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The Role of Flow in Dissemination of Recommendations for Hedonic Products in User-Generated Review Websites

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ABSTRACT

The widely publicized impact of user-generated review (UGR) sites on sales has spawned a large number of studies on user behaviors on UGR sites. These existing studies center on conversions of visitors into paying customers, and the creation and dissemination of online reviews. UGR site visitors will consider emotional cues in reviews more seriously if the product offered is more enjoyment-based, hedonic, than utilitarian. This study examines the impact of user enjoyment, when reading reviews on hedonic products, on dissemination of those reviews with their personal social circles. Specifically, to examine user enjoyment on UGR sites, we apply the concept of flow – enjoyable experiences that are intense and enticing enough to convert visitors to endorsers. We conducted two online surveys to contrast our suggested flow-based explanation on dissemination against alternative rationality-based one. The findings from our surveys show that the flow state increases their intentions to recommend the establishments, while the objectivity of reviews and expertise of reviewers are limited in explaining such.

1. Introduction

User-generated review (UGR) websites have expanded over the past two decades due to their value in harnessing the wisdom of the crowd, sharply increasing sales for local businesses appraised positively by the crowd (Ye, Law, & Gu, 2009). UGR sites provide online platforms which enable customers to publicly share their reviews of products and services (Ye et al., 2009) and offer other prospect customers reference points for choosing business establishments for themselves. In fact, a one-star increase in a Yelp rating results in a 9% increase in revenue (Luca, 2016). This significant impact on sales has spawned numerous studies on the generation of online reviews (Cheung & Lee, 2012) and their impact on local businesses (Goh, Heng, & Lin, 2013; Tussyadiah, Park, & Fesenmaier, 2011; Zhu & Zhang, 2010).

One understudied area of UGR sites, amid the myriad of studies on generation of reviews, is the *dissemination of reviews* by UGR site users (Kim, Cheong, & Kim, 2017; Yang, Zhou, & Liu, 2012). The ubiquity of mobile devices and the perpetual use of social media sites has proliferated the dissemination of online reviews (Yang et al., 2012). For example, people share reviews on their social networking sites, or directly suggest establishments to friends or family. The growth of review dissemination merits our attention in that people give more credence to recommendations from their acquaintances than from strangers; in other words, information diffusion along strong ties has greater impact than along weak ties (Kim et al., 2017). Nonetheless, only a handful of studies have looked into this important topic (Kim et al., 2017; Yang et al., 2012).

The few extant studies on review dissemination have not yet fully incorporated product types into their studies. The consumer behavior literature classifies products into hedonic and utilitarian categories (Ren & Nickerson, 2018). Hedonic products satisfy a buyer's emotional needs, such as enjoyment and pleasure, while utilitarian products offer tangible and purposive values (Babin, Darden, & Griffin, 1994). These product types influence the way UGR visitors respond to online reviews that they read about (Ren & Nickerson, 2018). Specifically, prospect consumers of hedonic products pay more attention to emotional responses expressed in online reviews than to the objectivity and rationality of reviews (Ren & Nickerson, 2018).

We question whether different factors render individuals more likely to disseminate online reviews for hedonic products than for utilitarian products. In a study by Kim et al. (2017), research focused on utilitarian products such as automobiles and laptops, and proposed message objectivity and credibility of reviewers as the primary factors facilitating review dissemination. However, UGR visitors who consider purchasing hedonic products less likely respond to these cues in reviews (Ren & Nickerson, 2018). Our primary objective for this study, therefore, is to identify whether a different set of factors facilitate review dissemination of hedonic products as opposed to utilitarian products, an area of review generation that remains largely unknown.

Anchoring our work in the pleasurable consumption values that hedonic products provide (Babin et al., 1994), we examine the impact of a user's *enjoyable experiences* on UGR sites on their intentions to share UGRs. Our theoretical support is the concept of

flow, which refers to the enjoyable experience that individuals feel while engaged in pleasurable activities, such as reading a novel or listening to music (Csikszentmihalyi, 1990). As the well-known phrase “time flies when you’re having fun” suggests, when what individuals are doing is enjoyable, they are in a “flow” and experience distortion of time and space.

UGR sites are equipped with interesting reviews curating diverse viewpoints from crowds. They also have interactive and social website features which website operators offer to grab the crowd’s attention and to create enjoyable experiences for them with the final goal of fostering and sustaining voluntary contributions of user-generated reviews (Cheung & Lee, 2012). In this vein, the concept of flow has been applied by many prior researchers who have tried explaining seemingly irrational behaviors of online shoppers, such as browsing an e-retailer’s website for a long period of time without a clear goal of purchasing anything (Koufaris, 2002). Thus, the concept of flow is appropriate for explaining how enjoyable user experiences on UGR sites, not objective assessments of online reviews, encourage review shares of hedonic products which are consumed for the satisfaction of emotional needs.

For a comparison of the factors leading to review dissemination of hedonic products, we conducted two online surveys: (1) testing our conceptual model utilizing flow, and (2) testing an alternative model involving rational assessments of online reviews used for utilitarian products (Kim et al., 2017). We selected restaurants as the hedonic product for this study because people visit restaurants for the enjoyment of eating out, and restaurants are among the top two types of business establishments reviewed on UGR sites (“Yelp Investor Relations,” 2018).

The results of our two surveys demonstrate that our suggested model based on flow explains review disseminations of hedonic products better than the alternative model based on rationality. In particular, interactive and social features, along with review quality, affect the extent to which UGR visitors feel flow, which in turn increases their intentions to disseminate recommendations about hedonic products. Conversely, message objectivity and perceived expertise of reviewers are not factors associated with increases in review dissemination.

Our conceptual model, along with the empirical results from two surveys, demonstrates the significant role of flow in dissemination of reviews about hedonic products. Previous studies on UGR sites have focused on review generation rather than dissemination; the studies which do look at dissemination have not included hedonic products, which are increasingly reviewed on UGR sites (Chu, Roh, & Park, 2015; Yelp Investor Relations, 2018). The identification of the role of flow in the context of UGR dissemination, therefore, contributes to completing the depiction of UGR site user behaviors.

2. Literature review

2.1. Definition of UGR sites and interface features

UGR sites provide online platforms which allow customers to publicly share their reviews of products and services, (Ye et al., 2009). Representative examples include Yelp, TripAdvisor, Google Maps, and Reddit, among others. UGR sites are, by definition, a type of e-business model called, “infomediary.” The unique value

proposition of this e-business model centers on providing compiled information about a large number of sellers to buyers so that buyers can save time searching for options while obtaining high quality information (Goh et al., 2013; Tussyadiah et al., 2011; Zhu & Zhang, 2010). What separates UGR sites from other infomediary is that this compilation of information is done by a large crowd of voluntary contributors (Yim, Khuntia, & Argyris, 2015). Also, lately, UGR sites are growing in the business sectors that center on hedonic products, such as restaurants, trip destinations, and performances (Chu et al., 2015). In order to foster and sustain high quality reviews from large groups of individuals, especially reviews on hedonic products, UGR sites provide interactive and social features (see Figure 1) in addition to compiled quality information (Argyris & Ransbotham, 2006).

Figure 1 shows a Yelp page featuring a restaurant in Manhattan, New York. This page has not only text-based factual reviews, but also reviews that stimulate senses (e.g., taste, smell), a variety of pictures (more than 2,000 photos in this example), and multimedia content (e.g., videos), all of which contributes to increasing the quality of reviews. Yelp also provides *interactive features* which enable visitors to easily maneuver around the site. For instance, they can contribute their reviews, “write a review,” express their concerns about the inadequacy of a review, “report a review,” and make reservations at the restaurant or contact the restaurant directly. In addition, reserved visitors who do not wish to write reviews can assess the helpfulness of each review by clicking on “useful,” “funny,” or “cool.” In addition, this site provides *social features* to foster interaction among users. Examples are, “ask the community,” and social networking features such as, friends list, “compliment,” “send messages,” and “follow.” In Figure 1, this reviewer has 90 friends on her list, has provided 370 reviews, and uploaded over 5,000 photos. In sum, UGR sites of late have transcended prior text-only discussion forums often found in Usenet groups to become multi-media-based, interactive, and social platforms (Baka, 2016).

2.2. Gap in previous studies and research question

UGR site growth and its impact on local businesses has spawned a myriad of research on three broad topical areas: (1) conversions from browsing to paying customers and the resultant impact on businesses (Goh et al., 2013; Pentina, Prybutok, & Zhang, 2008; Tussyadiah et al., 2011; Vermeulen & Seegers, 2009; Ye et al., 2009; Zhu & Zhang, 2010); (2) the credibility of reviews (Fogel & Zachariah, 2017; Lim & Van Der Heide, 2014; Mackiewicz & Yeats, 2014); and (3) the creation of reviews (Agnihotri & Bhattacharya, 2016; Arakji, Benbunan-Fich, & Koufaris, 2009; Bronner & De Hoog, 2011; Cheung & Lee, 2012; Gretzel & Yoo, 2008; Senecal, Gharbi, & Nantel, 2002; Tong, Van Der Heide, Langwell, & Walther, 2008; Wasko & Faraj, 2005; Zhang, Ye, Law, & Li, 2010).

In contrast to the wealth of research presented on these three areas, there is a dearth of research on the dissemination of online reviews (Kim et al., 2017; Yang et al., 2012). This paucity of research is concerning because prior researchers have postulated that addressing the dissemination of online reviews encapsulates

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Multimedia and visually interactive content

Hedonic products that stimulate senses

Popular Dishes

Roasted Duck Leg Confit
55 Photos · 130 Reviews

Warm Pistachio Cruste...
31 Photos · 94 Reviews

Foie Gras Au Torchon w...
32 Photos · 109 Reviews

View Full Menu

Make a Reservation

Wednesday, March 20, 2019

7:00 pm

2 people

Find a Table

Today 11:30 am - 12:00 am
Open now

Full menu

Price range \$11-30

Health Score A
owned by HDScores

Ask the Community

Noise levels at Amélie?

Fairly noisy. It's got a young crowd and lots of celebrations are ha...
went). Folks know how to have a good time haha

Social features that increase interactivity

Esmeralda C.
Hell's Kitchen,
Manhattan, NY

90 friends
370 reviews
5077 photos
Elite '19

Share review

Embed review

Compliment

Send message

Follow Esmeralda C.

3/27/2019
1 check-in

This French wine bar is such a cozy spot, even during lunch. Ventured with a friend and we opted on shared plates and each tried the cauliflower soup that was amazingly delicious (veganized). The pot of mussels was delicious, especially the sauce, great for dipping the perfectly baked french baguette.

Although we visited during lunch they offer happy hour (no one else has happy hour at 1pm). We tried the wine flight samples which is a set of 4 wines (I chose all red bold wines) for a reasonable price. Definitely take your time savoring the wines as they can sneak up on you but oh they were so good.

The wait staff was great, friendly and informative with questions we had.

I'd like to visit during dinner hours which offer a few menu items not available during lunch.

WINE FLIGHTS \$12

Figure 1. Snapshots of a Yelp Restaurant Page that shows that such pages are not only text-based but has interactive components, stimulate senses for hedonic experiences, and social features, all of which creates the states of flow.

user behaviors surrounding UGR sites, along with the conversion to paying customers and creation of positive word of mouth (Moe & Fader, 2004). In the same vein, Kim et al. (2017) suggested that the generation and dissemination of online reviews are the two components of user generated product reviews, and that, while the former has received much attention, the latter has not. Yang et al. (2012) argued that the impact of online review dissemination termed “virality” is growing more significant with the increased availability of mobile devices and services.

Both of these previous studies (Kim et al., 2017; Yang et al., 2012) employed the construct of *perceived usefulness* as an antecedent to users’ willingness to share online reviews, and identified factors that increase perceived usefulness of online reviews. Perceived usefulness (Davis, 1989) assumes rational and conscious evaluations of online reviews by readers and

thereby increases with factors such as *message objectivity* and *perceived expertise of reviewers* (Kim et al., 2017). In short, prior studies centered on the impact of rational assessments on the dissemination of online reviews.

In contrast, a recent study (Ren & Nickerson, 2018) demonstrated that individuals who consider purchasing hedonic products are influenced by the *emotional experiences* (“arousal words” in their conceptualization) of online reviews rather than by objectivity or expertise (Kim et al., 2017). This is because consumers buy hedonic products to satisfy their emotional needs. Product type determines the elements of online reviews that affect visitors’ purchasing behaviors (Mudambi & Schuff, 2010). The objectivity of reviews (“depth” of reviews in their conceptualization) has less effect on the perceived usefulness of the reviews for goods that

require direct experiences for quality assessment, as do many hedonic products (Mudambi & Schuff, 2010). In other words, the rational assessments of online reviews carry less weight in purchase decisions for products for which emotional consumption values matter most (Mudambi & Schuff, 2010).

We question whether these inconsistent findings from prior studies can be attributed to the focus of Kim et al. (2017) and Yang et al. (2012) on utilitarian rather than hedonic products. Utilitarian products serve rational and conscious purposes, while hedonic products provide consumers' emotional consumption values, such as enjoyment and pleasure (Babin et al., 1994). Kim et al. (2017) selected computers and automobiles as product types, which are examples of primarily utilitarian products, and Yang et al. (2012) did not specify exact product types included in the study. Thus, dissemination of online reviews for hedonic products remains yet to be fully explicated. Likewise, although Ren and Nickerson (2018) succeeded in demonstrating how different elements of online reviews affect purchasing behaviors for hedonic products, they did *not* examine the roles of product types in the *dissemination of reviews*.

Towards this end, we will examine how enjoyable emotional experiences that a UGR site provides – i.e., flow states – increase individuals' intentions to disseminate online reviews for hedonic products. In so doing, we will address the mixed findings reported in prior studies and contribute to completing the depiction of the dissemination of online reviews by filling an important gap relating to hedonic products.

2.3. Concept of flow and its fit with dissemination of reviews of hedonic products

The concept of flow refers to an enjoyable and pleasurable state emerging when people conduct stimulating work (Csikszentmihalyi, 1990). Csikszentmihalyi (1990), who devised the concept of flow, proposed flow as a way to enhance literacy (i.e., reading, writing, and arithmetic) among teenagers in the United States. He claimed that the primary reason for low literacy in the United States should be sought in learners' lack of motivation, not abilities, and suggested that learning should be enjoyable. "When what they were doing was especially enjoyable it felt like being carried away by a current, like being in a flow (Csikszentmihalyi, 1990, p. 127)." When students are in a flow, their learning itself becomes an intrinsically rewarding experience, or "autotelic," and they will be engaged intensively in the task of learning for the sheer sake of doing so, thereby increasing their learning outcomes. Creation of flow states does *not* require the use of any immersive technology, such as virtual reality, to be experienced by individuals. In contrast, these flow experiences can be achieved in everyday activities, such as "playing with babies, reading books, and writing poems (Csikszentmihalyi, 1990, p. 127)."

Many studies trying to understand online user behaviors that rationality alone cannot explain have employed the concept of flow and a focus on intrinsically rewarding experiences that motivate people to engage in an activity (Animesh, Pinsonneault, Yang, & Oh, 2011). For instance,

flow has been used to explain why people navigate online stores without immediate plans to purchase any products: Because they enjoy doing so, and are in a "flow" (Koufaris, 2002). As shown in Table 1, numerous studies have empirically shown that visitors feel flow when they navigate e-business websites equipped with product reviews and descriptions, *sans* immersive technologies. Recall that UGR sites also provide reviews and descriptions of products and services. In addition, Koufaris (2002), Chung and Tan (2004), and Skadberg and Kimmel (2004), have shown that flow was created on the websites that garner UGRs. Based on empirical support, one can conclude that UGR sites can also create the states of flow.

In sum, there is a close theoretical fit between the concept of flow and the pleasures that consumers expect from consuming hedonic products in that both are anchored in enjoyment. UGR sites, which create the flow states for their visitors, are likely to render their visitors more willing to share the review content with

Table 1. Prior studies providing empirical support to e-business sites generating flow.

References	Contexts and their implications for this study	Methodology
Chen, Wigand, & Nilan, 1999	User's flow experience during web activities (general web activities, such as browsing and reading)	304 web users (survey)
Moon & Kim, 2001	The role of flow experience in the adoption and use of the World Wide Web	152 new web users (survey)
Koufaris, 2002	Flow experience in the acceptance and use of e-commerce websites (e.g., Booksamillion.com) for purchasing books. Book reviews (both by critics and other users) were the primary factor that increased visitors' enjoyment.	280 online customers (survey)
Huang, 2003	Flow experience according to content, interactivity, and novelty in a wide variety of websites. No specific website or product type was defined in this study.	243 web users (survey)
Chung & Tan, 2004	The effects of the perception of fun in the acceptance of websites for general information searches (Articles and review pages). No particular website or product type was mentioned.	154 website users (survey)
Chen, 2006	User's flow experience during website navigation in general. No particular website or product type was mentioned.	233 web users (quasi-experiment)
Chang & Wang, 2008	Flow experience during website navigation in general. No particular website or product type was mentioned.	426 web users (survey)
Skadberg & Kimmel, 2004	Flow experience in the individual's behavior in a tourism website (a hedonic product) . The effects of flow experience on review dissemination was not investigated.	272 travel-website visitors (quasi-experiment)
Wu & Chang, 2005	Flow experience of online travel-community users (user-generated reviews about travel destinations)	286 users of online travel communities (survey)
Kwak et al., 2014	User's flow experience in Facebook (social networking sites)	154 Facebook users (survey)

their social circles. We will hypothesize these relationships in the subsequent section.

3. Theoretical background and development of hypotheses

3.1. Antecedents to flow

This section describes the three antecedents that we anticipate will help create a flow state on UGR sites. To propose a comprehensive set of factors increasing flow, we examine all the dimensions relevant to UGR sites. There are three components to consider when designing user interfaces: (1) the website platform itself, (2) content shared on the platform, and (3) interactions among users (Shneiderman, 2002). Following Shneiderman (2002), we propose three antecedents to flow: *interactivity*, as a characteristic of the platform; *sociability*, referring to user interactions; and *review quality*, pertaining to content.

3.1.1. Interactivity as an antecedent to flow

We argue that interactivity provided by a UGR website platform increases flow. Interactivity provided by UGR sites should be refined, however, from its original form to be relevant to studying UGR sites. Earlier studies on interactivity focused on the system's seamless and synchronous responsiveness to user navigational choices (Hoffman & Novak, 1996). For instance, researchers were interested in the ability of users to move back and forth across pages and maneuver features, such as shopping carts and payment systems, without technological delays or hurdles (Koufaris, 2002). Granted, such conceptualization of interactivity was necessary in infant stages of online shopping in the early 2000's, but many online retailers have improved those mechanical hurdles since then. What is more relevant for UGR sites with the advent of Web 2.0 is whether the site is responsive to visitors' needs and facilitates their desire to provide feedback to the platform (Hoffman & Novak, 2009). UGR sites should be perceived to be inviting and to value feedback from everyone, including those who may not contribute any reviews (Shneiderman, 2002).

Websites that are active, responsive, and participatory can increase users' perception of interactivity (Huang, 2006). Perhaps recognizing this importance, many UGR sites now provide light-weight participatory features for visitors who are more reserved and thus less inclined to write vested reviews. As shown in Figure 1, visitors can use the "report a review" feature to let the platform operators know about content they dislike or find inappropriate. They can click "useful" on reviews to indicate their preferences. We accordingly define interactivity as **the extent to which a UGR site is perceived to be responsive to and inviting user feedback**.

We assert that interactivity leads to flow (Hoffman & Novak, 2009). Interactivity is a key aspect of improving consumers' evaluations of a website (Huang, 2006). Furthermore, interactivity positively affects attitudes towards websites (Teo, Oh, Liu, & Wei, 2003) and users' involvement (Jiang, Chan, Tan, & Chua, 2010). Thus, we state our first hypothesis.

H1: interactivity will increase flow.

3.1.2. Sociability as an antecedent to flow

Sociability is another precursor to flow, and thus we maintain that UGR sites should provide features that foster socialization among participants to increase their flow states. Whether UGR sites can provide social benefits equivalent to those of social networking sites has been ambiguous because UGR sites rely on information exchange along weak ties rather than along strong ties. Recent studies, however, have shown that weak ties can also bring social benefits (Sandstrom & Dunn, 2014), such as nurturing informal conversations and forming new bonds between existing relationship circles (De Meo, Ferrara, Fiumara, & Provetti, 2012; Kavanaugh, Carroll, Rosson, Zin, & Reese, 2005). As shown in Figure 1, social features on UGR sites include sending direct messages, following, and adding other users to friends' lists. Some UGR sites provide an "ask the community" feature to foster a sense of community. Recently, many users create their profiles and friends lists on UGR sites in the same manner as they do on other popular social networking sites (e.g., Facebook or Instagram, Figure 1). Therefore, we define **sociability as the capacity of a UGR site to foster socialization among participants**. Socialization can occur in the forms of informal conversations, forming relationships, and eventually creating a sense of belonging where participants identify themselves as being part of the community (Cheung & Lee, 2012).

Many empirical findings attest to the positive influence of sociability on flow from a wide array of perspectives (Kwak, Choi, & Lee, 2014). Previous studies on online communities have also introduced the concepts of social values and sociability (Animesh et al., 2011). Enhanced sociability through direct communication among individuals, regardless of dispersed physical location, is an important factor that leads to flow (Blattberg & Deighton, 1991). Sociability achieved by the use of avatars in virtual communities increases flow (Animesh et al., 2011). Social interaction was a strong predictor of experiencing flow in online games (Kim, Baker, & Song, 2007). The more players interact with each other and learn from others' experiences, the more involved they become with the game (Kim et al., 2007). Even if visitors do not actively use those features to socialize with others, the provision of these sociability features increases social presence, which can create and enhance their experience of flow (Animesh et al., 2011). Applying these findings to the use of UGR sites, we argue that these socialization features will augment visitors' flow states. Therefore, we come to our second hypothesis.

H2: Sociability will increase flow.

3.1.3. Review quality as an antecedent to flow

We posit that review quality affects flow, and that high-quality reviews will increase the visitors' flow experience. The concept of review quality, or quality of information provided by a computerized information system, originally stems from DeLone and McLean's information systems success model (DeLone & McLean, 2003) and has been applied in contexts

where information acquisition and exchange are the major functions of an information system, as in UGR sites. Essentially, user satisfaction stems from information quality, with increased satisfaction facilitating system use (Delone & McLean, 2003).

Building on that work, researchers have examined how the quality of information leads to a satisfactory experience with websites, finding a strong positive relationship (McKinney, Yoon, & Zahedi, 2002). Inefficient or irrelevant information will dissatisfy users, thereby decreasing users' engagement and continued use of the systems (Kim et al., 2017). In contrast, trustworthy, up-to-date information will result in users finding the content more enjoyable, thereby increasing flow (Gao & Bai, 2014; Zhou & Lu, 2011). In alignment with these prior studies, we define **review quality (RQ) as the perceived relevance and reliability of online reviews**. We argue that, when a website is perceived as informative, users will find it more interesting, and their flow level will increase. Therefore, we hypothesize the following.

H3: Review quality will increase flow.

3.2. The influence of flow on dissemination of online reviews for hedonic products

We maintain that a flow state will increase visitors' intentions to share the recommendations with others. As their flow states increase, visitors' concentration and involvement in reading online reviews also increase (Hoffman & Novak, 1996); subsequently, customers become more inclined to communicate the positive aspects of a product or a service for which they read reviews (Blanchard, 2004). In addition, the augmented learning of products or services in online reviews changes the receiver's attitudes and behaviors positively towards the establishments (Hoch & Deighton, 1989). These behavioral changes can be manifested as intentions to visit the establishments (Tussyadiah et al., 2011), **or intentions to recommend** them if visitors cannot or do not want to visit immediately due to personal constraints. It is worth noting that once individuals change their attitudes towards an object, these established attitudes persist over time even in the face of intentional attempts to reverse the changes that had occurred (Petty, 2018). Thus, a potential time lapse between the moment they experience the flow state and the moment they pass on the recommendation is *not* a hurdle for dissemination.

We expect that this positive influence of flow on the dissemination of reviews will be particularly relevant for hedonic products because of the close fit between the enjoyment visitors experience on UGR sites and their pleasurable consumption expectations from hedonic products. A fit between a technology artifact and a user's task increases the user's task performance (Hong, Thong, & Tam, 2004). Thus, a UGR site that is enjoyable to navigate should facilitate users' learning of the hedonic establishments whose consumption experiences are expected to be enjoyable and pleasurable.

Taken together, one can expect that a flow state increases visitors' intentions to recommend the establishments they

read reviews about to their social circles, such as family, friends, and their social network connections. Accordingly, our fourth hypothesis is as follows.

H4: Flow will increase visitors' intentions to recommend hedonic establishments reviewed on UGR sites.

4. Methodology

4.1. Overview

To test our hypotheses, we chose an online survey over other methods, such as an experiment, because a survey was a better fit for our research purposes. Surveys have been employed in a large number of e-commerce studies, such as ones to assess the acceptance of e-commerce services (Lee & Turban, 2001), trust in online shopping (Bhattacharjee, 2000), and satisfaction with e-commerce services (Devaraj, Fan, & Kohli, 2002).

Specifically, we employed an online market research company, Qualtrics, to administer the survey using its own respondent pool. Qualtrics was responsible for recruiting respondents, validating the quality of responses collected, and incentivizing respondents. Qualtrics performs quality checks to exclude duplication and ensure validity and integrity of survey data. In addition, Qualtrics maintains nationwide respondent pools which cover a wide range of demographic factors (e.g., age, gender, education, and income), providing an advantage over employing a student respondent pool for generalization of the findings.

Of the many types of business establishments in existence, we selected restaurants as hedonic experiences. Reviews of restaurants do not rely on food quality only, but also on the atmosphere and emotional experience (Wakefield & Baker, 1998). For instance, social environments, background music, and interior design all affect customers' satisfaction with restaurants, and the intention to revisit them in the future (Tai & Fung, 1997). Hence, when users seek out restaurant reviews, they will be concerned with the cues that signal enjoyment and a positive experience, which will be different than reading reviews for a product that has mostly utilitarian value (Jang & Namkung, 2009). Also, restaurants are one of the top two establishments most often reviewed on UGR sites (Yelp Investor Relations, 2018). We chose to examine reviews posted on Yelp and TripAdvisor, because, according to Amazon's Alexa analytics, they are the top review sites for restaurants.

4.2. Sampling procedures

To accurately represent UGR visitors, we enforced four selection criteria on Qualtrics' sampling procedures. First, respondents had to have used Yelp or TripAdvisor for their restaurant searches at least once in the 60 days previous to taking the online survey. This requirement was to ensure that they correctly remembered their experiences with UGR sites. Second, we invited only those respondents who reside in North America, excluding residents of other countries where Yelp and TripAdvisor may not be active. Third, in

the survey, there was a quality check question – i.e., “Do you intend to answer the questions sincerely?” Anyone who responded “no” or “uncertain” to this question was removed. Fourth, individuals who answered all of the questions in less than one minute were removed to leave only conscientious respondents. Of the 328 respondents who were initially reached by Qualtrics, 162 qualified.

Respondents were incentivized according to the terms they had with the online survey company, not by the researchers. Respondents were promised anonymity and confidentiality, and their participation in the survey was entirely voluntary. Table 2 shows the demographic factors of the respondents.

4.3. Survey procedure and instruments

The qualified respondents were asked to indicate which UGR site they have used more often – Yelp or TripAdvisor. Once they indicated a preferred site, they were asked to answer questions based on their experiences with that website for restaurant searches only.

We selected scales for our survey instruments that have been verified by previous studies as benchmarks and then prefaced them with UGR websites as the target object. For flow (FL), we selected a scale used by Novak et al. (2003); for intentions to recommend (IR), we chose one by Sameer and Mark (2010); for interactivity (INT), we chose a scale by Huang (2012); for sociability (SOC), we used an instrument by Kreijns, Kirschner, Jochems, & van Buuren (2007); and for review quality (RQ), we employed a tool by Kim, Xu, and Koh (2004).

The FL instrument had three items: “When I was navigating the UGR website, (1) time seemed to pass quickly, (2) I felt captivated, and (3) I paid little attention to other things.” The IR instrument had three items: “I would (1) recommend

a restaurant I found on the UGR site to friends and family, (2) suggest a restaurant I found on the UGR site to anyone looking for restaurants, and (3) recommend a restaurant I found on the UGR site on my social networking sites.” The INT instrument had three items: “The UGR website (1) is effective in gathering visitors’ feedback, (2) makes me feel like it wants to listen to its visitors, and (3) encourages visitors to offer feedback.” The SOC instrument had three questions: “The UGR website allows me (1) to have informal conversation with others, (2) to identify myself with others and (3) to form relationships with others.” Lastly, The RQ instrument had two items: “The UGR website provided me with (1) information relevant to my needs and (2) accurate information.”

4.4. Reliability and validity of the measures

R and R package Partial Least Squares Path Modeling (PLS-PM) (Sanchez, Trinchera, & Russolillo, 2014) and IBM SPSS (v. 23) were employed to assess the psychometric properties of the scales, perform confirmatory factor analysis, and build path models. First, internal consistency was assessed by examining Cronbach’s alpha and composite reliability for each construct (Table 3). All constructs had Cronbach’s alpha and composite reliability above the benchmark level of .70 (Barclay, Thompson, & Higgins, 1995). Next, we assessed the discriminant validity using the criterion of Fornell and Larcker (1981), which requires that the square root of every average variance extracted (AVE) be larger than any correlation among any pair of latent constructs and should be at least .70. Table 3 shows the square root of each AVE value in the diagonal cells and the inter-construct correlations in the off-diagonal ones. All of the AVE values are greater than any correlation among any corresponding pair of latent constructs, and thus the discriminant validity is adequate for this measurement model.

Lastly, we tested whether there is a common method bias among the five dependent variables measured as perceptions – i.e., INT, SOC, RQ, FL, and IR – using Harman’s (1976) single-factor test (Harman, 1976). The results of an exploratory factor analysis show that no single factor explained a majority of the variance and that five factors with Eigen-values close to 1.00 or higher have emerged, thereby alleviating the concerns of common method bias.

5. Hypotheses testing results

The data collected from our online survey were used to test our hypotheses. Partial least squares with a bootstrapping

Table 2. Demographic factors of the main sample.

Gender	<ul style="list-style-type: none"> ● Male: 53 (32.7%) ● Female: 109 (67.4%)
Education level	<ul style="list-style-type: none"> ● High school diploma: 51 (31.5%) ● Associate’s degree/some college: 55 (34.0%) ● 4-year degree: 38 (23.5%) ● Master’s/professional degree: 16 (9.9%) ● Doctorate: 2 (1.2%)
Age group	<ul style="list-style-type: none"> ● 18–24 years old: 17 (10.5%) ● 25–34 years old: 62 (38.3%) ● 35–44 years old: 45 (27.8%) ● 45–54 years old: 17 (10.5%) ● 55–64 years old: 10(6.2%) ● 65 years old or older: 11 (6.8%)
Smart phone operating systems (if they had one)	<ul style="list-style-type: none"> ● Android: 93 (57.4%) ● Apple iOS: 65 (34.6%) ● Windows phone: 9 (5.6%) ● Others: 4 (2.5%)
Device they use UGR sites for restaurant search	<ul style="list-style-type: none"> ● Mobile phone: 92 (56.8%) ● Desktop computer: 28 (17.3%) ● Both: 42 (25.9%)

Table 3. Construct reliability and discriminant validity in the main model.

Constructs	Cronbach’s		Composite				
	Alpha	Reliability	(1)	(2)	(3)	(4)	(5)
(1) INT	0.72	0.84	0.80*				
(2) SOC	0.78	0.87	0.43	0.83			
(3) RQ	0.73	0.88	0.63	0.34	0.89		
(4) FL	0.80	0.88	0.50	0.65	0.45	0.84	
(5) IR	0.81	0.89	0.60	0.49	0.52	0.54	0.85

*Figures in the diagonal cells are the square root of each AVE.

technique (500 random samples, $n = 162$) were employed to test the hypotheses. Specifically, we employed R and R package PLS-PM (Sanchez et al., 2014). The sample size of 162 exceeds the widely accepted convention that the recommended sample size for structural equation modeling be at least 10 times the number of indicators (Kock & Hadaya, 2018), or at least 100 times for model convergence (Churchill & Iacobucci, 2006).

Next, we checked whether the model fit is appropriate. Among other indices for model fit, we decided to use (i) the ratio of chi-square to degree of freedom and (ii) the standardized root mean square residual (SRMR). We chose the ratio of chi-square to degree of freedom instead of a chi-square test because the chi-square is sensitive to the sample size and is almost always statistically significant even with a moderate sample size (as in our survey), and thus the ratio of chi-square to degree of freedom is a more adequate measure (Iacobucci, 2010). The chi-square to the degree of freedom ratio is 3.37, which is less than the recommended threshold, 5.0 (Hu & Bentler, 1999).

The second index we chose is SRMR, which measures the difference between the sample and the predicted covariance matrix (Henseler, Ringle, & Sarstedt, 2015). If the model fits well, the distance between the two matrices will be close to zero, as will the SRMR. In the simulation study done by Henseler et al. (2015), the bootstrap-based SRMR performs well in terms of evaluating the overall goodness-of-fit. The SRMR of our model is 0.07, which is less than the recommended threshold level of 0.08 (Hu & Bentler, 1999). Also, these indicators show that our model had an appropriate level of fit with the data.¹

Figure 2 shows all the path coefficients as well as the associated t-statistics and R squares. The path coefficient between interactivity and flow is 0.18 and significant ($t = 2.40, p < .05$), and thus H1, which hypothesizes that interactivity leads to flow, is supported. Next, the path coefficient between sociability and flow is 0.52 and

significant ($t = 8.42, p < .01$), indicating that sociability features of UGR sites promote flow. Therefore, H2 is supported. The path coefficient between review quality and flow is 0.16 and significant ($t = 2.21, p < .05$), which demonstrates that a higher quality of reviews leads to greater flow when using a UGR site, supporting H3. Lastly, the path coefficient between flow and intentions to recommend is 0.53 and was significant ($t = 8.01, p < .01$), supporting H4, which states that a flow state increases visitors' intentions to recommend establishments they find on UGR sites.

6. Discussion

Our hypotheses testing results demonstrate that review quality, interactivity, and socialization foster flow states which in turn increase visitors' intentions to pass on recommendations to their social circles, as hypothesized. These findings support our arguments that the enjoyable experiences that a UGR site provides to users facilitate dissemination of online reviews for hedonic products consumed for the satisfaction of emotional needs. However, these findings do not necessarily rule out the alternative hypothesis that consumers, regardless of product type, make rational assessments of online reviews, particularly valuing objectivity of, and expertise expressed in online reviews, in order to feel inclined to share online reviews. Thus, empirically showing the inadequacy of this alternative hypothesis would further support the findings regarding flow impact on review dissemination.

Towards this end, we conducted an online survey using identical constructs and survey instruments from Kim et al. (2017) who proposed this alternative model. Kim et al. (2017) proposed that source expertise (SE), message objectivity (MO), website credibility (WC), and receiver-source similarity (SM) increase perceived usefulness (PU) of online reviews, which subsequently leads to willingness to share (WS) the reviews. In their study involving utilitarian products (e.g.,

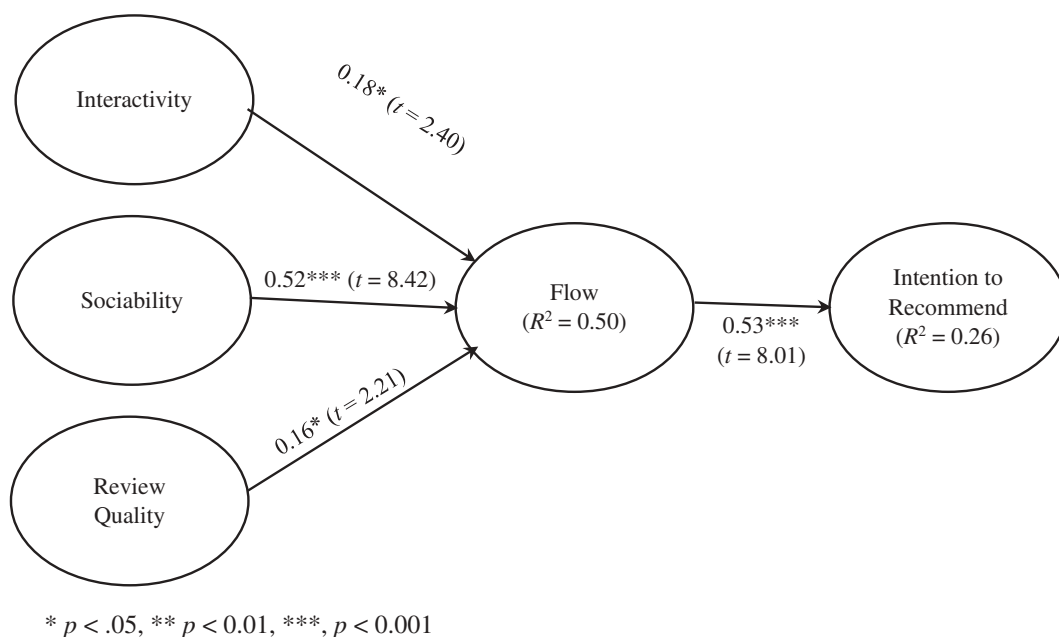


Figure 2. Main model testing results.

automobiles and laptops) tested using PLS-based SEM, all of these paths were found significant at a 0.05 significance level. We applied these scales to a hedonic product (i.e., restaurants) as in our own model.

We closely mimicked the survey procedures we had employed for testing our own model, including sampling procedures and the use of an online survey company. The study was completed by 239 qualified respondents (see Table 4 for demographic factors of the sample). We followed the same procedures to ensure reliability and validity of the scales. All the constructs showed acceptable levels of reliability and validity (Table 5). Next, we tested whether or not a common method bias is present in the data set. The results of an exploratory factor analysis showed that no single factor explained a majority of the variance and that six factors with Eigenvalues close to 1.00 or higher emerged, thereby alleviating the concerns of a common method bias.

Next, we tested whether the model fit is appropriate. The standardized root mean square residual of the path model is 0.053, which is less than 0.08, so the model fit is appropriate (Hu & Bentler, 1999). Also, the chi-square to the degrees of freedom ratio is 4.55, which is less than 5.0 (Kline, 2015). These indicators show that our model had an appropriate level of fit with the data.²

We used the R and R PLS-PM package to test our hypotheses. Partial least squares with a bootstrapping technique (500 random samples, $n = 239$) were employed to test the significance of the paths. The results of the path model are shown in Figure 3. Only two paths, which are from perceived usefulness to willingness to share, and from website credibility to perceived usefulness, are significant, while none of the SE (source expertise), SM (source-receiver similarity), or MO (message

Table 4. Demographic factors of the sample for the alternative model.

Gender	<ul style="list-style-type: none"> ● Male: 104 (43.5%) ● Female: 135 (56.5%)
Education level	<ul style="list-style-type: none"> ● High school diploma: 39 (16.3%) ● Associate's degree/some college: 71 (29.7%) ● 4-year degree: 79 (33%) ● Master's/professional degree: 46 (19.3%) ● Doctorate: 4 (1.7%)
Age group	<ul style="list-style-type: none"> ● 18–24 years old: 22 (10.5%) ● 25–34 years old: 72 (30%) ● 35–44 years old: 69 (28.8%) ● 45–54 years old: 29 (12.2%) ● 55–64 years old: 24 (10.1%) ● 65 years old or older: 20 (8.3%)
Smart phone operating systems (if they had one)	<ul style="list-style-type: none"> ● Android: 122 (51.0%) ● Apple iOS: 108 (45.2%) ● Windows phone: 6 (2.5%) ● Others: 3 (1.3%)
Device they use UGR sites for restaurant search	<ul style="list-style-type: none"> ● Mobile phone: 123 (51.5%) ● Desktop computer: 43 (18%) ● Both: 73 (30.5%)

Table 5. Construct reliability and discriminant validity in the alternative model.

	Cronbach's Alpha	Composite Reliability	(1)	(2)	(3)	(4)	(5)	(6)
(1) MO	0.85	0.91	0.88*					
(2) PU	0.82	0.89	0.57	0.86				
(3) SE	0.87	0.92	0.80	0.63	0.89			
(4) SM	0.90	0.93	0.68	0.58	0.75	0.91		
(5) WC	0.85	0.91	0.73	0.75	0.79	0.67	0.88	
(6) WS	0.88	0.92	0.61	0.75	0.69	0.66	0.72	0.90

*Figures in the diagonal cells are the square root of each AVE.

objectivity) was a significant influence on PU (perceived usefulness).

These results support our claim that, although the model described an individual's dissemination of review messages concerning utilitarian products, it fails to do so for hedonic goods, such as restaurants. The inadequacy of this model indirectly supports our assertion that flow state better explains dissemination of online user reviews for hedonic products.

7. Conclusion

7.1. Summary of the findings

In this study, we examined whether and why visitors to UGR sites become inclined to share recommendations about establishments. Identifying the value of browsing users in terms of their potential as word-of-mouth sources is important (Moe & Fader, 2004). A handful of existing studies on this topic have not yet focused on hedonic products, which many rapidly growing UGR sites (e.g., Yelp and TripAdvisor) center on (Chu et al., 2015), and thus have not yet addressed the flow aspects of UGR experiences that facilitate dissemination of online reviews for hedonic products. Considering the concept of flow, which refers to a pleasurable psychological state, there is a clear fit between the flow experiences provided by UGR sites and the emotional needs that consumers look to satisfy from purchasing hedonic products. This fit will render visitors more apt to pass on the reviews they read on UGR sites.

Furthermore, we proposed a comprehensive set of factors increasing flow in all three elements of user interface design – interactivity for platform (H1), socialization for users (H2), and review quality for content (H3). To test our model, we employed a marketing research company that recruited individuals who had used Yelp and TripAdvisor to search for restaurants in the recent past to participate in our online survey. Our path analyses results, using PLS-based SEM, indicate that all of our hypotheses are supported.

Furthermore, we conducted another online survey, using the same company and mimicking procedures of our prior data collection, to test the alternative model based on rationality. Our purpose was to see if this alternative model, which held for utilitarian products, can also be applied to review dissemination for hedonic products. The hypotheses-testing results from the alternative model using PLS-based SEM show that neither objectivity of reviews nor expertise of reviewers increased perceived usefulness of online reviews. The results from both our flow model and alternative rationality model indicate that a flow

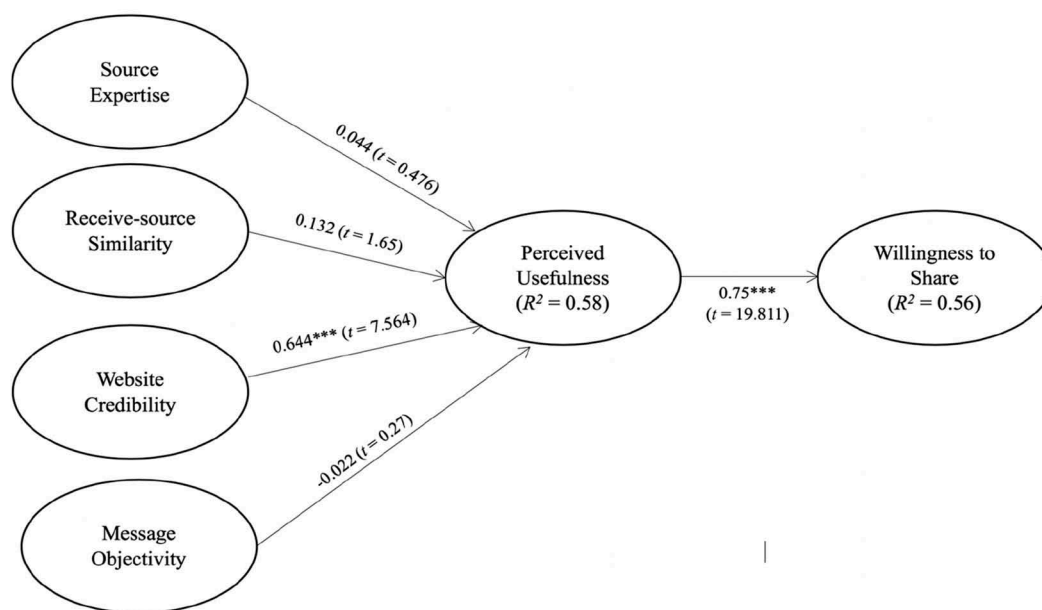


Figure 3. Alternative model testing results.

experience provided by a UGR site is an important influence on review dissemination of hedonic products.

7.2. Limitations of the findings

As with any study, our study has limitations. The first limitation is our small sample size of 162 respondents. While a larger number of respondents may have been preferable, our sample is larger than 100, which is sufficient for model convergence (Churchill & Iacobucci, 2006). Also, our model fit indices suggest appropriate model fit, showing that a relatively small sample size was not a negative factor for interpretation of our results. Another potential limitation is that we did not separate pure visitors who have never contributed any content to UGR sites from visitors in general, including active contributors. However, recent Yelp investor relations materials (2018) state that active reviewers are only a small fraction of visitors in general (less than 10%). UGR sites these days incorporate many participatory features, such as “like,” “connecting,” and “asking questions” as shown in Figure 1; thus, the distinction between purely passive visitors and active contributors is becoming less clear and less significant.

7.3. Contributions to theory advancement

Within these limitations, our study provides several significant contributions to theory advancement. First, this study helps complete the depiction of user behaviors on UGR sites. A few existing studies on review dissemination did not include emotional experiences that visitors look for in UGR sites when they consider hedonic products. By clearly specifying product type and focusing on flow experiences, we close an important gap in the literature.

Second, many researchers are beginning to recognize the value of the emotional experiences provided by UGR sites or any other websites in creating user loyalty to the websites

(Bilgihan, 2016). Prior studies adopted a rather utilitarian perspective that the website should provide tangible solutions to users’ problems as a way of creating user loyalty. However, more recent studies demonstrate that emotional experiences can be equally important (Bilgihan, 2016). This study provides empirical support to that claim.

Third, this study shows theory-driven psychological processes that UGR visitors undergo in disseminating reviews for hedonic products. Although Ren and Nickerson (2018) have successfully shown the importance of hedonic products in determining users’ purchase decisions and compared the differences between hedonic and utilitarian products, they have not shown the theoretical underpinning of such differences. Towards this end, we have employed the concept of flow and demonstrated theory-driven psychological processes that visitors who consider hedonic products undergo.

Also, not only have we employed the concept of flow, we have also proposed a comprehensive set of factors for increasing flow on UGR sites covering content, platform, and users in order to comprehensively address all three elements of user interface design (Shneiderman, 2002).

Lastly, our study contributes to a broader topic on establishing user classes (Moe & Fader, 2004). This work helps in establishing a category of users who may not purchase reviewed products immediately, but may recommend the products to others. This group of users may constitute another user class as they may be as valuable as paying customers.

7.4. Implications for practice

In addition to advancing theory, our study also has important implications for practice. Recognizing the influence of flow on review dissemination, interface designers may want to focus on creating enjoyable emotional experiences, or “fun” experiences, for users – especially those who consider purchasing

hedonic products. Since some of the fastest growing UGR sites indeed center on hedonic products such as restaurants and travel destinations (Chu et al., 2015), creating “fun” experiences for visitors will help to generate word-of-mouth recommendations by visitors. The fit between the values UGR sites provide and the consumption experiences expected from hedonic products closely resembles the interface design principle of creating interfaces that support the users’ goals (Norman & Euchner, 2016). Creating flow experiences will increase user engagement, rendering users more likely to spread positive reviews about the establishments featured on the website. This positive effect will help website owners convince business owners to pay to have their business featured, with the hope of creating indirect advertising from the crowd. In other words, website owners can demonstrate return on investment of advertisements to business owners, securing revenue for their websites.

In addition, this study shows that UGR sites should support socialization among users and encourage users to provide feedback. Instead of attempting to distinguish active contributors from passive participants, website designers should develop ways in which any visitor to UGR sites will feel included and invited to freely provide feedback through their sites. Feedback from visitors does not need to be narrowly defined as written reviews, but rather it can broadly include evaluations of written reviews (e.g., “like,” “share,” and “vote”) which even passive participants can easily provide. Also, UGR sites are becoming increasingly social, in that they equip their websites with social features equivalent to social networking sites such as Facebook (Baka, 2016), perhaps with the realization that enhanced sociability increases the value of their websites. Now both Yelp and TripAdvisor provide features with which users can build their friends list, connect to one another, message one another, and build their statuses in the platforms. To this end, user interaction designers are encouraged to consider ways in which they can foster social interaction among users.

Lastly, the results from this study show that it is crucial to consider the product types on which UGR sites center. Visitors want to satisfy different needs on websites contingent on the types of products they read reviews about. When they read reviews about utilitarian products, they will obviously try to remain rational and objective to ensure that they choose an option that provides the most practical use and makes the most logical sense. Conversely, when they read reviews about hedonic products, they will focus more on the products satisfying their emotional needs, thus, they will value the UGR sites that provide enjoyable experiences. Therefore, this study suggests that website designers should recognize the importance of product classification in their design.

7.5. Suggestions for future research

In the future, researchers may want to further explore causal relationships among the variables included in this paper. Because we used a cross-sectional online survey, we faced limitations in claiming direct causality. Subsequent studies may want to employ a different method, such as a controlled laboratory experiment or a longitudinal study.

In the future, researchers may compare different UGR sites or explore different product classifications, such as experience versus search products or high versus low involvement products. Depending on these product types, interfaces can also be designed differently. For future work, researchers may consider establishing design principles that pertain to each of these product classifications.

Disseminating recommendations is becoming prevalent. There are many other variables and contexts for researchers to explore in the future for a better understanding of review dissemination. The first step towards this understanding is to recognize the importance and relevance of the dissemination of online reviews in UGR sites.

Notes

1. To further demonstrate the model fit, we ran a covariance-based structural equation modeling (SEM), using the lavaan package in R, to provide fit indices used for assessing the fit of covariance-based SEMs (Kline, 2015). Recall that our model is based on PLS-based SEM; thus, these additional steps are not necessary. However, to ensure the appropriateness of our model fit, we provide this additional set of model fit indices. The three most common indices for covariance-based SEM are comparative fit index (CFI), root mean square error of approximation (RMSEA), and SRMR (Kline, 2015). CFI should be greater than 0.90; both RMSEA and SRMR should not be greater than 0.08 (Hu & Bentler, 1999; Kline, 2015). Our CFI is 0.91; RMSEA and SRMR are 0.08 and 0.07, all of which indicate our model fit is appropriate.
2. In addition, we offer fit indices appropriate for covariance-based structural equation modeling: The comparative fit index was .95, greater than the suggested level of .90; RMSEA and SRMR were both .07 and .04, respectively, less than the benchmark level of 0.8, thus indicating that the model fit was appropriate (Hu & Bentler, 1999; Kline, 2015).

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