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Examining the factors that influence the intentions to adopt internet shopping and cable television shopping in Taiwan

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Abstract

Using Rogers' diffusion of innovation model, this study attempts to compare the adoption of internet shopping with that of cable television shopping in Taiwan. Rogers' diffusion model has been criticized for its pro-innovation bias, and thus this study expects that the adoption of internet shopping will be consistent with the predictions of Rogers' model, while the adoption of cable television shopping will not. A telephone survey with 1227 valid interviews was used to collect data for this study. As expected, most findings regarding internet shopping follow the predictions of this model. However, the diffusion process in relation to cable television shopping digresses from the path predicted by Rogers' model. The detailed findings of the study are discussed in the article.

Key words

cable television shopping • diffusion of innovation • innovativeness • internet shopping • lifestyles • technology adoption • technology clustering

INTRODUCTION

Non-store shopping includes catalog shopping, direct marketing by manufacturers or their salespeople, purchasing from vending machines and door-to-door sales, etc. (Bowersox and Cooper, 1992; Kolter, 1976; Stone, 1994; Tsai, 1995). Catalog shopping has been available for a long time in Taiwan, but it is still not widely accepted because Chinese people are used to examining products thoroughly before purchasing. However, internet and satellite technologies allow non-store shoppers greater opportunities for 'virtual' inspection of products, thus eliminating the 'not-seeing' barrier (Li, 1999; Peng, 1999; Wigand and Benjamin, 1995).

Taiwan's internet-using population has grown very rapidly in a very short time, in part because of government encouragement. A survey by the government's Management Information Commission discovered that more than 35 percent of the population now uses the internet (MIC survey, 2002). As more people become internet users, many companies are trying to develop their business through the internet, resulting in the rise of internet shopping in Taiwan (Kuo et al., 2001).

In addition, satellite technology has had a substantial influence on non-store shopping in Taiwan. Taiwan's television market was rigidly regulated for more than 20 years, with only three terrestrial television stations dominating the market. Television shopping channels were not allowed then because frequencies were limited. Cable television was legalized in 1993 and the penetration rate rapidly increased to 80 percent by the end of 2001 (Chen, 2002; Li and Chiang, 2001). Cable television has a much larger channel capacity, which allows most cable television operators in Taiwan to include four to five shopping channels. Thus, cable television shopping is emerging as a new type of non-store shopping in Taiwan (Li, 2000).

Internet shopping and cable television shopping are similar in many respects. First, both are newly-emerging types of non-store shopping in Taiwan. Second, these two types of non-store shopping provide customers with greater opportunities to virtually examine products. Third, both types of non-store shopping offer customers similar forms of gratification compared with other types of non-store shopping (Li, 2000; Peng, 1999). Nevertheless, these two types of non-store shopping differ in terms of their product images. Cable television shopping operators have been criticized for using too many untruthful advertisements or sexual materials to sell their products, and thus people in Taiwan have formed a very negative image of cable television shopping (Li, 1999). However, internet shopping is one of the businesses promoted by the government, and therefore the operation of internet shopping has been directed along the right track ever since its inception. Most people in Taiwan view such shopping positively, believing that it will become a major trend in the near future (Li, 2000; Yang, 2002).

Using Rogers' diffusion of innovation model, this study attempts to compare the adoption of internet shopping with that of cable television shopping in Taiwan. Rogers' diffusion model has been criticized for its alleged pro-innovation bias – namely, its assumption that people look favorably on all innovations and its ignorance of the fact that there are some innovations that people do not wish to adopt (Rogers, 1995; Weng, 1996). The development of internet shopping in Taiwan concurs with the pro-innovation assumption of Rogers' model, while that of cable television shopping does not. Therefore, this study expects that the process of adopting internet shopping in Taiwan will be consistent with the predictions of Rogers' diffusion model, while that of adopting cable television shopping will not.

LITERATURE REVIEW

Rogers (1995) defines the diffusion of innovation as 'the process by which an innovation is communicated through certain channels over time among the members of a social system' (p. 10). His model identifies four elements that are critical for explaining when and how an innovation is adopted or rejected over time within a given society:

- (1) the innovation, which includes innovation attributes and technology clusters – a technology cluster consists of several technologies that are perceived as being interrelated. People's experiences with a technology obviously influence their perceptions of similar technologies, which in turn affect their adoption intentions (Rogers, 1995);
- (2) communication channels, which include mass media and interpersonal channels – Rogers' diffusion of innovation model regards the diffusion process basically as a communication process in which mass media play the role of informing, and interpersonal communication the role of persuading. Empirical findings show that adopters are heavier users of mass media than non-adopters (Atkin, 1995; Atkin and LaRose, 1994; Leung and Wei, 1998; Lin, 1998; Lin and Jeffres, 1998; Rogers, 1986, 1995);
- (3) time, which is involved in the diffusion in terms of the adoption rate within a system and the relative earliness with which an individual adopts an innovation – Rogers (1995) uses the degree to which an individual adopts a technology relatively earlier than other members of a society to classify people into five types:
 - innovators;
 - early adopters;

- early majority;
- late majority; and
- laggards.

These five types of adopters are found to differ from each other in terms of their demographics and personalities;

- (4) a social system, in which the diffusion occurs. A social system affects the diffusion of an innovation in terms of its social structure, norms, opinion leaders, and change agents.

Based on this model, this study examines how three factors – technology ownership, mass media use, and adopters' characteristics – influence the intentions to adopt internet shopping and cable television shopping in Taiwan.

Technology ownership

Technologies offer a wide range of functions, and people adopt certain technologies because their functions fulfill their needs. Thus, compatibility with users' needs is a critical variable for predicting technology adoption. The concept of technology clustering predicts that past experience of using a technology will encourage the adoption of functionally similar technologies (Atkin, 1995; Jeffres and Atkin, 1996; Lin, 1995; Lin and Jeffres, 1998; Rogers, 1995).

Atkin (1995) discovered that the adoption of entertainment-oriented 1–900 (telephone) services was related more to the use of entertainment technologies than information technologies. Leung and Wei (1998) found that cable television and internet subscribers were significantly more likely than non-subscribers to adopt interactive television. Atkin (1993) showed that cable subscription was related positively to the use of entertainment media, but unrelated to the use of interpersonal media. Li (2003) found that the intention to adopt electronic newspapers in Taiwan was related to the ownership of information-based and interpersonal technologies, but unrelated to the ownership of entertainment-oriented technologies.

Though internet and cable television shopping belong to non-store shopping, both of them serve their adopters in different ways. By utilizing the strengths of the internet, online shopping is valued by its users because of its interpersonal and informational functions. While the mechanism of cable television interactivity is not yet established in Taiwan and some studies have found that people watch cable shopping channels because these channels are entertaining (Li, 1999; Peng, 1999), cable television shopping ought to be good at providing its users with information and entertainment. Based on these findings within the literature, this study develops the following two hypotheses:

H1a: The intention to adopt internet shopping is positively related to the ownership of information-based and interpersonal technologies.

H1b: The intention to adopt cable television shopping is positively related to the ownership of information-based and entertainment-oriented technologies.

Mass media use

According to Rogers' diffusion of innovation model, mass media exposure is important for facilitating the awareness of an innovation. Hence, adopters are seen as having a higher degree of mass media use than non-adopters. In particular, the effect of mass media use is strong during the early stages of adoption (Dupagne and Agostino, 1991; Jeffres and Atkin, 1996; Leung, 1998; Leung and Wei, 1998; Li and Yang, 2000; Lin, 1998). Leung and Wei (1998) found that mass media use exerted a significant effect on the intention to adopt interactive television in Hong Kong, because most mass media use was related to the adoption. Li's study (2003) shows that the intention of Taiwanese to adopt electronic newspapers was positively related to magazine reading and movie-going, and negatively related to television viewing. Lin (1998) demonstrated, however, that the adoption of personal computers in the United States had no significant relationship with most traditional mass media use, and was negatively related to television viewing.

The literature has not come up with a conclusive finding regarding the effect of mass media use on technology adoption. Hence, this study uses a research question to explore the relationships between the two types of non-store shopping and mass media use:

RQ1: What are the relationships between the two types of non-store shopping and mass media use, including television viewing, radio listening, newspaper reading, magazine reading, and movie-going?

Adopters' characteristics

According to Rogers' diffusion of innovation model, two types of adopters' characteristics – demographics and personalities – have an important impact on technology adoption. Two personality traits – innovativeness and lifestyle – were examined in this study.

Innovativeness

Innovativeness is defined as an individual's tendency to seek novelty or to be more receptive to new ideas (Leung and Wei, 1998; Lin, 1998; Lin and Jeffres, 1998; Li, 2003; Rogers, 1995). Innovativeness varies from person to person and is discovered to be critical in technology adoption. Lin (1998) and Lin and Jeffres (1998) both showed that adopters and non-adopters were differentiated significantly by the variable of innovativeness. Busselle et al. (1999) found that innovativeness was able to predict the intention to adopt

the internet in a university. Li and Yang (2000) discovered that the variable of innovativeness was a significant predictor for the likelihood of adopting internet shopping in Taiwan. Li (2001) examined the intention to adopt interactive cable television services in Taiwan and found that innovativeness was able to predict the adoption intention. Based on the literature review, the second hypothesis is developed as follows:

- H2: The more innovative the respondents are, the more likely they are to adopt internet shopping and cable television shopping.

Lifestyles

Consumer research shows that early adopters of new technologies are motivated by social rewards, because the possession of certain technologies allows people to communicate social differentiation and identity to others (Arnould, 1989; Leung, 1998). Rogers' diffusion of innovation model also identifies social status as one factor that motivates people to adopt new technologies (Rogers, 1995). Lifestyles measure people's personalities, attitudes, or interests in order to reflect their psychological characteristics. The unique contribution of lifestyles lies in their visibility. Individuals express parts of themselves by developing different types of lifestyles, so lifestyles become an essential indicator for understanding the psychological world of consumers. Lifestyles are heavily researched by marketing scholars, because past studies have discovered ongoing relationships which were developed between particular brands consumed and lifestyles (Johansson, 1994; Shrum et al., 1995).

Scholars have developed different approaches to measure the lifestyles of consumers, of which the one most widely used is the AIO (activities, interests and opinions) approach. This approach assesses people's activities, interests, and opinions in order to classify them according to different lifestyles. Activities refer to the actual behaviors of an individual, interests are the degree to which an individual pays attention to certain matters, and opinions are the views and expectations that an individual has toward an issue.

Marketing research shows that examining the lifestyles of consumers allows researchers to understand the motivations behind consumption behaviors, which is critical for niche marketing (Li, 1999; Plummer, 1974; Wei, 1997). One of the motives for consuming new technologies is for social identity (Rogers, 1995); however, only a few studies have investigated the relationship between lifestyles and the process of adopting new technologies. These few studies have found that lifestyles are able to predict the adoption of new technologies (Leung, 1998; Li, 1999). Based on the literature review, this study examines the following research question:

RQ2: What are the relationships between lifestyles and the intentions to adopt internet shopping and cable television shopping?

Demographics

Past adoption studies show that adopters, particularly early ones, are younger, more educated, and more upscale than non-adopters. Moreover, males are more likely than females to be adopters of new technologies (Atkin, 1993; Leung, 1998; Leung and Wei, 1998; Li and Yang, 2000; Rogers, 1995). However, demographics play different roles in the process of diffusion. When an innovation is in its early diffusion, demographics exert an important influence on differentiating adopters from non-adopters (Busselle et al., 1999; Dupagne and Agostino, 1991; Leung and Wei, 1998; Li, 2003; Lin, 1998; Neuendorf et al., 1998). On the other hand, when an innovation has passed its critical mass, demographics lose their ability to discriminate in regard to product adoption (Atkin, 1993, 1995; Atkin and LaRose, 1994; Wei and Leung, 1998).

Lin (1998) found that, while the diffusion of personal computers in the US was still in its early stages, demographics possessed a strong discriminating effect among adopters, likely adopters, and non-adopters. Li (2001) demonstrated that only 2 percent of Taiwan's population adopted interactive cable television services, and demographics were strong predictors for the adoption. However, Atkin (1993) showed that, when more than 60 percent of US households had subscribed to cable television, demographics were no longer able to differentiate adopters from non-adopters. According to Li (2000), approximately 20 percent of Taiwan's population accounts for cable television shoppers and 8 percent for internet shoppers. Cable television shopping is approaching its critical mass, while internet shopping is still in its early stages of diffusion. Based on the literature review, the third hypothesis is developed as follows:

H3: Demographics have a stronger effect on the intention to adopt internet shopping than on the intention to adopt cable television shopping.

METHODOLOGY

Technology ownership

This study refers to several studies that investigate technology adoption in Taiwan and identifies a list of 23 communication technologies available in Taiwan (Li, 2001; Li and Yang, 2000; Yang, 2002). Based on the functional classification by Atkin (1995), this study first categorized the major functions of these technologies as being either informational, entertainment-oriented, or interpersonal, and then classified the 23 technologies according to the three types. Based on this classification, personal computers and fax machines were classified as information-based technologies, while answering machines and cellular phones were classified as interpersonal technologies.

• Table 1 Factor analysis on lifestyles

VARIABLES	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5
Factor 1: Being fashionable					
I am fashionable in the eyes of others	0.75	0.18	0.17	-0.02	0.15
I enjoy having new and fashionable things	0.78	0.12	0.10	-0.02	0.19
I pay attention to trends in fashion	0.73	0.22	-0.02	0.10	0.12
A fancy and distinctive lifestyle attracts me	0.75	0.15	0.12	0.17	-0.02
I dress up to show off my personality	0.70	0.26	0.12	0.12	-0.02
I enjoy a romantic lifestyle	0.71	0.15	0.12	0.20	-0.02
I enjoy stylish dresses	0.54	0.11	0.27	-0.02	0.38
Factor 2: Life expansionists					
Life means taking on challenges and risk	0.40	0.56	-0.02	-0.02	0.15
I will take some courses to brighten my future	0.26	0.81	-0.02	0.11	0.11
I like to learn more new knowledge and technology	0.26	0.78	-0.03	0.14	-0.02
Doing nothing will make me feel uncomfortable	-0.03	0.65	0.20	0.11	-0.02
I have high hopes of what I can accomplish	0.24	0.76	-0.02	-0.02	-0.02
Factor 3: Trust in mass media					
Advertising can be trusted	0.26	-0.02	0.71	-0.02	0.32
I trust what is reported in the newspaper	0.17	-0.02	0.84	-0.02	-0.02
Advertised products are more trustworthy	0.20	0.14	0.77	0.10	0.17
Factor 4: Enjoying life					
I prefer to do nothing but relax during holidays	0.13	-0.02	-0.02	0.60	0.25
I will be happy if I can live a leisurely life	0.14	-0.02	-0.02	0.76	-0.02
I prefer stable and secure jobs	-0.02	-0.02	0.28	0.65	-0.30
A living space of my own will make me happy	-0.02	0.38	-0.02	0.62	-0.02
A house by the lake or up in the hills is perfect for vacations	0.18	0.17	-0.02	0.48	0.23
Factor 5: Preference for foreign products					
Although expensive, I prefer foreign products	0.27	0.14	0.26	0.13	0.83
Foreign products give me more satisfaction	0.23	0.16	0.27	0.14	0.80
Eigenvalue	7.26	2.14	1.76	1.41	1.07
% Variance explained	32.98	9.74	8.00	6.40	4.88
Cronbach alpha	0.88	0.82	0.80	0.65	0.89

Ownership of functionally similar technologies was measured by counting how many of the three types of functionally similar technologies each respondent had.

Innovativeness

This study defines innovativeness as an individual's tendency to seek novelty or to be more receptive to new ideas and Lin's scale of need for innovativeness (1998) concurs with this definition. Therefore, this study used her four items with a nine-point scale to measure an individual's degree of innovativeness.

Lifestyles

This study used 22 items with a nine-point scale to measure lifestyles. The 22 items were employed in Leung's study (1998), which originally came from the 1995 IMI (International Marketing Institute) Consumer Surveys.¹ The surveys used activity, interest, and opinion as indicators of lifestyle orientations and were a combination of items from both US and French AIO (Activity, Interest and Opinion) inventories. Leung's study (1998) contained 52 items, but only 23 of the items passed a factor analysis. This study examined these 23 items and deleted one item that did not fit the situation in Taiwan.

Responses to the 22 items were processed by the Statistics Package for Social Science (SPSS) for a factor analysis of principal components using the varimax rotation. Five factors were extracted from the 22 items (see Table 1).

The first factor contained seven items, all of which were concerned with being fashionable in every aspect of life, and so it was referred to as 'being fashionable'. The second factor had five items, and was referred to as 'life expansionists', because all of the items emphasized being both aggressive and active in one's life. The third factor included three items, all of which were related to credibility in the mass media, and so it was referred to as 'trust in mass media'. The fourth factor was referred to as 'enjoying life', because these items stressed the importance of seeking pleasure and relaxation in one's life. The last factor comprised two items, both of which emphasized the strengths of foreign products, and thus was referred to as 'preference for foreign products'. A reliability analysis was performed on each of the factors and Cronbach's alphas for four of the five factors were above .80, indicating a high level of internal consistency. The value for factor 4 was .65, which was acceptable.

Demographics and mass media use

Demographics include age, sex, education, personal income, and family income. Age was measured in terms of six age levels, from the level of 15–20 to that of more than 60. Five types of mass media use – television

viewing, newspaper reading, magazine reading, radio listening, and movie-going – were examined in the study.

Adoption intention

In the questionnaire, respondents were asked whether or not they had used internet shopping or cable television shopping. If they had not, respondents were asked further to indicate from zero to five their intention to use internet shopping or cable television shopping in the future (zero meant no intention at all; one: small intention; and five: very much intention). This study used the responses to this question and assigned a six to those who had adopted internet shopping or cable television shopping, in order to come up with an interval scale for the intention to adopt internet or cable television shopping.

Telephone survey

A telephone survey using stratified random sampling was conducted in January 2002. The month-long telephone survey was administered in a central location, and supervised by the researcher with 12 research assistants conducting the interviews. The most recent telephone books for every city and county in Taiwan were used to select telephone numbers. Whenever a number was chosen from a telephone book, a ‘one’ was added to the number to avoid any biases existing in the telephone directory (Babbie, 1995; Wimmer and Dominick, 2000). After omitting business numbers, disconnected phones, and no-answers, this study made 2445 telephone calls, from which 1227 valid questionnaires were obtained. Thus, the response rate was approximately 50.2 percent.

FINDINGS

This study found that, among 1227 respondents, 128 (10.4%) were adopters of internet shopping and 181 (14.8%) were cable television shoppers. Approximately 40 percent of the sample had completed a college education, 39.5 percent, a senior high-school education; 10.7 percent, a junior high-school education; 6 percent, an elementary education; and the remaining 4 percent, graduate school. Of the respondents, 90 percent were roughly equally distributed among the four different groupings based on age (15–50), with the 15–20 age group containing a slightly lower percentage (16.2%). The profile of the sample is generally congruent with that of Taiwan’s population, except that the percentage of people possessing a college degree in this sample was slightly higher than that for the general population of Taiwan.

The five sets of variables – technology ownership, innovativeness, lifestyles, demographics, and mass media use – were entered into hierarchical multiple regression equations to examine their effects on the intention to

• Table 2 Multiple regression analysis for adoption intention

PREDICTOR VARIABLES	INTERNET		CABLE TV	
	SIMPLE R	STANDARDIZED BETA	SIMPLE R	STANDARDIZED BETA
Block 1: Demographics				
Age	-.238***	-.112***	-.041	-.015
Sex		-.068*		-.039
Education	.343***	.199***	.032	.002
Personal income	.092***	.047	.042	.042
Family income	.121***	-.087**	.060*	-.036
Multiple R		.383***		.074
Adjusted R square		.143		.001
Increased R square		.143		.001
Block 2: Media use				
TV	-.067*	-.035	.068*	.060*
Radio	.111***	.068**	.078*	.045
Newspapers	.068*	-.013	.047	.016
Magazines	.218***	.075**	.049	-.037
Movies	.204***	.060*	.026	-.056
Multiple R		.422***		.130*
Adjusted R square		.171		.009
Increased R square		.028		.008
Block 3: Lifestyles				
Being fashionable	.178***	-.014	.190***	.162***
Life expansionists	.210***	.032	.089**	-.040
Trust in mass media	.135***	.018	.140***	.077*
Enjoying life	.029	-.055	-.014	-.111***
Foreign products	.233***	.090**	.086***	-.042
Multiple R		.448***		.251***
Adjusted R square		.190		.051
Increased R square		.019		.042
Block 4: Technology ownership				
Entertainment	.199***	.073*	.232***	.195***
Information	.260***	.081*	.105***	-.022
Interpersonal	.202***	.018	.124***	.040
Multiple R		.465***		.309***
Adjusted R square		.204		.082
Increased R square		.014		.031
Block 5: Innovativeness				
Need	.256***	.121***	.137***	.101**
Multiple R		.474***		.319***
Adjusted R square		.213		.087
Increased R square		.009		.005

* $p < .05$; ** $p < .01$; *** $p < .001$

adopt internet shopping or cable television shopping. The results are summarized in Table 2.

Table 2 demonstrates that 11 of the 19 variables entered into the equation are significant predictors for the intention to adopt internet shopping, accounting for approximately 21 percent of the variance. Among the five sets of variables, demographic variables were discovered to be the most powerful set for the adoption, those for mass media use the second most powerful, those for lifestyles the third most powerful, and those for technology ownership, as well as innovativeness, the least powerful. The data indicated that those who were likely to adopt internet shopping tended to be males and younger, they had a higher educational level and lower family incomes, and they also had a higher number of information and entertainment-oriented technologies. Furthermore, these people were more innovative, had a higher degree of media exposure including radio, magazine, and movies, and they preferred foreign products.

Table 2 shows that six of the 19 variables examined were significant predictors for the intention to adopt cable television shopping, explaining only 8.7 percent of the variation. Lifestyles were found to be the most powerful set of variables for the intention to adopt, technology ownership the second most powerful, mass media use the third most powerful, and innovativeness the least powerful. Demographics were discovered to have no significant effect on the adoption intention.

Among the six predictors, ownership of entertainment-oriented technologies was the strongest variable ($B = .195$), the two lifestyles (being fashionable and enjoying life) the second and third strongest ($B = .162$, $B = -.111$) variables, respectively, innovativeness the fourth strongest ($B = .101$), and the lifestyles of trust in media and television viewing taking the fifth and sixth places ($B = .077$, $B = .060$), respectively. The data showed that people who were likely to adopt cable television shopping tended to be more innovative, to have a higher number of entertainment-oriented technologies, and to watch more television. Moreover, these people were fashionable, did not enjoy an easy life, and had a higher degree of trust in mass media.

DISCUSSION

This study found that 10.4 percent of the respondents were adopters of internet shopping, and Li and Yang's (2000) study showed that 6.5 percent of Taiwan's population in 2000 had adopted internet shopping, which indicates a stable growth of this form of consumption. Furthermore, approximately 55 percent of the non-adopters in this sample indicated that they would like to adopt internet shopping in the near future. According to Rogers' diffusion of innovation model, the first 2.5 percent of adopters of a new technology are innovators, and the next 13.5 percent are early adopters.

Innovators are not influential opinion leaders in local social systems, but early adopters are. As most early adopters use a technology, the diffusion of this technology accelerates (Rogers, 1995). The finding of this study demonstrates that more than half of the early adopters in Taiwan have adopted internet shopping. Hence, it is expected that the diffusion of internet shopping will accelerate very soon.

This study discovered that approximately 15 percent of Taiwan's population were cable television shoppers, and approximately 68 percent of the non-adopters indicated that they would not adopt this type of shopping in the future. Li (1999), whose study was conducted in 1998, found that about 23 percent of Taiwan's population was cable television shoppers. Another study administered in 2000 showed that about 20 percent of Taiwan's population had adopted cable television shopping (Li, 2000).² The three figures indicate that the adoption rate in relation to cable television shopping is declining.

According to Rogers (1995), not every innovation is able to successfully diffuse into a society and as such, obtaining critical mass is the key for an innovation to succeed in diffusion. Cable television shopping has not passed its threshold of critical mass and its adoption rate is decreasing. Therefore, the future of cable television shopping in Taiwan does not look very bright.

Technology ownership

The H1a hypothesis given here states that the intention to adopt internet shopping is related to the ownership of informational and interpersonal technologies, while H1b surmises that the intention to adopt cable television shopping is related to the ownership of entertainment-oriented and informational technologies. Data analysis shows that the intention to adopt internet shopping is positively correlated with the ownership of informational and entertainment-oriented technologies, and that the intention to adopt cable television shopping is significantly related to the ownership of entertainment-oriented technologies (see Table 2 above). Hence, H1a and H1b are only partially supported.

Due to its unlimited space, internet shopping should be good at providing sufficient information to potential customers. Moreover, with the mechanism of interactivity, internet shopping should be strong in terms of offering interpersonal services. However, this study found that internet shopping is significantly related to the ownership of informational technologies, and not related to the ownership of interpersonal technologies. The explanation for this finding may be that internet shopping in Taiwan is still in its early stages of development, and many interpersonal features have not been built into internet shopping websites. Therefore, people did not feel that internet shopping fulfilled their interpersonal needs. In the future, internet shopping operators should try to establish sophisticated

interpersonal interactions in relation to the internet shopping experience, in order to make full use of such interactivity.

Furthermore, this study found that internet shopping is also significantly correlated with the ownership of entertainment-oriented technologies. Li (2000) examined the different forms of gratification that the Taiwanese obtained from the four types of shopping – store shopping, internet shopping, cable television shopping, and catalog shopping – and found that killing time and knowing how to dress oneself were also important forms of gratification that people obtained from internet shopping. Therefore, this study demonstrates that internet shopping met people's entertainment needs more than their interpersonal needs.

Most advertisements on Taiwan's shopping channels take more than 10 minutes to introduce one product to their audience (Li, 1999). With so much time for advertising, cable television shopping channels should be good at giving sufficient information to potential shoppers. However, this study found that cable television shopping is significantly related only to the ownership of entertainment-oriented technologies, and unrelated to that of informational technologies. One study in Taiwan showed that more than 80 percent of the respondents said they never intentionally switched channels to watch shopping channels, and the most frequently cited reason why people watched shopping channels was that they viewed them by accident (Li, 1999). In fact, some studies indicate that advertisements on Taiwan's shopping channels exaggerated too much, and thus most people do not trust the messages given by shopping channels (*China Times*, 1999: 4, 13; Li, 1999). This may be why people in Taiwan do not rely on cable television shopping channels for information. The finding that people used shopping channels for entertainment concurs with the studies on Taiwan's shopping channels (Li, 1999).

Mass media use

The first research question of this study investigates the relationships between mass media use and the two types of non-store shopping. The data in Table 2 illustrate that the intention to adopt internet shopping is positively correlated to radio listening, magazine reading, and movie-going, and that the intention to adopt cable television shopping is positively correlated only with television viewing.

The adoption literature demonstrates that mass media use exerts an important influence on technology adoption when the diffusion of a technology is still in its early stages (Rogers, 1995). The results of this study show that three of the five types of mass media use have an important effect on the intention to adopt internet shopping, which concurs with the findings from the adoption literature. The intention to adopt cable television shopping is found to have a significant relationship only with television

viewing, indicating that people who watched more television were more likely to adopt cable television shopping. This finding is reasonable because several studies on cable television shopping channels in Taiwan show that viewing shopping channels was positively correlated with a purchase intention, and thus more television viewing resulted in more chances to switch to these shopping channels (Li, 1999; Wei, 1997).

The diffusion of cable television shopping is still in its early stages and mass media use in this study was discovered to have only a small effect on the adoption intention, which is inconsistent with the adoption literature. Furthermore, past adoption studies show that technology adoption is negatively correlated with television viewing (Leung and Wei, 1998; Li, 2003; Lin, 1998; Wei, 2001), while this study found just the opposite. A possible explanation for this finding is that shopping channel operators in Taiwan have not established a positive image for their channels, and thus most people avoid being associated with these channels. According to some reports (*China Times*, 1999, pp. 4, 13; Li, 1999), cable television shopping channels use much sexually-explicit material to attract people, and use many advertisements with low-quality pictures to save money. Therefore, the effect of mass media use on the intention to adopt cable television shopping has not followed the predictions of Rogers' model.

Innovativeness

This study predicts that the degree of innovativeness is positively related to the intention to adopt internet shopping and cable television shopping. The data in Table 2 show that the intentions to adopt internet shopping and cable television shopping were positively correlated with the variable for innovativeness. Hence, the findings of the study support the hypothesis H2.

The finding that the variable for innovativeness is positively correlated with the intention to adopt is consistent with Busselle et al. (1999), Li (2001), Lin (1998), and Lin and Jeffres (1998). Some of the above studies were conducted in the US using an American sample while the others, including this study, used a Chinese sample. Each of the studies found that the need for innovativeness was a good predictor of technology adoption, indicating that this variable was not affected by cultural differences. Taiwan is only one part of the Greater China region, and thus more studies using Chinese samples for different areas are needed to clarify the effect of the need for innovativeness in order to come up with a conclusion regarding the influence of culture on this variable.

Lifestyles

The second question posed by this study was concerned with the relationships between lifestyles and the intentions to adopt internet shopping and cable television shopping. The data in Table 2 show that the intention

to adopt internet shopping was positively correlated with the lifestyle of preference for foreign products. According to Leung (1998), this factor – the preference for foreign products – was not included in the US or French inventories, and reflected people's interest in foreign products. This factor is the same as that in Leung (1998), which was conducted using data from urban China. Hence, this factor may be characteristic of the consumption trend in Greater China.

Some studies on internet shopping in Taiwan have found that one of the motives of people who use internet shopping is to purchase foreign products (Li, 2000; Peng, 1999), a finding that concurs with findings of this study. However, Leung found that the preference for foreign products was not related to the adoption of new technologies in China, a finding that was inconsistent with the results of this study. A possible explanation for this inconsistency may be that the effect of lifestyles on technology adoption varies from one kind of technology to another, because Leung's study examined the adoption of seven technologies – karaoke bars, video stores, personal computers, VCRs, cable television, pagers, and cellular phones – and found that various lifestyles were associated with the adoption of each.

The factor concerned with enjoying life represents the value dimension of lifestyles in the French inventories and reflects the desire to have a relaxed, stable, and secure life (Leung, 1998). This study found that this factor was negatively correlated with the intention to adopt cable television shopping, suggesting that people who enjoyed a busy life tended to adopt this type of shopping because it allowed them to shop efficiently. Leung (1998) discovered that this lifestyle was positively correlated with both the adoption of VCRs and cable television, further indicating that the effect of lifestyles on technology adoption varied from one technology to another.

The factor related to being fashionable reflects the interest dimension of the AIO measures and is the same as the one found in Leung's study (1998). This study shows that the factor of being fashionable was positively correlated with the intention to adopt cable television shopping, which was consistent with Leung's findings (1998) that this lifestyle was significantly related to both the adoption of karaoke bars and video stores. Li (1999) showed that about 15 percent of the products advertised on shopping channels were cosmetic merchandise and 40 percent were dieting products, both of which were fashion-related items. Hence, it may be that people who are more concerned with fashion trends are more interested in using cable television shopping channels.

Demographics

The third hypothesis states that demographics have a stronger effect on the intention to adopt internet shopping than on the intention to adopt cable television shopping. The data in Table 2 show that demographics were the

most powerful set of variables for the intention to adopt internet shopping, accounting for 14.3 percent of the variance. However, demographics were discovered to have no significant effect on the intention to adopt cable television shopping. Therefore, the prediction of the third hypothesis is supported.

The data in Table 2 also show that four out of the five demographic variables which were examined had a significant effect on the intention to adopt internet shopping, indicating that male respondents who were younger, were better educated, and had a lower family income were more likely to adopt this type of shopping. The diffusion of internet shopping in Taiwan was still in its early stages and demographics were discovered to play a significant role in predicting its adoption, which was consistent with the findings of past studies (Atkin, 1993; Leung and Wei, 1999; Rogers, 1986, 1995). However, the finding that people with a lower family income were more likely to adopt internet shopping contradicted the results of earlier studies. Rogers' diffusion model (1995) predicts that richer people are more likely to adopt new technologies, and while this has been confirmed by most of the existing literature, this study found the opposite to be the case. This finding is very puzzling and more studies are needed to clarify this inconsistency.

The results of the study show that approximately 15 percent of Taiwan's population were adopters of cable television shopping, indicating that the diffusion was still in its early stages. However, demographics were found to have no impact on the intention to adopt cable television shopping, which is inconsistent with the adoption literature. A possible explanation for this finding may be that most people in Taiwan have a negative perception regarding cable television shopping, and thus its diffusion has digressed from the path predicted by Rogers' diffusion of innovation model. In addition to having exaggerated in advertisements for products, most shopping channel operators have resorted to unethical ways to try to cheat their audiences. Li (1999) found that most people did not shop a second time after purchasing products from shopping channels, because they felt duped somewhat by these channels' advertisements.

CONCLUSION

Internet shopping and cable television shopping in Taiwan are similar in many respects, but differ in a specific way, that is, through their product images. Rogers' diffusion model has been criticized for having a pro-innovation bias, and thus this study expects that the adoption of internet shopping will be consistent with the predictions of Rogers' model, while the adoption of cable television shopping will not. As expected, most findings regarding internet shopping follow the predictions of this model. However, the diffusion process of cable television shopping digresses from it.

The findings of this study show that Rogers' diffusion of innovation model may not be applicable to those innovations that people perceive negatively. Therefore, future studies should focus on these types of innovations to see how Rogers' model can be revised to fit them. Furthermore, this study found that demographics and mass media use were unable to make predictions regarding the adoption of cable television shopping, yet lifestyles were found to be a powerful variable for predicting the adoption intention. It was also discovered that different lifestyles were associated with the adoption of both internet shopping and cable television shopping. Thus, future studies should be conducted to explore further the relationship between lifestyles and technology adoption.

Using a telephone survey as a marketing tool is now becoming prevalent in Taiwan, which is one reason why this study could not produce an acceptable telephone survey response rate. Another reason for the low response rate in the study was that the questionnaire was slightly too long. This limitation can be eliminated in future studies by giving telephone interviewers more training and by shortening the questionnaire to a reasonable length.

In the future, operators of cable television shopping channels should try to change the ways in which they operate in order to create a positive and reliable image, so that people can have a positive perception of this type of consumption. Moreover, when niche-marketing their services, operators of cable television shopping channels should target their customers based on their lifestyles, instead of according to demographics or mass media use. By contrast, internet shopping operators should target their niche-marketing to customers based on information regarding demographics or mass media use. People who are male, are younger, and are better educated should be the top-priority target of internet shopping operators in the promotion of their services.

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Notes

- 1 The 1995 IMI consumer surveys were three parallel consumer surveys administered in 1995 (Leung, 1998) in three metropolitan areas of China including Beijing, Shanghai, and Guangzhou.
- 2 The study by Li and Yang (2000) examined the intention of Taiwanese to adopt internet shopping and found that only 6.5 percent of Taiwan's population were adopters of internet shopping. Li (2000) conducted a study using niche theory to examine market competition based on four types of shopping, namely, internet shopping, cable television shopping, catalog shopping, and store shopping.

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