The Integration of the Expectancy Disconfirmation and Symbolic Consumption Theories: A Case of Virtual Product Consumption

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Abstract
While the importance of customer satisfaction and purchase intention has been recognized in the marketing literature, the development and empirical validation of a model which specifically depicts the determinants of satisfaction and purchase intention with regard to virtual products has not been undertaken. Consequently, this study, by adopting the expectancy disconfirmation model and symbolic consumption theory, developed a conceptual model to explain and predict customer satisfaction and purchase intention in this context. The validation of the proposed theoretical model has demonstrated the significance of symbolic consumption theory, represented by social interaction in the virtual world, and the expectancy disconfirmation model in interpreting consumer behaviors in the context of virtual product consumption. Future research that examines the research model using a variety of samples in different contexts, or to extend the research model to empirically investigate other factors influencing customer satisfaction and purchase intention, including aesthetics and trust, are strongly encouraged.

Keywords: Virtual product, customer satisfaction, purchase intention, expectancy disconfirmation model, symbolic consumption.

1. Introduction
Due to the popularity of on-line games and social networking websites, more and more virtual products are being developed and traded, mostly in the form of business-to-customer (B2C) transactions. Users of online games and social networking websites may use virtual products to help enhance their gaming skills and the presence of their agents in cyberspace, as well as convey specific messages to others who they interact with. The growing importance of selling virtual products as a profit-making channel has drawn the attention of both practitioners and academics with regard to exploring ways to maximize the sales of these products [18].

There have been a significant number of studies investigating issues related to the development of virtual products from various perspectives, including product design, transaction mechanism, legal and ethical issues, and the development of new business models [11, 18, 21, 22, 26, 40]. However, very few studies have been conducted to specifically investigate the effects of social interactions and product customization on customer satisfaction and intention to purchase virtual products. As electronic commerce (e-commerce) managers have relearned that profits matter after the dot-com crash at the beginning of the 21st century, the lack of such investigations limits the capability of virtual product vendors to design products and/or services with marvelous quality which can better satisfy the needs of online consumers, and thus earn significant profits [39]. Consequently, by consulting symbolic consumption theory [14, 23, 31] and the expectancy disconfirmation model [27, 28], this study develops a theoretical model consisting of five constructs, including purchase intention, customer satisfaction, perceived quality, outcome expectation, and social interaction, in order to examine the structural relationships among them in the context of virtual product consumption. The results can provide virtual product vendors with insights into developing effective strategies for designing new virtual products which can better satisfy the specific needs of the individual customers, and, in turn, lead to a high level of purchase intention.

2. Research background
2.1. Virtual Product
The definition of virtual products, which are also frequently referred to as digital or cyber products, varies among different groups of researchers.
Generally speaking, virtual products are information-based products which are underpinned by binary code, and often contain or are bundled with non-digital components such as printed media, CDs, and DVDs [21, 32]. Whinston, Stahl, and Choi [42] argue that any products which can be promoted, sold, and distributed through digital networks can be called virtual products, including software, media files, information, and knowledge. Lee and Shin [22] provide an insight into the concept of virtual products by grouping all the products sold via the Internet into two categories: pure cyber products which are sold and used purely in cyberspace, such as the avatars consumers use to represent themselves in cyberspace, and conventional products sold in cyberspace, such as books, music, and movies.

With reference to the above discussion, in this study a virtual product is defined as a digitalized output which has a monetary value and can be sold, promoted, and distributed in both cyberspace and conventional marketplaces, while it can only be used to fulfill the specific needs of consumers in cyberspace. Hui and Chau [18] classify virtual products into three categories which are not mutually exclusive. The first category is tools and utilities. These kinds of virtual products are generally software programs that help users to perform specific functions in order to achieve specific purposes, such as virus scanning software and video and audio players. The second category is content-based digital products. These kinds of products gain their value from their information content, such as electronic newspapers, magazines, music, and videos. The last category is the online services, which includes services delivered via the Internet which provide users with access to resources, such as the Internet telephony and information search services. The emerging virtual products used in online games and social networking websites, such as the avatars at Secondlife.com and the Happy Farm game at Facebook.com, embrace the features of both content-based digital products and online services.

2.2. Social interaction – A symbolic consumption perspective

The concept of symbolic consumption has drawn researchers’ attention, since in this context a customer purchases a particular product/service for not only what it can do (functions) but also what it means implicitly and explicitly (symbols) to the others and the society [16, 23]. George [12] defines symbolic consumption by arguing that an act of consumption can be considered as having symbolic meaning if the consumer is aware that the consumption is made because of the benefits acquired other than those that the act of consumption directly generates. In other words, the symbolic value of a product/service refers to the perceived value of it based on a consumer’s recognition of the degree to which it can symbolically portray the way the consumer thinks about himself or herself, or deliver particular messages the consumer intends to present to others.

The phenomenon of symbolic consumption can be better comprehended with reference to the concept of extended self. Self-concept, which is also called self-image, refers to an individual’s attitude, perceptions, feelings, and evaluations of himself or herself [14]. An individual tends to seek, express, and ascertain the existence of the self through things he or she possesses [39], which can be considered the materialization of the extended self. Grubb and Grathwohl [14] argue that self-concept is an important factor influencing a consumer’s purchasing behaviors for products/services with symbolic significance, since these products/services can enhance the self-concept of an individual if they are publicly recognized in a manner which supports the consumer’s self-concept. Therefore, consumers are likely to exhibit all, or a partial set, of their self-concepts via the presence and/or the use of the products/services conveying desirable publicly-recognized symbolic meanings, which facilitates the acts of symbolic consumption [12, 20, 23]. While it is widely recognized that engagement in social activities is one of the main purposes for individuals' participation in virtual worlds, these participants tend to have different social needs. Thus, they require the consumption of a variety of virtual products (e.g., multiple avatars) through which to interact with the others in the virtual world in order to convey the messages that the virtual product users want to send to the others, and then to fulfill these social needs.

Because of the increasing popularity of online social interactions associated with the use of digital products/services [5], more and more virtual products are being developed for the purpose of facilitating human interactions in the cyberspace. The act of symbolic consumption is associated with the ways individuals interact with others in the cyberspace, since it can convey much meaning about the individuals, their values and the societal norms, and how their interpersonal relationships are to be managed [20]. Additionally, the symbolic meanings of a product/service rely on not only the perceptions of an individual consumer, but also the shared knowledge and understanding of others in a particular social group [31]. This indicates that the act of symbolic consumption may arise as a result of the
peer pressure perceived by a consumer in the process of social interactions [6]. Therefore, an examination of symbolic consumption can provide academics and practitioners with a better understanding of the values which are important to consumers.

2.3. Expectancy disconfirmation model

The expectancy disconfirmation model (EDM) proposed by Oliver [27] to evaluate customer satisfaction, includes factors of expectations, perceived quality, disconfirmation, and satisfaction. The core process of the EDM is that customers’ satisfaction is determined by their evaluation of the discrepancy (disconfirmation) between their expectations for a specific product/service, which are formed prior to purchase, and the perceived quality of the product/service after consumption. Figure 1 presents and depicts the key factors and processes of the EDM.

Expectations refer to a consumer’s anticipation with regard to the quality of a product based on his or her prior consumption experience and/or the information acquired in the market [3]. Perreault et al. [33] argue that expectations are the benefits a buyer expects to acquire from the purchase of a product as well as the promises made in associated marketing campaigns. Therefore, expectations can be considered an adapted standard that consumers use for making evaluative judgments [27]. Perceived quality, which is also referred to as product performance, perceived performance, and attribute performance, refers to a consumer’s evaluation of a recent consumption experience with regard to a particular product [9]. Anderson and Sullivan [1] indicate that perceived quality is influenced by both customer expectations and the actual quality of the product/service.

Disconfirmation, as discussed previously, arises from the gap between prior expectation and the actual performance/quality of the product/service purchased. Churchill and Surprenant [3] argue that a consumer’s expectations are confirmed when a product performs as expected, negatively disconfirmed when the product performs more poorly than expected, and positively confirmed when the product performs better than expected. This indicates that disconfirmation is dependent on both expectations and perceived quality, and is determined jointly by the manipulations of these two factors [28].

Howard and Sheth [17] define it as a consumer’s assessment of the rewards resulting from a transaction given the sacrifice made. Parasuraman, Zeithaml, and Berry [30] provide a comprehensive view of this issue by arguing that customer satisfaction is a function of a consumer’s own assessment of service quality, product quality, and price. Thus, customer satisfaction is defined in this study as a state of perception to feel appropriate or inappropriate experience resulting from a comparison with predictive expectations, given the sacrifice made [2, 7, 8, 13]. When products or services exceed expectations (positive disconfirmation), consumers tend to exhibit a high level of satisfaction, which may lead to high repurchase rates and loyalty [25].

The EDM has been widely adopted or extended to study research subjects related to consumer behaviors, and has shown promising results in terms of explaining and predicting customer satisfaction [1, 3, 9, 29]. Additionally, it has been adopted in studies which investigate and evaluate factors that influence the individuals’ IT usage intentions [19, 34, 35, 38, 41]. Consequently, along with the key characteristic of virtual products, namely social interaction, the EDM is adopted in this study to investigate the consumer behaviors with regard to such items.

3. Research model

Based on the results of a literature review, symbolic consumption theory and the EDM are integrated into a theoretical model for assessing the behavior of virtual product consumers. The proposed research model consists of five factors (see Figure 2), which are classified into three dimensions. The arrows in the research model are causal paths that represent the causal relationships between factors.
The first dimension, virtual product characteristic includes one factor of social interaction (SI), which is adopted based on the theory of symbolic consumption. The second dimension, expectation disconfirmation dimension, includes three constructs adopted from the EDM [27], which are outcome expectations (OE), perceived quality (PQ), and customer satisfaction (CS). There is strong support for outcome expectation and perceived quality being antecedents of customer satisfaction in the existing literature [1, 9, 30], and thus it is reasonable to include these two constructs in this study. Nevertheless, the factor of disconfirmation is not included in the proposed model as an independent construct. The rationale for this decision is that the effect of disconfirmation on customer satisfaction tends to be either insignificant [3] or captured by expectations and/or perceived quality [8, 25], as is often suggested in the literature. Therefore, disconfirmation is used as a measure rather than an antecedent of customer satisfaction in this study.

Finally, purchase intention has long been considered as a consequence of satisfaction [4, 25]. Consequently, purchase intention (PI) is included in the behavior dimension of the proposed research model to serve as the representation of the consequence of customer satisfaction.

4. Research hypotheses

The facilitation of social interaction has been considered one of the primary reasons contributing to consumption behaviors, which can be better comprehended from the perspective of symbolic consumption. For example, Johnstone and Conroy [20] argue that products are purchased not only for their use value, but also for their value in facilitating interactions, and thus can serve as aids to the formation of social links among individuals. Additionally, products with symbolic meanings are valuable to the consumers if they are able to elicit favorable reactions from the significant references/peers of the consumers in the process of social interaction [6, 31]

The above discussion implies the positive relationships between virtual products’ capability of facilitating social interaction and the key consumer-behavior-related factors, including outcome expectation, perceived quality, and customer satisfaction, as described in the EDM. Consequently, the following hypotheses are developed:

H1a. Social interaction positively influences the outcome expectation of virtual products.
H1b. Social interaction positively influences the perceived quality of virtual products.
H1c. Social interaction positively influences the customer satisfaction of virtual products.

Previous discussion of EDM indicates that both outcome expectation and perceived quality are directly related to customer satisfaction, while outcome expectation has a direct effect on perceived quality [1, 3, 27, 28, 29]. Additionally, a number of studies which adopt more recent and robust models for examining and explaining consumer behaviors have provided solid support for the relationships among outcome expectation, perceived quality, and customer satisfaction indicated above. These models include the well-known SERVQUAL for evaluating the service quality of retailers [30] and the American Customer Satisfaction Index (ACSI) [8, 9]. Finally, customer satisfaction is often proposed to have a direct effect on consumer purchase intention in various research settings [25, 37]. For example, Cronin and Taylor [4] argue that customer satisfaction, distinct from factors including quality and perceived value, has a positive relationship with purchase intention, while also mediating the effects of other factors (e.g., perceived quality) on purchase intention.

Based on the discussion above, the following hypotheses are proposed:
H2a. Outcome expectation positively influences the customer satisfaction of virtual products.
H2b. Outcome expectation positively influences the perceived quality of virtual products.
H3. Perceived quality positively influences the customer satisfaction of virtual products.
H4. Customer satisfaction positively influences the purchase intention of virtual products.

5. Data collection and analysis

5.1. Development of survey measures

To develop an effective survey, 20 items relevant to the five constructs of the proposed research model were adapted from the existing literature and refined based on the specific topic of this study. The items for the social interaction construct (see Table 1) were primarily self-developed by consulting the concepts of the symbolic consumption theory presented in the works of George [12], Grubb and Grathwohl [14], and Johnstone and Conroy [20], and Levy [23] in order to reflect the specific purposes of this study. The constructs of outcome expectation, perceived quality, and customer satisfaction adopted from the EDM were measured primarily by items adapted from the work of Fornell et al. [9], Lin and Wang [25], and Oliver [28]. Finally, the construct of
purchase intention, based primarily on the research of Liang and Lai [24].

All the survey items developed were pilot-tested with 30 experienced virtual product consumers who were students of a university. The results of the Cronbach’s alpha coefficient analysis indicated that the Cronbach’s alpha coefficients of all the five constructs were greater than 0.7, thus it was concluded that the items were considered highly reliable [26].

Table 1. Survey items for social interaction

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
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<tbody>
<tr>
<td>SI1</td>
<td>The use of the virtual products can make me become more popular in the online environment.</td>
</tr>
<tr>
<td>SI2</td>
<td>I can convey certain messages to others by using the virtual products.</td>
</tr>
<tr>
<td>SI3</td>
<td>The messages I convey through the use of the virtual products can be understood correctly by others.</td>
</tr>
<tr>
<td>SI4</td>
<td>I can receive the favorable responses from others to the messages I send through the use of the virtual products.</td>
</tr>
</tbody>
</table>

5.2. Data collection

Data for this study were collected using an online questionnaire to survey virtual product consumers recruited from a number of online forums in Taiwan with the permission of the forum administrators, and the data collection took approximately one month. The respondents were online game players who had experience of purchasing and using virtual products within the previous year in order to play online games and/or facilitate online social activities. Thus, the virtual products investigated in this study were those used in online games, such as the avatars and their associated digitalized accessories. The IP and email addresses of the respondents were recorded and screened to rule out repeated responses. Of the 377 questionnaires received, 89 incomplete or problematic responses were later removed, giving a valid return rate of 76.4%. The remaining 288 valid questionnaires were then used for analysis.

5.3. Data analysis

Data for this study were analyzed using the structural equation modeling technique. The measurement model was estimated first using confirmatory factor analysis (CFA) to examine the overall fit, validity, and reliability of the model. Then, the hypotheses between constructs were examined using the structural model.

The analysis of the measurement model indicated that the individual Cronbach’s alpha coefficients of the six constructs were greater than the recommended level of 0.7 or higher (ranging from 0.70 to 0.91). Additionally, the values of the goodness-of-fit index of the $\chi^2$/d.f. (2.59), SRMR (0.06), GFI (0.86), AGFI (0.81), and CFI (0.97) indicated a good fit of the measurement model [15].

Furthermore, the factor loadings of all the items were significant and greater than the recommended level of 0.6 (ranging from 0.66 to 0.91). The composite reliability (CR) statistics and the average variance extracted (AVE) of all the constructs were greater than the recommended level of 0.6 (ranging from 0.75 to 0.93) and 0.5 (ranging from 0.57 to 0.73), respectively. These results thus indicated that the measurement model exhibited adequate convergent validity [10].

Finally, the discriminant validity of the measurement model was determined to be satisfactory, since the squared correlations between constructs were smaller than the corresponding AVE estimates [10]. To conclude, the measurement model was adequate.

Given an appropriate measurement model, the structural model was then used for hypothesis testing. Before testing the hypotheses, the goodness-of-fit of the structural model was checked. The values of the goodness-of-fit index of the $\chi^2$/d.f. (2.78), SRMR (0.06), GFI (0.85), AGFI (0.81), and CFI (0.97) indicated a good fit of the structural model [15].

Hence, the hypotheses were then examined [15]. Figure 3 presents the standardized path coefficients ($\beta$) and $t$-values, their path significance for the structural model, and the coefficients of determinant ($R^2$) for each endogenous construct. As shown in Figure 3, all the hypotheses were supported by the data.

Figure 3. The hypothesis testing results
6. Implications

6.1. Implications for theory

The path analysis results of this study implied a number of relationships that determined consumers’ purchase intention of virtual products. First, social interaction was found to have a direct positive influence on outcome expectation, perceived quality, and customer satisfaction. These findings indicate the importance of the symbolic values of virtual products in terms of developing the desired self-image of consumers, acquiring the recognition of their significant peers, and thus facilitating an enjoyable social experience online [6, 14, 20, 31]. Thus, the significance of adopting a symbolic-value-based social interaction construct for comprehending the dynamics of virtual product consumption is well demonstrated.

Second, the research results indicate that social interaction, outcome expectation, and perceived quality all positively affect customer satisfaction, as suggested in a number of prior studies [27, 28, 29]. Additionally, it was found that perceived quality had the greatest direct effect on customer satisfaction among the three factors, and contributed to the indirect relationships of both social interaction and outcome expectation with customer satisfaction. While the mediating role of perceived quality in the relationship between outcome expectation and satisfaction has been proved in other studies related the EDM [1, 3] and other satisfaction-related frameworks [8, 9], this study has contributed to better understanding of this classic paradigm by validating it in the context of virtual product consumption. Furthermore, in this study the application of the EDM was advanced by integrating it with the concept of symbolic-consumption social interaction, and the research results have validated the indirect relationship between social interaction and customer satisfaction via the outcome expectation and perceived quality.

Finally, the research results showed that increases in customer satisfaction led to greater purchase intention. These results confirm the finding of prior studies that customer satisfaction is best described as the key antecedent of purchase intention, mediating the effects of other factors (e.g., outcome expectation and perceived quality) on purchase intention [4, 27, 37].

6.2. Implications for practice

The research findings suggest that consumer purchase intention can be enhanced if the formation of the cause and effect relationships among outcome expectation, perceived quality, and customer satisfaction is effectively managed. Thus, corporate managers are recommended to develop and implement strategies that can result in the materialization of the indicated psychological processes in order to increase overall customer satisfaction, and, in turn, raise the consumers’ purchase intention.

Additionally, social interaction was found to be a significant determinant of customer satisfaction. This finding indicates that it is critical for virtual product vendors to develop and continuously improve their ability to design products/services that are capable of facilitating social interactions in order to acquire competitive advantages in this particular market. With reference to the symbolic consumption theory, products/services with symbolic meanings will be valued by consumers if they can be used as effective tools to convey the desired self-image to others, and thus result in positive feedbacks from significant references/peers. It is therefore important for the virtual product vendors to communicate with their consumers on a frequent basis in order to acquire and utilize useful information with regard to their interests and concerns. Such information can then be utilized to develop products which best fulfill the social needs of the consumers. This, in turn, can increase the switching costs of the consumers and result in a high customer retention rate.

7. Conclusion

This study has developed and validated an integrated model for explaining and predicting consumer behaviors with regard to the virtual products by incorporating the concepts of symbolic consumption theory and the expectancy disconfirmation model. Social interaction, outcome expectation, perceived quality, and customer satisfaction were all found to be significant factors in determining consumers’ purchase intention of virtual products. The research findings can thus provide virtual product vendors with significant insights into developing favorable products and services which can better satisfy the specific needs of potential and existing consumers. Additionally, the validation of the proposed research model has provided support of the use of the expectancy disconfirmation model and verified the significant influence of the symbolic value of commodities in the context of virtual...
product consumption. To further extend the contribution of this study, more research that aims to examine the proposed research model using a variety of samples in similar and different contexts is thus needed to further validate it, or refine it by identifying additional variables which can enhance the ability of the proposed research model to explain and predict customer satisfaction and purchase intention, such as aesthetics, trust, and corporate image.

8. References


