
제품정보제공수준에 따른 소비자 행동

Factors Influencing Consumers' Actual Behavior based on Different Degree of Product Information

장활식, 박광오, 무 쟁
부산대학교 경영학과

Hwal-Sik Chang(hwschang@pusan.ac.kr), Kwang-Oh Park(kopark@pusan.ac.kr),
Zheng Wu(snowclatter@gmail.com)

Abstract

E-commerce has been developing rapidly by enabling companies to sell their products or services online. However, adoption of an e-commerce website still faces lots of problems, such as changing consumer behaviors from purchasing in physical stores to purchasing online, privacy and risk, and so on. The purpose of this study is to analyze the influence of consumers' attitude on actual purchasing behavior based on the degree of product information. In this study, we designed two

kinds of product web pages which show different degrees of product information. The first web page has adequate product information, and the second one has much less product information than the first one. We found that according to degree of product information, there is a difference among perceived usefulness, privacy, attitude and actual behavior. And we also reveal weight difference between the two kinds of webpages. Finally, we indicated that variables have impact effect on both mutual relations and preceding relationships.

■ keyword : | Product Information | Consumer's Actual Behavior |

요약

본 연구의 목적은 웹페이지에서 제공하는 제품정보수준에 따른 소비자 행동의 차이를 조망하는 것이다. 연구를 위해 우리는 제품정보수준이 다른 2개의 웹페이지를 만들었다. 그 후, 학습효과를 제거하기 위하여 각각의 웹페이지를 다른 사람에게 보여준 후 응답을 받았고, 각 웹페이지당 178개와 162개의 응답을 얻었기 때문에, 개인의 편견이나 오류를 줄였다. 그 후 응답값을 토대로 제품정보수준이 다른 두 개의 웹페이지를 본 응답자들이 느끼는 유용성, 프라이버시, 소비자 태도, 실제행동간에 차이와 두 개의 모형간에 설정된 인과관계의 가중치에 차이가 있는가를 분석하였다.

본 연구의 결과는 다음과 같다. 첫째, 제품정보제공수준이 다른 두 개의 웹페이지에서 느끼는 변수간의 차이를 분석하기 위해 t-test를 실시하였다. 분석결과, 제품정보수준이 다른 두 개의 웹페이지를 본 응답자들이 느끼는 유용성, 프라이버시, 소비자 태도, 실제행동간에는 차이가 있었다. 둘째, 높은 제품정보를 제공하는 웹페이지와 낮은 제품정보를 제공하는 웹페이지 사이에 설정된 인과관계 가중치에는 차이가 있었다. 셋째, 제품정보수준은 유용성 및 프라이버시에, 유용성은 프라이버시, 소비자 태도, 실제행동에, 프라이버시는 소비자 태도와 실제행동에, 소비자 태도는 실제행동에 유의한 영향을 나타내었다.

■ 중심어 : | 제품정보 | 소비자행동 |

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교신저자 : 박광오, e-mail : kopark@pusan.ac.kr

I. Introduction

Electronic Commerce (E-Commerce) has almost overnight become the dominant on-line activity. It has become a significant element in commercial activities world-wide, particularly in the developed countries where suitable infrastructure support is available.

The internet is profoundly changing consumer behaviour. People seem to enjoy shopping on the internet. Web sites are doing better and better to serve and entertain their customers, and seem to take a much bigger share of people's overall spending in the future. This has enormous implications for business. A web site is increasingly becoming the gateway to a company's brand, products and services – even if the firm does not sell online.

The objective of this study is to reveal different consumer behaviors based on different degree of product information provided by e-commerce web sites. We designed a model of 5 factors, including degree of product information, perceived usefulness, privacy, attitude, and actual behavior. Based on our model, we designed two kinds of web pages which show different degrees of product information. There is adequate product information on the first web page and much less product information on the second.

II. Literature Review

1. Degree of Product Information

Website content is a key factor influencing website success [3]. Product information is important to consumers' satisfaction with their online shopping experiences [2], and is considered critical in effectiveness of e-commerce website [4]. Revolutionary Internet-based multimedia technologies enable online firms to display their products via

adequate product information and various formats, such as image, flash, video, and so on. The degree of product information displayed on an e-commerce website has an impact on consumers' online shopping experience [1].

2. Perceived Usefulness

Featured online product information is used to introduce products to consumers to help them form a clear understanding and impression on the products [10]. David defined perceived usefulness as the degree to which a person believes that a particular system will help enhance his/her job performance [11]. And in the study of Yi and Jiang [1], perceived usefulness was referred to the degree to which a customer believes that a particular website has effectively helped them in product information acquisition process to form the attitude toward the website and make the final actual behavior.

3. Privacy

If customers do not trust that their personal data will be kept private and that payment is secured and executed only with appropriate authorization, they will not use the Internet [12]. This statement suggests that online privacy may actually prevent actual online purchasing behavior from taking place. Privacy is not a singular concept but instead is a term that includes different dimensions [13, 14]. Both consumers and marketers perceive privacy concerns in terms of information control: who has access to personal data, how personal data are used and what volume of advertising and marketing offers arises from the use of personal data [10].

4. Attitude

Attitude toward a web site is an equally useful indicator of perceived site value [16]. Web site

attributes such as convenience and pleasure may determine the actual behavior to purchase online [17]. Consumers' attitude towards a web site is a critical factor in not only deciding whether to purchase, but also whether to return at a later time.

5. Action Behavior

Understanding consumer behavior on the Web is made difficult by the fact that consumers and businesses have been transformed [18]. First, every online consumer performs as a traditional consumer on a computer while interacting with an e-commerce Web site. Second, the physical store has been transformed into a virtual store through e-commerce. Online consumer behavior is a research topic with an increasing number of publications per year. Although researchers have made unneglectable progress related to the field, there are still significant disagreements about the findings in this area [7].

III. A Research Model and Hypotheses

The objective of this study is to verify the different effect of two product web pages - one with adequate product information and the other with inadequate

product information. Five factors are included in this study, which are degree of product information, perceived usefulness, privacy, attitude, and actual behavior. Our research model is illustrated in [Figure 1]. Therefore, based on the above literature review, the following hypotheses are proposed.

The first hypothesis examines the relationship between degree of product information and perceived usefulness. Because adequate and relevant product information can help consumers form perception of features of products, and thus may help consumers make the decision to actually purchase the products online [1][6]. Therefore, based on the above literature review, the following hypothesis is proposed:

H1: Degree of product information influences perceived usefulness of e-commerce websites.

The second hypothesis examines the relationship between degree of product information and privacy of e-commerce websites. Compared to research of perceived risk of online e-commerce websites, the research of privacy of e-commerce is inadequate [15]. Web pages with adequate and relevant product information can reduce the consumers' uncertainty about the products they are interested in, thus

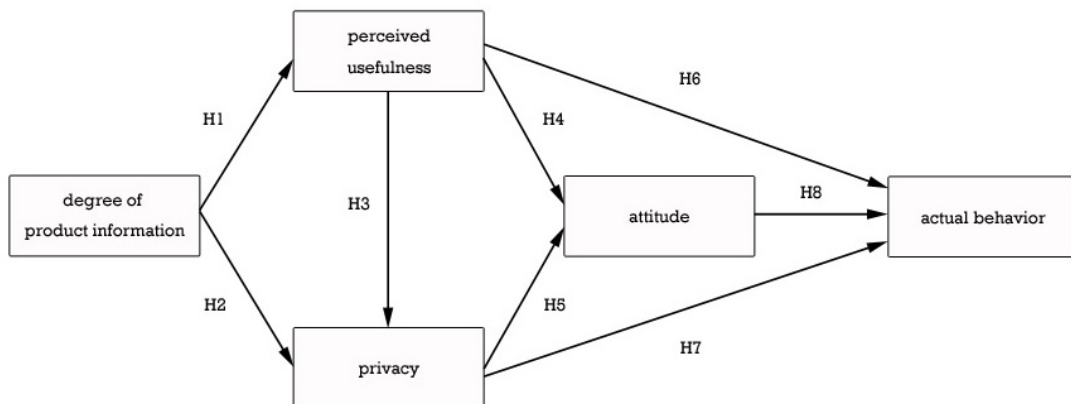


Figure 1. Research Model

decreasing perceived risk of e-commerce websites [7]. Therefore, the following hypothesis is proposed:

H2: Degree of product information influences privacy of e-commerce websites.

As is defined by Yi and Jiang [1], perceived usefulness was referred to the degree to which a customer believes that a particular website has effectively helped them in product information acquisition process to form the attitude toward the website and make the final actual behavior. The more useful consumers perceived the product information, the more valuable consumers consider the information and the more careful and professional consider an e-commerce website is. Therefore, based on this trust, consumers tend to perceive more secured privacy of an e-commerce website [7]. Therefore, the following hypothesis is proposed:

H3: Perceived usefulness of e-commerce websites influences privacy of websites.

Consumers' attitude toward a web site is a useful indicator of perceived web site value [16]. Perceived usefulness of a web site, such as suitable usability of a web site can result in consumers' satisfaction, thus determining the actual behavior to purchase online [17]. Therefore, the following hypothesis is proposed:

H4: Perceived usefulness of an e-commerce website influences attitude towards it.

Enhanced perceived risk and privacy of an e-commerce website can increase consumers' trust in purchasing online [5]. Privacy of a web site represents the degree of security and profession of an e-commerce web site [9]. If consumers don't believe that their data are securely kept on an e-commerce

web site, they will not trust on the web site [12]. Therefore, the following hypothesis is proposed:

H5: Privacy of an e-commerce website influences attitude towards it.

If consumers perceived an e-commerce web site to be useful, they will probably consider purchasing on the web site [11]. Consumers' attitude towards a web site is a critical factor in not only deciding whether to purchase, but also whether to return at a later time [16]. Therefore, the following hypothesis is proposed:

H6: Perceived usefulness of an e-commerce website influences actual behavior on it.

According previous studies, investigating consumer privacy perception and providing proper privacy enhancing strategies within the Internet shopping environment offers a great deal to potential Internet marketing. The relationship between privacy and consumer behavior is a well-researched and well-understood area of consumer research [7]. The following hypothesis is proposed:

H7: Privacy of an e-commerce website influences actual behavior.

Consumers' attitude towards an e-commerce web site plays an important role on consumers' actual behavior, such as continuously visiting behavior, continuous purchasing behavior, recommending behavior, and so on [10][18]. The following hypothesis is proposed:

H8: Consumers' attitude towards an e-commerce website influences his/her actual behavior on it.

Table 1. Operational Definition

Construct	Item	Operational Definition	Reference
Degree of Product Information	P1	Trust of Product Information Response of Product Information Utility of Product Information Sufficiency of Product Information	Sweeney & Soutar (2001) [19]
	P2		
	P3		
	P4		
Perceived Usefulness	V1	Perceived Navigation Usefulness Perceived Access Usefulness Perceived Content Usefulness Perceived Interaction Usefulness	Palmer (2004) [20]
	V2		
	V3		
	V4		
Privacy	P1	Misuse Personal Information Unlicensed Information Usage Decreasing Control Getting Personal Information	Lee et al. (2007) [21]
	P2		
	P3		
	P4		
Attitude	A1	Favorable Degree Instructive Degree Attentional Degree	Chae & Lee (2003) [22]
	A2		
	A3		
Actual Behavior	W1	Continuous Visiting Behavior Continuous Purchase Behavior Recommendation Behavior	Harrison (2001) [23]
	W2		
	W3		

Based on our model, we designed two kinds of web pages which show different degrees of product information. There is adequate product information on the first web page and there is much less product information on the second one. We analyze five factors in this study, including degree of product information, perceived usefulness, privacy, attitude and actual behavior.

The survey of this study was carried out for approximately 2 months. Through the survey, we obtained 178 copies of questionnaire for product webpage with adequate product information, and 162 copies of questionnaire for product webpage with inadequate product information. The average age of people taking part in the survey is 25, and male takes 57% and female takes 43%. Moreover, we found that the average period of time for them to use internet is 8.4 months per year, or 2.3 hours per day.

IV. Empirical Results

The research model was analyzed by structural equation modeling(SEM) using SAS 9.1.3 and AMOS 7.0.

1. Reliability and Validity of Measurement Model

The internal consistency of the measurement was assessed by calculating the Cronbach α . Alpha coefficients of the product webpage with adequate product information are 0.724, 0.733, 0.719, 0.740, and 0.751 for degree of product information, perceived usefulness, privacy, attitude and actual behavior, respectively. Alpha coefficients of the other product webpage with inadequate product information are 0.801, 0.639, 0.715, 0.717 and 0.760 for degree of product information, perceived usefulness, privacy, attitude and actual behavior, respectively. Hair et al. (1998)[24] suggested that the lowest limit for Cronbach's alpha be 0.70. All constructs in our research model demonstrated acceptable reliability except privacy of the product webpage with inadequate product information, which is slightly lower than the minimum desired cut-off of 0.70. These results of internal consistency are shown in [Table 2].

Table 2. Results of Internal Consistency Test

	Cronbach α	
	Product Webpage with Adequate Information	Product Webpage with Inadequate Information
Degree of Product Information	0.724	0.801
Perceived Usefulness	0.733	0.639
Privacy	0.719	0.715
Attitude	0.740	0.717
Actual Behavior	0.751	0.760

A confirmatory factor analysis using AMOS 7.0 was conducted to examine the convergent and

discriminant validity of the construct. Fit indices of the product webpage with adequate information are $X^2 / DF = 1.800$, GFI = 0.905, RMSR = 0.038, RMSEA = 0.058, AGFI = 0.805, NFI = 0.922, CFI = 0.885, TLI = 0.925, IFI = 0.906, PGFI = 0.663, PNFI = 0.601 (Recommended value : $X^2 / DF \leq 3.00$, GFI, NFI, CFI, TLI ≥ 0.90 , AGFI ≥ 0.80 , RMSR ≤ 0.05 , PGFI, PNFI ≥ 0.60 , RMSEA ≤ 0.08 ; Steiger, 1990), and all indices of this webpage research model demonstrated acceptable fit indices except the CFI, which is slightly lower than the minimum desired cut-off of 0.90. And fit indices of the product webpage with inadequate information are $X^2 / DF = 1.235$, GFI = 0.939, RMSR = 0.062, RMSEA = 0.024, AGFI = 0.881, NFI = 0.931, CFI = 0.949, TLI = 0.915, IFI = 0.923, PGFI = 0.610, PNFI = 0.621, and all indices in this webpage research model demonstrated acceptable fit indices except the RMSR, which is slightly greater than the maximum desired cut-off of 0.50.

Table 3. Confirmatory Factor Analysis

	Fit Indices	Recommended Value	Product Webpage with Adequate Information	Product Webpage with Inadequate Information
Absolute Fit Indices	X2/DF	≤ 3.00	1.800	1.235
	GFI	≥ 0.90	0.905	0.939
	RMSR	≤ 0.05	0.038	0.062
	RMSEA	≤ 0.08	0.058	0.024
Incremental Fit Indices	AGFI	≥ 0.80	0.805	0.881
	NFI	≥ 0.90	0.922	0.931
	CFI	≥ 0.90	0.885	0.949
	TLI	≥ 0.90	0.925	0.915
	IFI	≥ 0.90	0.906	0.923
Parsimony Fit Indices	PGFI	≥ 0.60	0.663	0.610
	PNFI	≥ 0.60	0.601	0.621

Convergent validity, which indicates the extent to which the items of a scale theoretically related to each other in reality, was verified by examining the composite reliability (CR) and the average variance extracted (AVE). Acceptable values of C.R. and AVE should be greater than 0.7 and 0.5 respectively (Fornell & Larcker, 1981). In this study, the items'

Table 4. Result of Convergent Validity Test

Factor	Product Webpage with Adequate Information				Product Webpage with Inadequate Information			
	Standardized Loading	Error Variance	Composite reliability	Average Variance Extracted	Standardized Loading	Error Variance	Composite reliability	Average Variance Extracted
Degree of Product Information	0.7503	0.0595	0.9690	0.5862	0.6301	0.1139	0.9539	0.5524
	0.8577	0.0926			0.7849	0.0915		
	0.6601	0.0616			0.8130	0.1128		
	0.7814	0.0834			0.7317	0.1050		
Perceived Usefulness	0.7653	0.0691	0.9588	0.6280	0.8214	0.1012	0.9475	0.6039
	0.8322	0.1307			0.84365	0.1813		
	0.8185	0.1121			0.6882	0.1290		
	0.7508	0.1195			0.7454	0.1205		
Privacy	0.8310	0.0944	0.9509	0.5649	0.7326	0.1152	0.9507	0.6408
	0.7207	0.1225			0.8728	0.1597		
	0.7013	0.1542			0.8413	0.1051		
	0.7469	0.0938			0.7463	0.1483		
Attitude	0.7680	0.0802	0.9628	0.6379	0.8694	0.0876	0.9643	0.6685
	0.7828	0.0772			0.8248	0.0612		
	0.8432	0.0641			0.7545	0.0732		
Actual Behavior	0.7301	0.0652	0.9600	0.5583	0.8103	0.0866	0.9563	0.5646
	0.6605	0.0787			0.8529	0.0572		
	0.8400	0.0635			0.5567	0.0814		

factor loadings are all greater than 0.7. As [Table 4] shows, all C.R. and AVE values and the item factor loadings meet the recommended threshold.

Discriminant validity measures whether a given construct is different from other constructs. It was assessed by one criterion: the square root of AVE for each construct should be greater than the correlations between the construct and other constructs (Fornell & Larcker, 1981)[25]. It is clearly shown in [Table 5] that all AVE values are greater than the off-diagonal elements in the corresponding rows and columns, demonstrating discriminant validity.

Table 5. Discriminant Validity & Multicollinearity (Product Webpage with Adequate Information)

	Product Information	Perceived Usefulness	Privacy	Attitude	Actual Behavior
Degree of Product Information	(0.586)				
Perceived Usefulness	0.460	(0.628)			
Privacy	0.258	0.421	(0.565)		
Attitude	0.237	0.313	0.231	(0.638)	
Actual Behavior	0.127	0.349	0.327	0.441	(0.558)

※ () Average Variance Extracted

Table 6. Discriminant Validity & Multicollinearity (Product Webpage with Inadequate Information)

	Product Information	Perceived Usefulness	Privacy	Attitude	Actual Behavior
Degree of Product Information	(0.552)				
Perceived Usefulness	0.327	(0.604)			
Privacy	0.213	0.351	(0.641)		
Attitude	0.112	0.309	0.170	(0.669)	
Actual Behavior	0.225	0.231	0.214	0.218	(0.565)

※ () Average Variance Extracted

2. Structure Model

After assessing the reliability and validity, the

hypothesized paths in models was tested by the AMOS 7.0 software to which a matrix of correlation between the variables was input, using the estimated maximum likelihood.

Table 7. Fit Indices for each of the Hypothesized Models

	Fit Indices	Recommended Value	Product Webpage with Adequate Information	Product Webpage with Inadequate Information
Absolute Fit Indices	X ² /DF	≤ 3.00	1.650	1.493
	GFI	≥ 0.90	0.902	0.924
	RMSR	≤ 0.05	0.056	0.042
	RMSEA	≤ 0.08	0.034	0.056
Incremental Fit Indices	AGFI	≥ 0.80	0.844	0.832
	NFI	≥ 0.90	0.912	0.929
	CFI	≥ 0.90	0.906	0.916
	TLI	≥ 0.90	0.951	0.933
Parsimony Fit Indices	IFI	≥ 0.90	0.904	0.885
	PGFI	≥ 0.60	0.665	0.656
	PNFI	≥ 0.60	0.608	0.609

Fit indices of the product webpage with adequate information are $X^2 / DF = 1.650$, $GFI = 0.902$, $RMSR = 0.056$, $RMSEA = 0.034$, $AGFI = 0.844$, $NFI = 0.912$, $CFI = 0.906$, $TLI = 0.951$, $IFI = 0.904$, $PGFI = 0.665$, $PNFI = 0.608$, and all indices in this webpage research model demonstrated acceptable fit indices except the RMSR, which is slightly greater than the minimum desired cut-off of 0.50. And fit indices of the product webpage with inadequate information are $X^2 / DF = 1.493$, $GFI = 0.924$, $RMSR = 0.042$, $RMSEA = 0.056$, $AGFI = 0.832$, $NFI = 0.929$, $CFI = 0.916$, $TLI = 0.933$, $IFI = 0.885$, $PGFI = 0.656$, $PNFI = 0.609$, and all indices in this webpage research model demonstrated acceptable fit indices except the IFI, which is slightly lower than the minimum desired cut-off of 0.90.

3. Hypothesis Testing (Product Webpage with Adequate Information)

[Table 8] shows the analysis results of the product webpage with adequate information. The table shows

direct effects at top cells, indirect effects in the middle, and total effects on the bottom.

The results indicate that degree of product information has a significant direct impact on perceived usefulness(H1=0.62, t-value=5.41), therefore, H1 is adopted. This is similar to the study conducted by Janda et al.(2002)[26] who stated that degree of product information influences perceived usefulness.

Degree of product information also influences privacy(H2=0.44, t-value=2.67), therefore, H2 is adopted. This is similar to the study conducted by Park et al.(2005)[27] who stated that the product information influences privacy.

Perceived usefulness influences privacy(H3=0.51, t-value=4.12), therefore, H3 is adopted. This is in accordance with the study conducted by Park et al.(2005)[27] which stated perceived usefulness influences privacy.

Perceived usefulness has a significant direct impact on attitude (H4=0.70, t-value=4.67), therefore, H4 is adopted. This is in accordance with the study conducted by Oh(2003)[28], who stated perceived usefulness influences attitude.

Privacy also has a significant direct impact on attitude (H5=0.37, t-value=2.72), therefore, H5 is adopted. This is in accordance with the study conducted by Vijayasarathy & Jones (2000)[29], which stated that privacy influences attitude.

Perceived usefulness has a significant direct impact on action behavior(H6=0.47, t-value=3.01), therefore, H6 is adopted. This is in accordance with the study conducted by Lin et al.(2005)[30] who stated perceived usefulness influences action behavior.

Privacy also has a significant direct impact on action behavior (H7=0.52, t-value=3.97), therefore, H7 is adopted. This is in accordance with the study conducted by Vijayasarathy & Jones(2000)[29], which

stated that privacy influences action behavior.

Attitude has a significant direct impact on action behavior (H8=0.64, t value=6.36), therefore, H8 is adopted. This is in accordance with the study conducted by Howard & Kerin(2004)[31] which stated that attitude influences action behavior.

Table 8. Coefficients of Direct, Indirect, Total Impacts (Product Webpage with Adequate Information)

		Perceived Usefulness	Privacy	Attitude	Actual Behavior
Degree of Product Information	Direct Effect	0.62***	0.44**	-	-
	Indirect Effect	-	0.09	0.24	0.15
	Total Effect	0.62***	0.53**	0.24	0.15
Perceived Usefulness	Direct Effect		0.51***	0.70***	0.47**
	Indirect Effect		-	0.04	0.19
	Total Effect		0.51***	0.74***	0.66***
Privacy	Direct Effect			0.37**	0.52***
	Indirect Effect			-	0.05
	Total Effect			0.37**	0.57***
Attitude	Direct Effect				0.64***
	Indirect Effect				-
	Total Effect				0.64***

0 Significant at $\alpha = 0.1$ * Significant at $\alpha = 0.05$ ** Significant at $\alpha = 0.01$ *** Significant at $\alpha = 0.001$

4. Hypothesis Testing (Product Webpage with Inadequate Information)

The results indicate that degree of product information has a significant direct impact on perceived usefulness(H1=0.31, t-value=2.29), so, H1 was adopted. This is similar to the study conducted by Janda et al.(2002)[26] who stated that the product information affects perceived usefulness.

Degree of product information also affects privacy(H2=0.19, t-value=1.97), so, H2 was adopted. This is similar to the study conducted by Liao & Cheung(2002)[32] who states that the product

information affects privacy.

Perceived usefulness affects privacy(H3=0.35, t-value=3.21), so, H3 was adopted. This is in accordance with the study conducted by Ernst & Young(2001)[33] which stated perceived usefulness affects privacy.

Perceived usefulness has a significant direct impact on attitude (H4=0.68, t-value=2.88), so, H4 was adopted. This is in accordance with the study conducted by Oh(2003)[28], who stated perceived usefulness affects attitude.

Privacy also has a significant direct impact on attitude (H5=0.29, t-value=2.45), so, H5 was adopted. This is in accordance with the study conducted by Yoh et al. (2003)[34], which stated that privacy affects attitude.

Table 9. Coefficients of Direct, Indirect, Total Impacts (Product Webpage with Inadequate Information)

		Perceived Usefulness	Privacy	Attitude	Actual Behavior
Degree of Product Information	Direct Effect	0.31*	0.19*	-	-
	Indirect Effect	-	0.07	0.09	0.04
	Total Effect	0.31*	0.26*	0.09	0.04
Perceived Usefulness	Direct Effect		0.35**	0.68**	0.17*
	Indirect Effect		-	0.02	0.02
	Total Effect		0.35**	0.70**	0.19*
Privacy	Direct Effect			0.29*	0.34*
	Indirect Effect			-	0.06
	Total Effect			0.29*	0.40**
Attitude	Direct Effect				0.42**
	Indirect Effect				-
	Total Effect				0.42**
0 Significant at $\alpha = 0.1$ * Significant at $\alpha = 0.05$ ** Significant at $\alpha = 0.01$ *** Significant at $\alpha = 0.001$					

Perceived usefulness has a significant direct impact on action behavior(H6=0.17, t-value=2.06), so, H6 was adopted. This is in accordance with the study conducted by Lin et al.(2005)[30] who stated perceived usefulness affects action behavior.

Privacy also has a significant direct impact on action behavior (H7=0.34, t-value=2.35), so, H7 was adopted. This is in accordance with the study conducted by Vijayasathy & Jones(2000)[29], which stated that privacy affects action behavior.

Attitude has a significant direct impact on action behavior (H8=0.42, t-value=3.20), so H8 was adopted. This is in accordance with the study conducted by Howard & Kerin(2004)[31] which stated that attitude affects action behavior.

5. Difference between attitude of consumer based on degree of product information

The objective of this study is to analyze the different effects of consumers' attitude on actual behaviors based on degree of product information. Therefore, we analyze the web pages through t-test. According to degree of product information, there is difference in perceived usefulness, privacy, attitude and actual behavior. In the following table, we get the p-value of the five constructs. The p-value of degree of product information, perceived usefulness, privacy, attitude, and actual behavior is 0.000, 0.000, 0.000, 0.008, and 0.011, respectively. The result shows that according to degree of product information, there is difference in perceived usefulness, privacy, attitude and actual behavior.

Table 10. t- test

Construct	P-value	Construct	P-value
Degree of Product Information	0.000	Attitude	0.008
Perceived Usefulness	0.000	Actual Behavior	0.011
Privacy	0.000		

Then, we analyze weight difference between product webpage with adequate information and product webpage with inadequate information. For

Table 11. Difference of Path Weights

hypothesis	Path	A Webpage (Weights)	B Webpage (Weights)	Weight Difference
1	Degree of Product Information ▶ Perceived Usefulness	Adopt (0.62)	Adopt (0.31)	0.31 (A>B)
2	Degree of Product Information ▶ Privacy	Adopt (0.44)	Adopt (0.19)	0.25 (A>B)
3	Perceived Usefulness ▶ Privacy	Adopt (0.51)	Adopt (0.35)	0.16 (A>B)
4	Perceived Usefulness ▶ Attitude	Adopt (0.70)	Adopt (0.68)	0.02 (A>B)
5	Privacy ▶ Attitude	Adopt (0.37)	Adopt (0.17)	0.20 (A>B)
6	Perceived Usefulness ▶ Actual Behavior	Adopt (0.47)	Adopt (0.29)	0.18 (A>B)
7	Privacy ▶ Actual Behavior	Adopt (0.52)	Adopt (0.34)	0.18 (A>B)
8	Attitude ▶ Actual Behavior	Adopt (0.64)	Adopt (0.42)	0.22 (A>B)

A Webpage = Product webpage with adequate information
 B Webpage = Product webpage with inadequate information

comparing weights, all hypotheses are adopted. The attitude of consumers is different according to different degree of product information. Moreover, path weights of A webpage (Product webpage with adequate information) are greater than path weights of B webpage (Product webpage with inadequate information). Weight differences of hypothesis 1, 2, 3, 4, 5, 6, 7, 8 are 0.31, 0.25, 0.16, 0.02, 0.20, 0.18, 0.18, and 0.22 respectively.

V. Conclusion

By survey based on two kinds of web pages with different degrees of product information, we analyzed the effects of consumers' attitude towards an e-commerce web site on their actual behaviors, such as continuous purchasing, continuous visiting, or recommendations.

The results of this study are concluded as follows. First, the results of t-test indicate that according to degree of product information, there is significant difference in perceived usefulness, privacy, attitude

and actual behavior. Second, we reveal that there exists weight difference between webpage with adequate information and webpage with inadequate information. Attitude of consumers changes based on different degrees of product information are displayed. Moreover, path weights of webpage with adequate product information are greater than path weights of webpage with inadequate product information. Third, variables have a positive influence on both mutual relation and preceding relationships. The results indicate that degree of product information has a significant direct impact on both perceived usefulness and privacy. Perceived usefulness has a significant direct impact on privacy, attitude, and actual behavior. Privacy has a significant direct impact on both attitude and actual behavior. Also, attitude has a significant direct impact on actual behavior.

The implication of study is as follows. First, most previous studies focused technology acceptance model (TAM), however, we analyzed the degree of product information which has not been fully studied by previous studies. Next, we reveal weight difference between e-commerce webpage with adequate product

information and webpage with inadequate product information. Finally, according to degree of product information, there exists difference in perceived usefulness, privacy, attitude and actual behavior.

The limitation and further direction of this study is as follows. Although we removed the learning effect from the same respondent, our questionnaire were distributed to other people. And in further research, studies can be performed on not only perceived usefulness, privacy, attitude, actual behavior, but also the relationship between other important factors which influence online shopping.

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저 자 소 개

장 활 식(Hwal-Sik Chang)

정회원



- 1985년 : 부산대학교 경영학과 (경영학사)
- 1987년 : University of Oregon, Eugene, Oregon, U.S.A. (경영학석사)
- 1993년 : Texas Tech University, Libbock, Texas, U.S.A(경영학박사)

▪ 1995년 ~ 현재 : 부산대학교 경영학부 교수
<관심분야> : ERP, DSS, IT 성과 측정 및 평가

박 광 오(Kwang-Oh Park)

정회원



- 2004년 : 부산외국어대학교 경영정보학과(경영학사)
- 2006년 : 부산대학교 경영학과 (경영학석사)
- 2010년 : 부산대학교 경영학과 (경영학박사)

<관심분야> : ERP, SCM, EC, CRM

무 쟁(Zheng Wu)

정회원



- 2004년 : School of Chemistry, East China University of Science and Technology(공학 학사)
- 2008년 : 부산대학교 컴퓨터공 학과 (공학석사)

▪ 2008년 ~ 현재 : 부산대학교 경영학과 박사과정
<관심분야> : EC, KM, 웹사이트 개발