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PHYSICAL OR DIGITAL? FACTORS DRIVE CONSUMERS TO PURCHASE DIGITAL MUSIC

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Abstract

The development of digital products is booming in recent years because of the mature of entire environment. Among them, digital music should be the spotlight with unexpectedly expending speed. However, most studies of electronic commerce still focus on the field of physical products, but missing the value of digital wave. The purpose here is to explore and complements digital parts. In this study, we constructed the research model based on TRA and extended it with the advantage and disadvantage of intangibility (convenience, perceived risk), some characteristics of digital product (price, variety, trialability), and the factor related to entertainment (perceived playfulness) to predict what are consumer really concerned when they buy digital music.8 hypotheses were supported. Finally, we proved TRA is still a useful theory in the field of digital products.

Key words: digital music, electronic commerce, TRA, digital product.

1. INTRODUCTION

Music in nature is some kind of voice that just can be heard but be seen or be touched so that it is very suitable to be sold with digital format online. For consumers, in fact, what really tangible is the storage recording the music and the package of that storage, and meanwhile, they are also the main source of cost that traditional music company have to afford. However, cost coming from manufacturing, packaging, shipping, and retailing all could be erased if music was sold online and that would create a win-win situation for both sides of supply and demand (Gallaway and Kinnear 2001). In other words, buyers can avoid the situation often encountered while shopping in traditional music stores that buy a album only a few songs are interesting and meet consumers' personal necessity. Some legal issues are also emerging out of the growth of downloading digital music that the songs transferred on Internet might not be authorized by music companies who own the copyright of music whether customers have paid for it or not.

However, fortunately, Apple Company maybe has found a solution to solve illegal download. In the United States, the ratio of downloading from P2P is decreasing after Apple launched the first online music store[1]—iTunes Music Store— by the support of five largest music companies in the world—BMG, EMI, Sony, Universal and Warner— on April 28, 2003. It means the demand of digital music really exists and sometimes it's not consumers' fault to download illegal music, just because there is no way for them to buy. Figure1.describes the forecast of growth of digital music.

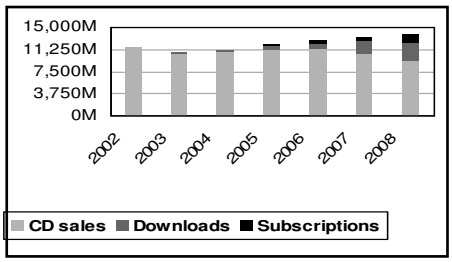

Figure 1. Rapid Growth of Online Music in America (adapted from In-Stat/MDR, Mar 2004)

However, studies about electronic commerce have provided many dimensions (i.e., convenience, price, variety, cost, etc.) why customers choose online shopping, but most of them aim at physical products and surprisingly little have involved in how digital or non-physical products the fittest type sold on Internet attract customers to purchase online. This paper represents research addressing this topic.

Following previous research describing online shopping intention, this research collects data of different online music stores to compare their difference and thinks over how the affection of characteristics of digital products work on different consumers to find out which factor is crucial to increase buyers' intention of purchasing digital music. So that the objectives of this research are: 1.To discover which factor attracts consumers to choose digital music.2.Discussing the characteristics of digital products to provide some guidelines to sellers to develop strategies of promoting growth of digital products.

2. THEORY OF REASONED ACTION

This study is constructed based on theory of reasoned action (TRA), the theory developed by Ajzen and Fishbein (1980) is an intention-based theory composing of attitude and subject norms with the function of predicting how human intention affects behaviour (Sheppard et al. 1988). It has been used to predict wide range of behaviours (Sheppard et al. 1988). And to allow for digital music is some kind of entertainment, perceived playfulness is also added as an intrinsic motivation source of

1 Investigation of Pew Internet & American Life Project 2005

intention (Moon and Kim 2001). Playfulness has two possible approaches: (1) focusing on the trait of playfulness, treats it as one kind of personal characteristic or (2) emphasizing the state of playfulness that is a situational characteristic of the interaction between an individual and the situation. Traits generally have comparatively stable characteristics of people and are relatively invariant to situational stimulation. Unlike traits, states refer to affective or cognitive episodes experienced in a short run and change over time, and it can be influenced by situational factors and interactions.

The researches about the state of playfulness are primarily based on the Csikszentimibalyi's "flow theory" (1975). He defined the flow as "the holistic sensation that people feel when they act with total involvement." People may have more voluntary interaction with environment while in the flow state. Moon and Kim (2001) consider playfulness as a intrinsic belief or motive to attitude and intention.

3. RESEARCH METHODOLOGY

Our Research model is primarily composed of characteristics of digital product and some factors that affect consumers adopting e-commerce (Figure 2).

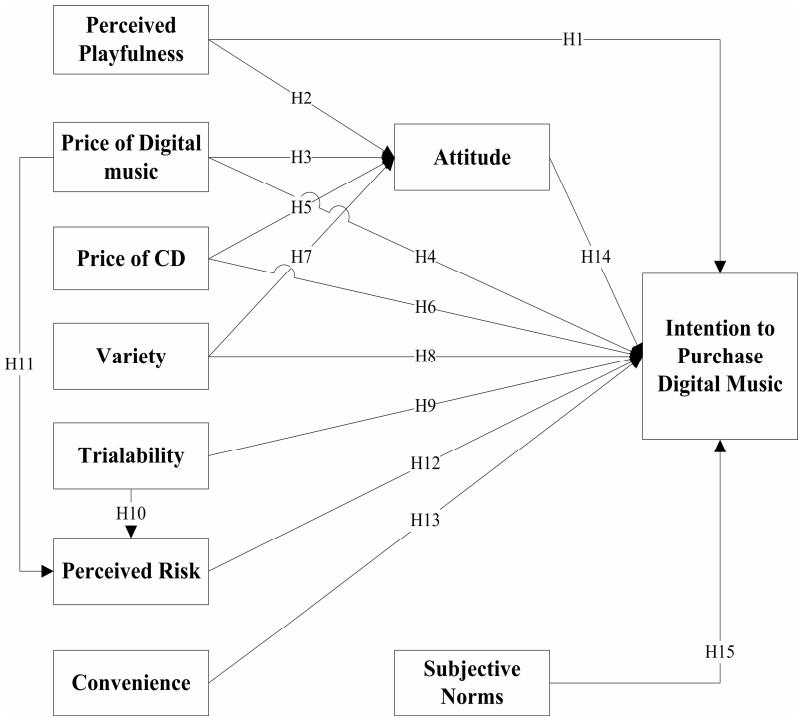

Figure2. Research Model

3.1 Research Model and Hypotheses

Some researchers embarked on arguing if the entertaining features are need to be addressed in TAM to better understand the behavioral intention of customers. So far, perceived playfulness is proved playing a significant role in developing the intention to use as well as the attitude toward the system (Moon and Kim 2001).

H1. Perceived playfulness has positive impact on intention of purchasing digital music.

H2. Perceived playfulness has positive impact on attitude of purchasing digital music.

The intention to shop online is affected by some variables including convenience, price, and product categories (Peterson et al. 1997). Characteristics of the product are keys leading to the success of e-market (Strader and Shaw 1997). Peace et al. (2003) support attitude will be affected by price. Je

and Park (2005) prove that the perceived price level has negative impact on people's attitude. And the behavioral intention of customers is influenced by their valuation of service, the perceived price level (Zeithaml 1988). Peterson et al. (1997) find that price-oriented consumers will compare price of the same products across channels and then chose the cheaper one.

H3. Price of digital music has negative effect on respondents' attitude toward purchasing digital music.

H4. Price of CD has positive effect on respondents' attitude toward purchasing digital music.

H5. Price of digital music has negative effect on respondents' intention of purchasing digital music.

H6. Price of CD has positive effect on respondents' intention of purchasing digital music.

Studies of retail patronage repeatedly have found that the perception of variety is an important determinant falling third behind location and price to attitude and store choice (Louviere and Gaeth, 1987). People are more satisfied with and likely to choose stores those are perceived as offering high variety and displayed in an organized rather than random manner (Hoch et al. 1999).

H7. Variety of digital music has positive effect on attitude toward purchasing digital music.

H8. Variety of digital music has positive effect on intention of purchasing digital music.

Consumers who prefer experiencing products are less likely to buy online. But some certain digital products could ignore this limitation by provide a segment of a song, some chapter of books or a trial version of software. Rogers (1983) argues that trialability will promote the diffusion of innovation.

H9. Trialability of digital music has positive effect on intention of purchasing digital music.

Free sample can reduce consumers' perceived risk (Roselius 1971). Because of intangibility, consumers will perceive higher degree of risk before getting products. Solomon (1992) considers that consumers will perceive more risk when shopping at non-store retailing than traditional stores because they don't have the chance to check or try. On the other hand, some literature also suggests that the value have an inverse impact on perceived risk (Garretson and Clow 1999).

H10. Trialability of digital music has negative effect on perceived risk of purchasing digital music.

H11. Price of digital music has negative effect on respondents' perceived risk of purchasing digital music.

Perceived risk has been proved that it will cause negative influence to attitudes or intentions of online transaction (Pavlou 2003). With another viewpoint, online purchasing over Internet is a more IT-related form of direct marketing and is similarly perceived as higher risk by consumers (Tan 1999).

H12. Degree of perceived risk has negative effect on intention of purchasing digital music.

Unlike traditional shopping, convenience is a major motive for consumers to shop electronically (Javenpaa and Todd 1997). Chiang (2001) points out the fact that the more consumers perceive offline shopping is inconvenient, the higher intention they have to shop online. Convenient-oriented is one of factors affecting online shopping. In addition, time saving is another important issue for busy customers and delivery time is what consumers care as well when shopping online (Gupta 2004).

H13. Convenience has positive effect to respondents' intention of purchasing digital music.

According to TRA (Ajzen and Fishbein 1975) and TPB, subjective norms and attitude are independent variables with significantly causal relationship to intention.

H14. Attitude toward purchasing digital music has positive effect on intention of purchasing digital music.

H15. Subjective norms have positive effect on intention of purchasing digital music.

3.2 Definition of Variables

Definitions and source of measurements of each variables in this research are listed in Table 1.

Variables	Definition	Source of Definition	Source of Measurement
Convenience	The consumers' perception of time saving while purchasing digital music online rather than buy physical CD in traditional stores.	Gehrt, Yale and Lawson (1996)	Devaraj et al. (2002)
Price	The price of a digital song or a period of using time.	Jocoby and Olson (1977)	Peace et al. (2003)
Variety	The number of distinct songs of different artisans an online music store has.	Kah and Wansink (2004)	Torkzadeh and Dhillon (2002)
Trialability	If sites provide free sample or trial period of online music or not.	Rogers (1983)	Moore and Benbasat (1991)
Perceived Playfulness	The extent to which (a) the individual perceives that his or her attention is focused on the interaction with the digital music; (b) Is curious during the interaction; (c) and Finds the interaction intrinsically enjoyable or interesting.	Moon and Kim (2001)	Je and Park (2005)
Subjective Norms	The consumer's perceptions that people who are important to him or her think he or she should or shouldn't buy digital music.	Fishbein & Ajzen (1975)	Bhattacherjee (2000)
Attitude	a person's inclination to exhibit a certain response towards a concept or object	Doob (1947)	Je and Park (2005)
Perceived Risk	The opportunity to purchase songs consumers actually don't like.	Bauer (1960)	Laroche et al. (2004)
Intention to Purchase Digital Music	The subjective probability of a consumer to purchase digital music on Internet.	Fishbein & Ajzen (1975)	Pavlou and Gefen (2004)

Table 1. Operating Definition of Variables and Measurement

3.3 Instrument Design

This study used survey method to collect data. Measurement items of each variable are all adapted from the literature and some items will be modified to fit this study to ensure the basic reliability and validity. To ensure the reliability, we estimate the coefficients of Cronbach' α of each constructs by the data collected in pretest. The value of Cronbach's α of constructs from 46 respondents was presented in Table2. The result proved every construct has notable reliability.

Construct	Number of Scale Items	Mean	S.D.	Cronbach's α
Attitude	3	5.051	1.082	0.9365
Perceived risk	5	3.131	1.392	0.9293
Intention	3	4.776	1.278	0.9611
Convenience	3	4.955	1.322	0.8447
Price of digital music	3	3.380	1.146	0.8744

Construct	Number of Scale Items	Mean	S.D.	Cronbach's α
Price of CD	3	5.481	1.122	0.8255
Variety	3	5.724	1.086	0.9400
Trialability	4	5.192	1.183	0.7856
Perceived playfulness	3	4.601	1.189	0.8267
Subjective norms	3	4.212	1.236	0.8232

Table2. Means and standard deviations of constructs

3.4 Sampling

We conducted an online survey to verify our research model. A total of 195 questionnaires returned, but 5 invalid responses were dropped. The condition of allowing people to fill the questionnaire is they have ever purchased digital music from kkbox. In order to make sure all participants have experience of purchasing authorized digital music, snowball sampling is adapted that invitations were sent through the special function provided by the specific software of digital music.

4. DATA ANALYSIS

Each of the variables was measured with multiple items derived from prior literature and adopted to fit this study about online shopping intention. Hypotheses and the model of this study will be tested with LISREL 8.51. Table3. lists all parameter of correlations between latent variables of this study and maximum one 0.66, however, is lower than 0.85. All VIF values are lower than 10 the value to judge if there is any multicollinearity among three or more variables (Table 4.).

Correlations	ATT	PRK	INT	CON	PDM	PCD	VAR	TRI	PPF	SUB
Attitude (ATT)	1									
Perceived risk (PRK)	0.03	1								
Intention (INT)	0.67	0.14	1							
Convenience (CON)	0.19	0.07	0.17	1						
Price of Digital Music (PDM)	0.20	0.20	0.04	-0.01	1					
Price of CD (PCD)	0.04	-0.02	0.04	0.02	-0.26	1				
Variety (VAR)	0.40	-0.09	0.42	0.25	-0.07	0.27	1			
Trialability (TRI)	0.25	-0.01	0.26	0.20	-0.13	0.06	0.24	1		
Perceived playful (PPF)	0.50	-0.02	0.48	0.30	0.00	-0.13	0.31	0.30	1	
Subjective norms (SUB)	0.50	-0.03	0.54	0.09	0.07	-0.02	0.19	0.16	0.38	1

Table 3. Correlation matrix of constructs

Variable	VIF
Attitude	1.88
Perceived risk	1.06
Convenience	1.15
Price of DM	1.24
Price of CD	1.24
Variety	1.41
Trialability	1.18
Perceived playfulness	1.62
Subjective norms	1.39

Table 4 Multicollinearity tests with VIF

4.1 The measurement model

After confirming the normality and collinearity of data, we begin the next test—the measurement model. That's a submodel in SEM that specifies the rules of correspondence between manifest and latent variables, and assesses the reliability of each variable for estimating the causal relationships. In the result, all indexes, with the only one exception of GFI, have gotten to satisfaction value (x2/d.f=1.714, GFI=.92, NNFI=.92, IFI=.93, RMSEA=.06, CFI=.93, SRMR=.052). GFI value (.81) just reaches the acceptable value in practice—.8.

4.1.1 Reliability and Validity of Constructs

Once the overall model fit has been evaluated, then the measurement of each factor can be assessed for reliability, the degree that construct indicators indicate the common latent construct and unidimensionality the assumption that the items of a variable all have acceptable fit on one-dimensionality. Composite reliability is notable while the result is more than 0.5, which roughly corresponds to a standardized loading of 0.7.. Guidelines also suggest that the AVE should exceed 0.5 for a construct. However, it should be noted that reliability doesn't represent validity the extent to which the indicators accurately measure what they are assumed to measure actually. The parameter of indexes of reliability and validity are all integrated into Table 5 and meanwhile results of discriminant validity is recorded in Table 6.

Latent variable	Observed variable	Standard factor loadings	Measure errors	Composite reliability	Average variance extracted
Attitude	ATT1	0.83	0.32	0.9081	0.7674
	ATT2	0.91	0.16		
	ATT3	0.89	0.22		
Perceived Risk	PRK1	0.64	0.58	0.9265	0.7197
	PRK2	0.78	0.40		
	PRK3	0.93	0.13		
	PRK4	0.95	0.10		
	PRK5	0.90	0.19		
Intention	INT1	0.84	0.29	0.9270	0.8092
	INT2	0.90	0.18		
	INT3	0.95	0.10		
Convenience	CON1	0.78	0.40	0.8880	0.7264
	CON2	0.92	0.15		
	CON3	0.85	0.27		
Price of Digital Music	PDM1	0.80	0.26	0.8959	0.7418
	PDM2	0.89	0.21		
	PDM3	0.85	0.28		
Price of CD	PCD1	0.95	0.11	0.8729	0.6987
	PCD2	0.72	0.49		
	PCD3	0.83	0.31		
Variety	VAR1	0.84	0.29	0.9194	0.7922
	VAR2	0.94	0.11		
	VAR3	0.88	0.22		
Trialability	TRI1	0.90	0.20	0.8956	0.6840
	TRI2	0.91	0.17		
	TRI3	0.77	0.41		
	TRI4	0.72	0.49		
Perceived Playfulness	PPF1	0.73	0.47	0.8807	0.7132
	PPF2	0.94	0.11		
	PPF3	0.85	0.28		
Subjective Norms	SUB1	0.83	0.31	0.9001	0.7505
	SUB2	0.87	0.25		
	SUB3	0.90	0.19		

Table 5. The results of reliability and validity with CFA

Correlations	ATT	PRK	INT	CON	PDM	PCD	VAR	TRI	PPF	SUB
Attitude	0.7674									
Perceived risk (PRK)	0.0049	0.7197								
Intention (INT)	0.4356	0.0256	0.8092							
Convenience	0.0361	0.0009	0.0196	0.7264						
Price of Digital Music (PDM)	0.0361	0.0529	0.0036	0.0016	0.7418					
Price of CD (PCD)	0.0036	0.0009	0.0064	0.0009	0.0676	0.6987				
Variety (VAR)	0.1681	0.0016	0.2401	0.0441	0.0016	0.0729	0.7922			
Trialability (TRI)	0.0784	0.00	0.0784	0.04	0.0169	0.0064	0.0625	0.6840		
Perceived playful (PPF)	0.2209	0.0036	0.2304	0.0961	0.0009	0.0121	0.1369	0.0961	0.7132	
Subjective norms (SUB)	0.2601	0.0009	0.3364	0.0064	0.0049	0.0001	0.0625	0.0324	0.1681	0.7505

Table 6. The results of discriminant validity test

4.2 The Structural Model

As the measurement model, indexes of model fit have to be tested at first. Fit indexes were all within the accepted threshold except for GFI, but the GFI is still acceptable: x2/d.f is 1.72, GFI is .80, RMSEA is .062, NNFI is .92, CFI and IFI is .93, and SRMR is .063. Besides the indexes of model fit, the main purpose of this section is to evaluate the hypotheses as well as the level of explained variance, and to get the coefficient of relationships among variables. Figure3. shows the model with standardized LISREL path coefficient and the significant level of each path. However, it is surprising that seven hypotheses at all were insignificant, especially those related to "intention" directly.

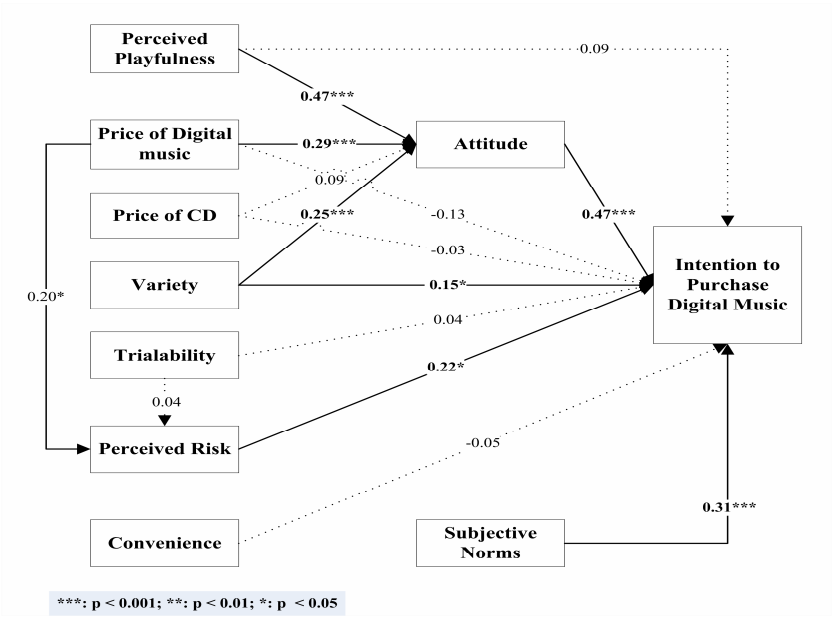

Figure 3. Standardized LISERL Solution

5. CONCLUSION AND DISCUSSION

5.1 Summary of Results

This study helps the retailers of digital music to find out which reason has notable influence on consumers' intention of purchasing digital music. A total of 15 hypotheses are supposed in the study with eight of them are supported (h2, h3, h7, h8, h11, h12, h14, h15) and the others are rejected. Perceived playfulness only had indirect influence on intention (h1, h2). This result is a little different to the studies taking perceived playfulness as an intrinsic motivation source of intention in which perceived playfulness has significant influence to attitude and intention like perceived usefulness. What leads to this result maybe is the decrease of playfulness. The researches regarding perceived playfulness are primarily based on Csikszentimihalyi's "flow theory" (1975), which can be described as a good experience of interaction or the most enjoyable experience possible. However, because most playfulness comes from the result of interaction—music listening with just little comes from the process of interaction between a customer and the software of digital music. So perceived playfulness cannot directly affect intention. However, we found perceived playfulness is the most powerful factor to attitude with coefficient 0.47. It means digital music is widely accepted for it does bring happy to consumers.

The same observation applies to price of digital music that it can't affect intention directly (h4) and only has indirect influence through "attitude" (h3). After comparing the prior research with this study, some diversities are found to have correlation with the ability of comparison. First, because of the raising of Internet, consumers can gather more information of price of "the same" product within less time and utilized the information to decide if they should shop online or go to the physical store. However, the market of digital music in Taiwan is an oligopoly, consumers don't have lots of opportunity to compare the difference between retailers of digital music, hence the enjoyment of comparison is lost. Secondly, although the function of CD and digital music is the same, they are still two different products in nature. The comparison of two different categories means nothing, so consumers lost fun again. Therefore, for the reasons given above, we explain why "price of digital music" has no direct influence on intention of purchasing digital music. Nevertheless, like the feeling of purchasing something costs 100 dollars is absolutely different with the feeling of purchasing something costs one million, price of digital music still works on the attitude to purchase for the emerge of "actual price" as previously studies. On the contrary, price of CD can't cause any significant effect on intention.

Variety is the only one characteristic of the digital product that has significant influence on intention and attitude at the same time. As lots of prior studies proved, consumers prefer to shop in the store providing more categories. This research proved variety is an important incentive for not only brick-and-motor but also pure-play to attract consumers. Especially for online stores, variety is the advantage of competition as well. Online music stores can provide about 5 millions categories, the number you will never meet in physical CD stores.

Trialability, unexpectedly, had neither direct nor indirect correlation with intention. It was assumed in this research that trialability should have the ability to erase the degree of consumers' perceived risk and elevate the intention of purchasing as prior studies suggested, but the truth told something different. In the first place, out of our investigation, the 3-days free trial may be too short to let consumers discover features of digital music such as additional information about singers, commendation of experts, search system, chat room and so on. In the second place, consumers can't confirm the quality of music because the quality of the trial version is much worse than the formal. Furthermore, some retailers provide another type of free trial—30-seconds free listening, but the length can only provide little help to consumers to recognize if the song is what he or she wants. For reasons mentioned above are our explanation why h9 and h10 are both unsupported.

Intangibility is the foundation of digital products. Because many studies suggest that intangibility has positive effect on perceived risk, we add perceived risk as a factor to see if there is any impact to

intention. In this research, it is proved that perceived risk had significantly negative effect on intention. Besides that, we also discovered the price of digital music was one source to make consumers' perceived risk. Although the trialability can't lower the degree of perceived risk, retailers, however, can provide cheaper price to decrease perceived risk and improve consumers' attitude toward purchasing digital music.

In h13, convenience, which is originally expected a powerful factor attracting people to shop online in a lot of literature, doesn't influence the intention of purchasing digital music at all. The reason why leads to this result may be that consumers don't treat convenience, which is composed of save of time, space and effect, as an important inducement for intangible software because consumers don't save enough time and space to feel the difference, but on the contrary, it is significant instead when they purchase "physical mechanisms" online.

H14 & h15 are two hypotheses excerpted from TRA used to predict people's behavioural intention. This study confirms that attitude and subjective norms still have very significant influence (0.47 & 0.31) on consumers' intention of purchasing digital products.

5.2 Implications of This Research

The finding certify some factors that are significant to intention of purchasing physical mechanisms, however, losing their influence on digital product instead. Trialability is one of them with little help for consumers. Sellers of digital music should offer some better methods to lower consumers' perception of risk that is proved to increase intention indirectly. In addition to trialability, we found the price of digital music also has positive effect on perceived risk, so that retailers can decrease perceived risk by sinking price, too. On the contrary, we found some factors that will leverage (or lower) the intention of purchasing digital music or ameliorate (or spoil) the attitude toward purchasing digital music. The degree of perceived playfulness is important to decide if a kind of entertainment is popular or not. Our analysis result also has the same conclusion that perceived playfulness is a critical factor to encourage consumers buying digital music. We advise retailers should provide more interesting functions within their software to increase consumers' involvement.

Variety is a significant predictor to estimate attitude and intention. It is also the only one factor that influences intention besides attitude, subjective norms and perceived risk. For this reason, sellers ought to expand the content of database to include more songs.

Today, piracy is a terrible threat yet whether for physical CD or digital music. To increase the intention of purchasing, retailers can emphasize the legal authorization from music companies to change their attitude toward purchasing digital music and to remind people downloading free music is wrong. The more people feel piracy is bad, the influence of subjective norms will be bigger.

The model of this research is based on TRA and composed of some other factors related to characteristics of the product itself and the features of electronic commerce, whereas no one has discussed properties of the specialized software like interface, special contents, bonus, message leaving, and so on. The future research can examine if the factors can increase the degree of explained variance or have significant correlations with intention.

Another target of future research can focus on how to enhance the generalization of research model. Digital music is just one kind of content-based digital product that is one of three types of the digital product classified by Hui and Chau (2002). With the increase of other two classifications, a framework with high explanation to the variance of intention of purchasing digital music will be developed.

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