Promoting Consumption Information Contribution to Online Feedback Systems: An Analysis from the Cognition Enhancement Perspective

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ABSTRACT

Online feedback systems (OFSs), which acquire, store, and publish feedbacks from consumers after their actual consumptions, are an effective mechanism to overcome information asymmetry. While past research has examined the word-of-mouth effect of OFS, little analytical effort has been invested in understanding factors that influence consumers’ information provision to OFS, which is crucial to the development and function of OFS. Based on the argument that the actual usage of an information system is motivated and governed by the cognitive processing of the system, this paper proposes that the mental representation of OFS will determine the consumer’s information contribution to OFS. The study recognizes that the mental representation would be underdeveloped due to a poverty of social and informational cues in OFS context and suggests two cognitive enhancement mechanisms to overcome the limitation. Propositions derived from the above conceptualization are provided. Implications for future research are also discussed.

Keywords  
Online feedback systems, information contribution, cognitive processes, cognitive enhancement.

INTRODUCTION

Given information asymmetry resulted from the inherent physical and temporal separation between the seller and the buyer and the Internet’s limited ability to convey rich product information as compared to traditional physical arrangements, attempt that could enhance potential consumers’ knowledge of the product can greatly promote the likelihood to succeed of an Internet marketplace. Reacting to the obvious demand for reliable and rich product and seller information, a number of electronic marketplaces have implemented various mechanisms to help customers acquire such information and facilitate transactions on electronic platforms. Because of the ease of integration with electronic platforms, information systems have become an important solution to the increasing product information demand. For examples, on Amazon.com, people can read reviews from both editors and peer customers on books to gain in-depth knowledge. eBay and other similar auction websites provide feedbacks on sellers to help buyers gauge their trustworthiness. Venere.com offers pure consumer reviews to assist users to gain information regarding various aspects of hotels registered on it. While some online marketplaces utilize product information from experts and independent sources, information systems that provide consumer reviews can be reasonably expected to be able to offer relatively comprehensive product information given the huge size of potential contributors.

Being an effective artifact that addresses the common information asymmetry problem in electronic commerce, online feedback systems (OFSs) have been proposed as a critical success factor for websites such as eBay (Dellarocas 2003; Resnick, Zeckhauser, Friedman, and Kuwabara, 2000). Dellarocas (2003) noted that OFSs could mobilize online word-of-mouth and guide consumers in making decisions in the online context. Substantial empirical evidence has been documented...
by Ba and Pavlou (2002), Hennig-Thurau and Walsh (2004), and Chevalier and Mayzlin (2003). These academic endeavors further signify the importance of OFS in electronic commerce.

Despite the prevalence OFSs in electronic commerce and the recognition of their value (Armstrong and Hagel 1996), our knowledge centers on how they affect consumer activities (Ba and Pavlou, 2002; Chevalier and Mayzlin 2003). Noticeably, one fundamental aspect of OFSs, consumer participation behavior in online feedback provision has not been well understood yet.

Adequate information supply to OFSs is instrumental to justify their critical role in building an effective Internet marketplace. For online feedback systems to realize their potential, sufficient information repository must be in place so that consumers can rely on the information to make informed decisions. To electronic commerce participants, the value of OFS lies in the contents from consumers, which are an effective signal of the quality of the products/services being transacted and of the trustworthiness of exchange partners. If online feedback systems are unable to solicit and accumulate necessary level of transactional information, the potential of online feedback systems will be substantially undermined. The immediate consequence of lack of contents in feedback systems would be that buyers are still unable to differentiate their engagements with sellers of varying level of trustworthiness, a situation which will gradually drive quality sellers out of the market (Akerlof 1970) and might even lead to the total dissolution of the online marketplace (Dellarocas 2003).

This study examines consumer information contribution to OFSs through a cognitive lens. Discussions on information contribution in the organization context are abundant, especially in the knowledge management literature. However, consumption information contribution to OFSs may differ from knowledge contribution to organizational electronic knowledge repository in some significant ways. In the organization context, there are many environmental factors such as prevailing norms, explicit persuasion and social cues that would give rise to rich mental representation of the system and promote knowledge contribution. However, for OFSs, external stimuli are relatively limited. It is therefore the interest of this study to explore how the mental representation of OFSs is developed and what mechanisms could be used to enhance the mental representation of OFSs and consequently to promote information contribution.

THE MENTAL REPRESENTATION PERSPECTIVE ON INFORMATION CONTRIBUTION TO OFS

Psychologists contend that people’s interactions with their environment, which acts as various stimuli, involve extensive information processing through complex cognitive mechanisms (Fiske and Taylor, 1991, p. 8). As illustrated in Figure 1, environmental inputs are detected, encoded, stored, and integrated with memories before responses are selected and executed. All cognitive stages between a person’s receiving of environmental stimuli and responding to the stimuli are influenced by her memories of the past events (Revell, 1993). Past experience results in knowledge, perceptions, evaluations, and beliefs that are stored in an individual’s memory in the form of cognitive structures. Such a cognitive context shapes the person’s ability to detect and propensity to select the stimuli embodied in the environment inputs. They also interact with the perceived stimuli to form a mental representation of the object that leads to the eventual execution of the response.

![Figure 1. Conceptual Stages of Information Processing (adapted from Revell 1993)](image-url)
Cognitive involvement is also observed in human-computer interaction (e.g., Agarwal and Karahanna 2000). An information technology artifact may embody multiple stimuli in its contents and interface. During technology and human interaction, these stimuli draw varying level of attention from users and stimulate cognitive processing of the stimuli. Therefore, users’ initial and continued engagement with a particular information system is an outcome of their cognitive activities that elicit, scrutinize, and abstract the information associated with the system from multiple sources. The information processing of the information system will lead to a set of thoughts, evaluations, and beliefs of the system, which is encapsulated as cognitive representation here.

As such, the consumer’s interaction with OFSs for information contribution is based on the mental representation of OFSs. As an electronic word-of-mouth mechanism, OFSs may generate stimuli similar to what is perceived by the consumer in a offline word-of-mouth communication and result in a mental representation similar to that of offline word-of-mouth channel in the consumer’s cognitive structure. Therefore, we derive the possible mental representation of OFSs by drawing on post-consumption communication literature.

The Possible Mental Representation of OFSs

Consumption information provision comes after actual commercial engagements. Post-consumption researchers observe that consumption experience communications in particular satisfy consumers’ communication needs that are aroused from their engagement with the product and use situation (Dichter 1966) and consumers tend to exhibit three dimensions of involvement in their communication, namely product involvement, self-involvement, and other-involvement (Westbrook 1987). Therefore, mental representation of OFSs may develop along the three involvement dimensions.

As a Reciprocating Tool

Product involvement stimulates the desire of consumers to communicate their experience with products or services. Consumption processes in general consist of three stages, pre-consumption, consumption, and post-consumption (Schiffman and Kanuk 2000). One outcome of pre-consumption stage is the formulation of expectations of actual consumption in consumers’ minds through cognitive processing of information from different sources such as marketing promotion and advertisements, interpersonal word-of-mouth, memory of past relevant consumption. After actual consumptions, in post-consumption stage, consumers tend to compare their expectations against their evaluations of what are received through cognitive appraisal and attribution. The expectancy disconfirmation can be manifested along a continuum from positive (obtained outcomes exceed the expectations) to neutral (obtained outcomes exactly meet the expectations) to negative (obtained outcomes fall short of expectations) (Oliver, 1980). The disconfirmation may produce a psychological tension (Dichter 1966) and stimulate consumer post-consumption behavior, including communication.

The post-consumption communication aroused by product-involvement is a way to reciprocate the product and service received (Soderlund 1998). For example, if negative disconfirmation is present, consumers could relieve their psychological discomfort by giving complaint through interpersonal communications (Schiffman and Kanuk 2000). The complaints could generally generate pivotally negative effects on other consumers’ similar consumption decisions; therefore the complainants are compensated psychologically. Empirically researchers have observed strong association between consumer negative word-of-mouth transmission with regard to the product or service, a typical post-consumption communication, and the perceived negative consumption experience. On the other hand, positive feelings aroused by satisfactory consumptions may produce promotive tensions that would stimulate the consumer to engage in certain activities to release them.

Proposition 1: The cognitive representation of OFSs as a tool to reciprocate the product/service encountered will positively affect information contribution to OFSs.

As a Self-presentation Tool

Self-presentation refers to the manner in which individuals plan, adopt, and carry out strategies for managing the impressions they make on others. People tend to purposively employ different vehicles to project their roles, traits, and characteristics, either ideal or real, to targets in various social situations (Price, Feick, and Guskey 1995). Wojnicki and Godes (2004) suggested that word-of-mouth communication is a self-oriented tool that can be used by consumers as a way to manage their image to others.

Such purposive consumption information provision allows consumers to gain attention, recognition, power or status (Westbrook 1987). In a similar vein, studies of online opinion leadership posit that consumer is motivated by the desire for public recognition of her ability to influence other individuals’ attitude or overt behavior (Jin, Bloch and Cameron, 2002). Some studies of consumer communication find that product and service knowledge is an antecedent to the desire to gain...
recognition from others (Wojnicki and Godes, 2004). Actually it has been articulated that providing advice and feedback is out of the desire people feel to share information about which they consider themselves expert (Hamilton 2001).

Self-presentation is also pervasive in cyberspace. Schau and Gilly (2003) found that people strategically use available web space to perform self-referential behaviors, with the aim to construct true selves. As such, OFSs may be conceptualized as a tool to present self to the others. Such a representation of OFSs may promote information provision to OFSs to realize self-presentation. However, the self-involvement utility varies across consumers. Consumers who regard themselves as expert would tend to have a high desire to express the trait and to be on alert for possible channels for self-presentation. Such a mental state would make people easily associate a stimulus with the purpose to express their expertise.

**Proposition 2:** The cognitive representation of OFSs as a tool to present self as an expert will positively affect information contribution to OFSs. Such a cognitive representation and contribution behavior will be more likely to occur to consumers who believe in their expertise.

As a Helping Tool

The post-consumption communication is able to help other consumers to have a good knowledge of products and services that they cannot easily obtain from formal marketing sources and to make informed consumption decision. The information transmitted through interpersonal communication is of substantial value given the wide existence of information asymmetry. Helping out, an altruism behavior, may be a basic human drive (Hamilton 2001). Providing product and service information might be a result of some consumers’ desire to help others. Therefore communicating with people about the actual consumption experience can help a consumer derive other-involvement utility (Westbrook 1987).

**Proposition 3:** Cognitive representation of OFSs as a tool to help others will positively affect information contribution to OFSs.

In summary, post-consumption communication may result in a multiple-dimensional mental representation. It can be adopted as a channel to reciprocate, to present a true or ideal self, or to help peer consumers. The intensity of these types of mental representation will influence the consumer’s decision for the engagement in providing information about her consumption experience to others.

MECHANISMS TO ENHANCE COGNITIVE PROCESSING OF OFSS

The Difference between OFSs and Offline Word-of-mouth Channel

The foregoing account derives the possible mental representation of OFSs by drawing upon the literature of post-consumption communication. Such mental representation may develop when a consumer casually come across OFSs while surfing the Internet. However, given the significant inferiority of OFSs to the offline word-of-mouth channel in the ability to convey an array of cues that promote cognitive processing of the systems, the development of the above-derived mental representation in the consumer’s cognitive structure could be problematic. Although both online and offline word-of-mouth channels may serve identical purposes for consumers to reciprocate products, present self and help others, there are much more and richer cues and stimuli in the offline context to initiate word-of-mouth activities than in the online context. For instance, the consumer may provide her experience with a product in a conversation with her friend who is considering that product. Hearing from a radio program a listener’s complaint about a restaurant may motive the consumer to do the same to a café where she has had a very unsatisfactory encounter. On the other hand, electronic media have proven to be a relatively lean channel in terms of the ability to convey social and visual cues (Daft and Lengel, 1984). The OFSs’ inability to convey motivational cues for information contribution would cause the under-development of mental representation of OFSs, which could make the consumer unable to associate OFSs with her consumption memory and to integrate the information from the two domains. Low cognitive elaboration will in turn lead to no-contribution response to OFSs.

A cognitive processing activation and enhancement approach could be a solution to overcome the above inherent limitation of OFSs. Such cognitive intervention can help enable the consumer to develop an enhanced mental representation of OFSs that ensures a series of active interactions between OFSs and consumption memory, and a desirable response to OFSs.

Information processing includes both a passive or automatic and an active or controlled component (Bargh 1989; Bargh, Gollwitzer, Lee-Chai, Barndollar and Trotschel, 2001). The passive component refers to an unconscious process that involves spreading of activation in an associative network. An active process is characterized by conscious cognitive operations such as the integration of mental representations. The dual processes of information processing suggest two possible types of interventions to enhance mental representation of OFSs. One is to embed some additional information cues in the system
stimuli and representation enhancement could be achieved when the consumer unconsciously perceive and process these cues while interacting with the system. This approach has been deployed in certain OFS platforms. The other is to impart beliefs and thoughts regarding OFSs to the consumer to activate a conscious mental operation of the external interventional information. The ultimate goal of these types of interventions is to promote information contribution to OFSs through the mediation of the enhanced mental representation of OFSs. Figure 2 depicts the conceptual model.

The Passive Enhancement Mechanism

The information system interface and contents are important stimuli for cognitive activities (Agarwal and Karahanna 2000; Mandel and Hohnson 2002; Ma, 2004). When integrated appropriately with OFSs, they augment the cues associated with OFSs and have the potential to enhance the representation of OFSs, which is difficult to develop otherwise.

Indeed, many information technology artifacts have been deployed in OFS platforms, such as Epinions.com, Amazon.com and eBay.com. However no theoretical underpinning has been provided to explain how these technologies can promote consumers’ information contribution behavior. We propose that in accordance with the possible mental representation of OFSs as a tool to reciprocate product/services, to express self, and to help others, the automatic enhancement mechanism can exert influence in three distinct ways to ensue active information processing and rich representation development of OFSs. Next, we draw upon current practice on OFSs to demonstrate how the automatic enhancement mechanism works.

Information environment, i.e., the published feedback and reviews provided by other consumers, may disseminate cues to draw consumers’ attentions to the ability of OFSs to reciprocate the product/service received and induce a series of cognitive operations. First, reading others’ reviews may help the consumer realize OFSs are an outlet for consumption information communication. Therefore, mental representation of OFSs is enhanced. Second, the review the consumer comes across may increase the accessibility of her similar or related experience stored in the memory (Higgins 1997). Third, the association between the activated domains of OFSs and consumption experience may be established automatically, which will lead to a high possibility of contribution response. Additionally, the activation of certain consumption memory may also bring along psychological tensions that a consumer would want to get rid of and the promoted attention to OFSs may make them an easily available conduit to release such feeling.

Proposition 4: Reviews published on OFSs serve as an automatic mechanism to enhance consumers’ mental representation of OFSs as a tool to reciprocate product/service providers and to promote information contribution to OFSs.

An important way to induce self-presentation behavior is the recognition and affirmation from the audience (Goffman, 1959; Ma, 2004). If cues of social recognition are present on OFSs platform, the consumer may gain the enhanced understanding of OFSs as a vehicle to express self. Additionally, consumers’ motivation could be invoked by the recognition stimulus. Cognitive integration of the activated thoughts will lead to increased consumption information contribution behavior. Current artifacts on the Internet OFSs, such as labels of top reviewer and expert reviewer and index of popularity (Amazon.com; Epinion.com) can be conceptualized as examples of automatic mechanism to enhance mental representation of OFSs as a venue for self-presentation.

Proposition 5: Artifacts that demonstrate the recognition of information contributors’ expertise and status serve as an automatic mechanism to enhance consumers’ mental representation of OFSs as a tool to present self and to promote information contribution to OFSs.

Environmental stimuli that demonstrate the helpfulness of the product/service reviews on OFSs may enhance the mental representation of OFSs. It has been found that helping behavior can be promoted when rewards in the form of recognition of the focal person’s benevolence and knowledgeableness from the recipients of the helping behavior and the public are present...
Proposition 6: Artifacts that demonstrate the helpfulness of the reviews on OFSs serve as an automatic mechanism to enhance consumers’ mental representation of OFSs as a tool to help others and to promote information contribution to OFSs.

The Active Enhancement Mechanism

Contrary to the passive enhancement mechanism that utilizes the situational context faced by the individual to convey stimuli, the active enhancement mechanism attempts to trigger mental representation construction with explicit intervention and guidance and to make consumers engage in conscious choice (Bargh et al. 2001). Such interventions are commonly employed in marketing practices with considerable theoretical underpinnings. For example, marketers tend to use various communication media to advertise their products, which is in essence a persuasive process to disseminate product information with the aim to shape the mental representation of the product in consumers’ cognitive structure that would lead to favorable end to the marketers.

Persuasion, defined as “human communication designed to influence others by modifying their beliefs, values, or attitudes” (Simons 1976, p. 21), is an effective mechanism to construct and enhance the individual’s mental representation of an object. However, unlike the automatic enhancement mechanism, the persuasive, controlled enhancement mechanism has yet to be incorporated in commercial OFSs, though it has been experimented in the academic study (Beenen, Ling, Wang, Chang, Frankowski, Resnick, and Kraut, 2004). Indeed, the interactive feature of computer-mediated communication makes the active enhancement mechanism feasible and deployable in the context of OFSs. Cognitive enhancement messages could be delivered to targets in several ways. Incorporating the message in a post online transaction process is appropriate for electronic commerce users. Alternatively, banners or pop-ups that contain the persuasive message could be activated when users visit the OFS websites.

In particular, the active enhancement mechanism could deliver some claims about OFSs to consumers that correspond to the three types of possible mental representation of OFSs. For example, the claim could explicate OFSs’ ability to revenge a manufacturer for the bad product quality by preventing other consumers from choosing its products, the ability to help establish the individual’s expert status in the online community, or the ability to help a huge pool of people who need informative description of and feedback on some experience products to make transactional engagement decisions. As such, consumers may have a better understanding of OFSs and may take them as a tool to reciprocate past exchange partners, to establish self-identity, or to help peer consumers. Moreover, these messages not only contribute to mental representation development of OFSs but also have a motivational effect on message recipients to form a response desired by the message sender.

Proposition 7: Artifacts that actively and explicitly deliver certain claims regarding OFSs’ ability to reciprocate products serve as an active mechanism to enhance consumers’ mental representation of OFSs and to promote information contribution to OFSs.

Proposition 8: Artifacts that actively and explicitly deliver certain claims regarding OFSs’ ability to present self serve as an active mechanism to enhance consumers’ mental representation of OFSs and to promote information contribution to OFSs.

Proposition 9: Artifacts that actively and explicitly deliver certain claims regarding OFSs’ ability to help others serve as an active mechanism to enhance consumers’ mental representation of OFSs and to promote information contribution to OFSs.

DISCUSSION AND CONCLUSION

This study focuses on consumers’ information contribution to OFSs, a type of information system artifact that is becoming increasingly important in electronic commerce. Adopting social cognition theories and drawing on the post communication literature, the paper postulates that a contribution response to OFSs is motivated by the mental representation of OFSs as a tool to reciprocate past exchange partners, to present a real or desired self, or to help other consumers. However, it also recognizes the difficulty for such mental representation to develop in the OFSs context because of a poverty of social and informational cues to activate cognitive operations. The paper suggests two cognitive enhancement mechanisms that could help overcome the above limitations. One is the automatic enhancement mechanism that has been incorporated in some
OFSs. This type of enhancement mechanism involves cues embedded in the content and interface of OFSs and allows consumers to develop an enhanced mental representation of OFSs in an unconscious manner. On the other hand, the controlled mechanism explicitly intervene consumers’ cognitive operations by providing certain favorable beliefs about OFSs. The ultimate goal of the two types of interventions is to promote information contribution to OFSs through the mediation of the enhanced mental representation of OFSs.

Representing one of the first studies of information contribution to OFSs, it fills the gap in OFSs research. This paper sets the foundation for empirical explorations. The conceptual framework could lead to an in-depth research model and important constructs could be derived from the conceptualization presented here. The cognitive perspective employed may also have implications for the research on general information technology usage.

The study also has important practical implications. First, it provides theoretical underpinnings to some artifacts deployed in OFSs. Future empirical studies developed from the analysis presented here will demonstrate the effectiveness of these artifacts and may provide guidance to practitioners and system designers. Second, it also suggests a new, practically feasible mechanism to promote information contribution by enhancing consumers’ perception of OFSs. The mechanism could use more proactive interactions, such as personalized website and message to highlight the consequences of using OFS. If the suggestion could be supported by empirical evidence, voluntary participation in OFSs can be effectively promoted.

It should be noted OFSs usage is a complex process and involves some factors not discussed here. For example, contribution cost in the form of cognitive workout and documentation effort may emerge in the cognitive processing of OFSs. Additionally, certain personality and environmental factors are expected to moderate the effects of cognitive enhancement mechanisms on mental representation development of OFSs. As an ongoing research effort, we are working to address the above limitations.

REFERENCES


