From e-commerce to social commerce: A close look at design features

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ARTICLE INFO

ABSTRACT

E-commerce is undergoing an evolution through the adoption of Web 2.0 capabilities to enhance customer participation and achieve greater economic value. This new phenomenon is commonly referred to as *social commerce*, however it has not yet been fully understood. In addition to the lack of a stable and agreed-upon definition, there is little research on social commerce and no significant research dedicated to the design of social commerce platforms. This study offers literature review to explain the concept of social commerce, tracks its nascent state-of-the-art, and discusses relevant design features as they relate to e-commerce and Web 2.0. We propose a new model and a set of principles for guiding social commerce design. We also apply the model and guidelines to two leading social commerce platforms, Amazon and Starbucks on Facebook. The findings indicate that, for any social commerce website, it is critical to achieve a minimum set of social commerce design features. These design features must cover all the layers of the proposed model, including the individual, conversation, community and commerce levels.

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1. Introduction

The rapid development of social media and Web 2.0 has provided a huge potential to transform e-commerce from a product-oriented environment to a social and customer-centred one (Wigand et al. 2008). In essence, *social media* refers to Internet-based applications built on Web 2.0, while *Web 2.0* refers to a concept as well as a platform for harnessing collective intelligence (Kaplan and Haenlein 2010). Within this environment, customers have access to social knowledge and experiences to support them in better understanding their online purchase purposes, and in making more informed and accurate purchase decisions (Dennison et al. 2009). Meanwhile, online businesses are able to capture customers' behaviours, which gives them insights into their shopping experiences and expectations, and helps them develop successful business strategies (Constantinides and Fountain 2008). Since such reciprocal advantages have been recognized by business organizations, e-commerce is undergoing a new evolution by adopting a variety of Web 2.0 features, functions and capabilities in order to enhance customer participation (Kim and Srivastava 2007), promote customer relationships (Liang et al. 2011), and achieve greater economic value (Parise and Guinan 2008). This e-commerce evolution is commonly equated with the birth of social commerce.

In general, social commerce refers to utilizing Web 2.0 in e-commerce (Kim and Srivastava 2007), particularly core Web 2.0 features such as user-generated content and sharing of content. The impact of Web 2.0 on e-commerce can be seen in both business outcomes and social interaction among consumers. More specifically, Web 2.0 significantly influences business transactions and the reliability of business reputation systems (Swamynathan et al. 2008). It can also strengthen business relationships with customers, increase traffic to company websites, identify new business opportunities, and support product and brand development (Michaelidou et al. 2011). It may as well enable businesses to provide high quality products, place them in a better position to predict market trends and maximize the effectiveness of their marketing campaigns (Constantinides et al. 2008). For customers, Web 2.0 can affect aspects such as customer control and value creation. With Web 2.0, customers' perceptions, preferences and decisions are not only based on information presented on e-commerce websites, but are also influenced by content generated by people on social networks (Constantinides and Fountain 2008).

As indicated by Stephen and Toubia (2009), in the e-commerce environment Web 2.0 shifts market power from companies to customers. Furthermore, since their needs are altered by the increasing requirements for online services and applications, customers are looking for more social and interactive ways to stimulate engagement. Web 2.0 provides customers with new approaches to interact with marketers and peer communities at the same time (Constantinides and Fountain 2008). Moreover, the value created by customers is significantly enhanced through Web 2.0 since the collaborative

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efforts of networked customers usually lead to better outputs (Kaplan and Haenlein 2010). One example is SAP, a major vendor in the ERP software market, who invites external developers to work together within an innovative community to solve specific product problems by providing collective intelligence through blogs and forums. Recently, thousands of e-commerce companies have adopted or been willing to adopt Web 2.0 to develop social commerce initiatives. A report by Lewis et al. (2008) indicates that the growing popularity of social commerce is reaching 43% per year. Nearly 88% of businesses expect to expand their investment on social commerce in the future (Constantinides et al. 2008).

Even though the aforementioned facts point to its rapid development and enormous potential, social commerce needs to be explored further. There are few studies that examine the concept of social commerce and its applications (Lee et al. 2008, Constantinides et al. 2008, Parise and Guinan 2008) and explain the role of Web 2.0 in e-commerce development (Wigand et al. 2008, Kim and Srivastava 2007, Liang et al. 2011), but there is limited focus on social commerce design issues. Even those rare studies that investigate social commerce interface design (Najjar 2011, Grange and Benbasat 2010) do not offer a systematic understanding of social commerce and its customer-centred design. It can be argued that this lack of understanding may hinder the development of effective and efficient social commerce platforms. Hence, our study primarily investigates the design features required for social commerce to fulfill its promise.

The following research question is investigated: what design features need to be considered in social commerce design? To that end we conduct an extensive review and classification of the literature covering the design of e-commerce and Web 2.0. Based on the findings, we introduce a new model and a set of principles for social commerce design. We then apply our model to leading social commerce platforms.

This paper is structured as follows. Section 2 introduces the concept of social commerce and briefly discusses the state-of-the-art. This is followed by a comprehensive review of the design principles as they apply to e-commerce and Web 2.0 in Sections 3 and 4. Section 5 introduces our new model for social commerce design. In Section 6, an heuristic evaluation of our model is conducted on two social commerce platforms, and Section 7 concludes.

2. Social commerce

2.1. Definitions

Social commerce can be defined as word-of-mouth applied to e-commerce (Dennison et al. 2009). However, Parise and Guinan (2008) give a more comprehensive definition where social commerce refers to a more social, creative and collaborative approach used in online marketplaces. In their definition, Web 2.0 tools are said to be aligned with an emerging trend when users add value by generating and sharing content. Wigand et al. (2008) capture the alterations made by social commerce and describe the concept as applying social media applications to shape business, hence transforming a market for goods and services into a socially centred and user-driven marketplace.

Social commerce involves multiple disciplines, including marketing, computer science, sociology and psychology, which may add to the diversity of definitions. For instance, in marketing, social commerce is about a noticeable trend in online marketplaces where businesses leverage social media or Web 2.0 as a direct marketing tool to support customers' decision making processes and buying behaviour (Constantinides and Fountain 2008). Focusing on computer technology, Lee et al. (2008) describe social

commerce as an online mediated application combining Web 2.0 technologies, such as Ajax (Murugesan 2007) and RSS (Wigand et al. 2008) with interactive platforms, such as social networking sites and content communities in a commercial environment. With respect to sociology, social commerce is about utilizing web-based social communities by e-commerce companies, focusing on the impact of social influence which shapes the interaction among consumers (Kim and Srivastava 2007). Finally, Marsden (2009) addresses social commerce in terms of the psychology of social shopping, where people are influenced by salient information cues from people within a networked community when they shop online.

Although social commerce has been explained differently, the abovementioned definitions allow researchers and practitioners to acquire a broad understanding of its concepts. While these definitions imply different scopes for social commerce and e-commerce, they suggest that social commerce is an evolution of e-commerce (Kooser 2008, Curty and Zhang 2011, Wang and Zhang 2012). Based on the above discussion, we define *social commerce* as a an Internet-based commercial application, leveraging social media and Web 2.0 technologies which support social interaction and user generated content in order to assist consumers in their decision making and acquisition of products and services within online marketplaces and communities.

The differences between e-commerce and social commerce can be highlighted in terms of business goals, customer connection and system interaction. With regard to business goals, e-commerce focuses on maximizing efficiency with strategies for sophisticated searches, one-click buying, specification-driven virtual catalogs and recommendations based on consumers' past shopping behaviour (Carroll 2008). Social commerce, however, is oriented toward social goals, such as networking, collaborating and information sharing, with a secondary focus on shopping (Wang and Zhang 2012). Regarding customer connection, customers usually interact with e-commerce platforms individually and independently from other customers, while social commerce involves online communities that support social connection to enhance conversation between customers (Kim and Srivastava 2007). As for system interaction, e-commerce in its classical form almost always provides one-way browsing, where information from customers is rarely (if ever) sent back to businesses or other customers. Social commerce, however, develops more social and interactive approaches that let customers express themselves and share their information with other customers as well as with businesses (Parise and Guinan 2008).

2.2. Overview of current research

Social commerce is starting to attract the attention of researchers, and a number of studies have been carried out recently, covering social commerce issues ranging from business applications to business strategies.

For instance, Serrano and Torres (2010) investigated Web 2.0 applications for Openbravo, an open source ERP solution for small and medium sized online businesses. The study claims that Openbravo ERP enables businesses to integrate a variety of Web 2.0 features into their current systems, which significantly improves business, social and collaborative capabilities. Costa and Tavares (2011) tried to understand social commerce – they refer to it as *social business* – by focusing on an existing industrial project, called PLAGE, which has the potential to develop a collaborative environment for social commerce throughout its multiple social platforms. The findings reveal that having interoperable social platforms improves commerce collaboration, develops trust, and implements strategic approaches to leverage networked relationships in social commerce. Michaelidou et al. (2011) investigated the barriers,

usage and perceived benefits of social networking sites in small and medium enterprises. They found that barriers include the perceived irrelevance of social networking sites within the industry and the uncertainty of their use to support brand development. This has not kept small and medium businesses from increasingly using social networking to attract customers though. The perceived benefits of using social networking in business include increasing brand awareness and online communication, as well as improving customer relationship management. Furthermore, Lee et al. (2008) found that Web 2.0 applications can largely increase the competitive advantage of small businesses. Indeed, when it comes to reaching customers with rich content, the authors argue that Web 2.0 applications give small businesses capabilities similar to those of large ones.

In addition to exploring its business applications and strategies, some studies investigate social commerce with regards to user behaviour, decision-making, and relationship establishment. For example, Wigand et al. (2008) explored consumer needs for social commerce. They identified three fundamental needs that motivate consumer behaviour through Web 2.0 within a commerce context. These are: the need to be an independent individual; the need to feel successful and competent; and the need to feel one belongs and is connected to others. Another empirical study conducted by Grange and Benbasat (2010) reports on the effects of online social shopping on user behavioural beliefs (perceived usefulness and enjoyment). The results of the study show that system functions such as quick access to products and help option design, such as the underlying message guiding use are strong predictors of the individual belief.

A study by Kim and Srivastava (2007) investigated social influence on e-commerce customers, focusing on their online decision making. The results show that social influence has a significant impact on customers' purchase decision making. In order to support customers in making informed and accurate shopping decisions, the study suggests using a diversity of applications to increase social interaction. These applications include product recommendation to a friend, customer review provision, discussion board, and writing and rating a review. Finally, Kang and Park-Poaps (2011) studied the motivational sources and consequences of social shopping. They developed and tested a structural model of social shopping in the context of fashion consumption. The results reveal that social comparison positively influences many dimensions of social shopping for fashion. These dimensions include social browsing, social bonding, opinion showing and power seeking.

3. E-commerce design principles

Given that social commerce is a combination of e-commerce and Web 2.0 (Constantinides et al. 2008), a first step towards understanding social commerce design is to separately study the design literature on e-commerce and Web 2.0, this section being dedicated to the former. Since the goal of e-commerce design is to foster customer interaction, support customer decision making and encourage customers to return (Helander and Khalid 2000), we investigate e-commerce design from a user's perspective. As such, in this section, a number of features necessary for designing effective e-commerce platforms are reviewed and categorized mainly from the field of human computer interaction (HCI). These design features, summarized in Table 1, are usability, information quality, website quality, service quality and playfulness.

Usability is one of the most important principles of e-commerce design (Li and Li 2011). According to the International Standards Organization (1998), usability refers to the effectiveness, efficiency and satisfaction with which specific users achieve specific goals in a specific context of use. Since websites serve as the interface to

the e-commerce system, usability studies have largely addressed e-commerce website design, with a particular focus on ease of use and user-friendliness. More specifically, *ease of use* refers to the degree to which users perceive that using the particular system can achieve their performance (Kumar et al. 2007). *User friendliness* is about the perception of aesthetic design in terms of website interface (Matera et al. 2002). But many studies use multiple features to explain usability-oriented design. For instance, usability reflects the perceived ease of understanding the structure of a system, simplicity of use of the website, the speed of locating an item, the perceived ease of navigating the website, consistent design formats, and the ability of users to control their movement within the system (Flavián et al. 2006). Helander and Khalid (2000) describe the usability dimension in aspects of simplicity; support; accessibility; visibility; reversible action; feedback and personalization. In their description, simplicity refers to using simple functions; support is about keeping the customer in control; accessibility and visibility may be achieved by making objects accessible and visible; reversible action is to provide undo functions at all times; feedback is to provide a visible comment mechanism after services, and personalization allows a user to customize the interface. (See Fig. 1.)

Information quality is a fundamental design principle in e-commerce since it is a source of value to customers (Molla and Licker 2001). It refers to relevance, accuracy, understanding and usefulness of information provided by the e-commerce website (Susser and Ariga 2006). Hasan and Abuelrub (2011) call it content quality, and claim that it can significantly influence customer attitudes and interaction with e-commerce. For example, Jaiswal et al. (2010) show that information quality is a key feature influencing user satisfaction with and loyalty towards e-commerce. Thus, information quality should be paid much attention by presenting accurate, sufficient and relevant information. Such importance is further extended by Liu and Arnett (2000), who claim that information quality closely relates to business profitability, decision quality and performance, perceived benefits of information systems and the level of system usage. For example, by improving the accuracy and timeliness of information exchanged between a business and its suppliers using electronic data interchange (EDI), a form or business-to-business e-commerce, the business can obtain significant financial returns from inventory holding cost, obsolete inventory cost, transportation cost and premium freight (Mukhopadhyay et al. 1995). Moreover, users' perceptions of information systems benefits and their acceptance of information systems are largely determined by whether unique, reliable, and up to date information can be delivered to meet their needs. With a high level of quality information, information systems in general, and e-commerce systems in particular, can be fully used by a wider range of users (Yang et al. 2005). Accordingly, information quality in e-commerce should be emphasized on a number of subdesign elements, including accuracy; timeliness; relevance; flexible information presentation; price information; product comparability; service differentiation and complete product description.

Website quality is defined as the e-commerce system's performance in delivering information and services (Liao et al. 2006). It has a significant impact on customers' purchase decision (Liang and Lai 2002), satisfaction (Chu et al. 2007) and trust (McKnight et al. 2002). Customers are usually dissatisfied with e-commerce websites featuring slow access, ineffective error recovery, poor operation and computation, and unsecured services (Liu and Arnett 2000). Conversely, a high level of website quality design can be achieved by focusing on appearance, content, functionality, navigation, and security. Appearance refers to a website's presentation, which should rely on a variety of visual design elements, such as text size, colour, page layout and font to enhance visual attractive-

Table 1
Summary of e-commerce design principles.

Design principles	Characteristics	Business objectives	References
Usability	Ease of use	To make site easy to use and operate	Lee and Lee (2003), Kumar et al. (2007), Nielsen (1994), and Hasan and Abuelrub (2011)
	User-friendliness	To make a user-friendly website interface	Matera et al. (2002)
	Simplicity	To provide simple structure and functions	Nielsen (1994), Flavián et al. (2006), Helander and Khalid (2000
	Navigation	To support user movement within site	Flavián et al. (2006)and Hasan and Abuelrub (2011)
	User control	To permit user to leave site at all times	Flavián et al. (2006) and Nielsen (1994)
	Error prevention	To prevent user from making errors	Nielsen (1994)
	Help function	To offer help and documentation	Nielsen (1994) and Helander and Khalid (2000)
	Understandability	To make content easy to understand	Flavián et al. (2006) and Hasan and Abuelrub (2011)
	Accessibility	To make site accessible for all users	Helander and Khalid (2000)
	Speed	To make it fast to load items	Flavián et al. (2006)
	Visibility of system status	To keep users informed about system	Nielsen (1994) and Helander and Khalid (2000)
	Match real world	To follow real-world conventions	Nielsen (1994)
	Consistency	To keep the same design features through the site	Nielsen (1994)
	Recognition rather than recall	To make information easy to remember	Nielsen (1994)
	Aesthetic design	To design aesthetic and attractive websites	Nielsen (1994)
	Personalization	To make site customizable	Helander and Khalid (2000)
Information quality	Relevance	To provide relevant information	Susser and Ariga (2006), Jaiswal et al. (2010), and Liu and Arnett (2000)
	Accuracy	To provide accurate information	Susser and Ariga (2006), Jaiswal et al. (2010), and Liu and Arnett (2000)
	Completeness	To provide complete information	Liu and Arnett (2000)
	Update	To provide updated information	Liu and Arnett (2000) and Hasan and Abuelrub (2011)
	Authority	To ensure user confidence in information	Hasan and Abuelrub (2011)
	Objective	To provide objective and unbiased information	Hasan and Abuelrub (2011)
	Usefulness	To provide useful information	Susser and Ariga (2006) and Liu and Arnett (2000)
	Sufficiency	To provide sufficient information	Jaiswal et al. (2010) and Hasan and Abuelrub (2011)
System quality	Security	To ensure task performance in a secure manner	Liu and Arnett (2000), and Lee and Kozar (2006)
	Access	To enable quick access to services	Liu and Arnett (2000)
	Error recovery	To help error recovery	Liu and Arnett (2000)
	Operation and computation	To make system and services easy to use and operate	Liu and Arnett (2000)
	Appearance	To present visual design elements	Lee and Lee (2003) and Robins and Holmes (2008)
	Functionality	To provide adequate functions	Stefani and Xenos (2011)
	Payment	To provide secure and easy payment methods	Liu and Arnett (2000)
	Ordering mechanism	To process user order and track order status	Liu and Arnett (2000)
	Content	To provide rich content that matches user expectations	Hasan and Abuelrub (2011)
Service quality	Responsiveness	To quickly respond to user requirements	Liu and Arnett (2000), Lee and Kozar (2006), and Parasuraman et al. (1994)
	Assurance	To provide support for user problem solving	Liu and Arnett (2000) and Parasuraman et al. (1994)
	Empathy	To provide caring and attention to users	Liu and Arnett (2000), Lee and Kozar (2006), and Parasuraman et al. (1994)
	Following up service	To listen to user feedback	Liu and Arnett (2000)
	Reliability	To deliver reliable and trustworthy services	Lee and Kozar (2006), Heim and Field (2007), and Parasuraman et al. (1994)
Playfulness	Enjoyment	To provide pleasurable experience	Jarvenpaa and Todd (1996)
	Attractive appearance	To provide aesthetic website	Liu and Arnett (2000) and Katerattanakul (2002)
	Control	To give user control	Katerattanakul (2002)
	Curiosity	To motivate user cognitive curiosity	Katerattanakul (2002)
	Intrinsic interest	To match user interests	Katerattanakul (2002)

ness (Lee and Lee 2003). Content provides customers with a valuable source of information, which needs to be always current, comprehensive and accurate (Hasan and Abuelrub 2011). Functionality refers to a set of functions and properties that satisfy customers' needs in their task completion (Stefani and Xenos 2011). Navigation facilitates site orientation, reinforcing the ability of customers to ascertain navigational control, so that they can guide their movement around the site to locate related objects (Tung et al. 2003). Finally, security ensures that customers can interact with the expected services and accomplish their tasks in a secure manner at all times (Lee and Kozar 2006).

Service quality is a critical principle in e-commerce design. In general, it is defined as online support capabilities offered by

e-commerce providers (Wolfinbarger and Gilly 2003). It covers a wide range of assistance, such as frequently asked questions, order tracking and complaint management. Not providing effective support may lead to customers and sales loss (DeLone and McLean 2004). Several studies have attempted to understand service quality design by exploring its dimensions. Lee and Kozar (2006), for instance, suggest a set of attributes related to service quality design, which are empathy, reliability and responsiveness. Heim and Field (2007) propose four specific dimensions in the formation of e-service quality. These include website design which allows consumers to rate their satisfaction with the business process, reliability which allows consumers to rate the fulfillment practices, security and privacy that allow consumers to rate their perception of pri-
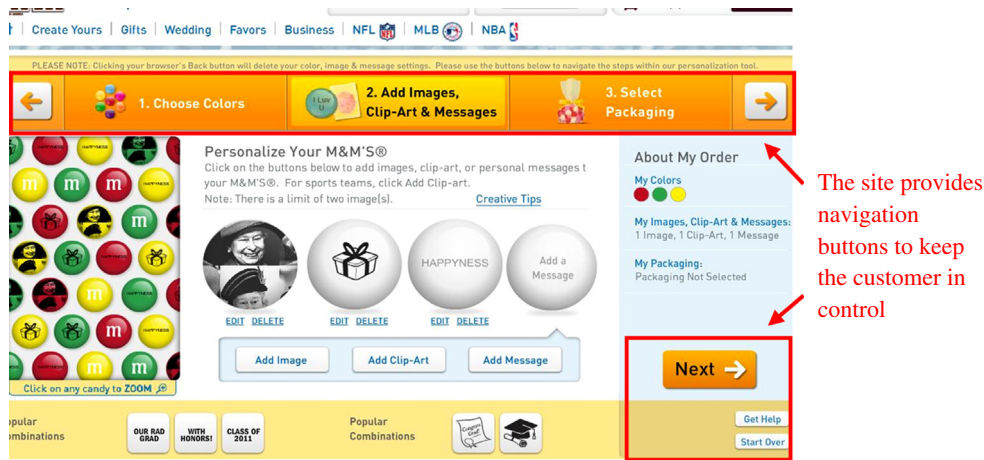
Fig. 1. Keeping the customer in control (from www.mymms.com).

vacy, and customer service which allows consumers to rate service support. Furthermore, SERVQUAL, a well-known instrument, focuses on reliability, responsiveness, empathy, assurance and tangibility in assessing service quality (Parasuraman et al. 1994). Reliability is about the provision of trustworthy and reliable services, responsiveness relates to the expectation of service support and promotion, empathy reflects the retailer's ability to interact with customers, assurance can be implied by solving customers' problems, and tangibility is about a set of physical facilities. (See Fig. 2.) However, tangibility has been disputed by the Lee and Kozar (2006), who claim that since e-commerce is not physical, there is no need to consider the tangibility dimension.

Finally, the importance of playfulness as a design feature has been emphasized by a number of designers. In essence, it refers to perceiving enjoyment when customers interact with e-commerce websites. A satisfied customer may obtain pleasure from both material and emotion in e-commerce (Jarvenpaa and Todd 1996). Such enjoyable experience not only motivates customers' participation, but also encourages their repeat visits. To better understand playfulness design in e-commerce, Liu and Arnett (2000) consider five different aspects: (1) e-commerce should make customers enjoy their visit; (2) it should motivate customers to feel engaged; (3) it should promote customers' excitement; (4) it should offer aesthetic design to attract customers; and (5) it should promote customers' concentration when they shop online. However, as these aspects are still too general to serve as specific design guidelines, Katerattanakul (2002) details playfulness design in terms of control, attention focus, curiosity and intrinsic interest.

Regarding control, playfulness can be achieved by designing a well organized website content, effective navigation, quick response time, and easy transaction. In terms of attention focus, enjoyment can be achieved by offering an attractive and aesthetic website interface, as well as appropriate animation and audio content. With respect to curiosity, hyperlinks provided on websites should motivate customers' cognitive curiosity to discover more functionalities and services. To attain intrinsic interest, websites should provide relevant content that matches customers' interests.

Although there has been a considerable amount of research dedicated to e-commerce issues, there is still a need for a systematic review of e-commerce design. Existing empirical research identifies several design features for e-commerce, however not all these features can be appropriately applied to social commerce. Furthermore, some studies deal with the quality factors in e-commerce design (e.g. Liao et al. 2006, Stefani and Xenos 2011, Hasan and Abuelrub 2011), while others are directed towards a specific web service (e.g. Heim and Field 2007, Éthier et al. 2008), but little research has been done to provide a standard framework or benchmark defining user-centred e-commerce design. Moreover, many studies are employed to measure design issues in various types of e-commerce by using student samples (e.g. Aladwani and Palvia 2002, Susser and Ariga 2006). However, student samples are appropriate in an experimental study. They are not suitable for confirming critical website features for all types of customers.

Additionally, a focus on a specific e-commerce domain limits the possibility of generalizing the findings. For instance, Susser and Ariga (2006) explored e-commerce design in the tourism
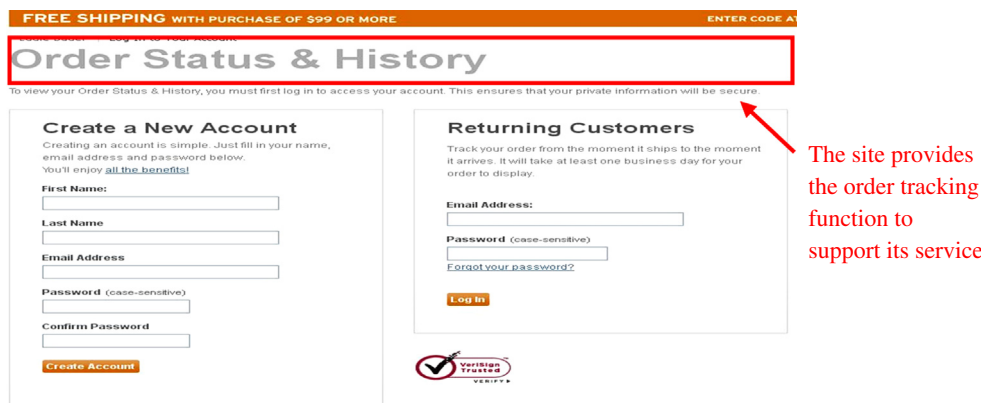

Fig. 2. Provision of order tracking (from www.eddiebauer.com/home.jsp).

industry. Their results imply that the use of multimedia and animation are important design characteristics in tourism destination sites. Conversely, these characteristics must be used with caution when designing or developing effective websites (Nielsen and Loranger 2006). To summarize, the aforementioned studies have highlighted a number of important design features, including usability, information quality, website quality, service quality and playfulness, which develop fundamental knowledge about e-commerce design. Such efforts are helpful as a first step towards understanding social commerce design. However, the detailed level of design characteristics associated with these identified design features needs to be further explored.

4. Web 2.0 design principles

We have reviewed e-commerce design principles, but Web 2.0 is another vital component in social commerce design; hence, this section is dedicated to it. Web 2.0 harnesses the power of the web in a more collaborative and interactive way, encouraging networked communities to socially connect, and providing opportunities for utilizing the web to engage users more effectively. As such, Web 2.0 is based on user-centred design, with the following key characteristics: participation from users (Nitsche et al. 2009); conversations among users (Koch et al. 2011); community (Constantinides et al. 2008); recognizable participants (Han et al. 2011); and good system quality (Almeida et al. 2009). (See Table 2.)

Participation, which has been recognized as a core property of Web 2.0 (Moham et al. 2008), refers to the various activities that involve users interacting with services and applications. It fundamentally supports users in generating, sharing, editing, syndicating and disseminating information. To encourage user participation, a number of design features have been suggested by previous studies, namely user generated content, information sharing,

engagement intensity and level of interaction, incentives provision, and task creation. For example, Constantinides et al. (2008) point out that providing user generated information and easy access significantly fosters participation, motivating users to create, edit and distribute content. This creation, editing and dissemination of information can lead to democratizing knowledge and making users actively engaged. In addition, Han et al. (2011) place an emphasis on content sharing design features to accelerate user participation, suggesting that it is important to provide a capability to share or distribute content that users want to know. In this aspect, Najjar (2011) highlighted many specific design features to support information sharing, such as adding semantic markups to the pages with "share" and "like" buttons, posting notifications, creating blogs with fun content, providing reviews of products, and adding content tags to facilitate search. Moreover, Koch et al. (2011) suggest design features such as engagement intensity and extent, incentives provision and task design to ignite users' passion in participation. More specifically, intensity and level of interaction should entice users to engage more frequently and continuously interact with services and applications. Incentive provision should give direct and honest feedback and offer monetary or non-monetary rewards based on users' performance. Finally, task creation should enable users to take on various roles in a range of tasks, such as co-designer or co-creator. (See Fig. 3.)

Conversation relates to interaction among users, essentially supporting them in building peer communities. Communication and connection are fundamentally required for conversation (Han et al. 2011). In other words, communication provides users with multiple conversation channels with their friends to convey their opinions in real time. Connection makes it possible to maintain relationships made under both online and offline conditions. Koch et al. (2011) suggest conversation design through two principles: interaction and partner communication. Interaction should utilize services, applications and platforms to encourage intense interac-

Table 2
Summary of Web 2.0 design principles.

| Design principles	Characteristics	Business objectives	References
Participation	User content creation	To encourage participants to generate content	Nitsche et al. (2009), Wigand et al. (2008), and Moham et al. (2008)
	Information sharing	To motivate participants to share content	Nitsche et al. (2009), Najjar (2011), and Han et al. (2011)
	Participation Intensity	To allow participants to engage more often and on a continuous basis	Koch et al. (2011)
	Incentives provision	To offer monetary and nonmonetary rewards based on participant performance	Koch et al. (2011)
	Task creation	To enable participants to take on different roles, such as co-designer or co-creator	Koch et al. (2011)
Conversation	Interaction	To encourage intense interaction among participants	Koch et al. (2011) and Constantinides et al. (2008)
	Communication	To build communication around topics	Almeida et al. (2009), Han et al. (2011), and Najjar (2011)
	Connection	To keep participants connected under both online and offline conditions	Koch et al. (2011)
Community	Networking effects	To allow relationships to be established and a community to be built	Nitsche et al. (2009), Constantinides et al. (2008), and Murugesan (2007)
	Collaboration	To provide collaboration among participants	Lee et al. (2008) and Murugesan (2007)
Participant identification	Identity	To identify participants	Han et al. (2011) and Almeida et al. (2009)
	Content representation and expression	To use features such as pictures and videos to represent participants' content	Almeida et al. (2009)
System quality	Interface features	To provide responsive, user-friendly and flexible interface	Almeida et al. (2009), Murugesan (2007), and Moham et al. (2008)
	Simplicity	To ensure simplicity in design and features	Wigand et al. (2008) and Constantinides and Fountain (2008)
	Tools and multimedia-rich environment	To provide an immersive but simple to explore environment	Koch et al. (2011)
	Crowdsourcing	To foster open source, open innovation and co-design	Constantinides et al. (2008), Wigand et al. (2008), and Lee et al. (2008)
	Transparency	To offer a transparent process	Wigand et al. (2008)
	User control	To provide control for participants over data	Constantinides et al. (2008) and Moham et al. (2008)
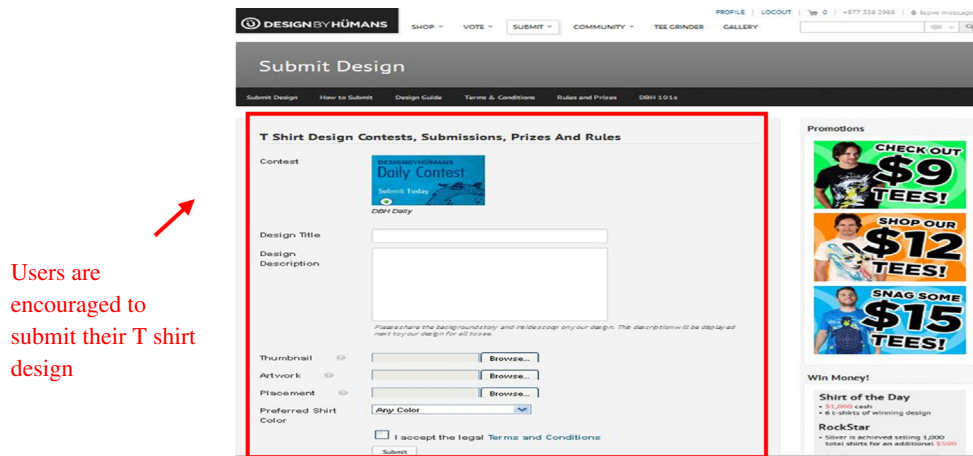
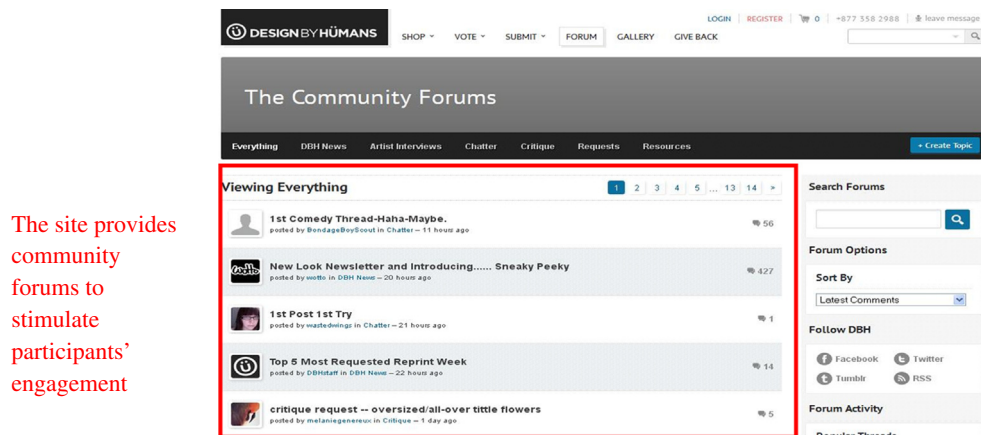**Fig. 3.** Playing the co-designer role (from www.designbyhumans.com).

Fig. 4. Provision of customer forums (from www.designbyhumans.com/forum).

tion among participants, allowing relationships to be built. (See Fig. 4.) The availability of various social media tools and functionalities may enrich communication between participants. Moreover, connecting with existing social communities and leveraging existing relationships can largely develop participant conversation.

Community relates to an aggregation of participant groups and constitutes the network power that produces social effects. It significantly influences participant performance with services and applications. As indicated by Constantinides and Fountain (2008), network effects and peer usage dramatically motivate user attitude and loyalty. Therefore, it appears to constitute another important Web 2.0 design feature (Nitsche et al. 2009). Constantinides et al. (2008) suggest that communities should be easily created based on special interest groups and users should be able to freely share their experience and knowledge within the community. Similarly, Murugesan (2007) addresses the establishment of social networks of people with common interests. Such communities should support collaboration and gather collective intelligence. This collaboration capability can possibly be deployed through three types of collaborative tools: blogs, mashups and wikis (Lee et al. 2008). Additionally, Koch et al. (2011) envision community management design through the presentation of online and offline events to drive community growth, and the provision of visibility and transparency.

Within social activities and content, participants need to be recognized by other people. Such recognition can be perceived as social proof to encourage participants' engagement. In this context,

Almeida et al. (2009) address identification design in terms of participant identity and content awareness. They suggest using effective means of representation and expression to highlight identity and content awareness, such as providing participant profile, pictures, avatars and videos. Furthermore, participant identification can also be promoted by visually displaying participant characteristics, recent activity and status through social media. Finally, Sharmin and Bailey (2011) suggest that online discussion sites should create awareness by posting participant interests and highlighting contributions.

System quality is another crucial design feature of Web 2.0, as it significantly impacts participants' perceptions and engagement. Quality can be divided into interface features, openness and user control. More specifically, Web 2.0 sites should be designed with simplicity, flexibility, update possibility, richness and responsiveness (Murugesan 2007). They should have a user-friendly interface with rich media (Moham et al. 2008) and clear links for navigation (Almeida et al. 2009). Particularly, Web 2.0 applications should offer simple features and their value proposition should be easily recognizable (Constantinides and Fountain 2008). Open source, open innovation and co-design features should characterize Web 2.0 openness and transparency (Lee et al. 2008), allowing users to participate in the design of products. User control should be extended to Web 2.0, giving users the ability to own their data on a website and exercise control over that data (Moham et al. 2008).

Because Web 2.0 is an important component of social commerce, the aforementioned studies may provide assistance in

understanding social commerce design. However, although a range of Web 2.0 essential design features have been identified, many studies are exploratory or conceptual in nature having no empirical validation. Kristin (2010), for instance, identified three key dimensions of Web 2.0 design: form, content and interface. These dimensions are not confirmed empirically though. Besides, a number of important Web 2.0 design principles have been suggested by previous studies (Murugesan 2007, Moham et al. 2008, Almeida et al. 2009, Koch et al. 2011), including encouraging participation, building conversation, utilizing community, identifying participants and providing quality systems, but to date, there is no specific study that reveals the potential interrelationships among these design characteristics.

5. Designing for social commerce: a conceptual model

Having investigated the design features as they apply to e-commerce and Web 2.0, this section focuses on social commerce design. Our conceptual model for social commerce design is presented in Fig. 5. (See Fig. 5.) The model is extended from Fisher (2010) who identifies three core elements of social design – identity, conversation and community – in a model that is meant for designing social applications (or social software in general). Given that social commerce is a combination of e-commerce and Web 2.0, we added a fourth component, commerce, to capture the e-commerce design features. Hence, our model for social commerce design consists of four layers: Individual, Community, Conversation, and Commerce.

The order of the layers in our proposed model – Individual, then Conversation, then Community, then Commerce – is justified as follows. The most inner layer represents "the self." As Fisher (2010) argues, users interact within online communities because "they learn more about themselves and enjoy feeling known by their community." This layer is where all the information starts, including user profiles as well as all the user generated content (posting, commenting, liking, sharing, etc.). Naturally, the second layer is conversation, where individuals express themselves through postings and exchanges with other individuals. Without conversation, there is no multiplication of user generated content and no serious propagation of collective intelligence. Hence the Conversation layer includes the Individual layer. A community is created or consolidated through interactions, which in our case consist of conversations. Most importantly, conversations take place within communities; hence the community layer includes the conversation layer. Finally, the outer layer is the Commerce layer, which enables the possibility of doing commerce within a community that is already established. The idea of social commerce is to leverage relationships that exist between members of a community.

We argue, again, that the key distinction between e-commerce and social commerce is that the first concept usually only sees an Individual (inner layer) while the second usually sees a Community (layer 3) built on Conversation (layer 2). Therefore if we remove the Community and Conversation layers from Fig. 5, we end up with e-commerce, that is, the Commerce layer (outer layer) surrounding the Individual layer. If we remove the Commerce layer we end up with a typical online community. But if we consider the four layers, we end up with social commerce. Design features that are common to all four layers are presented horizontally. (See the horizontal line in Fig. 5.)

The four layers represent social commerce's high-level design principles. To complete the model, we analysed design features as they relate to e-commerce and Web 2.0 and grouped them into the corresponding layers. (See Tables 1 and 2.) In the process, features that were not suitable for the social commerce context were not selected. Features that were found to relate to more than one layer were grouped into one principle based on their key characteristics.

Individual is the first layer in social commerce design, which refers to providing a sense of self identification and awareness that can be recognized by others. Building a personal profile is helpful for identifying a participant and motivating social activity. Also, when applications focus on a particular topic (e.g., in a cooking application, a profile can showcase information on dishes and lists of ingredients) rendering the participant's profile relevant to this context may make him even more visible to those who are interested in the context. Individual features can be designed by showing the participant's real name with profile pictures, utilizing the personal profile to build a social experience, and highlighting interesting social information. (See Table 3a for the detailed design features.)

The second layer of social commerce design is Conversation, which requires offering a variety of interaction features among participants in order to establish a community. The Conversation design principle provides participants with collaborative and bidirectional communications, not only offering rich social content, but
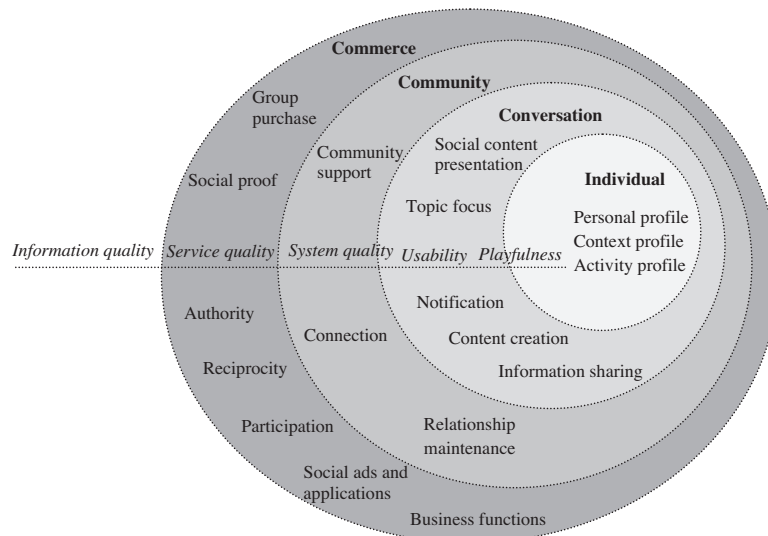
Fig. 5. Social commerce design model.

Table 3a
Summary of Individual design principle.

Design principles	Design features	Explanations
Individual	Personal profile	• To present clear and correct information to identify participants, such as providing a participant's real name and profile picture
		• To provide additional information, such as mutual friends' lists and place of work if necessary
		• To provide personalized and attractive information, such as participant likes and interests
	Content profile	• To make profile relevant to the content when applications focus on a particular domain, for instance in a cooking app, a profile can showcase information on dishes and their ingredients
	Activity profile	• To highlight interesting information in the participant's activities, such as information categorized by most viewed, most commented on, and most popular

also motivating participants to generate social content. In this context, Conversation design should focus on various approaches that enable participants to listen as well as speak (Fisher 2010). More precisely, information acquirement can be achieved by displaying participants' activity, focusing on conversation around core themes, and providing activity notifications. Content generation includes encouraging participants' feedback provision and sharing information. (See Table 3b for the detailed design features.)

The third layer of social commerce design is Community building. Communities are groups of people who can support each other's decision making. To build a community, there are a number of design features that need to be addressed, including offering appropriate community support, connecting people and friends, and updating social activities to maintain relationships. (See Table 3c for the detailed design features.) Commerce is the outer layer of social commerce design, supposed to harness community effects to engage participants with services and applications provided by online businesses. It covers a wide range of design features, such as shopping with like-minded people, offering social proof, following the crowd and authority, reciprocating favours, providing social ads and application, and facilitating business functions. (See Table 3d for the detailed design features.)

There are evidently multidimensional features that are naturally connected throughout all four layers of social commerce design, and they need to be considered as a whole. They include information quality, system quality, service quality, usability, and playfulness. (See Table 3e for the detailed design features.) For example, within the individual layer, information should be accurate in a participant's profiles, updated information may motivate social activity in building communities, and complete information may make product descriptions more useful. In addition, offering

systems and services of good quality are helpful to identify individuals (e.g., highlighting participants' activities), encourage participation (e.g., following up services), maintain relationships (e.g., quick responses) and achieve commercial outcomes (e.g., secure payment). Furthermore, there is a need to ensure, throughout all layers of social commerce design, that the system is easy to use and provides users with an enjoyable experience.

6. Application

In order to better understand the proposed model for social commerce design and the specific design principles developed in this study, a heuristic evaluation was applied on two social commerce websites. We believe there are two categories of social commerce. One category is based on e-commerce websites that leverage Web 2.0 tools and concepts to develop social commerce, and the other is built on Web 2.0 platforms that add e-commerce features. We selected Amazon (www.amazon.ca) from the first category and Starbucks Facebook (www.facebook.com/Starbucks) from the second category.

Table 4 lists the design features as they apply or not to the two target social commerce websites. Overall, the two websites appear to be clear and straightforward in terms of the social features and the commerce features they aim to put forward. Various types of content are properly presented in an assortment of formats enabling users to easily consult the displayed information and effectively interact with services and applications.

A user's identity is clearly displayed throughout the two websites when the user logs in. (See Fig. 6.) Interesting information, such as the recent purchase history and the most favourite Starbucks product list is highlighted in users' profiles, which is helpful

Table 3b
Summary of Conversations design principle.

Design principles	Design features	Explanations
Conversation	Social content presentation	• To make it easy to view relevant content and activities from active participants, such as presenting the most recent activities in chronological order
		• To offer rich social content in various formats, such as text, photo, video and audio
		• To optimize social content formats
		• To consider interactive ways of social content provision, such as the Facebook Activity Feed and the Recommendations plug-in
	Topic focus	• To build tools to focus conversation around core topics, such as Pinterest.com, a virtual pinboard allowing users to organize and share things they find on the web
		• To enable participants to interact with social content, and each piece of content can be created as their own conversation topics, such as providing reviews or rating other users' reviews
	Notification	• To create connection through notifications - when participants interact with specific services and applications, notifications will be automatically delivered to other people, such as Facebook messages
	Content creation	• To encourage participants to express their experiences, knowledge and interests, such as the Twitter "Like" button
		• To provide feedback mechanisms since participants are likely to respond to content created or posted by other participants or friends, such as the Facebook social plug-in "Comment" button
	Information sharing	• To share experiences and knowledge, motivating deep engagement and providing participants with a strong sense of social identity, such as the Facebook "Share" button
		• To create a sense of pleasure and confidence when experiences and knowledge are shared, reviewed and commented on by others, leading to more active social interaction, such as displaying a question's responses from all participants

Table 3c
Summary of Community design principle.

Design principles	Design features	Explanations
Community	Community support	• To build communities matching one's goals and objectives, such as the Apple community aimed at answering Apple products' usage questions • To consider the appropriate types of communications, and the levels of support, such as email support, telephone support or web support • To enable participants to receive real time community support whenever needed, such as online chatting • To provide social suggestions to help participants overcome the uncertainty of decision, showing what others are doing and have done, such as a community discussion board
	Connection	• To connect and automatically display connections with engaged people, such as the Facebook friend connection • To link with people you like because admiration and attraction may build social bonds and trust, such as the Best Buy Blog
	Relationship maintenance	• To update social activities in time and inform participants through status messages, such as the Facebook "News feed" • To provide social events to support relationship maintenance, such as the Nike social events

Table 3d
Summary of Commerce Design Principles.

Design principles	Design features	Explanations
Commerce	Group purchase	• To link with people who have similar shopping interests, such as Groupon.com • To create customer shopping lists and share the shopping lists with more people, such as a "Wish list"
	Social proof	• To resolve customer uncertainty about what to do or buy, such as the option of "customers who bought this also bought"
	Authority	• To present expert recommendations, such as the Amazon "Recommendations for you" • To make expert advice available to customers, such as the Apple "Online asking questions"
	Reciprocity	• To facilitate listening to / watching people's experiences and feedbacks • To enable participants to reciprocate favours, such as the Facebook "Share" and "Like" buttons
	Participation	• To involve customers in the process of product design and development, editing, evaluating and submitting design ideas, such as the M&Ms personalized candies online tool • To display a history of customers' activity, such as "Customers who viewed this also viewed" • To make customers' activity status visible to and recognized by other participants and vendors, such as displaying and marking "Most helpful customer reviews" on Amazon • To offer incentive mechanisms, such as monetary or non-monetary rewards
	Social ads and applications	• To offer advertisement services and applications, such as Facebook "advertise" • To invite participants to participate in branded online applications, such as social games
	Business functions 　Ordering function	• To take a customer's order • To fulfill a customer's order as promised • To track order status online
	Payment mechanisms	• To provide secure and easy payment methods

to draw users' attention to particular content. Each conversation focuses on the core topics, attracting users' engagement in interesting ways about services and applications they like. For example, when reviewing a digital camera on Amazon, the site shows a number of photos taken using that particular camera under various predefined shooting situations. Furthermore, the two websites display users' preferences and recent activity, which can effectively support more user engagement. (See Fig. 7.) When users interact with products and services, they can easily share their content with other people and provide comments. (See Fig. 8.)

There are several social commerce design features missing from both target social commerce websites, however. For example, on Amazon, when users interact with specific services or purchase products, notification messages should be generated and automatically delivered to users' friends. Moreover, there are no communication approaches that can indicate and connect users with people who have similar shopping interests. If the site can show other people who are already participating in services and applications similar to the ones' the user is undertaking, it may generate more engagement. It is hard for a user to obtain real time support from a peer community, where people with common interests work together and utilize their collective intelligence to solve problems and make decisions. Regarding Starbucks Facebook, there is a lack of navigation descriptions, which might influence users' movement within the site. Although many products can be reviewed and commented on, it is not possible

for users to purchase them online. In particular, there are no online payment transaction functions on the website. Furthermore, information about products, prices and deals is not complete nor is it presented at the right detailed level, which may constitute a barrier for users to take further actions. There is also a need to make online help functions available throughout the website.

According to our analysis, it seems that Amazon needs to pay more attention to leveraging social media features in order to provide a more interactive, social and collaborative user experience. These social media features should concentrate on customer generated content, information sharing, customer connection and peer community establishment. Conversely, the Starbucks social commerce application (also called App) built on Facebook should develop more commerce features, such as offering incentive mechanisms, distributing commerce advertisements, presenting price information, applying shopping cart functions and implementing purchase order tracking mechanisms in order to effectively support users' online shopping needs.

We believe that it is critical for any social commerce website to achieve a minimum set of social commerce design features. As indicated in Section 5, the design model is constituted of four layers, each addressing a number of design features. Although it is not necessary to achieve all design features within each layer, social commerce design features should cover all the layers. In other words, the minimum set of features for social commerce design should in-

Table 3e
Summary of common design features throughout the four layers.

Design principles	Design features	Explanations
All four layers	Information quality	
	Information relevancy	• To provide relevant information and social content
	Information accuracy	• To offer accurate information and social content
	Information completeness	• To provide complete information and social content
	Information update	• To update information and social content
		• To present information and services update date
	System quality	
	Security	• To ensure all customers' actions are secure
		• To provide user authentication
		• To display a message about data protection when user submits personal information to system
	Accessibility	• To provide universal and quick access to the website
	Precise operation and computation	• To ensure proper operation and computation within all services and applications
	Participant control	• To clearly indicate how data is utilized and integrated
		• To enable participants' control over the data that they provide for services and applications, and the information that services and applications create from this data
		• To make participants aware that all personal information is used with their permission and applied in ways that they understand
	Transparency	• To be straightforward with information that is utilized from participants' profiles
		• To build transparency in terms of participant roles, processes and service outcomes
		• To present privacy notices as well as terms and conditions of use
	Service quality	
	Responsiveness	• To respond quickly to user requirements, such as the Apple online responses
	Following up services	• To provide follow up and feedback services to support service improvement, such as online user satisfaction surveys
	Usability	
	Ease of use	• To make sites, services and applications easy to use and operate
		• To match menu structure with task structure within the site
	Navigation	• To guide customers' movements to achieve their desirable service outcomes, such as providing clear forward and backward buttons
		• To provide messages that indicate where users are within the site, such as the breadcrumbs bar
	Error recovery	• To present clear error messages to suggest further actions
		• To present warning messages if users are making potentially serious errors
	Valid links	• To provide descriptive, meaningful and explicit links and ensure all links work properly
	Help functions	• To provide support during customers' performance whenever needed
		• To provide guidance in a clear and simple language
	Consistency	• To provide a consistent experience to support customers' perception and behaviours, such as consistent design formats
		• To ensure tagging consistency
	Playfulness	
	Enjoyment	• To provide an enjoyable experience through the website, such as the M&Ms. "fun and games"
		• To offer pleasurable and respectful interaction with customers
	Attractive appearance	• To apply clear, simple and meaningful images within corresponding text
		• To present content in an uncluttered manner
		• To separate information groups, and create symmetry in content display

clude features from the individual, conversation, community and commerce layers. Taking the previous example of Amazon, in the commerce layer, design makes the website accessible and easy to use, offering rich commercial information. Services and applications are implemented in a secure manner and users' confidential information is carefully protected. Flexible functions and capabilities support users in finding the information they seek and achieving their desirable outcomes. Users can easily distinguish ads from regular content. Regarding the community layer, peer communities closely interconnect with users in the context of relevant services and applications, providing social support in real time. With respect to the conversation layer, the website leverages various social media tools, such as "like" and "share" buttons to foster user participation. When users are involved in specific services and applications, the website not only offers rich social content to users, but also motivates them to generate social content, such as providing feedback, rating reviews and making recommendations. Furthermore, within the layer of individual design, when users interact with the website, design helps users to be aware of their engagement and recognize their content through activity profiles.

Similarly, in the Starbucks Facebook example, participants can be easily identified through their personal profile when visiting the site. The most recent activities are clearly organized in chronological order and presented on the site. The website provides rich social content in various formats such as text, photo and video. Participants are encouraged to share experiences and knowledge by offering flexible "like" and "share" buttons throughout the site. Each piece of content presented on the site can be created as the participant's own conversation topic. In addition, participants closely connect with their community and link with people they like, so that they are able to receive real time community support whenever needed. Note that, in this article, we adopt the understanding that e-commerce is more than "ordering" and "paying" for items online. E-commerce also includes the step "before the online transaction" of online marketing, as well as the step "after the online transaction" of online customer service. Although there are no ordering and payment mechanisms on Starbucks Facebook, the website offers a variety of commercial advertisements and disseminates information about Starbuck products, services, news and announcements to a wider range of consumers. Since these features are essential components of e-commerce, Starbucks Facebook is therefore considered an instance of social commerce.

Furthermore, we believe that it is important to consider the business objectives and strategies for each layer of social com-

Table 4
Design features within the target social commerce websites.

Design principle	Design features	Amazon	Starbucks Facebook
Individual	Personal profile	√	√
	Context profile	√	√
	Activity profile	√	√
Conversation	Social content presentation	×	√
	Content focus	√	√
	Notification	×	√
	Content creation	√	√
	Information sharing	√	√
Community	Community support	×	×
	Connection	×	√
	Participant control	√	√
	Relationship maintenance	×	×
Commerce	Group purchase	×	×
	Social proof	√	√
	Authority	√	√
	Reciprocity	√	√
	Participation	×	√
	Social ads	√	√
	Social applications	×	√
Common features	Information quality	√	×
	System quality	√	×
	Service quality	√	×
	Usability	√	×
	Playfulness	√	√

(√ = covered, × = not covered).
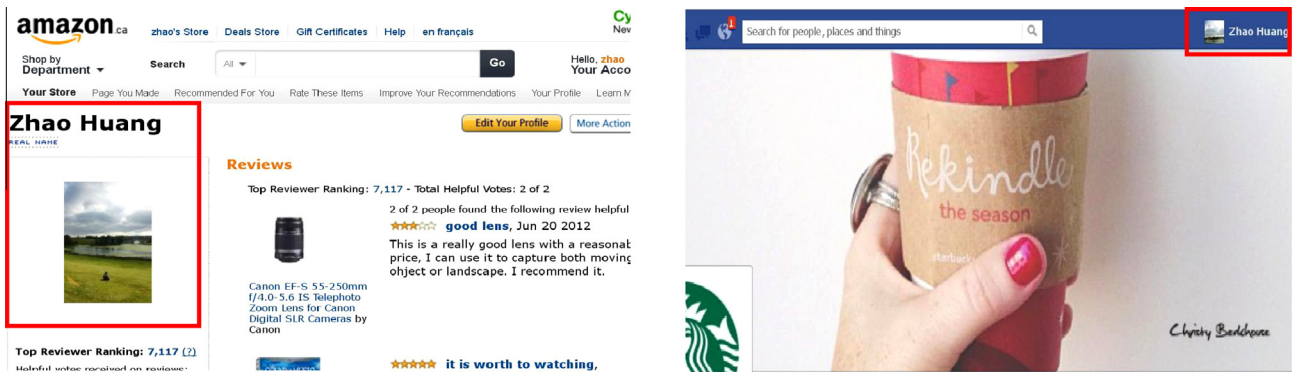
Fig. 6. User identity presentation.
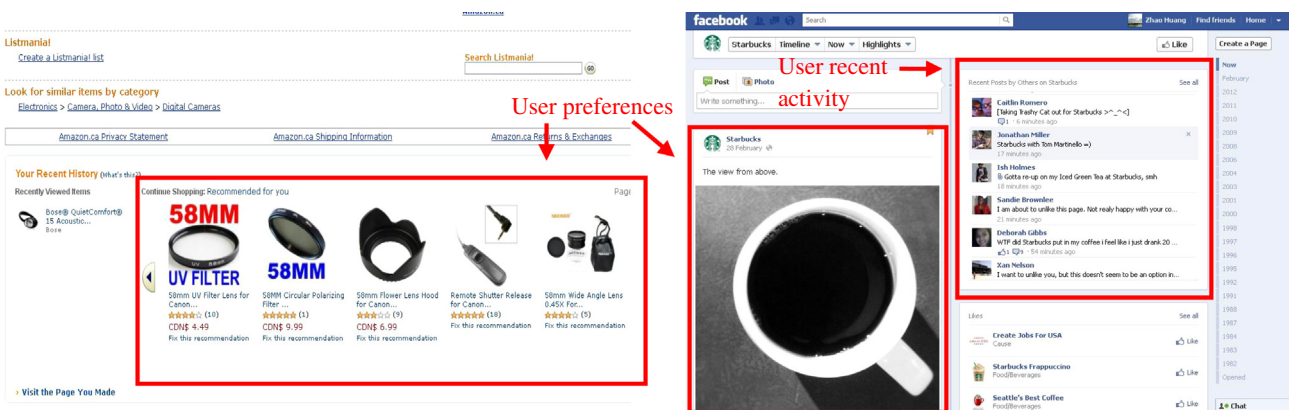
Fig. 7. Displaying user preferences and recent activity.

merce design, so that companies with different business objectives and strategies can achieve their desirable design outcomes. For example, if the focus of a company is mainly on e-commerce, it should pay more attention to the individual layer and the commerce layer in order to ensure that website services support all consumer purchase behaviours, even though the community and
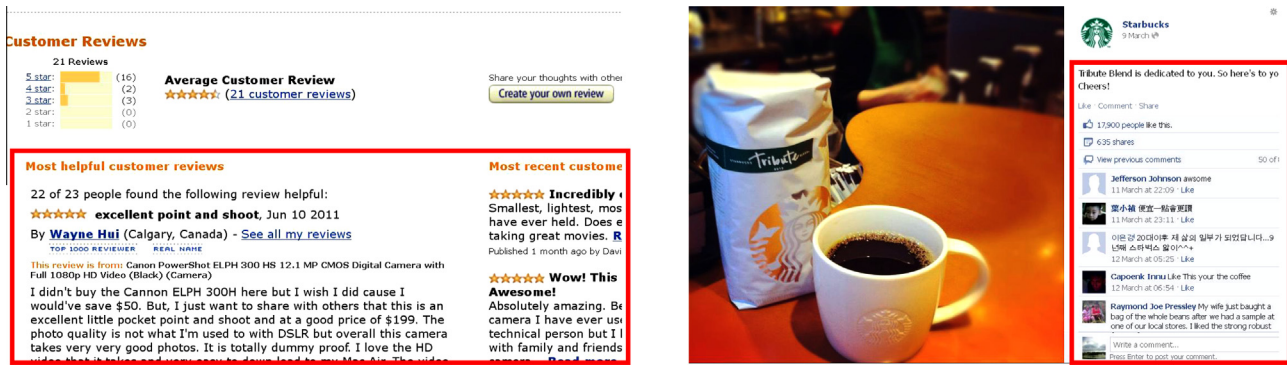
Fig. 8. Social comment provisions.

conversation layers are important and should at some point be looked into. But if a company is more interested in building a community around (and have conversation that has started and spread about) its products or brand, then the individual, conversation and community layers should be paid more attention. The commerce layer can later be developed if (more) commerce features are needed. However, if designing social commerce is the main goal of the company then it should make sure that a minimum set of design features cover all the layers of social commerce design, including individual, conversation, community and commerce, and more features will be added to various layers as needed.

This study proposes a set of design principles to provide guidance for developers and designers to build more effective social commerce platforms. Considering social commerce design and development, it is important to be aware of the relationships among participants, interaction, community and commerce. These relationships address a fundamental understanding of social commerce design. In this context, the design should focus on identifying users, motivating participation, building conversation, utilizing community, and providing quality websites, which allow users to be identified and informed in order to establish a community within an online shopping environment. However, although a number of social commerce design features have been suggested, it is not necessary to apply all of them at once. There is a need to carefully analyze specific design requirements according to a clear social commerce development plan and strategy.

Moreover, in order to implement these proposed design principles successfully, several considerations can be advanced. First, business organizations and web developers need to devise a sound plan prior to design, in which customers should be placed at the center. In other words, customers need to be involved in social commerce development. Second, when the identified principles are considered for designing a social commerce website, designers should present and explain these principles to customers at the detailed level and ask customers to check whether these principles can meet their requirements. Third, if specific design features conflict with each other, designers should analyze circumstances under which specific principles should be followed. Furthermore, a balance must be found between obligatory design features and offering a rich amount of flexible design features, adequate social content and various Web 2.0 tools for designers. Finally, designers should utilize their previous experiences and success stories to assess the specific design needs.

7. Conclusion

Social commerce is increasingly drawing the attention of practitioners and academics. Evidence from previous studies indicates that social commerce is a new phenomenon that needs to be better

understood. This study conducted a systematic literature review, explaining the social commerce concept, presenting its state-of-the-art, and describing the relevant features in social commerce design. More importantly, a new conceptual model for social commerce design has been introduced, with the hope of providing insights into social commerce and the overall relationships among the participants, the community and online commerce.

There are some limitations to this study though. For example, our conceptual model was only applied to two social commerce websites, which kept us from making our results more empirically meaningful. The other limitation concerns the identification of e-commerce and Web 2.0 design characteristics. The process of selecting appropriate design characteristics and grouping them into relevant design principles is based on the reviewed state of the art. Hence, some characteristics may be found to relate to more than one design principle, however, our study groups these characteristics into one design principle based on their key features.

This study being the first step, a number of future studies will be carried out. These include:

- To build a social commerce prototype to validate the proposed design model and relevant design principles.
- To explore the design process and principles within the two categories of social commerce (i.e., e-commerce-based and social network based social commerce platforms).
- To identify design patterns of social commerce by studying a variety of real world social commerce applications from a software engineering perspective.

The managerial recommendations of this research are as follows. First, management needs to identify its existing e-commerce and social networking applications and capabilities. They must then decide on the way to develop their social commerce strategy: to add social features to their e-commerce platform, or to add commerce features to their social network platform. If they have an e-commerce operation, they already fulfill the features in the Individual and Commerce layers of our proposed model. They need to implement the features in the Community and Conversation layers. If they have a serious presence on social networks, then they already fulfill the Individual, Conversation and Community layers. All they need is to further implement the Commerce layer.

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