Full length article

Social presence, trust, and social commerce purchase intention: An empirical research

Baozhou Lu a, *, Weiguo Fan b, Mi Zhou b

a School of Economics & Management, China University of Petroleum, 66 West Chang Jiang Rd, Qingdao, 26655, China
b Pamplin College of Business, Virginia Polytechnic Institute and State University, 3007 Pamplin Hall, Blacksburg, VA 24061, USA

A R T I C L E   I N F O

Article history:
Received 30 May 2015
Received in revised form 18 November 2015
Accepted 29 November 2015
Available online xxx

Keywords:
Social commerce
Social presence
Online social commerce marketplaces
Online trust
Purchase intention

A B S T R A C T

Lacking the presence of human and social elements is claimed one major weakness that is hindering the growth of e-commerce. The emergence of social commerce might help ameliorate this situation. Social commerce is a new evolution of e-commerce that combines the commercial and social activities by deploying social technologies into e-commerce sites. Social commerce reintroduces the social aspect of shopping to e-commerce, increasing the degree of social presences in online environment. Drawing upon the social presence theory, this study theorizes the nature of social aspect in online SC marketplace by proposing a set of three social presence variables. These variables are then hypothesized to have positive impacts on trusting beliefs which in turn result in online purchase behaviors. The research model is examined via data collected from a typical e-commerce site in China. Our findings suggest that social presence factors grounded in social technologies contribute significantly to the building of the trust-worthy online exchanging relationships. In doing so, this paper confirms the positive role of social aspect in shaping online purchase behaviors, providing a theoretical evidence for the fusion of social and commercial activities. Finally, this paper introduces a new perspective of e-commerce and calls more attention to this new phenomenon of social commerce.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

A notable difference between online and offline markets that is hindering the growth of e-commerce is the decreased presence of human and social elements in the online environment (Cyr, Head, Larios, & Pan, 2009; Hassanein, Head, & Chunhua, 2009). This lean nature of online environment is often mentioned one of the major drawbacks of e-commerce (Pavlou & Gefen, 2004). It is claimed to eliminate social cues (e.g., body language), impose additional unique risks (Lee, 1998), and consequently impair the building of the trustworthy atmosphere online. However, this situation has been greatly improved recently by incorporating Web 2.0 capabilities into the e-commerce website. This new evolution is commonly referred to as the birth of social commerce (SC) (Huang & Benyoucef, 2013; Shin, 2013; Yadav, De Valck, Henning-Thurau, Hoffman, & Spann, 2013). New design features built upon social media and Web 2.0 technologies, including recommendation lists, ratings, comments, social proof, and reciprocity applications (Huang & Benyoucef, 2013; Olbrich & Holsing, 2011), enhance customer participation and allow them to collect socially rich information, resulted in a more trustworthy and sociable online transaction environment. Although these positive influences have been widely recognized, the social aspect of e-commerce has not been completely understood, nor their impacts on purchasing decision.

In this study, Social Presence Theory (SPT) is employed as the theoretical lens to understand the impacts of social shopping features in online SC marketplaces. To account for various aspects of social commerce, a multi-dimensional conceptualization of social presence is proposed based on previous studies (Biocca, Harms, & Burgoon, 2003; Caspi & Blau, 2008; Shen & Khalifa, 2009). Then their influences on purchasing decision are examined in a research model by using trust as the key mediating variable. In sum, this study tries to offer several potential contributions.

First, it re-conceptualizes social presence as a multi-dimensional construct in social commerce context, and thus, overcomes the limitations of the unidimensional conceptualization in literature. In doing so it sheds light on the nature of social aspect
in SC context by using SPT, contributing a set of social factors that have impacts on trust. Second, it offers a full understanding on online purchase behaviors by considering the influences of both social factors and structural factors. Finally, it discloses the importance of the social aspect on online purchase behaviors, calling more attention to this relatively new but important research area in future.

The rest of the paper is organized as follows. We begin with the theoretical development, including discussing the emergence of social commerce phenomenon and proposing a multi-dimensional model of social presence. Next, we present the research model and the hypotheses, followed by a description of the research methodology. The paper then presents the research results, which is followed by a discussion of key findings and contributions, as well as the implications for both research and practice. Finally, we discuss the limitations of this study, the possible direction of future research, and provide the concluding remarks.

2. Theoretical background and conceptual development

2.1. Social commerce

As a relatively new phenomenon, social commerce has evolved quickly in practice (Barnes, 2014; Kim & Park, 2013; Wang & Zhang, 2012). A recent report by McKinsey (Chui et al., 2012) estimates that the use of social technologies can contribute $900 billion to $1.3 trillion in value, and that up to 1/3 of consumer spending is subject to influence from social commerce. Another report by Barclays (2012) indicates that by 2021 nearly half of the UK consumer population will be engaged in social commerce. The term of social commerce was first coined by Yahoo in 2005 to denote online places where people can share experiences, get advice from one another, find goods and services and then purchase them (Mardsen, 2010). Its early applications can be found in the late 1990s when Amazon introduced the rating and review systems. The increased popularity of social technologies over last couple of years, including social media, web 2.0 and social networks, has spawned an expanded range of social commerce tools and opportunities (Liang & Turban, 2011; Mardsen, 2010).

Recently, SC generally refers to as the delivery of e-commerce activities and transactions via the social media environment (Liang & Turban, 2011). It is viewed as a new evolution of e-commerce (Huang & Benyoucef, 2013; Wang & Zhang, 2012). Liang and Turban (2011) summarized three major attributes of SC: social technologies, community interactions, and commercial activities. Thus, SC can be considered a subset of e-commerce that involves using social technologies to assist e-commerce transactions and activities (Yadav et al., 2013). In essence, SC is a combination of commercial and social activities (Liang & Turban, 2011; Zhou, Zhang, & Zimmermann, 2013). Traditional e-commerce sites, such as Amazon and Taobao, have added social applications and content to help people to connect where they usually buy. Considering the dominance of marketplace-based e-commerce like Amazon and Taobao, we try to uncover how social factors engendered by social applications shape the beliefs and behaviors of buyers in online SC marketplaces.

2.2. Social aspect of online shopping

Shopping has always been a social activity. Consumers tend to be influenced by their social interactions with others when making purchase decisions (Godes et al., 2005). E-commerce focuses more on maximizing efficiency and the one-way interactions between customers and the system (Huang & Benyoucef, 2013). Online transactions are usually facilitated and guaranteed by structural factors such as escrow services and credit card guarantees (Fang et al., 2014; Pavlou & Gefen, 2004). Social technologies reintroduce the social side into online purchasing process, making online purchasing a more social experience. They also greatly increase the firm ability to directly initiate and manage social interaction either impossible or too costly in the past (Chen, Wang, & Xie, 2011). Thus, while e-business concentrates more on business goals, SC is more oriented toward social goals, such as networking, collaborating and information sharing, with a secondary focus on shopping (Wang & Zhang, 2012). Online buyers are able to get access to social knowledge and experiences to support them in better understanding their purchase purposes, and in making more informed and accurate decisions (Dennison, Bourdage-Braun, & Chetuparambil, 2009).

While prior studies offer insights on how social interactions shape buyer behaviors, such as, word-of-mouth (WOM), observational learning, and social support (Amblee & Bui, 2011; Chen et al., 2011; Trusov, Bucklin, & Pauwels, 2009), they may have overlooked the overall effects of the social context (Kreijns, Kirschner, & Jochems, 2003). In SC, buyers are able to get more social cues to support their purchasing decisions by collecting more information from the communities, by observing the actions of other buyer, or by interacting with online sellers. Huang and Benyoucef (2013) proposed a conceptual model to summarize the social design features of SC along four layers including the individual, conversation, community and commerce levels, shown in Table 1. They argued that the key distinction between e-commerce and social commerce is that the former usually only sees an individual layer while the latter usually sees a community built on conversation. We argue that the social design features applied in these four layers enrich social information, make buyers feel more connected with others, and finally enhance a social context online. SPT has been indicated a suitable theoretical lens for understanding the social context in e-commerce. SPT suggests that social presence is built upon signals transmitted in a communication medium, such as virtual agents (Hess, Fuller, & Campbell, 2009), IT-enabled human-like interaction (Pavlou, Liang, & Xue, 2007), socially-rich text, personalized greetings (Gefen & Straub, 2004), chat (Qiu & Benbasat, 2005) or message boards (Cyr, Hassanein, Head, & Ivanov, 2007). Thus, the social design features will convey various types of social presence (seen in Table 1) that will be discussed in next section.

2.3. A multi-dimensional conceptualization of social presence in social commerce context

The concept of social presence is grounded in social presence theory that elaborates the ability of a communication medium to transmit social cues (Short, Williams, & Christie, 1976). Defined as “the salience of the other in a mediated communication and the consequent salience of their interpersonal interactions” (Short et al., 1976), SP is viewed as an inherent quality of a communication medium. From a psychological standpoint, SP also closely relates to intimacy and psychological closeness (Short et al., 1976). In this perspective, SP is often measured as the perceived warmth, conveying a feeling of human contact, sociability, and sensitivity embodied in a medium (Rice & Case, 1983). Most of prior e-commerce research has adopted unidimensional model of SP, focusing on the capability of website to convey a sense of human warmth and sociability.

However, this unidimensional conceptualization of SP might not be suitable for virtual community, where people not only interact with the computer mediated medium, but also need to communicate with other members and immerse themselves into
the virtual community. Thus, a multidimensional conceptualization of SP is advocated. Shen and Khalifa (2009) propose a three-dimension model of SP including awareness, affective SP and cognitive SP. Caspi and Blau (2008) indicate three different conceptualizations of SP for online learning communities, i.e., as perception of other given the subjective quality of a medium, as self-projection onto the group, and as social identification. Tu (2002) suggests SP in online learning communities should have three dimensions: social context, online communication, and interactivity. Since social commerce is seen as the combination of commercial and community activities (Huang & Benyoucef, 2013; Liang & Turban, 2011), SP in social commerce should also be conceptualized as a multi-dimensional construct.

Based upon prior research, we propose a three-dimension model of SP, named respectively, SP of the web, perception of others, and SP of interaction with sellers. Our conceptualization is akin to the SP model of Caspi and Blau (2008), which also contains three factors: perception of the others, medium’s impersonality, and medium as interaction enabling.

SP of the web refers to the capability of a website to convey a sense of human warmth and sociability (Gefen & Straub, 2004; Hassanein et al., 2009). It might be the most adopted perspective in prior e-commerce research, reflecting the inherent “subjective quality” of website. Most websites do not facilitate direct interaction with another human, but this does not mean that a website cannot convey social presence. A website, as the container of multimedia contents and socially rich text, can convey a sense of personal, sociable and sensitive human contact. Other IT artifacts embedded in a website, e.g., physically embodied agents (Lee, Jung, Kim, & Kim, 2006), 3D avatar or videos, and Text-To-Speech voice (Qiu & Benbasat, 2005), also help to enhance the perceived SP. The provision of recommendations and consumer reviews in an e-commerce site also increases the SP of the website (Kumar & Benbasat, 2006). Table 1 indicates the social design feature in SC that build up the perceived SP of a website. Geffe, such as personal profile, context profile, social content, and information sharing.

The second dimension is perception of others (Caspi & Blau, 2008), also named awareness. Perception of others refers to the extent to which other social actors appear to exist and react to the users in online communities (Shen & Khalifa, 2009). Awareness in an online community is achieved through status updating, self-presentation features and continuous participation in online discussion. In SC, a few social applications increase the awareness of other buyers who might feel interests in the same product or topic. For instance, social proof - a type of social application to resolve customer uncertainty about what to do or buy (e.g., the option of “customers who bought this also bought”) - will give buyers a hint on the existence of other buyers and their purchasing interest. WOM (or recommendation and review system) can also increase perception of other online buyers. WOM valence indicates the percentage of prior buyers who hold positive or negative opinions, and WOM volume plays an informative role by increasing the degree of buyer awareness (Chen et al., 2011). Revealing observational learning information (Chen et al., 2011), which contains the discrete signals expressed by the actions of other consumers (e.g. the percentage of adoption, wish list, Facebook “share” and “Like” button), will also let a buyer be aware of others buyers and their actions. Other social applications relevant for perception of others are suggested in Table 1, including reciprocity, group purchase, connection, etc. Since buyers in a SC marketplace can rely on multiple sources to infer the presence of other buyers, social presence of others should be measured as the composite latent construct that is jointly influenced by the measures (MacKenzie, Podsakoff, & Jarvis, 2005).

Table 1 Social design features and social presence (adapted from Huang & Benyoucef, 2013).

<table>
<thead>
<tr>
<th>Design principle</th>
<th>Design features</th>
<th>Amazon</th>
<th>Taobao</th>
<th>Dimension of SP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Personal profile</td>
<td>√</td>
<td>√</td>
<td>∆</td>
</tr>
<tr>
<td></td>
<td>Context profile</td>
<td>√</td>
<td>√</td>
<td>∆</td>
</tr>
<tr>
<td></td>
<td>Activity profile</td>
<td>√</td>
<td>√</td>
<td>∆</td>
</tr>
<tr>
<td>Conversion</td>
<td>Social content presentation</td>
<td>√</td>
<td>√</td>
<td>∆</td>
</tr>
<tr>
<td></td>
<td>Topic focus</td>
<td>√</td>
<td>√</td>
<td>∆</td>
</tr>
<tr>
<td></td>
<td>Notification</td>
<td>√</td>
<td>√</td>
<td>∆</td>
</tr>
<tr>
<td></td>
<td>Information sharing</td>
<td>√</td>
<td>√</td>
<td>∆</td>
</tr>
<tr>
<td>Community</td>
<td>Community support</td>
<td>×</td>
<td>√</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Connection</td>
<td>×</td>
<td>√</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Relationship maintenance</td>
<td>×</td>
<td>×</td>
<td>–</td>
</tr>
<tr>
<td>Commerce</td>
<td>Group purchase</td>
<td>×</td>
<td>×</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Social proof</td>
<td>√</td>
<td>√</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Authority</td>
<td>√</td>
<td>√</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Reciprocity</td>
<td>√</td>
<td>√</td>
<td>∆</td>
</tr>
<tr>
<td></td>
<td>Participation</td>
<td>×</td>
<td>×</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Social ads and application</td>
<td>×</td>
<td>×</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Messenger tools with sellers</td>
<td>×</td>
<td>√</td>
<td>–</td>
</tr>
</tbody>
</table>

leading online marketplace in China, QQ – a third party developed instant message tool – is used by its members for the daily transactions. Considering the extensive usage of CMC tools in practice, we argue that interaction with sellers is one important dimension of SP.

2.4. Trust in social commerce marketplace

Trust is a central aspect in many economic transactions (Fukuyama, 1995; Mayer, Davis, & Schoorman, 1995). When a social environment cannot be regulated through rules and customs, people tend to adopt trust as a reducer of social complexity (Luhmann, 1979). This is especially true for online transactions due to the absence of effective regulation over the opportunistic behaviors of e-vendors. Thus, trust is often considered the foundation of e-commerce (Keen, Ballance, Chan, & Schrump, 1999) and the most crucial factor for the success of e-commerce (Wang & Emurian, 2005). Prior e-commerce research has focused on finding key antecedents of trust or disclosing the trust building mechanism (e.g., Lu, Hirschheim, & Schwarz, 2015; Ou & Sia, 2009). These studies focused more on the impacts of functionality (e.g., usability, ease of use and usefulness) and institutional structures (e.g., structural assurance, situational normality and feedback mechanisms), paying very little attention to social factors (Kim & Park, 2013) except social presence of web interface (e.g., Gefen & Straub, 2004; Hassanein & Head, 2007). Trust, indeed, is built through social interactions with other people and the surrounding environment. Thus, social context should be an important but neglected characteristic of trust in prior literature.

Trust is a complex and multifaceted construct (Gefen, Karahanna, & Straub, 2003). It has been conceptualized in a variety of ways. McKnight, Choudhury, and Kacmar (2002) tried to remove some of the conceptual confusion on trust by separating beliefs from intended behavior based on the theory of reasoned action (Fishbein & Ajzen, 1975). They put trust into two broad categories: trusting beliefs and trusting intentions and conceptualized trust as a set of specific beliefs including integrity, benevolence and ability. This conceptualization of trust is akin to that of other studies adopting SPT (e.g., Hess et al., 2009). Then trusting beliefs is conceptualized as a second-order construct in this study. Two types of trustees exist for a SC marketplace from a buyer perspective (Lu et al., 2015): marketplace (e.g., Amazon and eBay) and sellers resided in the marketplace. Trust in online sellers is considered as the major construct in this study, while trust in marketplace is taken as control variable.

3. Research model and hypothesis development

The proposed research model is depicted in Fig. 1. In a SC marketplace, online sellers can overcome the more impersonal, anonymous and automated stigma of online shopping by making their virtual storefront socially rich (Kumar & Benbasat, 2002). Perceived social presences should help buyer shape their trusting beliefs towards sellers. The model presents that each dimension of social presence has a positive influence on trust in the sellers, which in turn, will shape online purchasing behaviors. The hypotheses are explained in detail as below.

3.1. Social presence of web and trust

E-commerce is, in essence, a type of information system. Buyers conduct online transactions mainly through interacting with the website. These buyer-web interactions could be viewed similar to interpersonal interactions (Pavlou et al., 2007) if the website were treated a social actor (Kumar & Benbasat, 2002). Since human interaction is viewed as a precondition of trust (Blau, 1964) the buyer-web interactions should also contribute to the building of trust online. A high SP website conveys more information and social cues, and thus, is perceived to be more transparent; whereas in a more transparent environment the untrustworthy behaviors will be inhibited. The SP of a website will also shorten the perceived social distance between buyers and sellers (Pavlou et al., 2007). And it is easier to form a trustworthy relationship when the perceived social distance is short. Therefore, the SP of a web should enhance buyers’ trust towards online sellers. Prior studies have also suggested a positive impact of the SP of a website on trust (Hassanein et al., 2009). Thus, in a SC marketplace, the SP of a web created by an online seller will make him/her more trustworthy. Hence, we hypothesize that:

H1. The SP of web of will have a positive impact on trust in online sellers.

3.2. Perception of others and trust

Shopping has always been social activities. Social psychology research indicates that human can learn from and be affected by the knowledge and experiences of others who they know or trust (Mardes, 2010). Persuasion can be extremely effective when it
comes from similar others (Cialdini, 2001), even if they are random strangers. Marketing literature also suggests that consumers’ beliefs, attitudes and behaviors tend to be influenced by their social interactions with others when they make purchase decisions (Godes et al., 2005). When shopping online, buyers are hard to validate the information offered by the sellers. However, they can rely on their peers who have visited the same storefront for indirect cues (Cialdini, 2001). Buyers not only can interact with the e-commerce system, but also are able to make sense of the existence of other buyers based on various cues resided in social applications such as customers’ reviews (WOM), pick lists, popularity lists and transactional history. If social cues send positive signals (e.g. positive WOM valence, most of visitors wish to get this product, most of visitors have purchased this product …), a buyer will feel more confident in the seller’s ability, benevolence and integrity in providing good services. Marketing literature also indicates that when people observe the purchase actions of all previous individuals, this publicly observed information outweighs their own private information in shaping their beliefs and behaviors (Chen et al., 2011). As a result, people tend to follow the lead of their online predecessors and become engaged in a type of “herd behavior” (Chen et al., 2011). Accordingly, we have:

H2. Perception of others will have a positive impact on trust in online sellers.

3.3. Social presence of interaction and trust

Online chat tools such as QQ, MSN or chat plug-ins embedded in the website have been used for seller–buyer interactions, through which more social information will be revealed to buyers to form their trusting beliefs. In order to sustain a good customer relationship, several methods are often employed, such as, choosing special words and sending the emotional icons like smile. For instance, a special language style, termed “Taobao Style”, is popular in Taobao communities. Buyers are greeted with the word of “Qin” (means “my dear” and rarely used in daily communication in Chinese culture but extensively used in online context). The traded goods are called “Baobei” (means “treasured objects”), “Taobao Style”, in together with other communication methods, make sellers feel friendlier and warmer, and thereby, will help to shorten the perceived distance between them. Thus, the CMC chat tools are also able to convey a sense of social presence. Buyers are also able to make sense of the attitudes, benevolence, and integrity of sellers via these computer mediated interactions, thereby forming beliefs on sellers. The computer mediated interactions, such as, email and teleconference, have been argued to be able to convey SP and in turn to shape user beliefs (Qiu & Benbasat, 2005; Zack, 1993). In online learning communities, the text-based online discussion (Medium as interaction enabling) is found to be positively correlated with the cognitive aspects of learning (Caspi & Blau, 2008). Hence, we have:

H3. SP of interaction will have a positive impact on trust in online sellers.

3.4. Trust and purchase intention

Purchase intention is defined in this study as a buyer’s intention to purchase from a seller resided in a SC marketplace. According to the Theory of Planned Behavior (Ajzen, 1991), behavioral intention is the most influential predictor of behavior. Thus, in this study we use purchase intention to represent purchase behaviors.

Taking part in online transactions requires buyers to deal with the social complexity associated with the opportunistic behaviors of sellers. Trust can be viewed as a significant antecedent belief that creates a positive attitude toward the transaction behavior (Jarcenpaa, Tractinsky, & Vitale, 2000), which in turn leads to transaction intentions. Trust helps reduce the social complexity and vulnerability that a buyer feels in e-commerce by allowing the buyer to subjectively rule out undesirable yet possible behaviors of the e-vendor. As such, trust can help buyers reduce their risk perceptions when dealing with online vendors, thereby encouraging them to engage in the “trust-related behaviors” with e-vendors, such as sharing information or making purchases (McKnight et al., 2002). Prior studies have shown that trusting beliefs in specific online vendors are correlated with transaction intentions with those same vendors (McKnight & Chervany, 2002; Pavlou, 2003). We hypothesize that the same logic can be extended to online sellers in a SC marketplace. Accordingly, we have:

H4. Trust in online sellers (trusting beliefs) will increase purchase intention.

3.5. Control variables

The model incorporates additional control variables known to affect trust and online behavior that are described below.

Online comment and rating systems provide fine-grained information about a seller’s reputation that is likely to engender a buyer’s trust in a seller (Pavlou & Dimoka, 2006). Positive comments and ratings help buyer to form positive beliefs in sellers. Thus, its effect on trust in seller is controlled.

Trust disposition is the degree that people in general can be trusted. Since trusting disposition has shown to increase trust, we control for its effect on trust in seller.

Trust transference logic (Stewart, 2003) indicates that trust may be transferred from a place, an industry association, or an entity to another individual. In online context, trust of a marketplace can transfer to the sellers associated with that marketplace. Prior research also indicates that trust in marketplace increases buyer intention to engage in online transactions (Lu et al., 2015). Thus, its effects on both trust in seller and purchase intention need to be controlled.

Consumers’ perception of price fairness has been known to significantly affect their reactions toward sellers. Previous studies have found that perceived price fairness directly affects consumers’ purchase intention (e.g., Kaheman, Knetisch, & Thaler, 1986). Therefore, it’s effect on purchase intention is also controlled.

4. Research methodology

Following Gefen and Straub (2004), the free simulation experiment methodology is used in this study. In a free simulation experiment, subjects are exposed to the research setting that simulates or duplicates the real-world situation and respond naturally to tasks before answering questions about beliefs, attitudes, and observation (Fromkin & Streufert, 1976). Since no variables are specifically manipulated, the technique is known as a “free” simulation experiment. The strength of this technique is that it allows the researcher to observe and measure the subjects engaged in real world task.

In selecting the sites to be included in this study, we deliberately chose online marketplaces that are well known and widely used. Eventually, Taobao is selected as the real-world setting where subjects are required to complete tasks. Taobao is the largest online marketplace in China. By 2010 it owned over 370 million members. Transactions on Taobao totaled over 1 trillion
RMB in 2012 and reached 35 billion RMB on the single day of November 11 (double 11) of 2013. More recently Taobao has evolved into a SC marketplace as indicated in Table 1. Hence, Taobao represents a typical SC marketplace and is qualified as the free simulation experiment site.

4.1. Instrument development

Wherever possible, the measurement items were adapted from previous research. All constructs were measured by reflective indicators except for the construct of “social presence of others”, which was measured with formative items. Information regarding on others buyers revealed by social applications can be summarized into three types, including others who might feel interest with the product (e.g., the wish list and the share button), others who have actually bought the product (e.g., sales record), and others who have provided positive information about the product (e.g., WOM). Therefore, social presence of others can be measured by these three formative indicators.

As the original reflective items were in English, we used the following procedures to ensure the translation validity. First, a researcher whose native language is Chinese forward translated the items into Chinese. Next, another researcher independently backward translated the items into English. Subsequently, the two researchers compared and discussed the two English versions to develop the first Chinese version of the items. The preliminary instrument was pilot tested and reviewed by two faculty and three doctoral students in IS field for clarity and face validity. Minor revisions were made based on their feedbacks. Finally, the two initial translators checked this version together and finalized the Chinese instrument.

We measured all items using seven-point Likert scales ranging from strongly disagree (1) to strongly agree (7). A further pretest of the survey instrument was conducted with 105 subjects, using the same data collection method that would be applied in the actual data collection. The items were modified following the procedures recommended by Churchill (1979). Please see the Appendix A for the scales.

4.2. Experimental procedure

The MBA and senior undergraduate students in business schools from two universities of China took part in the experiment. The classes in which the experiments were performed were randomly chosen with permission from the instructors. The subjects were assured that the results would only be reported in aggregate to guarantee their anonymity and confidentiality. The activity was performed during class hours in two similar computer labs. In this way, exogenous variance relating to hardware issues, network response time, browser, purchase activity, and so on, was controlled. Subjects were first given a brief introduction of the study. After that, they were required to go through the process of buying from Taobao without actually completing the transaction by following guidance. To simulate the real world situation as closely as possible, subjects were allowed to freely select the products based on their real needs. Immediately after completing the task, subjects filled out a web-based instrument. The purpose to do this is to refresh, in the mind of the buyers, the nature of the interaction with the seller, thereby increasing the content validity by collecting responses based on a recent activity. Finally, out of the 640 questionnaires distributed, 546 valid responses were received after removing invalid responses including those containing more than five missing values and those with the same answer to all questions, resulting in a valid rate of 85.3%.

4.3. Sample statistics

Table 2 summarizes the descriptive information of the dataset. About 53.1% of the respondents were male, and 46.9% were female. A majority of respondents had online purchasing experiences (96.2%) and were regular Internet consumers (90% of subjects purchase online at least once a month). As the free simulation experiment was conducted in universities, a majority (77.3%) of the respondents were aged between 18 and 30. Even though the subjects are mainly MBA and undergraduate students, they without a doubt are the main Internet consumers in China. About 60% of Internet consumers in China are aged between 18 and 30 years old (iClick, 2014), and more than 60% of Taobao buyers have undergraduate education or above (Lu, Zhao, & Wang, 2010). The use of students sample for e-commerce research was also advocated in previous studies (Walczuch & Lundgren, 2004). Thus, we believe that our sample represents the major segment of Internet consumers in China and should be appropriate for this study.

Following Armstrong and Overton (1977), nonresponse bias was assessed by verifying that respondent demographics (age, gender and education) were not significantly distinct from current Chinese Internet consumers (iClick, 2014; iResearch, 2013).

5. Data analysis and result

The partial least square (PLS) approach was used for the data analysis considering its ability to deal with the formative constructs (Gefen, Straub, & Boudreau, 2000; Goo, Kishore, & Rao, 2009). PLS is a “second-generation” technique that has gained increasing popularity in the field of marketing or information systems in recent years (Becker 1991; Hair, Sarstedt, Ringle, & Mena, 2012). For accurate estimation and enough statistical power, minimum sample size check is performed by following Chin (1998). A strong rule of thumb suggests that the sample size should be at least equal to the larger of the following: (1) ten times the scale with the largest number of formative indicators, or (2) ten times the largest number of structural paths directed at a particular construct in the structural model (Chin, 1998). The sample size for current study is 552, exceeding the minimum demand of sample size (10^2 = 130) according to the rule of thumb. Therefore, our sample size is adequate. Next we will discuss the results of measurement and structural model with the use of PLS.

5.1. Measurement model assessment

We first assessed the second-order construct of trusting beliefs by comparing two separate models by using LISREL (Goo et al., 2009). Model 1 hypothesizes that a unidimensional first-order factor accounts for the variance among all measurement items of the second-order construct (trust in seller) in this study. Model 2 hypothesizes a second-order factor that accounts for the patterns of covariance among the first-order factors as conceptualized in this study. Comparison of Model 1 (χ^2 = 381.4, d.f. = 35, RMR = 0.061) and Model 2 (χ^2 = 109.6, d.f. = 32, RMR = 0.035), indicates that Model 2 is a better-fitting model with significant changes in chi-square (∆χ^2 = 271.8, d.f.d. = 3; p < 0.0001). Items loaded significantly on their assigned first-order factors, which in turn highly
loaded on the second-order construct. The LISREL statistics confirmed our hypothesis of trusting in sellers as a second-order construct.

A measurement model analysis for the reflective constructs was conducted via the component part of PLS. We first refined the measurement model by deleting the items with low loadings and cross loadings. The retained items are shown in Table 4. Internal reliability was verified with all composite reliability scores and Cronbach’s Alpha of the latent variables exceeding the 0.70 threshold, as shown in Table 3. Convergent validity is often demonstrated by meeting the following criteria: significant item loadings (>0.70) for each construct, adequate internal reliabilities (>0.70), and high AVE (average variance extracted) scores (>0.50). Evidence from Table 3 shows that all these criteria have been satisfied for each construct, indicating convergent validity was established. As shown in Table 4, the square root of the AVE for each construct (diagonal term) exceeds the correlations between the construct and other constructs (off-diagonal terms), providing strong evidence of discriminant validity. A low to moderate correlation coefficient (<0.60) (in Table 4) is also often considered evidence of discriminant validity.

The formative items might suffer from multicollinearity.
(Diamantopoulos, 2011). The degree of multicollinearity for the formative items is measured by the variance inflation factor (VIF), which was calculated via SPSS. All the VIFs (1.99, 1.31, 1.83, respectively) are below the rule of thumb of 10 (or even the more conservative value of 5) (Hair, Black, Babin, Anderson, & Tatham, 2006), indicating that multicollinearity is not a serious concern for the study.

The extent of common method bias was assessed with three tests. First, Harman’s one-factor test (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) was performed by including all reflective items with both principal axis factoring and principal component factoring. In both cases more than one factor emerged. The variance explained by the largest factor was 36.2% for principal axis factoring, and 37% for principal component factoring. Both results are below the critical value of 50%. Second, the marker variable approach was performed by first identifying one maker item that is not included in the research model and do not have an explicit theoretical influence on the construct in the research model. The correlations between the marker item and the items of interest have to be caused by the method (Rönkkö & Vlitalo, 2011). The mean correlation coefficients values for the marker item is 0.035, indicating insignificant influence of the CMV. Results of the marker variable analysis are omitted for simplicity. Third, the correlation matrix (Table 4) does not indicate any highly correlated factors (highest correlation is r = 0.65), whereas evidence of common method bias should have resulted in extremely high correlations (r > 0.90) (Pavlou et al., 2007). These results indicate that the CMV is unlikely to distort the results of this study.

5.2. Structural model and hypothesis testing

The results of testing the structural model are shown in Fig. 2. The t-values for the path coefficients were estimated via the bootstrapping procedure (Chin, 1998). The R2 numbers represent the percentage of variance explained for the dependent variables. All three dimensions of the social presences in online marketplace are found to contribute positively and significantly to Trust in Sellers, and respectively they are: Social Presence of Web (β = 0.21, P < 0.01); Social Presence of Interaction (β = 0.27, P < 0.01) and Social Presence of Others (β = 0.09, P < 0.01). Hence, hypotheses H1–3 are supported. Collectively, these three social presence constructs account for almost 48 percent of the variance explained in Trust in Sellers. As hypothesized, Purchase Intention is found to be significantly influenced by Trust in Sellers (β = 0.38, P < 0.01), supporting H4. Trust in Sellers by itself can account for about 35 percent of the variance explained in Purchase Intention. As expected, all the controlled variables, except Trust in Platform (β = 0.10, P < 0.10), have significant impacts on their assigned dependent variables. The results show that even when even allowing for the effects of the control variables, social presence constructs still significantly contribute to buyer trusting beliefs towards online sellers and Trust in Seller is still a strong predicator for buyer purchase intention.

6. Discussion

6.1. Key findings and contributions

This study has several key findings. First, the results confirm the significant positive impact of trusting beliefs on purchase intention in the context of online SC marketplace even allowing the effects of controlling variables. A substantial degree of trusting beliefs in sellers’ traits of integrity, benevolence and competence is needed by online buyers before making purchase decisions. Thus, this study upholds the claim that trust is important in e-commerce (Fang et al., 2014; McKnight et al., 2002; Pavlou & Gefen, 2004) and extends it to the context of social commerce. Second, the results support our hypothesis of trusting beliefs as a second-order construct composing of integrity, benevolence and competence, providing a more parsimonious conceptualization of trusting beliefs in the context of both e-commerce and social commerce. Although trusting beliefs has been suggested a multi-dimensional construct (McKnight et al., 2002), it was often treated as a set of separate variables, increasing model complexity or making results suffer from high multicollinearity because of high correlations among the dimensions of trust. Third, drawing upon the perspective of social presence theory, this study sheds light on the nature of social atmosphere of the social commerce marketplace by proposing and testing a set of three antecedents of trusting beliefs: SP of web, perception of others, and SP of interaction with sellers. All the three proposed social presence constructs are found to be strong predictors of trust in seller, jointly accounting for a substantial degree of the variance in trust in seller. The results, thereby, suggest the vital role of social atmosphere in building buyer trusting beliefs in sellers in an online SC marketplaces. Finally, the entire structural model with the controlled variables helps delineate the full picture in which both social and structural factors shape buyer beliefs and purchase behaviors in a SC marketplace.

The primary contribution of this study is to introduce a new set of social antecedent factors of trusting beliefs into a model...
that explains the buyer purchase behavior in the online SC marketplaces. By identifying the underlying social sources of e-trust in addition to the institutional and individual sources in literature (Gefen & Pavlou, 2012; McKnight et al., 2002), this study provide a more full understanding on online purchase behaviors in SC marketplaces. Prior research concentrates more on the impacts of institutional context and technological factors for trust building in e-commerce (e.g., Fang et al., 2014), neglecting the influences of the social context. However, social context is an important source of trust (Luhmann, 1979). Thus, this study extends current trust research by introducing a new set of social factors relying social presence theory. Second, drawing upon the social presence theory, this study theorizes the nature of social aspect of shopping by surfacing three SPT-based constructs: SP of web, perception of others and SP of interaction with online sellers. While social presence was often treated as one-dimensional construct that represents the static characteristic of web interface (Shen & Khalifa, 2009); this study has proposed and validated it as a multi-dimensional concept in the SC context. Third, via the social presence constructs, we disclose how the use of social applications and functions in e-commerce websites helps build the trustworthy online environment and shape buyer perceptions and behaviors. Fourth, this study contributes to trust literature by separating the individual-level trust (trust in seller) with the institution-based trust (e.g., trust in marketplace, structural assurance). It reflects the nature of relationships in online marketplace (Lu et al., 2015): buyers need to trust both the marketplace and sellers before making purchase decision. Thus, two types of relationship exist in an online marketplace: the dyadic buy-seller relationship reflected by the construct of trust in seller and the buyer-institution relationship reflected by construct of trust in marketplace. Finally, by looking into buyer behaviors in online SC marketplaces, we introduce a new phenomenon — social commerce — that deserves more attention in future study. Social influences in e-commerce have been overlooked or simplified in prior literature, however, the mushrooming of SC call more attention to the social perspective of online shopping.

6.2. Implications for research

Online trust is viewed as a central concept of e-commerce in literature (Keen et al., 1999) because of its substantial roles in mitigating negative perceptions (uncertainty and risks) and in enabling online transactions. Most e-commerce studies focused on a single website and viewed trust as a dyadic (one-to-one) relationship between a buyer and a specific vendor. Since the dominance of online marketplace, this study examines trust in online marketplace and extends it to the SC context. From a relationship perspective, two types of relationships exist in online marketplaces: the online buyer—seller relationship (trust in seller) and the buyer—marketplace relationship (trust in marketplace). Though trust in marketplace is controlled for this study, the results support its significant positive effects on purchase intention. Thus, the buyer—marketplace relationship also helps encourage online transactions (Lu et al., 2015). This study contributes to e-commerce literature in delineating the relationships in online marketplaces. It also suggests that both types of relationships deserve special attention in future studies.

Since trust (as a set of beliefs) is a key mediating variable in online relationship models (Morgan & Hunt, 1994), a lot effort has been put into finding the underlying sources of online trust in e-commerce literature. Trust are found to root in institutional mechanisms (McKnight et al., 2002; Pavlou & Gefen, 2004), individual characteristics such as trust disposition and familiarity (Gefen & Straub, 2004), and website design features (Kim, Jin, & Swinney, 2009; Ou & Sia, 2009). There have been very few studies (e.g., Liang & Turban, 2011) that tried to identify antecedents of trust from the social perspective. However, the fast development of social commerce reintroduces the social aspect of shopping to e-commerce, making it possible for online buyers to rely on social cues in assisting their purchase decisions. This study confirms the positive impacts of social factors on trust (beliefs) by theorizing the nature of social aspect in online marketplaces based on the SPT perspective. In doing so, this study not only suggests that SPT is a relevant theoretical perspective, but also indicates that the social aspect of e-commerce deserve further exploration with a variety of theoretical lenses such as social capital theory.

To overcome the limitations of viewing as a one-dimensional construct (Shen & Khalifa, 2009) and to better conceptualize the nature of social aspect of e-commerce, this study proposes and validates social presence as a multi-dimensional construct composing a set of three variables. Jointly they account for a substantial degree of variance explained in trusting beliefs. A multi-dimensional conceptualization of social presence offers at least two strengths. First, it can show which dimensions of SP have significant influences on online behaviors, providing a deep understanding on how the social factors impact use perceptions, beliefs and behaviors. Second, it helps us uncover antecedent factors for each dimension of SP. In online context, perceptions of SP are grounded in the use of social artifacts. A multi-dimensional conceptualization of SP can disclose how various social artifacts affect different SP dimensions (Shen & Khalifa, 2009). Online buyer communities have been found to increase engagement in e-commerce adoption (Liang & Turban, 2011; Lu et al., 2010). Therefore, we contribute a set of three SPT-based variables as social antecedent factors of trust that can be explored in future e-commerce and online community research.

As for the formative SP construct — social presence of others, the indicator of SPO1, reflecting the information about other buyers who might feel interest with the product, seems a weak item ($\beta = 0.18, P > 0.10$). This suggests that in comparison with the information about who might want to buy, the social cues regarding to others who have actually bought and provided comments are more persuasive for an online buyer to trust a specific seller. Thus, the findings of this study is consistent with the study of Chen et al. (2011), in which the positive observational learning information was found to have a significant impact on buyers’ purchase actions. Since this is the first endeavor to conceptualize social presence of others in terms of social commerce context, our specification of this construct might be not comprehensive (Diamantopoulos, 2011), we encourage future studies to continue to explore this construct.

It should be noticed that the above findings are based on the data collected from China, which is significant different from Western culture. Although previous research revealed that there were no significant differences for the effects of social presence on trust between Chinese and Western culture (Hassanein et al., 2009), further examination of our model in the context of Western culture might been necessary before the generalization the research results.

Finally, from a descriptive perspective, this study describes the process by which a set of social factors facilitate online exchange relationships through the key mediating role of trusting beliefs after controlling the effects of a few key variables. This study suggests that in the context of social commerce buyer trusting beliefs depend on both structural sources and social sources. Research models that examine online buyer behaviors in social commerce without considering either one of their effects may
result in problems of “errors of exclusion” (Benbasat & Zmud, 2003).

6.3. Implications for practice

Our research also has several practical implications. First, although embedding social technologies into e-commerce sites has been widely adopted by practitioners, its effectiveness is rarely examined and confirmed in literature. This study shows that the perceived social presences conveyed by the use of social technologies can increase buyer trusting beliefs towards sellers, which is a necessary precursor of online purchase. Thus, to some extent, the combination of social technologies with e-commerce applications is effective, though the effectiveness of some social applications need to be further examined. This encourages the practitioners to continue to include social applications into their site but with a more careful examination on their effectiveness.

Second, our results indicate that the social presence conveyed by the web content (text, pictures, videos, etc.) and the social presence conveyed by interaction with sellers can significantly increase buyer trusting beliefs. The results of this study, combined with previous research (Hassanein et al., 2009), suggest that online sellers might wish to invest in creating and maintaining these two effective social presence channels with potential buyers. Furthermore, this study indicates that perception of other buyers also has a positive impact on buyers’ trusting beliefs towards a specific online seller. But not all information revealed about other buyers contribute significantly. Only information regarding with others who have actually bought and who have provided positively information is useful in shaping online buyers’ trusting beliefs. This indicates that online platform managers should closely monitor the effects of the information revealed about other online buyers.

Finally, our results uphold the claims that trust is critical for the success of electronic commerce in literature (Lu et al., 2010) and extends it to the SC context. Our findings suggest that both social factors and structural factors are necessary for trust building in online SC marketplaces. This implies that building social environment based on social technologies is as important as building institutional environment with the IT-enabled mechanisms for online marketplace providers. Since most e-commerce websites have completed the building of reliable institutional environment, it is more urgent and important for e-commerce companies and marketplaces providers to establish a more social environment for the next step.

6.4. Limitations and suggestions for future research

This paper has a number of limitations. First, MBA and undergraduate students sample was used in this study. Although nonresponse sample bias was assessed and verified, the sample may not represent actual online buyers of online marketplace. Second, a single website (Taobao) data was used for this study. In spite of that Taobao is the largest SC marketplace in China, including more sites for data collection will increase the external validity of the results. Additional research can examine the model by using actual online buyer data with the inclusion of more sites. Third, the model was tested only with the data collected from Chinese culture. The results might not be generalized to other cultural context. Future study is also needed for testing the model in different cultures. Fourth, the common method bias was assessed and the results showed that common method variance was not a major concern statistically, however, common method bias cannot be absolutely ruled out. Finally, we have controlled the effects of some important variables on trust; however, this paper cannot address all these possible antecedents of trust, such as, reputation, branding, and previous purchase experiences. Additional research is also needed to sort out the effects of these variables.

In addition to the aforementioned future research suggestions, this paper suggests several more research directions as follows. First, we have proposed and tested social presence as a multi-dimensional construct in this study. Future research can further examine our conceptualization in different cultural context or by proposing new dimensions of social presence. Second, social presences are conveyed by the use of social applications and technologies. Then future research can study how various social artifacts influence different types of social presence. Third, online buyer community has been found to positively affect e-commerce adoption (Lu et al., 2010). Social presence theory is also a suitable perspective for online community research (Shen & Khalifa, 2009). Thus, future research can explore the user behaviors in online buyer communities by using the SPT perspective. Fourth, the focus of this study is to examine the effects of different types of social presence on trusting beliefs. We use trust in marketplace (intentions) as the surrogate for institutional mechanism and other factors associated with marketplace. A more complete model that includes both social factors and structural factors will be more interesting for future research. Finally, we have shown that the use of social technologies is effective for online trusting building via a set of variables based on SPT. Future research can theorize the nature of social aspect by employing social theoretical perspectives.

7. Conclusion

Drawing upon the social presence theory, this paper looks into the nature of social aspect in online social commerce marketplaces by proposing a set of three social presence variables, SP of the web, perception of others and SP of interaction, respectively. A research model that describes buyer purchase behaviors in online social marketplaces is proposed by including the three social presence variables as social antecedents of trusting beliefs. In sum, this study sheds new light on both social commerce research and social presence theory as follows. First, it re-conceptualizes and validates the concept of social presence as a multi-dimensional construct in social commerce, overcoming the limitations of one-dimensional conceptualization in previous e-commerce research. Next, it contributes a new set of social presence variables that can be explored in future research. Then this paper discloses the positive effects of social presence variables on trusting beliefs, suggesting an effective way for trust building in online social commerce marketplaces, that is, the combination of IT-enabled structural factors and the social factors based on the use of social technologies. Finally, we introduce a new perspective of e-commerce that needs special attention for future investigations, that is, a new phenomenon of social commerce.

Fund sources

This work is supported by National Key Technology R&D Program of the Ministry of Science and Technology (Grant No. 2013BAH54F03), the Ministry of education of Humanities and Social Science project (Grant No. 12YJC630105), the Doctoral Fund of Ministry of Education of China (Grant No. 20120133120005), the Soft Science Fund of Shandong (Grant No. 2014RKE28002) and Fundamental Research Funds for the Central Universities (13CX04039B).
## Appendix A. Instrument and measurement properties

<table>
<thead>
<tr>
<th>Principle variables</th>
<th>Mean</th>
<th>Std dev</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social presence of web</strong> (Gefen &amp; Straub, 2004)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPW1</td>
<td>There is a sense of human contact in the web of the seller.</td>
<td>4.38</td>
<td>1.13</td>
</tr>
<tr>
<td>SPW2</td>
<td>There is a sense of personalization in the web of the seller.</td>
<td>4.25</td>
<td>1.12</td>
</tr>
<tr>
<td>SPW3</td>
<td>There is a sense of sociability in the web of the seller.</td>
<td>4.42</td>
<td>4.12</td>
</tr>
<tr>
<td>SPW4*</td>
<td>There is a sense of human warmth in the web of the seller.</td>
<td>4.14</td>
<td>1.17</td>
</tr>
<tr>
<td><strong>Social presence of others</strong> (composite latent construct)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPO1</td>
<td>There are many buyers who feel interested in the product.</td>
<td>4.87</td>
<td>1.24</td>
</tr>
<tr>
<td>SPO2</td>
<td>There are many others buyers sharing information regarding with the product</td>
<td>4.59</td>
<td>1.12</td>
</tr>
<tr>
<td>SPO3</td>
<td>There are many others who have bought the product.</td>
<td>5.14</td>
<td>1.24</td>
</tr>
<tr>
<td><strong>Trust disposition</strong> (Caspi &amp; Blau 2008; Hess et al., 2009)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPI1</td>
<td>I can make sense of the attitude of sellers by interacting with them via Aliwangwang.</td>
<td>4.71</td>
<td>1.10</td>
</tr>
<tr>
<td>SPI2</td>
<td>I can imagine how they may look like by interacting with them via Aliwangwang.</td>
<td>5.02</td>
<td>1.10</td>
</tr>
<tr>
<td>SPI3</td>
<td>There is a sense of human touch to communicate with sellers via Aliwangwang.</td>
<td>4.49</td>
<td>1.06</td>
</tr>
<tr>
<td>SPI4</td>
<td>Communication via Aliwangwang was warm.</td>
<td>4.35</td>
<td>1.09</td>
</tr>
<tr>
<td><strong>Purchase intention</strong> (Gefen &amp; Straub, 2004)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI1</td>
<td>I am very likely to buy the product from seller.</td>
<td>4.95</td>
<td>1.14</td>
</tr>
<tr>
<td>PI2</td>
<td>I would consider buying the product from the seller in the future.</td>
<td>4.91</td>
<td>1.07</td>
</tr>
<tr>
<td>PI3</td>
<td>I intend to buy the product from the seller.</td>
<td>4.81</td>
<td>1.15</td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment</strong> (Pavlou &amp; Dimoka, 2006)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>The average rating of the vendor is high.</td>
<td>5.08</td>
<td>1.12</td>
</tr>
<tr>
<td>C2</td>
<td>The comments on the product are positive.</td>
<td>5.05</td>
<td>1.05</td>
</tr>
<tr>
<td>C3</td>
<td>The comments on the service are positive.</td>
<td>5.10</td>
<td>0.97</td>
</tr>
<tr>
<td>C4</td>
<td>Overall, the comments on the vendor are positive.</td>
<td>5.21</td>
<td>0.99</td>
</tr>
<tr>
<td><strong>Trust in marketplaces</strong> (Pavlou &amp; Gefen, 2004)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIM1</td>
<td>As the online marketplace, Taobao can be trusted at all times.</td>
<td>4.79</td>
<td>0.95</td>
</tr>
<tr>
<td>TIM2</td>
<td>As the online marketplace Taobao can be counted on to do what is right.</td>
<td>4.53</td>
<td>0.98</td>
</tr>
<tr>
<td>TIM3</td>
<td>Taobao has high integrity.</td>
<td>4.43</td>
<td>1.00</td>
</tr>
<tr>
<td>TIM4</td>
<td>Taobao is a competent and knowledgeable online transaction platform.</td>
<td>4.77</td>
<td>0.97</td>
</tr>
<tr>
<td><strong>Perceived price fairness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPF1</td>
<td>It is worth buying the product from this vendor with this price.</td>
<td>4.80</td>
<td>1.24</td>
</tr>
<tr>
<td>PPF2</td>
<td>The price of the product is competitive.</td>
<td>4.75</td>
<td>1.21</td>
</tr>
<tr>
<td>PPF3</td>
<td>My choice of this product with this price will be a wise one.</td>
<td>4.69</td>
<td>1.20</td>
</tr>
<tr>
<td>PPF4</td>
<td>I am satisfied with the price.</td>
<td>4.75</td>
<td>1.27</td>
</tr>
</tbody>
</table>

*Item dropped from final analysis. All scales anchored by: 1-strongly disagree, 7-strongly agree.*

### References


