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THE INFLUENCE OF INFORMATION SENSITIVITY, COMPENSATION ON PRIVACY CONCERN AND BEHAVIOUR INTENTION

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Abstract

The holdbacks of information privacy to online marketing result in scholars' research passionate around privacy concern. Following the research trend, this study examined the effect of two antecedent factors--information sensitivity and compensation--and their interactions on privacy concern and behaviour intention including information disclosure, protection intention and transaction intention. Two types of information (basic information as less sensitive information; basic and financial information in purchasing context, basic and identifiable information in job hunting context as more sensitive information) and two types of compensation (30% sale discount as low level of compensation, free job vacation information as high level of compensation) were assigned to approximately reflect the practices in the real world. The experimental results show that privacy concern has negative effect on information disclosure but positive effect on protection intention. Information sensitivity has negative effect on information disclosure and transaction intention but positive effect on protection intention. On the contrary, compensation has positive effect on information disclosure and transaction intention. Moreover, compensation negatively interacts with information sensitivity, which has positive effect on information disclosure. These outcomes imply marketers should beware of the cost-benefits level to obtain accurate personal information.

Keywords: Information sensitivity, Compensation, Privacy concern, Behaviour intention.

1 INTRODUCTION

Users face uncertainty and risk when providing information to marketers (Milne & Boza, 1999), which seems phenomenal with Internet popularity. Online users enjoy convenient, instantaneous and plentiful information and services, such as search engine service, software download, sales discount, personalization service, etc. However, it is noticeable that personal information as compromise to get those benefits would be surrendered. Not only the identifiable and transactional data are collected, but also the visiting records are tracked and captured by marketers. All of these phenomena and practices led to information security and privacy issues arouse public's attention. Survey, executed in multi-countries, is the evidence that online users' privacy concern has increased in this decade (Bettina & Oliver & Sarah 2005, Equifax 1996, Harris & Westin 1998, Smith & Milberg & Burke 1996, Westin 1997).

The issue of privacy is regarded as the main reason to embarrass online users' participation and further inhibits Ecommerce development (Malhotra & Kim & Agarwal 2004, Miyazaki & Krishnamurthy 2002). When facing with the information privacy disclosure risks, users would take preventive measures to protect themselves, such as reluctant of information provision, information fabricate, online activity quit and abandon (Milne & Rohm & Bahl 2004). As a result, eliminating the negative impact of privacy concern and its consequences is the indispensable premise for practitioners to fulfill online marketing.

There are two sides of factors impact on privacy concern and its consequences. One is promoting factors that potentially interfere and tamper with information security and privacy, such as information sensitivity (Sheehan & Hoy 2000), social awareness (Dinev & Hart 2005), or sold to third party (Nowak & Phelps 1992). On the opposite, the other is lessening factors that have negative effect on privacy concern, including information control (Han & Maclaurin 2002, Phelps & D'Souza & Nowak 2001, Stewart & Segars 2002), internet literacy (Dinev & Hart 2005), permission from users before collected (Nowak & Phelps 1997), compensation (Ashworth & Free 2006, Sheehan & Hoy 2000), reward (Xie & Teo & Wan 2006), incentives (Hui & Teo & Lee 2007, Phelps & Nowak & Ferrell 2000), trust (Luo 2002), etc.

Users face a risk-benefits dilemma when enjoy online tradeoff and services (Hui et al. 2007). Compensation, reward and monetary incentives are the valuable provisions taken by marketers to attract more visiting, meanwhile, they are regarded as the antecedents of privacy concern by scholars (Ashworth & Free 2006, Hui et al. 2007, Phelps et al. 2000, Sheehan & Hoy 2000, Xie et al. 2006). Sheehan and Hoy (2000) point out compensation is the terms of wider definition because benefit could be a specific financial value (such as a cash payment, product, or service), and in some cases, the value could be information based (such as access to information that is of interest). It means not only the reward or monetary incentives but also services and any other forms of benefits are seemed as certain of compensations. As the value provision concomitant, personal information requested is unavoidable, sensitivity degree of which is one of the main antecedents of privacy concern also (Sheehan & Hoy 2000). Similarly, some scholars (Culnan & Bies 2003, Xie et al. 2006) propose risk-benefits are the essential considerations to users' information disclosure or purchase decision. For example, Malhotra et al reported information type would have negative impact on behaviour intention (Malhotra et al. 2004). Hui et al (2007) found monetary incentive had positive impact on disclosure but amount of information requested had negative influence on it.

Previous studies have revealed that information sensitivity and compensation have positive and negative impact on privacy concern and behaviour intention separately. However, it is doubt that whether the interactions exist when these two counteractive factors operate simultaneously, further, which factors have more strength on privacy concern and behaviour intention? Generally, information requested and compensation provided in each online context is special and distinctive. Online users present different information disclosure willingness to diverse contexts, such as retail, financial, or

medical /health web sites (Earp & Baumer 2003). Noticeably, one of the limitations of previous researches is that examined the influences within one confirmed context not but across contexts. To fill this gap, investigating two antecedents' effect in two industries seems as possible and valuable.

To address these problems, drawing on social exchange theory, this study develops a research model to examine the effect of information sensitivity and compensation on privacy concern and behaviour intentions including information disclosure, protection intention and transaction intention. A 2*2 experimental design with information requested (sensitivity high or low), and compensation provided (high or low level) are conducted. After data analysis, we discuss research outcomes and reveal the contributions. The limitations and future work were presented as a close.

2 THEORETICAL MODEL AND HYPOTHESES DEVELOPMENT

2.1 Social exchange theory based

When surfing the Internet, users enjoy the services such as sales discount, information searching, etc., while, personal information would be transferred and collected, some are special for marketing use, such as consumer analysis and sells forecast, and others are necessary to perform online activities, such as personalization services(Awad & Krishnan 2006), deliver goods, etc. Users undergo higher privacy risks as more sensitive information is exposed. However, information privacy would be compromised to benefit from the services.

One of the most fitting theory can be used to describe user's behaviour is social exchange theory, which argued "The more valuable to a person is the result of his action, the more likely he is to perform the action."(Emerson 1976, Homans 1974). Same as Andrade et al's opinion(Andrade & Kaltcheva & Weitz 2002) , users' behaviour intentions, including self-disclosure, protection, and transaction, are engaged in and interpreted in terms of the costs and benefits to the individuals. Moreover, according to some scholars' arguement, information privacy in real life would be varied with industry sectors(Culnan & Bies 2003, Milberg & Burke & Smith & Kallman, 1995). Different types of information requested and compensation provided are composed of cost-benefits in each industry. Therefore, privacy concern would be influenced by information, compensation and their interactions. Thus, we proposed the following research model.

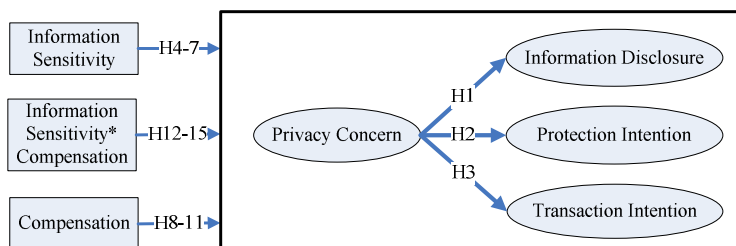


Figure 1. Research model

2.2 Effect of privacy concern on behaviour intention

The definition of information privacy concerns (PC) is referred to an individual's subjective views of fairness within the context of information privacy(Campbell 1997). Scholars unanimously consensus on influence of privacy concern on behaviour intention (BI), especially on information disclosure, protection behaviour and transact intention. For example, Awad and Krishnan(2006) claimed that user's willingness to partake in online profile decrease with a higher level of general privacy concern. Nam et al(2006) point out privacy concern have a significant effect on willingness to disclose information. Sheehan and Hoy(1999) reported that when privacy concern increase, users would likely

be providing inaccurate and incomplete information, asking for name removed from mailing lists and send more negative message. Milne and Culnan(2004) indicated that privacy concern has positively effect on reading online privacy notices. Stewart and Segars(2002) call for that privacy concern have positive effect on behaviour intention, such as refuse to give information, take action to remove name from mail lists, refuse to purchase a product, decided not to apply for something like a job, credit or insurance. Dinev and Hart (2006) argued that privacy concern have a negative effect on willingness to provide personal information and intention to transact. Wirtz et al. (2007) examined that privacy concern increasing result in higher power-enhancing responses such as the fabrication of personal information, use of privacy-enhancing technologies and refusal to purchase.

Similarly, questionnaire-based survey revealed that users have ever taken preventive actions in order to decrease privacy risks. For example, 47% German Internet users sometimes provided false data, 82% Netherlands users have refused to give personal information and 34% have provide fabricate information about personal habits and preferences(Berendt & Gunther & Spiekermann 2005, Teltzrow & Kobsa 2004). Thus, based on the literature listed above, privacy concern has effect on protection intention positively but on information disclosure and transaction intention negatively.

Hypotheses 1 Privacy concern has negative effect on information disclosure

Hypotheses 2 Privacy concern has positive effect on protection intention

Hypotheses 3 Privacy concern has negative effect on transaction intention

2.3 Cost-benefit effects on privacy concern and behaviour intention

Information sensitivity (IS) has been defined as “the level of privacy concern an individual feels for a type of data in a specific situation(Weible 1993). The level of perception on privacy concern depends on the requested information type. Researches found that users more concern on medical records, social security numbers, and financial information requested than product purchases and media habits(Nowak & Phelps 1992, Sheehan & Hoy 2000, Ward & Bridges & Chitty 2005). Further, Many scholars consistently claimed that users’ reactions to privacy threats depend on the type of information requested by marketers(Malhotra et al. 2004, Phelps et al. 2000, Sheehan & Hoy 1999, Sheehan & Hoy 2000). Compared with less sensitive information, more sensitive information will exert more negative effect on uses’ attitudes and intentions toward revealing personal information(Malhotra et al. 2004). When the requested information sensitivity is high, users’ privacy concern and behaviour intention, including information disclosure, protection intention and transaction intention, are again consistent with social exchange theory’s explanation that are engaged in and interpreted in terms of the costs and benefits to the individuals(Andrade & Kaltcheva & Weita 2002). Thus, the high sensitive information is requested, the high privacy concern and the more protection intention are, but the less information disclosure and transaction intention are.

Hypotheses 4 Information sensitivity has positive effect on privacy concern

Hypotheses 5 Information sensitivity has negative effect on information disclosure

Hypotheses 6 Information sensitivity has positive effect on protection intention

Hypotheses 7 Information sensitivity has negative effect on transaction intention

Similarly, the compensation provided, as one kind of benefits, would decrease the concern of information privacy(Andrade & Kaltcheva & Weita 2002), meanwhile, consistent with Xie et al.’s (2006) opinion, drawing on utility theories, users may compromised to reveal personal information, take less prevention actions and perform more transactions. Thus:

Hypotheses 8 Compensation has negative effect on privacy concern

Hypotheses 9 Compensation has positive effect on information disclosure

Hypotheses 10 Compensation has negative effect on protection intention

Hypotheses 11 Compensation has positive effect on transaction intention

Also as the value proposition of social exchange theory describe, “the more valuable to a person is the result of his action, the more likely he is to perform the action”(Emerson 1976, Homans 1974), it is

means users pertain to maximize positive and minimize negative outcomes when facing the risk-benefits tradeoff(Dinev & Hart 2006). Therefore, if information sensitivity and compensation operate concurrently to certain online contexts, users would judge by value proposition. Thus, we proposed the interactions of information sensitivity and compensation would have effect on privacy concern and behaviour intention as well.

Hypotheses 12 Compensation will negatively interact with information sensitivity, which has negative effect on privacy concern

Hypotheses 13 Compensation will negatively interact with information sensitivity, which has positive effect on information disclosure

Hypotheses 14 Compensation will negatively interact with information sensitivity, which has negative effect on protection intention

Hypotheses 15 Compensation will negatively interact with information sensitivity, which has positive effect on transaction intention

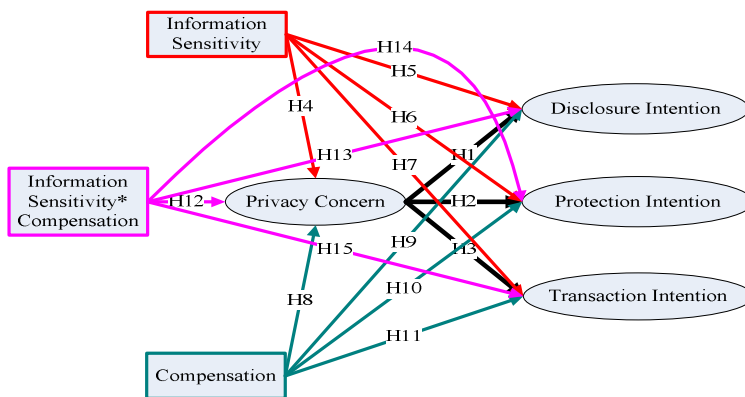


Figure 2. The effect of IS, CO and their interactions on PC and BI

3 RESEARCH METHODOLOGY

3.1 Participants

According to CNNIC (2007) nearest report, University students are the target populations because they are the representative online users in China. Out of 180 questionnaires distributed, 157 completed and usable samples were received, resulting in a response rate of 87.2%. Majority of the respondents are aged 20-23 years (84.1%) and the percentage of male and female are 43.9% and 56.1%. Average Internet experiences are 5.52 years. In addition, 74.5% respondents have more than one email address. Nearly 50% respondents have experience of purchasing online and 37.6% of entire respondents ever use credit card to pay.

Demographic Characteristic	Mean (std.)		Number	Percentage
Sex		Male	69	43.9%
		Female	88	56.1%
Age	21.76 (1.557)	<20	5	3.2%
		20-23	132	75.7%
		>23	20	12.7%
Internet Experience	5.52 (2.513)			
Have more than one Email	.75 (.434)	0	39	25.0%
		1	117	75.0%
Online purchase times	3.11 (8.816)	0	77	62.9%

		1-3	44	25.0%
		4-10	11	7.8%
		11+	6	4.3%
Pay by Credit Card	.38 (.486)	0	102	72.9%
		1	38	27.1%

Table 1. Descriptive statistics (N=157)

3.2 Design

The experiment consisted of a 2*2 factorial design. Considering students as the target participants, after the exports discussion and pre-test, information type (basic information as less sensitivity; basic & financial information as more sensitivity in purchasing context, basic & identifiable information as more sensitivity in Job-hunting context) and compensation (30% sale discounts as low level of compensation; free job vocation information as high level) were assigned, which would be reported in manipulation checks. This sale discount were chosen because Ward et al argued if 30% discount has no statistical impact, then it is unlikely any level of discounting will influence on privacy concern and behaviour intentions(Ward et al. 2005). Thus, four online contexts were confirmed (Table 2).

Treatment	Information sensitivity (H)	Information sensitivity (L)
Compensation (H)	(4) Free job vacation information Identifiable info: ID, digital photo Basic info (39,M:18; F21)	(3)Free job vacation information Basic info: name, email, mobile phone, address (39,M:14; F25)
Compensation (L)	(2) 30% discount Financial info: credit card and pin Basic info (40,M:22; F18)	(1) 30% discount Basic info: name, email, mobile phone, address (39,M:15; F24)

Table 2. Four experimental contexts design

3.3 Measurements

The scales of privacy concern and behaviour intentions were selected and adopted from previous researches (shown in Table 3). The total questionnaires, except demographics and manipulation checks, used a seven-point Likert-scale(1 as “strongly disagree”, 7 as “strongly agree”).

Constructs	Item coding	Description and Sources
IUIPC	CONT1-3	3-Dimension, 10-Items, adapted from Malhotra et al(Malhotra et al. 2004)
	AWAR1-3	
	COLL1-4	
Information Disclosure (IND)	IND1-5	Willing to submit the requested information(Malhotra et al. 2004)
		Would submit the requested information(Malhotra et al. 2004)
		Provide incomplete or inaccurate information(Sheehan & Hoy 1999)
		Provide fabricate information(Teltzrow & Kobsa 2004)
		Provide personal information(Dinev & Hart 2006, Nam et al. 2006, Teltzrow & Kobsa 2004)
Protection Intention (PRI)	PRI1-6	Read online privacy notices(Milne & Culnan 2004, Milne et al. 2004)
		Read license agreements before register your information(Buchanan & Paine & Jonson & Reips 2007)
		Make sure online forms are secure before filling out(Milne et al. 2004)
		Block messages/emails you do not want to hear from(Buchanan et al. 2007)
		Set computer or browser to reject cookies(Buchanan et al. 2007, Milne et al.

		2004, Wirtz et al. 2007)
		Use pop up window blocker(Buchanan et al. 2007)
Transaction Intention (TRI)	TRI1-3	Decide not to apply for something like a job, credit, etc. (Stewart & Segars 2002)
		Refuse to purchase a product(Milne et al. 2004, Stewart & Segars 2002, Wirtz et al. 2007)
		Refuse to transact(Dinev & Hart 2005)

Table 3. Behaviour intention for information privacy concern

3.4 Procedure

An experimental questionnaire survey was conducted in three Universities for data collection. Each participant was arranged into each experimental context in random order. After informed the instructions and the descriptions by a video program, participants was told to read the questionnaires' context description carefully and suppose him or her-self engaged in corresponding contexts. Under of this premise, based on their consideration and intention, participants fill up the questionnaires.

4 RESULTS

4.1 Manipulation checks

The manipulation checks results show that both the information sensitivity and compensation were manipulated correctly. All of the respondents perceived that 30% sale discount is lower than free job vacation information provided (t-statistic=-3.449, p=.001). Respondents in both online contexts perceived basic information as low level of information sensitivity (t-statistic=-19.106,-11.459, p=.001, p=.001)

4.2 Construct validity and reliability

Confirmatory factor analysis with varimax rotation was performed to test discriminant validity of privacy concern construct. Factor analysis presented in Table 3 shows three factors with eigenvalues above 1.00 and item communality ranging over 0.590. Cronbach's alpha value (.740) was computed to check the internal consistency of the statements, which verified that privacy concern construct are reliable and valid.

Construct	Item coding	KMO	Factor loadings							α
IUIPC	CONT1	.731	.602							.749
	CONT 2		.705							
	CONT 3		.741							
	AWAR1			.779						
	AWAR 2			.590						
	AWAR 3			.815						
	COLL 1				.781					
	COLL 2				.701					
	COLL 3				.820					
	COLL 4				.680					
Behaviour Intention	IND1	.729			.653				.820	
	IND 2				.592					
	IND 3				.798					
	IND 4				.809					
	IND 5				.748					

	PRI1						.810				.786
	PRI 2						.811				
	PRI 3						.823				
	PRI 4							.670			.622
	PRI 5							.796			
	PRI 6							.752			
	TRI1								.861		.832
	TRI 2								.876		
	TRI 3								.744		

Table 4. Privacy concern and behaviour intention factor loadings and reliability results

Because the behaviour intention was adopted from a set of existed scales, it is necessary to test the validity through exploratory factor analysis. The results shown in table 3 identified that the scale of information disclosure, protection intention and transaction intention constructs contained five, six and three items separately consistency with previous research. Among them, protection intention loaded by two factors, which were termed as general caution and technical protection by Buchanan(Buchanan et al. 2007). Cronbach's alpha value is .820, .786, .622, .832 means good internal consistency exists between the statements.

4.3 Hypothesis test

Table 5 presents the regression analysis results, which indicate that privacy concern has a negative effect on information disclosure but positive effect on protection intention, while, the influence on transaction intention was not significant. Thus, H1, 2 were supported but H3 was not supported. Consider of two online environments (purchasing book and job hunting) assigned in this experiment, we divided the data into two groups and then make the regression analysis further to investigate privacy concern impact on its consequences. The results in table 6 indicate that privacy concern has significant positive effect on protection intention in both contexts, but the effects of privacy concern on information disclosure and transaction intention are not significant in each context.

Construct	β	R Square	F	T	Hypothesis Test
IND	-.185	.028	4.471*	-2.114*	H1 Supported
PRI	.338	.114	20.030***	4.475***	H2 Supported
TRI	.051	.004	.589	.768	H3 Not Supported

*p<.05, **p<.01, ***p<.005

Table 5. Regression results of privacy concern impact on behaviour intention

	IND		PRI		TRI	
	Purchase	Job hunting	Purchase	Job hunting	Purchase	Job hunting
β	-.121	-.210	.303	.302	-.031	.107
R Square	.013	.035	.103	.118	.001	.019
F	.977	2.766	8.818***	10.213***	.095	1.489
T	-.988	-1.663	2.970***	3.196***	-.308	1.220

*p<.05, **p<.01, ***p<.005

Table 6. Regression analysis in online purchase and job hunting environment

GLM analyses (MANOVA, Table 7) were conducted to test information sensitivity, compensation and their interactions impact on privacy concern and behaviour intention. The results indicate that information sensitivity has negative effect on information disclosure and transaction intention, but has positive effect on protection intention. Thus, H5, 6, 7 were supported. Compensation has not

significant effect on privacy concern and behaviour intention. Thus, hypothesis 8, 9, 10, 11 were not supported. While, compensation is negatively interact with information sensitivity, which has negative effect on information disclosure. Thus, H13 was supported. The mean of privacy concern and behaviour intention in each contexts were presented in Table 8. The graph of interactions' influences was presented in Figure 3.

Factor	SSCP Matrix				df	λ	F-value			
	IUIPC	IND	PRI	TRI			IUIPC	IND	PRI	TRI
IS	.716	-2.384	1.449	-2.359	1	.885***	1.91	7.04**	4.51*	7.92**
	-2.384	7.938	-4.824	7.854						
	1.449	-4.824	2.931	-4.773						
	-2.359	7.854	-4.773	7.771						
CO	.908	-1.969	.767	1.330	1	.935*	2.42	3.79	1.00	1.98
	-1.969	4.267	-1.662	-2.883						
	.767	-1.662	.647	. 1.123						
	1.330	-2.883	1.123	1.947						
IS*CO	.586	-1.764	.307	-.536	1	.961	1.57	4.71*	.246	.498
	-1.764	5.306	-.922	1.611						
	.307	-.922	.160	-.280						
	-.536	1.611	-.280	.489						

*p<.05, **p<.01, ***p<.005

Table 7. GLM Multivariate Analysis

	IUIPC		IND		PRI		TRI	
	IS (H)	IS (L)	IS (H)	IS (L)	IS (H)	IS (L)	IS (H)	IS (L)
CO (H)	5.80	5.78	3.52	3.60	5.25	5.04	4.38	4.71
CO (L)	5.77	5.51	3.48	4.30	5.18	4.85	4.04	4.60

Table 8 Mean in each context

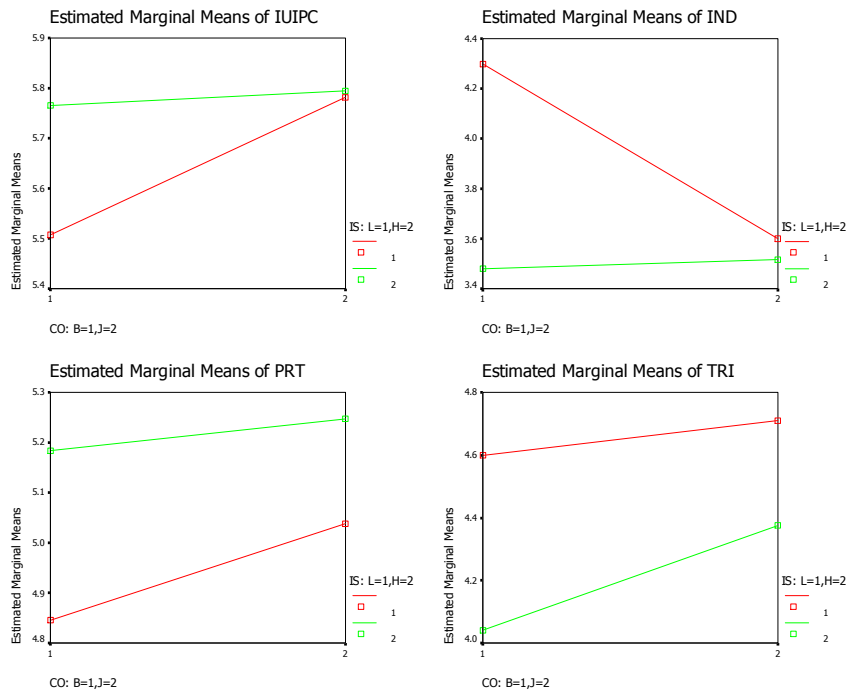


Figure 3. Graph of Interaction effects

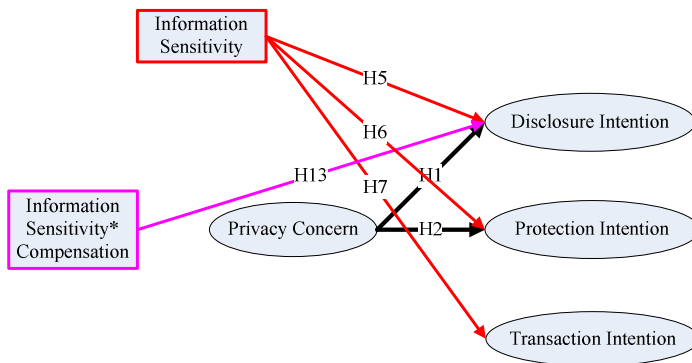


Figure 4. The influence of IS, CO and their interactions on PC and BI

5 DISCUSSION, IMPLICATIONS AND LIMITATIONS

This study examined the effect of information sensitivity, compensation and their interactions on privacy concern and behaviour intention, including information disclosure, protection intention and transaction intention. One of the main contributions is to investigate the relationships within the same context and across contexts simultaneously through a specific experimental assigned.

Privacy concern has significant negative effect on information disclosure but positive effect on protection intention, which verified previous studies over again such as Malhotra et al's, Dinev and Hart's research. However, privacy concern has not significant effect on transaction intention, which is not consistency with Wirtz et al's findings about privacy concern increasing by means of more refusals to purchase(Wirtz et al., 2007) or Dinev and Hart's argument on privacy concern has a negative effect on intention to transact(Dinev & Hart, 2005). To explore the reasons leading to this, a further regression analysis was preformed. We found privacy concern has significant positive effect on protection intention in both contexts, but the effects of privacy concern on information disclosure and transaction intention are not significant in each context.

Information sensitivity has negative effect on information disclosure and transaction intention, but positive effect on protection intention. Compensation has not significant effect on privacy concern and behaviour intention. One of the reasons is the assigned compensation is not achieved the significant level. Another major contribution is that explored the interaction of information sensitivity and compensation and found that compensation is negatively interact with information sensitivity, which has negative effect on information disclosure.

The results are corroborated empirical evidence that information sensitivity holdback users' willingness on information disclosure(Ward et al., 2005). Thus, to obtain the actual user's information, one efficient way is to request propriety information instead of more sensitive ones. In addition, the interaction of information sensitivity and compensation has significant effect on information disclosure indicates that marketers should beware the balance between information requested and compensation provided as bait.

While the outcomes reveal the way for practitioners to facilitate users providing accurate information and execute transactions, it has certain limitations need to mention. We assigned the experimental contexts considering university students as the target participants, thus the outcomes need to be tested to broader online users, such as employees, etc. Moreover, we investigated two types of information. While, there are other types of personal information, such as lifestyle characteristics and shopping/purchasing habits(Phelps et al., 2000), related with privacy perspective yet. Extending the current studies to explore the influence of other types of information on privacy concern and behaviour intention would help to recommend more actual suggestions for widely online contexts or industries, such as marriage consultant website, online booking system, etc.

6 CONCLUSION

This study verified privacy concern has negative effect on information disclosure and transaction intention, but positive effect on protection intention. Information sensitivity has negative effect on information disclosure, protection intention and transaction intention but compensation has not significant effect on them. While, compensation is negatively interact with information sensitivity, which has negative effect on information disclosure. Those findings propose the practical suggestions for marketers to arouse users disclose more accurate personal information. Future research could try to enrich the type of information requested and compensation provided to reflect more actual and concrete online environment.

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