Efficacy of Communication Support in Collaborative Online Shopping: The Moderating Effect of Task Types

Keng Siau  
Missouri University of Science and Technology  
siauk@mst.edu

Fiona Fui-Hoon Nah  
Missouri University of Science and Technology  
nahf@mst.edu

Haisu Sha  
Missouri University of Science and Technology  
hsch5@mst.edu

ABSTRACT
With the widespread popularity of social media such as Facebook and Twitter, social commerce is generating much hype in business and is attracting a lot of attention in academia. Social commerce integrates e-commerce and social communication/media. In this research, our focus is on collaborative online shopping. This research-in-progress paper outlines an experimental study to investigate the effect of communication support and task types on collaborative online shopping. Media Richness Theory (MRT) and Task-Media Fit (TMF) form the theoretical foundation of this research. As a pioneering research to investigate the interaction effect of communication support and task types in collaborative online shopping, we expect this research to contribute to a better understanding of the design and development of collaborative online shopping websites.

Keywords
Social e-commerce, media richness theory, task-media fit, collaborative shopping.

INTRODUCTION
The opening of Internet for commerce gave birth to electronic commerce. Technological advancement in wireless technologies and handheld devices has enabled the creation of mobile e-commerce while the widespread popularity of social media has provided a golden opportunity for social e-commerce. Social e-commerce refers to e-commerce that is enabled by social networks and online social relationships (Laudon and Traver, 2012). The need for social online shopping support has been demonstrated in prior studies (Tractinsky and Rao, 2001; Zhu, Benbasat and Jiang, 2010).

Given that social interaction is a common phenomenon in our daily shopping activities, it is common for one to seek the opinions and comments of others to gather information or identify products for purchase considerations or to make decisions on which products to purchase. Similarly, communication support is an important component of collaborative online shopping, which refers to “the activity in which a consumer shops at an online store concurrently with one or more remotely located shopping partners” (Zhu, et al., 2010, p. 872). In a collaborative online shopping context, the social cues are missing which could increase misunderstanding and ambiguity, or even cause unnecessary confusions. Hence, in this research, we propose to study the efficacy of communication support and its interaction effect with e-commerce task types in supporting collaborative online shopping.

The paper is organized as follows. This Introduction section sets the stage for discussions of social e-commerce and collaborative online shopping. A brief review of social e-commerce and collaborative online shopping is also provided. Next, the Media Richness Theory (MRT) and Task-Media Fit (TMF) are reviewed and the hypotheses for this research are generated. The next section presents the research methodology which includes the experimental design for this research. The last section concludes the paper and highlights the expected contributions.

BACKGROUND AND RELATED WORK
Zhu et al. (2010) examined two types of technological support – navigation support and communication support – in collaborative online shopping. Navigation support can influence how collaborative shopping companions navigate to the
products of their interests, whereas communication support ensures that shopping partners can communicate to share their interests, observations, and suggestions instantly. Collaborative online shopping can be a difficult or challenging task because online shoppers may not be viewing the same product (or set of products) or attending to the same information or topic during their interactions (Zhu et al. 2010). Their findings suggest that shared navigation reduces uncoupling (i.e., the loss of coordination with one’s shopping partner) as compared to separate navigation. In addition, compared to text chat, voice chat does not reduce the occurrence of uncoupling but increases the efficiency in resolving uncoupling.

Shiau and Lou (2012) investigated factors that influence continuous use by consumers in online group buying. They examined the degree to which reciprocity and reputation of social exchange, trust, and vendor creativity affect consumer satisfaction and intention toward online purchasing. The results suggest that consumer satisfaction with online group buying is predicted primarily by trust, followed by consumer reciprocity.

An interesting study by Goswami, Tan and Teo (2007) proposed that a fit between the objectives of collaborative shopping (i.e., socializing and purchasing) and website features (i.e., communication support and decision support) to support the activity will result in higher process and outcome satisfaction. Kim, Suh and Lee (2013), on the other hand, found that two design components, embodiment and media richness, have a positive effect on intention to use collaborative online shopping.

Even though earlier research has examined various aspects of collaborative online shopping, it is still not clear what types of communication media are best suited to support the process of collaborative online shopping. In this research, we are interested in assessing the efficacy of media richness (i.e., text versus video communication) for supporting two types of collaborative online shopping tasks: (i) generating products to derive a consideration set, and (ii) choosing a specific product for purchase. More specifically, we will examine whether there is an interaction effect between media richness and types of collaborative online shopping tasks.

THEORETICAL FOUNDATION AND HYPOTHESES

Media richness theory (MRT) was proposed by Daft and Lengel (1984) to explain the degree to which different communication media have different capacities for resolving ambiguity and facilitating understanding. According to MRT, media richness is a function of (i) multiplicity of cues, (ii) immediacy of feedback, (iii) language variety and naturalness, and (iv) personal focus (Daft and Lengel, 1984). In other words, media richness increases as the number of communication channels increases due to the increased variety of communication cues available. Immediate feedback also increases media richness. In addition, the more natural and personal the communication is, the greater the media richness.

Media Richness Theory (MRT) posits that the nature of the communication task, in terms of equivocality and uncertainty, determines which communication medium is most appropriate for that task (Daft, Lengel and Trevino, 1987). For example, highly equivocal tasks with a high degree of uncertainty require rich media for communication to reduce potential conflicting interpretations or misunderstanding in order to facilitate a common understanding between the parties involved. When the task is well-defined with no (or low) equivocality and uncertainty, written communication, which is lean in information richness, is adequate as the medium of communication support. MRT can be extended to the Task-Media Fit (TMF) hypotheses (McGrath and Hollingshead, 1993) shown in Figure 1, which illustrates the fit between task types and communication media (Valacich, Mennecke, Wachter and Wheeler, 1994, citing and drawing on McGrath and Hollingshead, 1993).

According to the TMF hypotheses, text communication through computer mediated systems (such as SMS or e-mail) is a good fit for Generating tasks, i.e., tasks that require the communication parties to come up with ideas for the task such as potential products for consideration in a collaborative online shopping context. Video and audio communication, on the other hand, are a good fit for Choosing tasks, i.e., tasks that require selecting an answer such as coming to a decision on a product to purchase in a collaborative online shopping context.

E-commerce shopping tasks typically involve both idea (product) generation and product selection (Ho and Tam, 2005). Based on the TMF hypotheses, we hypothesize that text communication is more appropriate than video communication for generating a list of products for consideration in online collaborative shopping, and video communication is a more appropriate than text communication for coming to a decision on a product to purchase in online collaborative shopping where multiple parties shop together online. Hence, our main proposition for this research is:

Proposition: Text communication is more appropriate than video communication for generating products for the consideration set in collaborative online shopping, whereas video communication is more appropriate than text communication for selecting a product to purchase in collaborative online shopping.
Figure 1: Task-Media Fit Hypotheses (Valacich et al. 1994 citing McGrath and Hollingshead, 1993 as the original source)

Table 1: Task-Media Fit Hypotheses

<table>
<thead>
<tr>
<th>Task type(s)</th>
<th>Media for Group Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generating ideas &amp; plans</td>
<td>Increasing potential richness required for task success</td>
</tr>
<tr>
<td>Computer systems</td>
<td>Audio systems</td>
</tr>
<tr>
<td>Good fit</td>
<td>Marginal fit</td>
</tr>
<tr>
<td>Choosing correct answer: inferential tasks</td>
<td>Medium too constrained</td>
</tr>
<tr>
<td>Choosing preferred answer: judgment tasks</td>
<td>Poor fit</td>
</tr>
<tr>
<td>Negotiating conflicts of interests</td>
<td>Poor fit</td>
</tr>
</tbody>
</table>


Based on the proposition generated from the TMF hypotheses, we generate specific hypotheses for this research. The hypotheses are presented next with the theoretical justifications for them.

Efficacy of Communication Media in Online Collaborative Shopping

MRT posits that task effectiveness is determined by matching task needs to the communication medium’s ability to convey information related to the task (Daft and Lengel, 1986; Daft et al., 1987). When uncertainty is high and equivocality is high, task effectiveness increases with the richness of communication medium support. When uncertainty is low and equivocality is low, task effectiveness decreases with the richness of communication medium support. As noted by Valacich et al. (1994), “the use of media richer than what the task requires may act as a ‘distraction’ such that nonessential communication for effective task performance will be exchanged” (p. 13). Hence, using a richer communication medium than necessary can potentially be distracting to the person performing the task such that it distracts them from focusing on the task. Valacich et al. (1994) also noted that “Media providing less richness of information than the task requirements may act to constrain communication such that the media is not capable of transmitting the types of communication needed to effectively address the task” (p. 13). In other words, when task requirements are equivocal or uncertain, a lean communication medium is inadequate to support the task.

Extending MRT, the TMF hypotheses (see Figure 1) posit that tasks involving idea generation in a collaborative context have the least uncertainty and equivocality because there is little need for coordination among the parties involved, and hence, text communication, which is lean in communication support, is most appropriate. In addition, a collaborative choice task, such as product selection where coordination and consensus among the parties are required, is best supported by video or audio communication. In a collaborative choice task, the parties involved may need to gather more information relating to the task to reduce the level of uncertainty as well as resolve any ambiguous or conflicting opinions among the parties. Hence, a richer medium such as video communication will be more helpful and appropriate.

Drawing on the theoretical arguments of MRT and TMF hypotheses, there is a fit when a lean medium such as text communication is used to support the generation of product consideration sets in collaborative online shopping and a misfit when a rich medium such as video communication is used for the task (see H1 below). Hence, task focus, satisfaction with process, and satisfaction with outcome(s) are expected to be high when there is a task-media fit and the reverse is expected when there is a misfit. In other words, the generation of a product consideration set in collaborative online shopping requires only the posting or transmission of product ideas and little coordination is needed between the parties. Hence, a lean medium such as text communication is a fit for the task because it helps the different parties involved stay focused on generating a list of products for the consideration set. If a rich medium such as video communication is used, the availability of unnecessary
media richness, such as socio-emotional cues and the use of audio communication, could give rise to non-relevant or non-essential communication that could serve as distractions from the idea generation task. Thus, H1a is proposed.

When there is a fit, that is, when text communication is used for product generation tasks, participants are more satisfied with the process as well as the outcomes. In other words, the efficiency and task focus that are experienced when text communication is used for product generation tasks give rise to high satisfaction with the process and outcomes. Thus, H1b and H1c are proposed.

H1: For the task of generating products to derive a consideration set in collaborative online shopping, text communication outperforms video communication.

H1a: For the task of generating products to derive a consideration set in collaborative online shopping, text communication will result in higher task focus than video communication.

H1b: For the task of generating products to derive a consideration set in collaborative online shopping, text communication will result in higher satisfaction with process than video communication.

H1c: For the task of generating products to derive a consideration set in collaborative online shopping, text communication will result in higher satisfaction with outcomes than video communication.

For product selection tasks, the richness of communication support becomes more important because of the need to not only reduce information uncertainty and ambiguity but also to resolve any disagreement or conflicting opinions in arriving at a consensus decision. Hence, to reach consensus on the choice of a product to purchase in online collaborative shopping, the use of a rich medium such as video communication is considered a task-media fit and the use of a lean medium such as text communication is a task-media misfit. Hence, H2 is proposed.

The selection of a product in collaborative online shopping requires not only a high degree of communication exchange but also the need to come to a consensus. In order to reach consensus, conflicting opinions or disagreements will need to be resolved. Hence, a rich medium such as video communication is a fit because the availability of non-verbal and audio communication cues can potentially help to minimize miscommunication and misunderstanding, which can be helpful in resolving differing opinions and staying focused on the task. On the other hand, if a lean medium such as text communication is used, the lack of non-verbal and audio communication can create uncertainty and ambiguity, and cause unnecessary misunderstanding which is a distraction from the task. Thus, H2a is proposed.

The availability of non-verbal and social cues in video communication can be helpful in resolving disagreements or conflicting information and in reaching consensus for product selection tasks. Hence, video communication is hypothesized to lead to higher satisfaction with the process and outcomes as compared to text communication for product selection tasks, which are stated in H2b and H2c below.

H2: For the task of product selection in collaborative online shopping, video communication outperforms text communication.

H2a: For the task of product selection in collaborative online shopping, video communication will result in higher task focus than text communication.

H2b: For the task of product selection in collaborative online shopping, video communication will result in higher satisfaction with process than text communication.

H2c: For the task of product selection in collaborative online shopping, video communication will result in higher satisfaction with outcomes than text communication.

RESEARCH METHODOLOGY

A 2 by 2 between-subject experimental design is proposed, where the first factor is task type and the second factor is communication medium (see Figure 2). Task type comprises product generation task and production selection task, and the two communication media are text communication and video communication. Subjects are randomly assigned to pairs (dyads) and then randomly assigned to one of the four experimental conditions: (1) text communication for product generation task; (2) video communication for product generation task; (3) text communication for product selection task, and (4) video communication for product selection task.

The dyads will work in pairs to complete a collaborative online shopping task. They will be given the scenario that they are colleagues in a company. For dyads assigned to the product generation task, they will be asked to collaborate online in a dispersed setting to identify a set of supercomputer models for purchase consideration in their company that falls within a
certain price range and is capable of carrying out business analytics involving big data. For dyads assigned to the product selection task, they will be asked to collaborate online in a dispersed setting to come to a consensus on the choice of a model of supercomputers (from a consideration set of supercomputer models given to them) that will be purchased by the company for carrying out business analytics involving big data. With regard to the communication medium for collaborative online shopping, the dyads that will be assigned to text communication will use SMS to communicate online, whereas the dyads that will be assigned to video communication will use video communication to collaborate online to complete the given task.

![Figure 2: Experimental Conditions](image)

The dependent variables are task focus, satisfaction with process, and satisfaction with outcomes. Task focus is a process variable where the communication between the dyads will be transcribed in the case of video communication (i.e., transcripts are readily available for those using text communication) and each unit of analysis, a statement (i.e., sentence), will be coded into one of two categories: task-related versus non-task-related. We will assess task focus in terms of quantity (or frequency) and percentage (or ratio of task-related statements to all statements in the transcript). The measurement for satisfaction with process and satisfaction with outcomes will be adapted from Green and Taber (1980). We will also carry out manipulation checks for media richness where the measurement from Dennis and Kinney (1994) will be used.

Subjects will be recruited from undergraduate students enrolled in the business program at the authors’ institution. Class credits will be given for their participation.

**CONCLUSIONS AND EXPECTED CONTRIBUTIONS**

Social e-commerce is the next evolution of e-commerce. Online collaborative shopping is increasing in popularity; however, it is not clear what types of communication support are appropriate for this activity.

In this research, we propose that both text and video communications are needed to provide optimal communication support for collaborative online shopping and that there is an interaction between the types of communication support (text versus video) and the two main task types in collaborative online shopping (product generation versus product selection). We draw on the media richness theory and task-media fit hypotheses to hypothesize interaction effects between communication support and task types in the collaborative online shopping context and its impact on process and outcome variables. In future research, we are interested in assessing whether the efficacy of communication support in collaborative online shopping context is in line with online shoppers’ media choices for communication support.

**REFERENCES**


