

CONSUMER CHARACTERISTICS, SOCIAL INFLUENCE, AND SYSTEM FACTORS ON ONLINE GROUP-BUYING REPURCHASING INTENTION

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ABSTRACT

Online group buying (OGB) has recently captured the attention of academic researchers. Because of the lack of an integrated perspective of external variables in the technology acceptance model (TAM), we investigated the influence of consumer characteristics (economic shopping orientation and prior buying frequency), social influence factors (subjective norms and visibility), and system factors (system quality and information quality) on perceived usefulness (PU) and perceived ease of use (PEOU) of the OGB web site. We also examined the effects of PU and PEOU on attitudes and behavioral intention. We collected 1,163 useable questionnaires through a quantitative online survey, and used structural equation modeling (SEM) to analyze the data. The results show that, whereas economic shopping orientation, subjective norms, and information quality had a positive effect on PU, purchasing frequency and system quality affect the PEOU of the OGB web site. However, the relationship between visibility and PU was non-significant. We integrated consumer characteristics, social influence, and system factors in OGB research, and the findings can assist OGB administrators to improve their understanding of the attendant factors of PU and PEOU to form positive user attitudes toward OGB and increase their reuse and repurchasing intentions.

Keywords: Online group buying; Technology acceptance model; Consumer characteristics; Social influence; System factors

1. Introduction

The main concept of group buying is that consumers recruit potential consumers to achieve a sufficient order volume for obtaining a discounted group price [Jing and Xie, 2011]. Group buying is a common method used by consumers, but group buyers have previously been restricted to asking only people with whom they are familiar to engage in group buying [Liao et al., 2012]. The practice of group buying has existed for many years, but the Internet has made it much more practical than before [Anand and Aron, 2003]. By using the Internet, buyers with common interests can connect easily without the involvement of an established acquaintance or geographical limitations [Yuan, 2004] and, thus, OGB can eliminate the restrictions of traditional group buying [Liao et al., 2012]. Research has suggested that online group-buying (hereafter, OGB) web sites are a particularly effective form of buying [Liao et al., 2012]. OGB web sites have therefore made rapid progress in recent years [Matsuo, 2009]. OGB web sites such as Groupon (www.groupon.com) and LivingSocial (www.livingsocial.com) negotiate with businesses to provide members with substantial discounts [Coulter and Roggeveen, 2012]. In addition to setting low prices to attract OGB web sites users and persuade them to purchase products and services, Ihergo (www.ihergo.com.tw), for example, updates product information daily, which includes multiple upcoming products and the main product features [Ku, 2012]. Although OGB web sites have grown dramatically in the past several years in Taiwan (e.g., GOMAJI, Groupon, 17life, Ihergo, GoodLife), retaining Web users who continue to use these sites is a critical concern for OGB managers.

Increasingly more online consumers are attracted to OGB, causing widespread academic attention [Anand and Aron, 2003]. Certain studies have focused on the price-discovery mechanism [Anand and Aron, 2003; Matsuo, 2009], whereas several consumer studies have focused on consumer motivations such as price advantage, discount amount,

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novelty, and extraordinary offers [Erdoğan and Çiçek, 2011], as well as gender difference in OGB buying preferences [Liao et al., 2012]. Despite these findings and their insights into OGB literature, research investigating factors that form positive consumer attitudes and intent to reuse OGB web sites is minimal. Based on our research, only one study has explored the factors affecting OGB behavioral intention [Tsai et al., 2011], and their findings indicated that perceived usefulness (PU) and perceived ease of use (PEOU) are antecedent factors of OGB intention. PU is the subjective probability that a prospective user using a particular application system will enhance his or her job performance, and PEOU refers to the degree to which the prospective user expects that using a particular system will be effortless [Davis, 1989]. According to the technology acceptance model (TAM), PU and PEOU are critical antecedents to user attitudes, use intention, and behavior.

Accordingly, academic researchers have focused on understanding the external variables in the TAM. Hung et al. [2013] extended the TAM by incorporating computer self-efficacy and personal innovativeness as consumer characteristics and media richness as a system characteristic that affects the PU and PEOU of digital museums. In addition, a study explored consumer characteristics (i.e., computer self-efficacy) and system characteristics (i.e., computer playfulness) as antecedents to the PEOU of virtual worlds for business [Shen and Eder, 2009]. Several studies have focused on measuring the influence of either subjective norms [Bhatti, 2007] from a social influence perspective or a prior online shopping experience [McKechnie et al., 2006; Tong, 2010], collectivistic values [Noh et al., 2013], or utilitarian shopping orientation [Lee et al., 2006] from the perspective of consumer characteristics. However, few studies have examined the effects of information and system quality from a system perspective [Lin, 2007]. Information quality and system quality have been perceived as crucial to the essential attributes of information systems [Sun, 2010], and the two quality factors are significant determinants of customer satisfaction [Fang et al., 2011]. Consequently, scant integrated studies to date have considered the three types of external variables in the TAM. No study has combined all three factors (i.e., consumer characteristics, social influence, and system factors) to investigate the effects of these factors on the TAM. Understanding the potential influence factors on PU and PEOU is crucial, and an integrated perspective is required to provide a holistic view of the antecedents of the TAM. Although an integrated perspective can contribute to the development of these web sites, an integrated understanding of whether the three factors affect PU and PEOU has not been attained. Specifically, although PU and PEOU are critical factors in predicting individual attitudes and behavior, the external variables of PU and PEOU have not been empirically tested in the OGB web site context.

A previous study indicated that the interest of a user in a product depends on how the product relates to the goals and orientation of the user [Clarke, 2006]. Although the main concept of OGB is to provide online consumers with price-based incentives for volume purchases [Anand and Aron, 2003], the idea can attract people who have an economic shopping orientation and are concerned with paying a low price to save money by using the OGB web site. In addition, whenever OGB site consumers use the web site, they generally become increasingly familiar with the web site [Wang, 2010], which leads to enhanced perceptions of ease. Thus, user's economic shopping orientation toward OGB and prior buying frequency associated with OGB may affect the user evaluations of OGB. Furthermore, because consumers who use OGB web sites choose collective procurement to enhance bargaining power and obtain low prices [Cheng et al., 2012], the OGB consumption process is related to a possible social collective consciousness and influenced by social groups. Literature reviews have indicated that social influences, such as subjective norms, affect PU and PEOU [Bhatti, 2007; Yang et al., 2009]. However, norms may also evolve from a person observing and adopting the behavior of other people [Ajzen, 2002]. Researchers have suggested that visibility affects a person's behavior [Lepoutre and Heene, 2006] because the value of the behavior increases as the number of people engaged in that behavior increases.

Finally, similar with other information systems, current OGB web site consumers' intention to engage in OGB is determined by the perceptions of system characteristics [Cheng and Huang, 2013]. Researchers believe that the product's functional benefits influence consumer adoption of the product [Wood and Hoeffler, 2013], indicating that the adoption or rejection of a system is dependent on the system itself [Boonstra, 2003]. Based on this perspective, researchers believe that system characteristics affect PU and PEOU [Lin, 2007; Lee et al., 2006]. System characteristics refer to the qualities of the physical and process aspects of the system [Chan et al., 1993; Sooklal et al., 2011]. Previous researchers have suggested that system characteristics serve as determinants of PU [Nov and Ye, 2008]. Specifically, researchers have determined that information quality positively affects PU, whereas system quality positively affects PEOU [Lin, 2007].

In summary, in this study, the external variables of PU and PEOU toward OGB web sites can be classified into three types: consumer characteristics (economic shopping orientation and prior buying frequency), social influence factors (subjective norms and visibility), and system factors (system quality and information quality). Because previous related empirical studies have examined such factors from only a single perspective [McKechnie et al., 2006; Bhatti, 2007; Lin, 2007], no researchers have conducted an empirically integrated study on how these three types of

variables are related to PU and PEOU directly. Examining the effects of these external variables is crucial to providing an integrated understanding of these external variables and contributing to the theoretical development of the TAM. In addition, although the number of OGB web sites has rapidly increased in recent years, motivating consumers to reuse shopping web sites remains the primary challenge for web site administrators. The growing number of shoppers purchasing from OGB and the increasing number of OGB firms require that marketers develop an enhanced understanding of OGB buyers. To understand comprehensively the factors influencing consumers to use OGB web sites, we first apply the TAM model and focus on determining which factors affect PU and PEOU. More specifically, we explore the antecedent factors that affect PU and PEOU from an integrated perspective and integrate personal factors, social factor roles, and system factors to explore how these factors contribute to consumer PU, PEOU, attitudes, and behavioral intention in OGB web sites. By clarifying why consumers reuse OGB web sites, web site administrators and marketers can facilitate the development of these web sites. Our finding can assist web site administrators to develop an effective retention program.

2.Literature review and hypotheses development

2.1.Online group buying

Online group-buying is a novel electronic commerce phenomenon [Wei et al., 2011]. Depending on the number of units a group buys, consumers have an incentive to regroup for unit price reduction [Asselin and Chaib-Draa, 2006]. While the total purchasing amount increases, consumers receive lower prices than when purchasing individually [Chen and Roma, 2011]. Under the group-buying context, discounted group prices are offered based on consumers' aggregated purchasing quantity that achieves a required group size [Jing and Xie, 2011]. When consumers cooperate with each other to achieve a required merchandise amount, quantity discounts are based on total customer orders instead of individual customer orders [Anand and Aron, 2003]. Thus, group-buying is designed to aggregate consumer power to gain volume discounts. Group buying enables consumers to obtain volume discounts and discounted group prices when consumers aggregate the requested group size. Group buying is therefore a mechanism in which consumers cooperate and buy goods at a discount price [Matsuo, 2009]. Yuan [2004] indicated that finding a particular group of people with the same traditional market demands is difficult. Because online group buyers can form coalitions with potential buyers on the Internet in a short period [Matsuo, 2009], the online market-based mechanism has enabled OGB to become increasingly accessible [Anand and Aron, 2003].

2.2 Technology Acceptance Model

The Technology Acceptance Model (TAM) has been widely used and demonstrated across various information technologies, including e-commerce [Bigné-Alcañiz et al., 2008; McKechnie et al., 2006; Tong, 2010], e-books [Read et al., 2011], e-healthcare [Lanseng and Andreassen, 2007], mobiles [Huang et al., 2007; Kim and Garrison, 2008], web2.0 [Shin and Kim, 2008], etc. TAM has been studied extensively and considered a mature model in predicting technology use. Davis et al. [1989] developed the original technology acceptance model, which was introduced by Davis. The model is based on theories in social psychology, including the theory of reasoned action (TRA) and the theory of planned behavior (TPB). Davis proposed the TAM in an effort to explain and predict the adoption and use of information technology at work in 1989. The model states that PU and PEOU affect attitude toward use, which affects behavioral intentions, which in turn affects actual usage. TAM posits PU and PEOU as the primary determinants of system use affected by external variables. Both the PU and PEOU affect attitude, which consists of beliefs on the performing behavior and the valuation of the behavior's consequence [Ajzen and Fishbein, 1975]. Attitude toward usage will also affect the behavior intentions to use, and eventually affect actual usage. From the model by Davis, external variables affect PU and PEOU and are the key elements to affect these results.

2.3.Hypotheses development

2.3.1. The influence of consumer characteristics on the PU and PEOU of OGB web site.

Research has suggested that personal characteristics are an external variable that influences consumer product preference evolution and adoption [Sridhar et al., 2012]. A previous study indicated that individual differences (i.e., shopping orientation) affect the TAM framework [Lee et al., 2006]. Shopping orientation, a consumer characteristic, influences the type of information for which consumers search [Lee and Kim, 2008], and has been defined as a shopping lifestyle that can be used to predict consumer behavior [Tai, 2008]. Moreover, economic shopping orientation entails the tendency to seek instrumental value [Pookulangara et al., 2011], such as the tendency to seek a lower price [Demoulin and Zidda, 2009]. Consumers who have the economic shopping orientation are interested in obtaining price information, prefer to shop at discount stores [Lee and Kim, 2008], and evaluate stores and products from a price perspective [Tai, 2008]. Perceived usefulness (PU) is the degree to which people believe that using a specific technology will improve their performance [Davis, 1989]. Consumers with economic shopping orientation typically attempt to save money to achieve their goal [Tai, 2008], whereas OGB offers a specific product/service at a discounted price, as long as the number of online buyers is sufficiently large in a certain short period [Matsuo,

2009]. Thus, consumers who highly evaluate the economic aspect of shopping are more likely to score higher in PU. Thus, we propose the following hypothesis:

H1: Economic shopping orientation has a positive effect on the PU of OGB web sites.

Prior purchasing frequency is the degree to which consumers have frequently used a certain web site [Park and Jun, 2003]. Ease of use refers to the extent to which a person believes that using a new technology will be effortless [Davis, 1989]. Bucklin and Sismeiro [2003] suggested that prior online purchasing experience enables consumers to use particular web sites. When they have learned how to use a web site, their user skills become more advanced. Thus, consumers who have more experience with a certain web site positively adjust their ease of use perception of that web site as a shopping medium [Monsuwe, 2004]. Tong [2010] also found that prior purchasing experience has a positive effect on PEOU. Hence, we propose the following hypothesis:

H2: Prior buying frequency has a positive effect on the PEOU of OGB web sites.

2.3.2. The effect of social influence factors on the PU and PEOU of OGB web site.

Social influences refer to how other people influence a person's behavioral decisions [Grenny et al., 2008]. Social influences are related to the external pressure (from important people in the person's life, such as family, friends, and supervisors at work) a person perceives to use or not use a system, and have been studied extensively in TAM research [Shen, 2012]. Social influence is the extent to which social networks influence people's behavior through messages and signals from others that facilitate the formation of people's perceived value of a technology system. Furthermore, social influence affects individuals through both messages about social expectations and the observed behavior of others [Herath and Rao, 2009]. Regarding social expectations, subjective norms are related to one's perception that salient referents think and expect s/he should or should not perform a certain behavior [Ajzen and Fishbein, 1975]. López et al. [2008] indicated that the information people receive from others typically affects their perception of using a technology system. Referent opinions in society also affect perceptions regarding technology use [Yi et al., 2006]. Prior research has found that subjective norms have a positive effect on PU [Chen, et al., 2009]. Hence, we propose the following hypothesis:

H3: Subjective norms have a positive effect on the PU of OGB web sites.

Regarding the observed behavior of others, social influence affects the behavioral intention of consumers, which reflects the concept that the decisions of consumers are influenced by the manner in which individuals perceive technology users as a cue to adopt the technology [Gonzalez et al., 2012]. A previous study indicated that the social influence construct also includes visibility [Yang et al., 2009], which refers to the degree to which the use of a technology system is apparent in the social surroundings of an individual [Ilie et al., 2005], and is related to people being able to communicate with others by using the technology system [Lee and Panteli, 2010]. Visibility occurs when people see others using the same thing [Zhang, 2011]. Oh et al. [2003] indicated that people exposed to a certain IT system before adopting it are more likely to understand it or find it useful [Oh et al., 2003]. Yang et al. [2009] also found that this has a direct effect on PU in adopting IT. Thus, we propose the following hypothesis:

H4: Visibility has a positive effect on the PU of OGB web sites.

2.3.3. The influence of system factors on the PU and PEOU of OGB web site.

The TAM suggests that use depends on a prospective user's attitude toward a system, and the model emphasizes the role of system design in the acceptance of the system [Boonstra, 2003]. A previous study indicated that the object-based beliefs and attitudes toward the system characteristics (i.e., system quality and information quality) can affect the TAM framework [Wixom and Todd, 2005]. System quality refers to the perception of system technical performance, such as its reliability or accessibility [Freeze et al., 2010; Lin, 2007]. Higher system quality may provide users with more convenient, private, and faster responses [Ahn et al., 2007]. Technology with high system quality may be perceived as convenient and easy to use; therefore, ease of use may be a consequence of system quality [Sanayei et al., 2011]. Lin [2007] also found that system quality has a positive effect on PEOU in a virtual community. Therefore, we propose the following hypothesis:

H5: System quality has a positive effect on the PEOU of OGB web sites.

Information quality refers to the quality of information a system provides, primarily in the form of reports [Freeze et al., 2010]. To help users complete their task, information presentation must effectively facilitate interpretation and understanding. Users who perceive that information is accurate and up-to-date may feel its usefulness [Lin, 2007]. Previous study has also indicated that information quality has a positive effect on PU in a virtual community [Lin, 2007]. We therefore propose the following hypothesis:

H6: Information quality has a positive effect on the PU of OGB web sites.

2.3.4. The PU, PEOU, attitudes, and intention

The TAM suggests that "usefulness" is influenced by "ease of use." Easier technology use means less effort to use the application [Davis, 1989; Lanseng and Andreassen, 2007]. The online technology context has also validated this relationship [McKechnie et al., 2006]. Attitudes refer to the desirability to use IT [Shin, 2010]. Aboelmaged [2010]

stated that realizing the usefulness of e-business applications in improving performance or efficiency positively affects user attitudes toward that application. Because users are concerned regarding the effort required to use an application, such concerns enable them to have a favorable and compelling perception. Numerous studies have validated this correlation [Çelikand Yilmaz, 2011; Lee et al., 2006]. Therefore, we propose the following hypotheses:

H7: PEOU has a positive effect on PU.

H8: PU has a positive effect on attitudes.

H9: PEOU has a positive effect on attitudes.

Intention to reuse refers to the likelihood of a person adopting technology to re-acquire desirable product information [Kim and Park, 2005]. People who believe that technology increases task performance justify it from the perspective of a greater intention to use that technology [LansengandAndreassen, 2007]. Kim and Park [2005] suggested that a consumer who feels favorable toward a retailer is more willing to gather product information from that retailer. They confirmed that attitudes positively affect the intention to search. Hence, we propose the following hypotheses:

H10: PU has a positive effect on intention to re-search.

H11: Attitudes have a positive effect on intention to re-search.

Intention to repurchase refers to the likelihood of a person continuing to purchase products from an online store in the future [Fang et al., 2011]. Becerra and Korgaonkar[2009] stated that an increase of information source consulted online may affect the decision to purchase. They also found that the intention to search affects the intention to purchase. Therefore, we propose the following hypothesis:

H12: Intention to re-search has a positive effect on the intention to repurchase.

2.3.5. Control variable: Perceived price fairness and product quality

Numerous studies have confirmed the relationship of perceived price and product quality to intention to purchase [Hansen, 2005; Jiang andRosenbloom, 2005; FandosandFlavián, 2006; Wu et al., 2011; Wu et al., 2011]. Perceived price fairness involves consumer judgment regarding whether a price is fair when comparing it with other providers [Han and Kim, 2009]. Quality is the features or characteristics of a product or service that satisfy the specified or implied needs of consumers [Becker, 2000]. Product quality plays an essential role in product consumption [FandosandFlavián, 2006]. Therefore, we used these two variables as control variables for repurchase intention.

The above hypotheses lead us to the research model. Figure 1 illustrates the proposed model.

3. Research method

3.1 Sampling and data collection

We conducted this study in Taiwan. According to a survey in Taiwan, the OGB usage rate rose to nearly one quarter (22.3%) in 2010, compared with 2009, with a growth of nearly 12% [Market Intelligence & Consulting Institute, 2011]. We employed an online survey because the study participants had previous OGB purchase experience and because an online survey may be relatively easier in targeting these respondents [Chu and Lu, 2007]. Online questionnaires were distributed on a market survey web site from December 27, 2012 to January 27, 2013. To control for product effect across the product categories of the OGB web site, we chose food products because the most preferred product in OGB is food, comprising approximately one-third (33%) of all online buying in Taiwan [Liao et al., 2012]. We used online survey questionnaires to target people with prior food purchase experience of OGB in Taiwan and stressed the importance of respondent cooperation to prompt the respondents to consider their “currently most visited online group-buying web site.” Each participant was then queried regarding their perceptions of the OGB web site, using scales to represent their perceptions. A total of 1,213 questionnaires were returned, and after discarding 50 unusable responses, 1,163 usable responses remained. The statistical results show that 708 of the respondents were women (approximately 61%), and 455 were men (39%). Among the respondents, 581 (50.0%) were aged 30 to 39 years, followed by 20 to 29 (26.4%), and 40 to 49 (17.4%) years, whereas few of them were aged below 20 (1.6%) or above 49 (4.6%). Users who had visited the site once every 1 or 2 months formed the next most common distribution (35.0%), followed by 2 to 3 times or more each month (23.7%), and 2 to 3 times per year (19.3). These findings are similar to related reports produced by the Ministry of Economic Affairs [2012] and Lifewin[2013], which indicate that slightly more female consumers than males use OGB web sites and half of the consumers who use OGB web sites are aged 30-39 years, with the remainder aged 20 to 29 and 40 to 49 years. Thus, our study sample may reflect population characteristics.

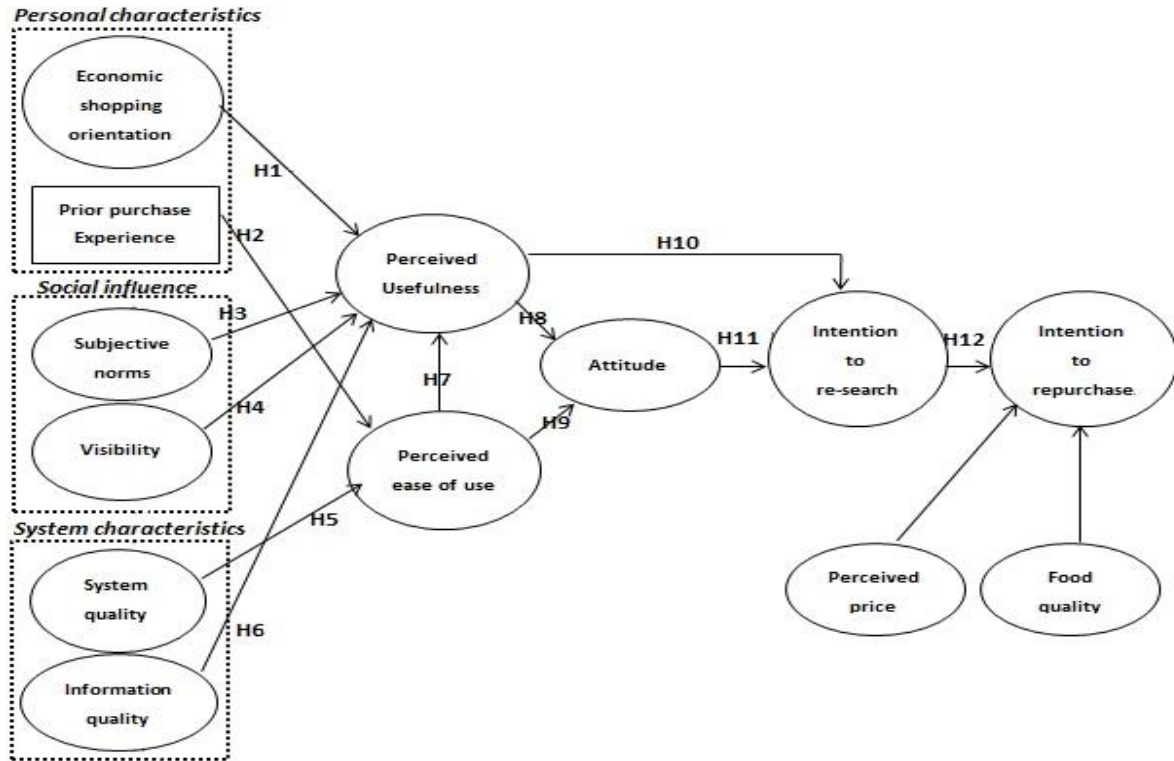


Figure 1: Conceptual framework

3.2. Measurements

We used questionnaires in this study and based the measurement items on an extensive review of relevant literature to ensure their content validity, and items from the original scale. We measured prior purchasing frequency using a 1-item scale developed by Park and Jun [2003] and measured economic shopping orientations using a 3-item scale from Demoulin and Zidda [2009]. We adopted subjective norms from the 3-item scale of Jihyun et al. [2009] and measured visibility using a 3-item scale adopted from Yang et al. [2009]. We measured system quality and information quality using two 4-item scales developed by Lin [2007] and measured PU and PEOU using two 3-item scales adopted from Çelik and Yilmaz [2011]. We measured attitudes using a 3-item scale adopted from the study by Shin [2010]. Intention to re-search and to repurchase were measured using two 3-item scales developed by Shiu et al. [2011] and Yen and Lu [2008]. We applied the four items designed by Kim et al. [2008] and four items designed by Ryu and Kim [2008] to measure perceived price fairness and product quality. All of the items were measured using a 7-point Likert scale (ranging from 1 = strongly disagree, to 7 = strongly agree).

4. Data analysis and results

Before performing LISREL analysis, samples are assumed to follow a multivariate normal distribution without multicollinearity. Kurtosis and skewness values must be checked to ascertain whether the data is distributed normally to avoid affecting the model estimation and test results. According to Hair et al. [2006], a significant departure from normal distribution occurs when skewness and kurtosis values fall outside the range of -1 to + 1. In this study, skewness was between -0.76 to 0.41, and kurtosis was between -0.51 and 0.91. Both were found to be within the acceptable range of skewness and kurtosis indices, signifying that the samples were normally distributed. We evaluated multicollinearity by checking the variance inflation factor (VIF), which should be less than 10 [Hair et al., 2006]. The VIF value in this study was between 1.28 and 6.25, and did not surpass the acceptable range. Hence, the results indicate the absence of multicollinearity. Having confirmed the prerequisite in structural equation modeling (SEM), we used confirmatory factor analysis (CFA) to test the measurement accuracy.

4.1 Confirmatory factor analysis

A CFA was run on the 40 items to determine whether the measurement variables reliably reflected the hypothesized latent variables. One of the advantages of a CFA is its ability to evaluate the construct validity of a proposed measurement theory [Hair et al., 2006]. Construct validity is an experimental demonstration that the measurement items are measuring the theoretical construct they claim to be measuring. This includes convergent and

discriminant validity. Hair et al. [2006] also indicated that convergent validity includes “individual item reliability,” “composite reliability (CR),” and “average variance extracted (AVE).”

Individual item reliability can be examined using standardized loading. All of the lambda values in Table 1 are larger than the recommended ideal value of 0.7, which confirms the convergent scale validity [Hair et al., 2006]. We used CR and AVE to test internal consistency reliability and set the thresholds of these indices at 0.7 and 0.5, respectively. As shown in Table 1, the CR values for 12 constructs ranged from 0.93 to 0.98, and the AVE values ranged from 0.78 to 0.95; therefore, all of the values exceeded the recommended levels. Thus, the results provide evidence of internal consistency reliability. We evaluated discriminant validity using AVE. Table 2 shows that the square root of the AVE value of each construct exceeded the respective correlation factors, indicating the presence of discriminant validity. Because all of the constructs were measured using single-source self-report data, which may cause common method variances (CMV) and response biases to occur [Morwitz et al., 1993], we tested for CMV. We used the Harman one-factor test on all the items used as the study variables to evaluate whether CMV was a critical concern in this study. All the items were included in an exploratory factor analysis (EFA), which included principal component analysis and a varimax rotation, to determine if CMV was present. The basic assumption of this approach is that CMV exists when a single dominant factor emerges in the analysis. The EFA results indicated that no single dominant factor emerged in the analysis and the first factor explained only 25.2% of the variance, indicating that CMV was unlikely to exist.

4.2 Model fit assessment and results

We used SEM to test the hypothesized model. The fit indices indicated that the hypothesized model fit the data well [Tsai et al., 2011]. According to Hair et al. [2006], three types of fit indices are in SEM: (1) The absolute-fit measure is used to assess how well the researcher theory fits the sample data. The chi-square to degrees-of-freedom ratio, GFI, AGFI, and RMSEA are common absolute-fit indices. (2) The incremental-fit measure is used to assess how well a specified model fits relative to an alternative baseline model. CFI, NFI, and NNFI are common incremental-fit indices. (3) The parsimonious-fit measure is used to consider the model complexity. PNFI and PGFI are common parsimonious-fit indices. The results of using the conceptual model indicated that the model fits the data well, and the chi-square (3055.74) to degrees-of-freedom ratio (674) at 4.53, GFI at .88, AGFI at .86, RMSEA at 0.055, CFI at .99, NFI at .99, and NNFI at .99, are all within the accepted thresholds suggested in the literature [Ahmad Han, 2007]. PNFI at 0.86 and PGFI at 0.73 were also above the cutoff value of 0.5 [Tsai et al., 2011]. All fit measures and indices in this study were above the accepted benchmarks and indicated an excellent model fit.

Table 3 shows the results of examining the proposed hypotheses. Utilitarian ($p < .05$), subjective norms ($p < .01$), and information quality ($p < .001$) had a significant influence on PU, indicating that H1, H3, and H6 were supported. Buying frequency ($p < .001$) and system quality ($p < .05$) had a significant influence on PEOU, indicating that H2 and H5 were supported. However, the effect of visibility on PU in OGB was non-significant. Thus, H4 was not supported. Finally, PEOU ($p < .01$) had a significant influence on PU, PU ($p < .001$) and PEOU ($p < .001$) had a significant influence on attitudes, PU ($p < .001$) and attitudes ($p < .001$) had a significant influence on re-search intention, and re-search intention ($p < .001$) had a significant influence on repurchase intention, indicating that H7-H12 were supported. Additionally, the squared multiple correlations (SMC, R^2) for the endogenous variables were 0.85 for the PU, 0.89 for the PEOU, 0.85 for attitude, 0.66 for re-search intention, and 0.80 for repurchase intention. The results indicate that a high proportion of the variance in PU (85%) was caused by the users' economic shopping orientation, subjective norms, and information quality. Buying frequency and system quality were attributed to a high proportion of the variance in PEOU (89%). Based on these results, consumer characteristics (economic shopping orientation and prior buying frequency), social influence factors (subjective norms), and system factors (system quality and information quality) were critical antecedent variables of the TAM.

Table1: Internal Reliability and Convergent Validity Test Results.

Constructs and Measurement items	λ	CR	AVE
Economic shopping orientation			
I choose to shop the OGB website because it has the best deals.	0.86	0.93	0.81
I compare what I get for my money in different stores.	0.91		
I choose what websites to go to based on where I find what I need for the best price.	0.92		
Subjective norms			
People important to me think I should use the OGB website.	0.93	0.97	0.90
People who influence my behavior think I should use the OGB website.	0.97		
People whose opinions I value prefer that I use the OGB website.	0.95		
Visibility			
In my surroundings, I see the OGB website on many computers.	0.92	0.96	0.88
The OGB website is commonly used in my surroundings.	0.96		
It is easy for me to observe others using the OGB website in my surroundings.	0.93		
System quality			
The OGB website operates reliably.	0.91	0.95	0.83
The OGB website allows information to be readily accessible to me.	0.92		
It takes too long for the OGB website to respond to my requests.	0.90		
The OGB website can be adapted to meet a variety of needs.	0.90		
Information quality			
The information provided by the OGB website is accurate.	0.92	0.96	0.86
The OGB website provides a complete set of information.	0.95		
The information from the OGB website is always current..	0.91		
The information provided by the OGB website is well-formatted.	0.93		
Perceived usefulness			
Using the OGB website increases my shopping performance.	0.90	0.95	0.85
The OGB websites are useful for shopping.	0.94		
Using the OGB website enhances my shopping effectiveness.	0.94		
Perceived ease of use			
Learning to use the OGB website was easy for me.	0.90	0.94	0.84
My interaction with the OGB website was clear and understandable.	0.94		
I found it easy to use the OGB website to find what I wanted.	0.92		
Attitudes			
I think using the OGB website is a good idea.	0.92	0.96	0.88
I think using the OGB website is beneficial to me.	0.96		
I have positive perceptions of using the OGB website.	0.95		
Re-search intention			
I intend to re-search information at the OGB website in the next 4 weeks.	0.96	0.98	0.95
I want to re-search information at the OGB website in the next 4 weeks.	0.99		
I plan to re-search information at the OGB website in the next 4 weeks.	0.97		
Repurchase intention			
I intend to continue purchasing at the OGB website.	0.97	0.98	0.93
I will continue purchasing at the OGB website.	0.97		
I plan to continue purchasing at the OGB website.	0.95		
Price fairness			
The OGB website provides an acceptable price	0.92	0.97	0.90
The OGB website provides a satisfactory price.	0.95		
The OGB website provides a rational price.	0.96		
The OGB website provides a fair price.	0.95		
Food quality			
Food products are tasty at the OGB website.	0.86	0.93	0.78
Food products are well presented at the OGB website.	0.94		
The menu of food products offers a good variety at the OGB website.	0.90		
The OGB website provides healthy food-product options.	0.82		

Table2 :Correlations Among the Latent Variables.

Variables	ESO	VI	SN	SQ	IQ	PU	PEOU	ATT	RSI	RPI	PF	FQ
Economic shopping orientation	0.90											
Visibility	0.30	0.95										
Subjective norms	0.42	0.61	0.94									
System quality	0.56	0.55	0.69	0.91								
Information quality	0.49	0.56	0.66	0.87	0.93							
Perceived usefulness	0.52	0.56	0.65	0.85	0.85	0.92						
Perceived ease of use	0.56	0.47	0.63	0.81	0.80	0.83	0.92					
Attitude	0.54	0.51	0.63	0.80	0.78	0.85	0.84	0.94				
Re-search intention	0.49	0.47	0.56	0.71	0.69	0.75	0.73	0.77	0.97			
Repurchase intention	0.51	0.48	0.59	0.73	0.72	0.76	0.76	0.79	0.83	0.96		
Price fairness	0.47	0.51	0.63	0.76	0.77	0.79	0.76	0.78	0.74	0.81	0.95	
Food quality	0.44	0.55	0.62	0.77	0.79	0.79	0.75	0.77	0.72	0.78	0.85	0.88

Note: The square root of average variance extracted (AVE) for each construct (on the diagonal)

Table3: Research Findings

Hypothesis	Path coefficients	T-value	Finding
H1: ESO → PU	0.04	2.00*	Supported
H2:BF → PEOU	0.68	4.81***	Supported
H3: SN → PU	0.07	3.61**	Supported
H4: VI → PU	0.03	1.35	Not supported
H5:SQ → PEOU	0.30	2.11*	Supported
H6: IQ → PU	0.43	13.61***	Supported
H7: PEOU → PU	0.46	14.32***	Supported
H8: PU → ATT	0.48	12.39***	Supported
H9: PEOU → ATT	0.46	11.85***	Supported
H10:PU → RSI	0.34	6.87***	Supported
H11:ATT → RSI	0.50	10.14***	Supported
H12:RSI → RPI	0.46	22.13***	Supported

Note. ESO = Economic shopping orientation; BE=buying frequency; VI=Visibility; SN= Subjective norms; SQ=System quality; IQ=Information quality; PU=Perceived usefulness; PEOU=Perceived ease of use; ATT=Attitude; RSI=Re-search intention; RPI=Repurchase intention; PF=Price fairness; FQ=Food quality
 ***significant level<0.001, ** significant level<0.01, *significant level<0.05

5. Conclusion and discussion

The current rapid growth in the number of OGB web sites necessitates that marketers develop an understanding of consumer behavioral intention. We sought to identify whether personal characteristics, social influence, and system characteristics affect consumer perceptions of OGB web sites and their positive attitudes and behavioral intention regarding OGB web sites. We investigated the effect of consumer characteristics (economic shopping orientation and prior buying frequency), social influence factors (subjective norms and visibility), and system factors (system quality and information quality) on PU and PEOU of OGB web sites, and the consequences of consumer attitudes and re-search intention to re-search and repurchase intention. The results confirm the impact of PEOU on PU, PU and PEOU on attitudes, PU and attitudes on re-search intention, and re-search intention on repurchase intention, all of which are mentioned in the TAM and previous literature [Davis, 1989; Kim and Park, 2005; Lee et al., 2006; McKechnie et al., 2006; Becerra andKorgaonkar, 2009]. The results indicated that economic shopping orientation, subjective norms, and information quality have a positive effect on PU, and buying frequency and system quality have a positive effect on PEOU; these results are supported by previous literature [Lee et al., 2006; Lin, 2007; Chen et al., 2009; Tong, 2010]. However, we found visibility to have no significant effect on PU, possibly because most of the study respondents were women. Prior studies have shown that female consumers care more about individual close relationships (i.e., narrowly on dyadic bonds), whereas male consumers care more about relationships with larger groups (i.e., broader social structure; Melnyk et al., 2009). Because visibility refers to the degree to which using an OGB web site is apparent and might not be a social cue from an individual's close group, the effects of visibility are therefore non-significant for female users. In summary, although most of the findings of this study are similar to those

of previous studies, the factors discussed in TAM are separate. We integrated these factors into three aspects that influence PU or PEOU.

5.1 Theoretical and practical implication

Previous related empirical studies have not extensively explored the factors affecting consumer use of OGB web sites (these studies use only partial factors), and previous studies using TAM do not classify external variables. Therefore, this study contributes to the literature on OGB consumer behavior by integrating the research on consumer characteristics, social influence, and system factors into the TAM. Consistent with previous research findings [Lee et al., 2006; McKechnie et al., 2006; Becerra and Korgaonkar, 2009], the results of this study indicate that using the TAM is appropriate for describing OGB consumer behavioral intentions. OGB web site administrators should increase user favorable attitudes, re-search, and intention to repurchase by demonstrating that their OGB web site is useful and easy to use. Specifically, we discovered that external variables in TAM can be classified into consumer characteristics (economic shopping orientation and prior buying frequency), social influence factors (subjective norms and visibility), and system factors (system quality and information quality). Thus, we theoretically confirm extensive factors that affect consumer perception and lead to behavioral intention in OGB based on a theoretical model (TAM). In addition, the results of squared multiple correlations (R^2) revealed a high percentage of variance in each endogenous construct (0.85 for the PU, 0.89 for the PEOU), which was caused by the external variables (economic shopping orientation, prior buying frequency, subjective norms, system quality, and information quality). The high explanatory power of the model suggests that it can serve as the basic model for predicting OGB consumption behavior.

In addition to academic implications, this study contributes to the OGB practitioners by aligning the work in three types of external variables and TAM. The first of which is that personal characteristics (i.e. economic shopping orientation and prior buying frequency) affect consumer perception of PU and PEOU which consequently affecting consumer attitude and willing to use OGB to purchase products. The research findings provide managerial implications for OGB web site marketers regarding the effect of consumer characteristics on consumers' perceptions of OGB web sites. The results offer consumer segments (based on economic shopping orientation and prior buying frequency) for developing effective retention programs to align consumer segment strategies. Understanding that consumers with a high economic shopping orientation and prior buying frequency respond with more positive perceptions of OGB web sites than those with a low economic shopping orientation and prior buying frequency do has enabled marketers to conduct activities for developing a positive relationship with consumers with a high economic shopping orientation and high buying frequency, thereby increasing the positive perceptions, attitude, and behavioral intention toward the OGB web site. Second, the results of this study indicate that subjective norms positively affect PU. Because subjective norms facilitate consumer perceptions of usefulness of the OGB web site, the results suggest that OGB administrators and marketers can offer members incentives for introducing and asking their friends, relatives, or colleagues to engage in OGB web site activities. Third, although the system significantly influenced PEOU and information quality positively influenced PU, the results imply that OGB web site information administrators should establish excellent system features such as reliable operation, accessibility, and quick responses to enhance consumer perceptions of system quality toward OGB web sites. OGB web site information administrators should also provide accurate, complete, and well-formatted information to their consumers to enhance the positive perceptions of information quality. To attract potential consumers, OGB sites may post messages about discount products, and provide the link to the web site by using bulletin board systems, online discussion forums, and weblogs. They may also send e-mails to their members to inform them of the discount products and encourage their members to forward the message to their friends, colleagues, and relatives through social networking sites such as Facebook, Twitter, LinkedIn, and Google+ to inform others about the benefits of collaborating in group-buying activities.

5.2 Limitation and future study

Although we contribute to the field of consumer research, our study includes certain limitations. Therefore, we offer recommendations for future research based on these limitations. First, because we collected Taiwanese data, the results may not be sufficiently generalizable because of cultural differences. For example, social influences may not have an effect in the West because Westerners are typically more individualistic than Easterners. Therefore, future research may produce results that are more generalizable by distributing questionnaires in different countries. Second, our study factors are based on relevant literature, and future researchers could add related antecedent variables to form a more comprehensive framework for adopting OGB. For instance, "product category involvement," which is a personal characteristic, positively affects PEOU [McKechnie et al., 2006]. In addition, a previous study indicated that trust positively affects PU and PEOU [Zarmpouet al., 2012], and customer trust is a primary reason for the return of customers to an e-vendor [Gefen et al., 2003]. The reputation of the e-business is also a crucial factor for consumers considering forming a long-term relationship with the company [Walczak and Gregg, 2009]. Future studies can include these variables to investigate their effects in strengthening this model. Third, the consumer evaluation of the information components of web sites is associated with shopping tasks [Kim et al., 2007] and, thus, purchase tasks

may moderate the effects of the three types of external variables in the TAM. Testing the model by examining a variety of shopping tasks (for example, individuals purchasing food for themselves or for an organization) would provide generalized and potentially useful insights. Furthermore, comparing the variety of shopping tasks can be useful to academic researchers. Fourth,. We used multi-item measures to limit the response consistency effects and employed certain indices to test the reliability and validity of the data. However, cross-validating the results with experimental research or a longitudinal approach would be useful. Finally, an additional limitation was that the sample was limited to food purchases. Although this allowed us to control for product effect across the product categories of the OGB web site, it potentially limits generalizability of the results to other products. To provide evidence of generalizability, future research could replicate our findings in other product category settings. In summary, our study results enrich the academic implications and are directly relevant to practice. The findings of our research will hopefully serve as a springboard for future OGB research.

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