work of Milberg, Gefen, and Bellman to better understand and test the effect that national culture has on trust and internet privacy.

Keywords

Cross cultural IS research, Globe Project, Privacy, Trust, Risk Beliefs

INTRODUCTION

Attitudes toward information privacy differ across the world. Previous studies have shown that there is a relationship between race and ethnic origin, and concern for information privacy (CFIP). Since Electronic Commerce (EC) is acknowledged to be a global activity, work should be undertaken develop models that test our understanding of the interplay between privacy policies, attitudes, trust and culture. The work presented here contributes to this endeavour.

In the context of online shopping behaviour, Mahmood, Bagchi and Ford (2004) produced one of the first studies using international data. They tested the way that trust, "technological savvy", demographics and lifestyle characteristics affect online shopping behaviour. Their model did not include national culture as a predictor of trust or online shopping behaviour, but they noted that future researchers should focus specifically on the impact of culture.

PRIOR RESEARCH

Privacy

Frequency of internet use has been associated with lower levels of CFIP, and less experience with higher levels of anxiety (Bellman et al., 2004). The effects of gender, age and personality type on attitudes to information privacy have been explored e.g. Vance (2000). National culture has been incorporated as a demographic factor in many works, but has rarely been studied in isolation as an antecedent to privacy attitudes (Bellman et al., 2004).

A number of studies have used the 15 question instrument developed by Smith Milberg and Burke (1996) or adaptations thereof (Bellman et al., 2004; Liu et al., 2004; Malhotra et al., 2004; Smith et al., 1996). The survey measures participants' attitudes along four dimensions; collection, errors, improper access, and secondary use. Recently it has been suggested that CFIP may be more parsimoniously represented as a higher-order factor than a correlated set of first-order factors (Malhotra et al., 2004; Stewart and Segars, 2002). We adapt the instrument used by Malhotra et al, because it captures a second order factor, Internet Users' Information Privacy Concern (IUIPC).

National Culture

Culture as a demographic indicator has been used in a number of privacy studies. Most recently (Bellman et al., 2004) used national regulation as a means of revealing CFIP. They hypothesised three explanations for differences in privacy concerns: culture, internet experience, and political desires using the Hofstede (2001) dimensions to describe culture. Only culture and internet experience were significant. i.e., it is nature and experience rather than government intervention that determines an individual's attitude to information privacy.

However, the validity of National Culture measures to date has been criticized for accuracy and relevance, particularly with regard to cultural boundaries. These and other criticisms of the use of cultural factors by (Myers and Tan, 2002) have been substantially overcome by the GLOBE project (House et al., 2004). GLOBE re-examines national culture in a new way, mitigating many of the concerns of earlier approaches. This study represents a move away from the Hofstede (2001) national cultural dimensions in favour of those developed in the GLOBE project (many of which are developed from the foundations laid by Hofstede). GLOBE variables are presented with the proposed model. Heales, Cockcroft and Raduescu (2004) provide a more extensive background on the development and use of the GLOBE cultural dimensions in an IS setting.

Trust and behavioural intention

Recent work has shown that behavioural intention (BI) in EC has a strong relationship with trust. Although trust is difficult to define, Gefen, Karahanna and Straub (2003) conduct a rigorous review of the various dimensions of trust in an e-commerce setting.

Two recent studies on trust have specifically explored CFIP; Malhotra et al (2004) drew on social contact theory to present a framework for users' privacy concerns and proposed and tested a causal model between IUIPC and BI. They identified three factors, trusting beliefs, risk beliefs, and BI. Trust also featured as an antecedent to BI in the work of Liu et al (2004) who tested the model through a variety of questions concerning how the respondent felt about structural features of an internet site, see Figure 1, which provides a starting point for the work developed here.
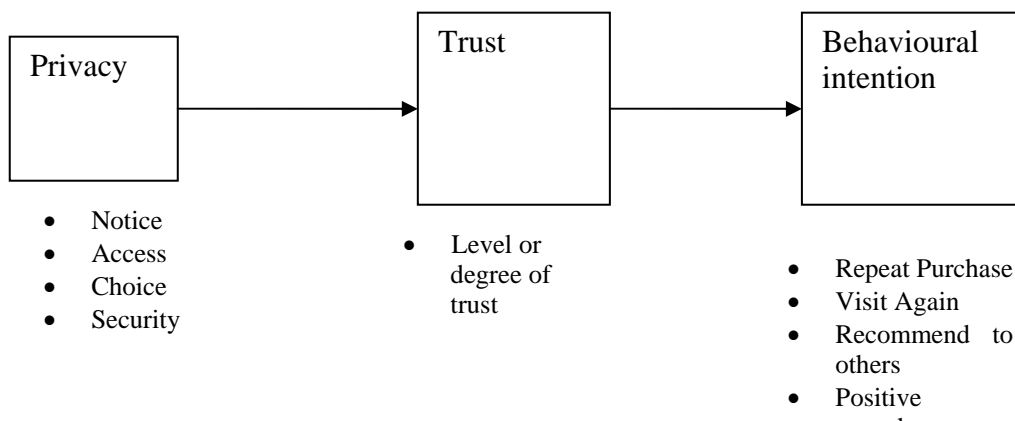

Figure 1 Privacy-trust-behavioral intention model (adapted from (Liu et al., 2004))

PROPOSED STUDY AND MODEL

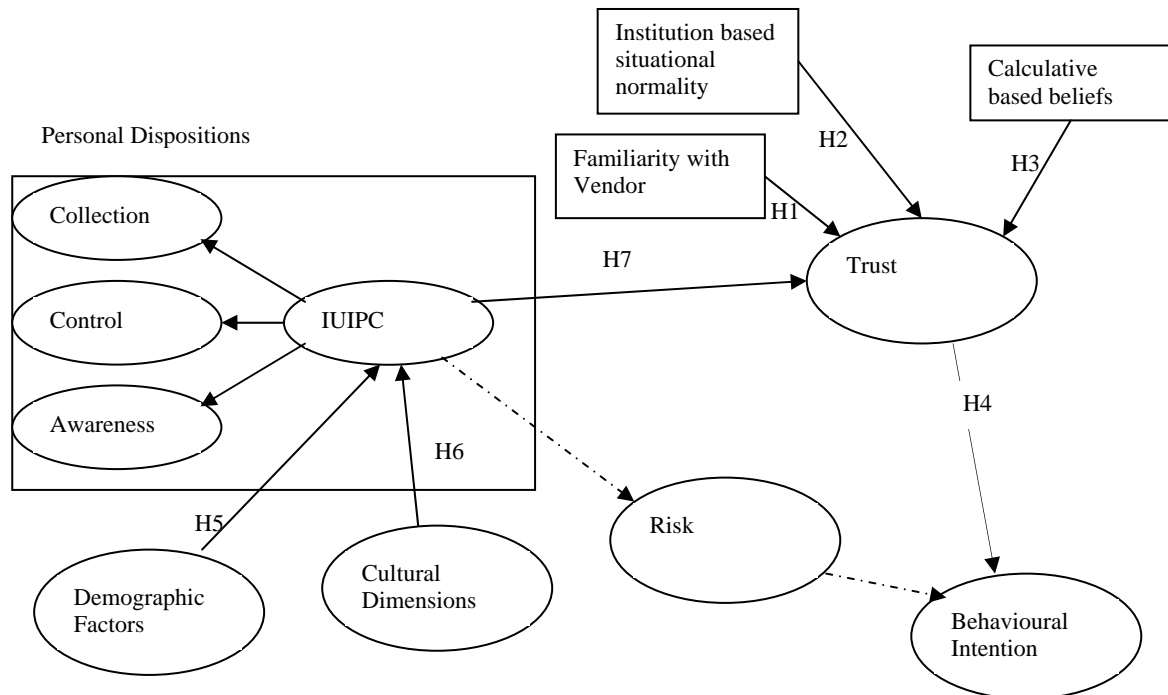Figure 2 details the research model. An explanation of each of the remaining constructs in the model follows.

Figure 2 Research Model

Trust

Trust includes beliefs relating to integrity, benevolence, ability, and predictability. Familiarity reduces social complexity and uncertainty, thus is likely to enhance trust. The assessment that a new transaction will be a success based on how customary the situation appears (situational normality) also leads to trust. Trust can also be shaped by an assessment of the costs and benefits to the other party of cheating or cooperating, this is known as calculative based trust. Structural assurances such as policies or web seals are also likely to increase trust. A full discussion of these antecedents is given in Gefen (2003). This leads us to hypothesize:

> *H1 Familiarity with a trustworthy e-vendor will positively affect trust in that e-vendor*
>
> *H2 Perceptions of situational normality will positively affect trust in an e-vendor*
>
> *H3 Calculative based beliefs will positively affect trust in an e-vendor*

Finally, based on prior work Gefen (2003), trust allows the user to subjectively rule out undesirable behaviours by the vendor and hence heighten levels of intended use.

> *H4 Trust will positively affect BI*

Risk

Many authors have used a trust-risk model to explain behaviours in the consumer-firm relationship. In essence the model suggests that in a situation in which risks are present, trust plays an important role in determining one's risk taking behaviour (Malhotra et al., 2004). Personal traits are known to influence both trusting beliefs and risk beliefs. A tendency to worry over information privacy will influence how a person perceives a given risk. If a user has a high degree of information privacy concern it is likely that they will also have highly developed risk beliefs. Risk beliefs refer to the expectation that loss will occur as a result of releasing personal information to an online firm. Risk was included in the model post-hoc and thus we did not set out to specifically test any hypotheses in this area.

Demographic factors

Internet use has widely been identified as a factor that reduced IUIPC (Bellman et al., 2004). It has been suggested that younger users have a greater degree of awareness about privacy and how to protect themselves and hence are less anxious about privacy, these results were borne out in Gauzente (2004). The original study by Milberg (1995) showed that females tend to be more concerned than males. This leads us to propose:

> *H5-1 Age will be negatively associated with IUIPC*
>
> *H5-2 Internet experience is negatively associated with IUIPC*
>
> *H5-3 Female users are likely to have a higher level of IUIPC*

Cultural Dimensions

Table 1 presents the results of some previous studies in culture and privacy, all studies focused on the original Hofstede (2001) variables.

Study	Hofstede variable	Hypothesis relating to attitude to information privacy	Supported?
(Milberg et al., 1995)	UA	High UA High Concern	No
	PD	High PD High Concern	No
	IND	High IND High Concern	No
(Bellman et al., 2004)	PD	Low PDI High Concern	Yes (secondary use, More regulation)
	MAS	Low MAS High Concern	Yes (secondary use, online security)
	IND	Low IND High Concern	Yes (Errors)

Table 1 Previous studies of National Culture and Privacy

We extend the work in these studies by using the GLOBE cultural dimensions. Each dimension was considered from the viewpoint of its effects on privacy concerns.

Power distance

A culture of high PD is characterized by a hierarchy of authority and control, centralization of knowledge and responsibility, excessive rule and a more restricted exchange of knowledge (House et al., 2004). The reverse is true of lower PD cultures which are, characterized by less hierarchy, fewer rules, greater decentralization of knowledge and free flow of information. We suggest that cultures with low PD emphasize a flatter hierarchy and greater equality in relationships. Thus those with low PD would be more willing to share information, and have a more egalitarian view on privacy. The converse is true that high PD cultures would tend to want to control and guard information by adopting a high IUIPC stance. This argument leads to:

> ` *H6-1 PD scores will be positively associated with IUIPC scores.*

Uncertainty Avoidance

UA is the extent to which a society relies on social norms and procedures to alleviate the unpredictability of future events. In high UA cultures, people would be expected to have high levels of CFIP because they would aim to reduce uncertainty by being cautious and careful about the information they divulged through the internet so that they would be more certain as to what was done with any information provided. On the other hand,

people scoring low on UA are less interested in reducing uncertainty and would not be concerned about how information they provide is used. The ability to reduce uncertainty with a computer system is highly valued for high UA individuals (Hofstede, 2001). Therefore, the relationship between UA and IUIPC exists, thus:

H6-2 High uncertainty avoidance will be associated high IUIPC

Institutional Collectivism
High values of IC encourage and reward collective distribution of resources and collective action. In such cultures cooperation is seen as more important than the individuals needs (Wagner, 1995). In such an environment attitudes toward privacy are likely to be more relaxed, leading to:

H6-3 IC will be negatively associated with values of IUIPC

Humane Orientation:
HO targets the individual's focus on others' wellbeing, and people rather than task oriented approach. Paternalistic and patronage relationships are valued, and individuals value harmony (Dhillon and Backhouse, 2001). It follows that individuals exhibiting high levels of HO would be concerned about privacy.

H6-4 HO will be positively associated with values of IUIPC

Performance Orientation:
In cultures with the highest reported PO scores, training and development is highly valued. People believe in taking initiative and emphasize performance. It is likely that these people will be concerned about privacy and would strive to ensure that privacy issues are addressed, thus:

H6-5 PO will be positively associated with values of IUIPC

Future Orientation:
Kluckhohn and Strodtbeck (1961) first identified this phenomenon that represents a culture's focus on the past, present or future. A past-oriented culture might evaluate plans in terms of customs, traditions, or history, while a future-oriented culture would evaluate plans in terms of future benefits. People with high FO scores would be more concerned about privacy issues in the future and would likely have a high IUIPC score, thus:

H6-6 FO will be positively associated with values of IUIPC

Gender Egalitarianism:
In societies where the differences in gender are high, gender inequality will be apparent. Men tend to focus on hierarchy and independence, while women focus on intimacy and solidarity, thus women would be more concerned over privacy issues.

H6-7 High GE will be associated with high IUIPC

Group Collectivism

This dimension refers to the extent to which members of a society take pride in membership in small groups such as their family and close circle of friends, and the organizations in which they are employed. In countries with high group collectivism scores, being a member of a family and of a close group of friends is important and there is an inclination to put friends and family before society's rules and procedures. This focus and tendency to share may lead people to be less concerned about privacy.

H6-8 High GC will be associated with low IUIPC

Privacy
Consensus in the trust literature (Malhotra et al., 2004) implies:

H7 There is a negative relationship between IUIPC and the degree of trust an individual has when making an online transaction

RESEARCH METHOD

Using the a modified version of the Malhotra et al (2004) model and questionnaire, a web-based survey instrument was used to collect data from a cross-section of (non-student) Internet users on the constructs in the model. The survey subjects varied in age from 20 to 73 and the gender balance was 55% female and 45% male. The countries of birth of respondents were Australia & New Zealand (8), the UK and Ireland (7), Asia (7), the US (2), Continental Europe (2) and Venezuela(1)   There were 53 questions in the survey. Respondents were asked a series of demographic questions, including some based on culture related variables. They were then presented with two scenarios one of which involved a discount club that gave discounts on CDs Books and electronics in exchange for personal purchase preference information (such as favourite category, brand design etc), the second was the same scenario only asking for personal financial information (such as income, mortgage payments, investments).

The data collected from the questionnaire were subject to analysis using structural equation modelling. First, the measurement model was tested to determine whether the items loaded satisfactorily on to the constructs being measured. Insignificant items were dropped from the analysis. Only one item of measuring global information privacy concerns was dropped. All other measures were retained. Testing of the model was somewhat restricted due to the low sample size (N=27).

When tested independently Demographic factors (H5), Age and Work Experience significantly positively affected IUIPC. Cultural Dimensions (H6), Uncertainty Avoidance, Institutional Collectivism, Performance Orientation, and Future Orientation had significant negative effects on IUIPC, and Humane Orientation had a significant positive effect.

The whole model was then tested using SEM as shown in Figure 3. Surprisingly, the main effect between IUIPC and Trust was not significant. However, the relationship between IUIPC and Behavioural Intention was significant. This led us to test the relationship that Risk had a mediating factor between IUIPC and Behavioural Intention. We found a strong significant relationship between IUIPC and Risk, and a weaker significant relationship between Risk and Behavioural Intention. Removal of Trust from the model significantly improved the model fit, although the model fit is below the accepted threshold, we believe it is a strong indicator to support the hypotheses in the theoretical model. Based on the entire model the following hypotheses were accepted H2 and H6-8. All others were rejected.

RESULTS
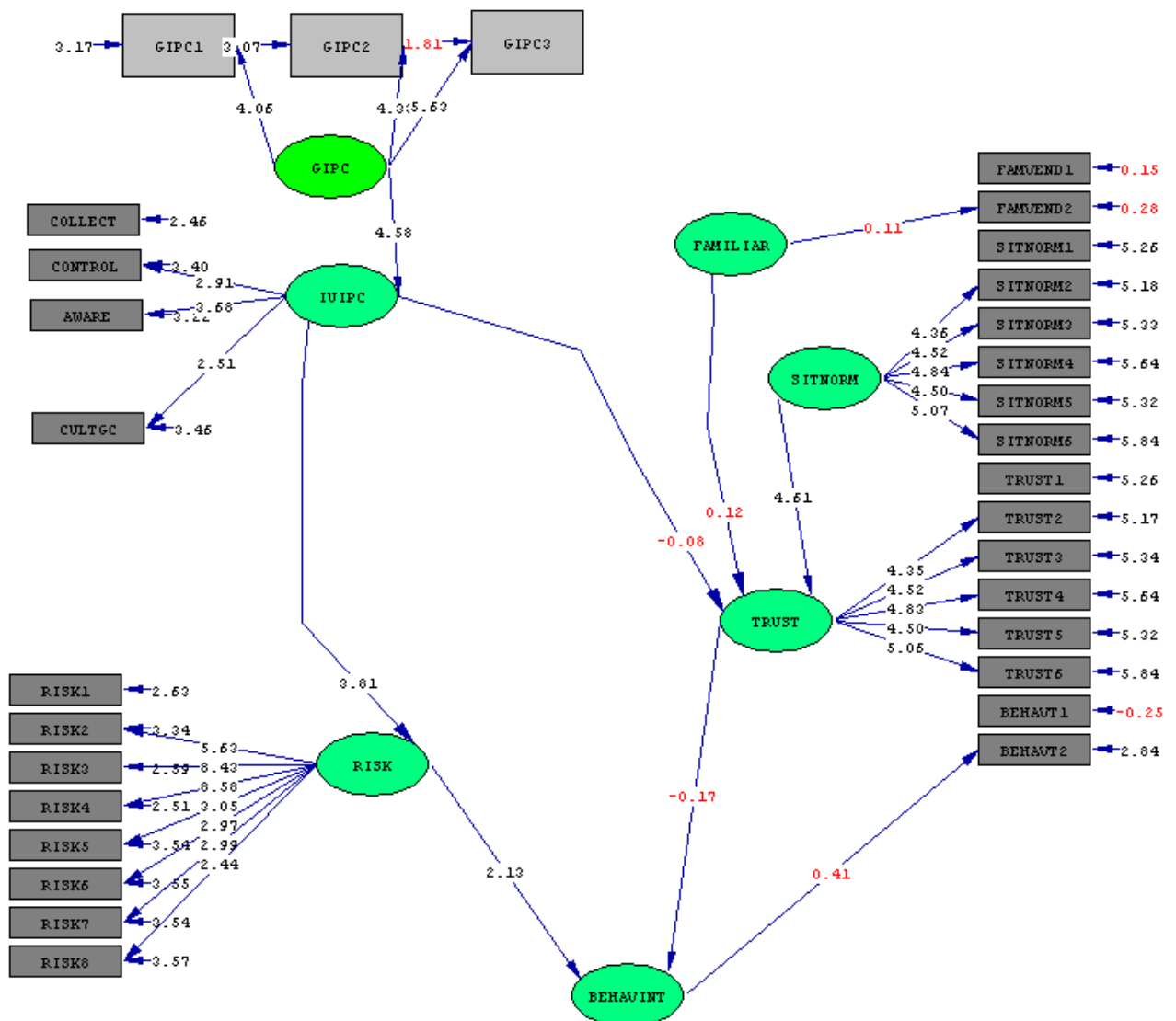
Figure 3 Lisrel Output for model shown in Figure 1 with risk added (t-values shown)

Additional research and a much larger sample in this area will help to further improve the model and better describe the role that Privacy plays in the relationship between Privacy and Behavioural Intention when considering the options of whether to divulge private information or not.

DISCUSSION

There has been little work exploring the role of culture in the relationship between privacy, trust, risk and behavioural intention in e-commerce. This work contributes to the body of knowledge in that area. It also confirms the validity of the second order factor IUIPC first put forward by (Malhotra et al., 2004) as being explained by first order factors; collection, control and awareness. We explored how cultural factors may contribute to IUIPC and discovered that group collectivism was the only significant contributor. It is suggested that this illustrates the dichotomy in our sample between those from what the GLOBE project describes as the Anglo Cluster, and those of South Asian origin. An interesting finding of this work is that trust does not

mediate the relationship between IUIPC and behavioural intention as would be expected. It appears that respondents may trust a site based on their privacy concerns, but their intention to use is more strongly motivated by what they perceive as risk factors. The other key finding is that situational normality is significant in trust, this supports earlier work by (Gefen and Straub, 2004).

An additional unexpected finding was the mediating role of risk in the relationship between IUIPC and behavioural intention.

The encouraging results of this study suggest an extension of the research to additional country clusters. Such an extension will help ensure an appropriate cultural and demographic mix. We expect the hypotheses to continue being supported, and allow for further investigation into parts of this model that have not achieved significance.

LIMITATION

The small sample size is the major limitation of this work.

CONCLUSIONS AND CURRENT STATUS

This research attempts to build on prior research to show how national cultural dimensions and privacy are important in developing trust in a web-based e-commerce environment. The research combines the work of Bellman et al.(2004), Gefen et al (2003), and Milberg et al. (2000) with the Globe cultural dimensions to examine the influence that culture has on privacy concerns and trust. This further contributes to the cultural theoretical foundation called for by others (Bellman et al., 2004; Gefen et al., 2003). Preliminary findings indicate situational normality to be a key factor in behavioural intention. Group collectivism emerges as significant within the sample, but a dichotomy of cultures may explain this. Work is progressing to expand the survey sample. The results of additional web-based survey data will be shared with participants at ACIS.

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