Does Privacy Assurance on Social Commerce Sites Matter to Millennials?

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Abstract

Social commerce (s-commerce) has become increasingly impactful to e-commerce and has generated potential economic benefits. With the rise of online privacy concerns, we have seen the need to explain how concerns about privacy affect consumers' social interaction behavior and purchase decision-making on s-commerce sites. Synthesizing the privacy-trust-behavioral intention (PTB) and consumer decision-making models, this study proposes a comprehensive model by specifically refining its privacy and trust from an institutional perspective and investigating the influences of social interaction on purchase intention and actual purchase behaviors. Our results found that institutional privacy assurance positively influences institutional-based trust, which, in turn, affects online social interactions, and consequently increases the likelihood of product purchases on s-commerce sites. Theoretical development of this research contributes to both marketing and information systems disciplines in the social media era.

Keywords: Social commerce; institutional privacy assurance; institutional-based trust; word-of-mouth communication; observational learning

1. Introduction

Social commerce (s-commerce) has become increasingly impactful on e-commerce and has generated significant economic benefits. However, consumers' privacy concerns that arise from online transactions and social interactions on shopping websites are increasingly growing. In fact, the Marketing Science Institute's Research Priorities (2016-2018) consider privacy concerns such an import issue in online business that they call for further research in the field. This phenomenon is becoming increasingly worse as s-commerce sites integrate tools to enable interaction and socialization between peers (i.e., social networking features, recommendation systems, rating options, discussion boards, etc.) with commercial features (Huang & Benyoucef, 2013). S-commerce sites have been considered a new business model, shifting from a product orientation to a social- and consumer-driven orientation (Huang & Benyoucef, 2013), by utilizing a variety of Web 2.0 technologies to enhance social interactions among consumers in online environments (Liang & Turban, 2011). It is more based on social media and social media has created more opportunities for firms (Confos & Davis, 2016). Although s-commerce has become increasingly impactful to e-commerce and has generated potential economic benefits, it has been plagued by rising consumer privacy concerns.

The new design features, such as referrals, recommendations, crowdsourcing, and subscriptions embedded on s-commerce sites have become a threat to personal privacy as well as an impediment to consumer engagement. Evidence from two reports in 2012 show that, with concerns about personal privacy, 75% of the consumers on Pinterest (one of the most popular s-commerce sites in the U.S.) hesitate to purchase products after discovering them on the site (Caine, 2012); only 8% of consumers feel extremely safe buying products or services through social networking sites (SNS) (CNBC, 2012). Privacy risk and interpersonal impression have been highlighted as the most interesting research topics in the field of social media (Shiau, Dwivedi & Lai, 2018). Indeed, privacy concern has been identified

as a major factor restraining e-commerce (Berendt, Günther, & Spiekermann, 2005; Dinev & Hart, 2006) and social networking sites (Belanger, Hiller, & Smith, 2002; Shin, 2010). However, according to some recent reviews of the literature on social commerce (Lin, Li & Wang, 2017; Zhang & Benyoucef, 2016; Zhou, Zhang & Zimmermann, 2013), although trust has been extensively studied, there is insufficient research into privacy issues. In this regard, a closer examination of the impact of privacy concerns is needed to understand how consumer trust and engagement can be constructed to facilitate purchase decisions in s-commerce environments.

Prior research into s-commerce has focused on the new design features and mechanisms of s-commerce sites (Curty & Zhang, 2013; Huang & Benyoucef, 2013; Kim & Park, 2013; Zhang & Wang, 2012; Lin, Li & Wang, 2017; Ahmad & Laroche, 2017). The design features of s-commerce in terms of transactional, relational, and social emphases have the potential to increase consumer participation, reshape companies' business and marketing strategies, and, particularly, to strengthen customer and merchant ties through relational features (Curty & Zhang, 2013). Meanwhile, several studies have examined how purchase intention can be increased on s-commerce sites by social and relational aspects of s-commerce, such as social support and relationship quality (e.g. Liang, Ho, Li, & Turban, 2011; Zhang, Lu, Gupta, & Zhao, 2014; Bai, Yao & Dou, 2015), social presence (Zhang et al., 2014), social factors (Huang & Benyoucef, 2017), social desire (Ko, 2018), degree of friendship (Li, Liang & Li, 2018), and closeness (Ng, 2013). Although these studies provide new insights into how consumers engage on s-commerce sites with technical and social aspects, they have major limitations because consumer privacy concerns are not fully taken into consideration. There is a paucity of research focusing on privacy concern issues in the context of s-commerce (Zhang & Benyoucef, 2016).

Privacy assurance is one of the most important features of social networking and s-commerce sites (Bansal, Zahedi, & Gefen, 2015; James, Warkentin, & Collignon, 2015). In fact, researchers call for

research into privacy and risk concerns, recommending government agencies to keep users informed and give them control in order to avoid theses privacy concerns (see literature review of social media of Kapoor et al., 2018). Typically, online service providers use privacy statements and privacy seals to facilitate consumers' trust and their willingness to make online purchases (Kim, Steinfield, & Lai, 2008). Consumers hesitate to disclose their personal information during shopping because privacy assurance within s-commerce sites is often not expected or is undefined (Dwyer, 2007). Without privacy protection mechanisms and regulations built for ensuring online privacy and security, s-commerce practitioners will struggle to sustain active consumer engagement in online settings (Kim et al., 2008) and find it difficult to translate consumer interactions into sales growth and business values (Yadav et al., 2013). Social media has the potential to improve customers' experiences, to strengthen bonds among users and the company and to foster customer evangelization through word-of-mouth (Alalwan, Rana, Dwivedi, & Algharabat, 2017). However, little is known about whether consumers using s-commerce sites will make an actual purchase decision if their privacy can be protected effectively by s-commerce sites' privacy policies or other third-party regulations (Bansal et al., 2015).

To close this research gap, we aim to provide new insight into the privacy management and complex purchase-decision-making process in s-commerce environments by understanding consumers' privacy concerns from their root causes. Therefore, this study set out to answer the following research question: *How does institutional-based privacy assurance influence consumers' trust and social interaction and purchase behavior in the context of s-commerce?*

Expanding on the privacy-trust-behavioral intention model developed by Liu et al. (2005), we posit that enhancing the effectiveness of privacy management could accelerate consumers' trust toward s-commerce sites and thereby increase their behavioral intentions and actual behaviors. Specifically, we examine how institutional privacy assurance (i.e., privacy policies and industry self-regulation)

affects consumers' trust toward s-commerce sites and how such a trust facilitates pre-purchase activities (i.e., word-of-mouth communication and observing other consumers' purchases) and purchase intentions, which in turn increases the likelihood of actual purchase. Due to the vast majority of s-commerce audience being young consumers, this study has been conducted studying millennial behavior.

This study aims to make the following contributions: First, it widens privacy-trust research in the s-commerce context. Second, it considers a broad view of social interactions by studying not only word-of-mouth valence and content, but also the passive observation of learning interactions. Third, it extends the Privacy-Trust-Behavior model, analyzing how institutional privacy assurance increases users' trust toward s-commerce websites, what positively affects social interactions and, consequently, users' purchase intention and actual purchase behavior. Finally, rather than merely examining consumers' behavioral intentions, our study investigates consumers' actual purchase behavior. This provides further insight into the consumer decision-making process in s-commerce sites.

2. Theoretical background and literature review

2.1 Social commerce context

S-commerce websites have been described as a mixture of electronic commerce, social media and social networks cues (Lu & Fan, 2014; Liang & Turban, 2011, Turban et al., 2018). Thereby, s-commerce has been defined as "*any commercial activities facilitated by or conducted through broad social media and Web 2.0 tools in consumers' online shopping process or business' interactions with their customers*" (Lin, Li & Wang, 2017, p. 191). Thus, regarding s-commerce features focus, these kinds of websites can be classified into two main approaches (Ng, 2013; Zhang & Benyoucef, 2016). First, as e-commerce websites that add social interaction tools (e.g. Amazon), and, secondly, social networks that add commercial functions (e.g., Facebook, Fancy).

Due the intrinsic characteristics of s-commerce (that is, websites where, as well as buying products, users can interact and socialize with others and with the company) (Turban et al., 2018; Lin et al. 2017; Herrando, Jimenez-Martinez & Martin-De Hoyos, 2017; Zhang et al. 2015), the information content can come from two main sources: user-generated content (in the form of recommendations, reviews, ratings, posts, etc.) or company-generated content. However, this richness of social interaction also entails personal privacy concerns regarding the collection of personal information, unauthorized secondary usage of data, external unauthorized secondary usage, errors in personal information, and improper access (Bergström, 2015). Hence, the misuse of personal information and privacy concerns in digital environments has been seen as an important research priority (MSI 2016-2018). In this study, therefore, this study aims to examine whether institutional privacy assurance may increase users' trust toward social commerce websites, with the intention of positively affecting social interactions and, consequently, purchase intention and users' actual purchase behavior.

2.2 Institutional-based Privacy Assurance

The privacy and security of s-commerce websites is one of the cornerstones of a website's quality (Mamonov & Benbunan-Fich, 2017). Indeed, managing consumers' information privacy is harder in s-commerce sites than in e-commerce or offline environments, due to the new design features of s-commerce (Kim & Park, 2013; Shin, 2010). Information privacy refers to "*the desire of individuals to control or have some influence over data about themselves*" (Bélanger & Crossler, 2011, p. 1017). Information privacy concerns increasingly arise when new technologies with advanced capabilities for social features and information processing come into play (Preibusch, Peetz, Acar, & Berendt, 2016). Although the success of s-commerce depends on the innovation of design features (Zhou & Lu, 2011), design features such as social content presentation, notification, topic focus, and social ads and

applications could be a double-edged sword for s-commerce sites (Huang & Benyoucef, 2013). It potentially incurs huge consumer concern about privacy invasion due to poor policies and governances. For example, s-commerce sites record consumers' profiles (e.g., photograph, birthday, location, religion, and personal interests), consumer preferences, and their interaction activities with sellers and other peers (e.g., transactions, connections, and private messages). Such an increase in social activities in s-commerce sites may induce consumer concern regarding information security if businesses misuse the information and jeopardize their privacy in various ways, such as fraudulent transactions and identity theft (Kim, Ferrin, & Rao, 2008). As such, consumers are facing more information privacy issues. There is no doubt that consumers may be reluctant to engage in social interaction or information sharing activities if they have concerns about information privacy (Vijayasarathy, 2004). However, with appropriate governance, these features have the potential to help s-commerce sites gain marketing insights from consumers as well as intensify its selling and branding activities.

Prior studies have explored privacy concern as a key impediment of s-commerce success (Martin, 2018). Yet, privacy concern is constantly viewed as a general concern and relies on measurement of privacy-related proxies. Researchers have argued that privacy is more situation-specific than dispositional (Solove, 2006). In other words, privacy concern in a specific situation is much more understandable than it is in the abstract (Xu et al., 2011). Smith et al. (2011) further suggest that privacy concern is a context-sensitive factor that should consider the impact of particular contexts, instead of investigating the link between privacy-related proxies and behavior-related variables. Following the call for the contextual emphasis of privacy concerns, in this study, we introduce institutional-based privacy assurance, which refers to "*the interventions that a particular company makes to assure consumers that efforts have been devoted to protect personal information*" (Xu et al., 2011, p. 805). Such privacy assurances can influence an individual's decisions on information disclosure (McKnight

et al., 2002; Xu et al., 2011). For example, industry self-regulation and privacy policies help reduce privacy concerns and therefore can boost trust (Xu et al. 2011). Likewise, the use of website assurance seals has been seen as a way of establishing trust in online commercial activities because of their ability to face users' need for transaction security assurance, privacy assurance and transaction integrity assurance (Hu, Wu, Wu & Zhang, 2010; Kimery & McCort, 2006; McKnight, Kacmar & Choudhury, 2004). Kim and Park (2013) claim that if consumers feel secure in online transactions during social shopping, they are likely to trust s-commerce sites.

Privacy assurance formed by institutions has been found to be as the key element of s-commerce success. From the institutional theory perspective, s-commerce sites must create privacy policies and regulations to pursue legitimacy and minimize consumers' concerns on information disclosure (e.g. transaction information) (Ginosar & Ariel, 2017). According to the resource-based view, consumers' information is considered as an important organizational resource. The more consumers' information s-commerce sites obtain, the more sustainable the business advantage will be. Particularly in s-commerce sites, consumers make a purchase decision based on other peers' information (e.g., product review and rating). Privacy assurance formed by s-commerce sites or third-party organizations who collaborate with s-commerce sites should be viewed as an integral part of s-commerce business model (Ginosar & Ariel, 2017). It is therefore important to understand whether institutional-based privacy assurance affects consumers' trust towards s-commerce sites and their behavior.

2.3 Institutional-based Trust

Trust has been considered to play a critical role in reducing individuals' insecurity and risk perception in various online contexts. Prior research (e.g., Miltgen & Smith, 2015; Smith et al., 2011) suggest that its impact on other privacy-related constructs should be examined, with trust acting as an antecedent,

outcome, mediator, or moderator. A recent study by Chen and Shen (2015) views trust as an interpersonal value, arguing that consumers' trust towards members affects social shopping intention on a Chinese social commerce site (Chen & Shen, 2015). In this study, the concept of trust is considered as an institutional-based trust and acts as an antecedent of consumers' behavioral intentions in our model.

Institutional-based trust is defined as an individual's perception of the institutional environment (McKnight et al., 2002). In social networking sites, institutional-based trust is described as the trust of a user in the website in general (See-To & Ho, 2014). Institutional-based trust reflects the security around a circumstance in light of guarantees, safety nets, or other structures. McKnight et al. (2002) emphasize that legal protection provided by an institution can make users feel trustworthy, which in turn leads to active intention and behavior (McKnight et al., 2002). Trust formed by an institution is most likely to relieve privacy concerns about personal information because consumers in a common community are likely to treat the site as a shared family (Luo, 2002). Consumers' trust is greatly determined by the s-commerce environment itself (Shin, 2010). Social interactions and purchase decisions will be made when consumers tend to trust the s-commerce sites where they are shopping. In other words, consumers with higher institutional-based trust toward s-commerce sites are likely to feel comfortable with the other peers' or sellers' requests, which can reduce the perception of risk to a controllable level. This belief may mainly come from the regulative institutional context. Thus, this study focuses on trust towards s-commerce sites as institutional-based trust.

2.4 Social interactions in social commerce

With the popularity of s-commerce sites, both academics and practitioners are paying more attention to consumer peer interaction and its influence on purchase decisions (Cheung et al., 2014). Social

interactions are multidimensional in nature (Hajli & Sims, 2015). Drawing on word-of-mouth (WOM) theory (Engel, Kegerreis, & Blackwell, 1969; Zhang & Wang, 2012) and observational learning theory (Bandura & McClelland, 1977; Bikhchandani, Hirshleifer, & Welch, 1998; Bikhchandani, Hirshleifer, & Welch, 2008), social interactions could be categorized into two key forms: word-of-mouth communication, and observing other consumers' purchases. On one hand, in WOM communication, users are active players: they communicate on and participate in the social commerce platform by posting a recommendation, sharing their experiences, rating a product, and so on. On the other hand, there are passive users that employ, read and consider the content generated and shared by other users without taking an active part in the interaction. That is, they observe, glean knowledge, and learn from other users' consumer behavior through their shared experiences.

Previous research has viewed WOM valence, content, volume, motivation, etc. (see the literature review of King, Racherla & Bush, 2014) as key social interaction activities in online environments. WOM theory assumes that WOM information is an indispensable experienced source created by individuals or marketers, and is then diffused by consumers or marketers to other consumers (Engel, Kegerreis, & Blackwell, 1969). WOM information aims to help consumers fully understand a service or a product before its consumption and might also shape expectations of service (Bansal & Voyer, 2000). The popularity of social media allows WOM theory to evolve from the concept of linear marketer influence to one based on network coproduction. The concept of network coproduction assumes that consumers are regarded as active co-producers of value and meaning and WOM communications are coproduced in consumer networks, groups, and communities. This develops the concept of value co-creation (Barrutia, Paredes, & Echebarria, 2016). With this new insight, WOM theory is particularly well-suited to investigations into consumer social interaction in the s-commerce environment. WOM communication can be viewed as "*verbal, informal communication occurring in*

person, by telephone, email, mailing list, or any other communication method" (Goyette, Ricard, Bergeron, & Marticotte, 2010, p. 9). Godes et al. (2005) defined it as an opinion-based social interaction that consumers use as a recommendation or rating system to interact with others by discussing a service or a product. In the context of s-commerce, Hajli et al. (2014) conceptualize WOM as an s-commerce construct that produce WOM information by recommendations and referrals, ratings and reviews, and forums and communities. In this study, we define WOM communication as user-generated content conveying positive or negative information related to sellers and products/services that is disseminated and communicated within social networks. According to the review conducted by Sweeney, Soutar and Mazzarol (2014) positive WOM is linked to relating good experiences, supporting the organization, and making recommendations; while negative WOM is associated with product denigration, relating bad experiences, and complaining.

However, only a few studies consider observational learning as a fundamental form of social interaction (Blazevic et al., 2013; Libai et al, 2010; Libai, Muller & Peres, 2013). This form of social interaction, the tendency to observe others consumers' purchase behaviors and decisions, can be explained by observational learning theory (Bikhchandani et al., 1998; Bikhchandani et al., 2008; Chen, Wang, & Xie, 2011). Observational learning refers to learning through the observation of the behavior of other people, which could affect the individual's behavior in many ways, with both positive and negative consequences (Bandura & McClelland, 1977). That is, this kind of social interaction refers to gaining knowledge and learning by observing others' behavior through user-generated content. Hence, this social interaction is considered an individual passive action, and with it, it affects individuals' behavior. It can help users to make a purchase decision based on the information they have collected by observation. This theory highlights that people gather information from others when they face new tasks that allow them to virtually eliminate the need for complex mental processing effort to make a

decision (Bandura & McClelland, 1977). People weigh others' information more heavily than their own information when observational learning occurs (Banerjee, 1992). Applying this theory to consumer behavior research, earlier studies have stated that consumers' product-adopting decisions could be shaped by those of previous consumers (Bikhchandani et al., 1998; Simpson, Siguaw, & Cadogan, 2008). Simpson, Siguaw, and Cadogan (2008) have explained that the opinions of others' purchases can be regarded as information to take into consideration in the purchase decision-making process, because such information as a heuristic enables consumers to simplify decision-making and overcome information overload. Research on e-commerce has revealed that the information obtained from observing previous consumers' purchases is associated with purchase actions (buy or not buy) (Chen et al., 2011; Cheung et al., 2014). Therefore, in this study, we use WOM communication and observation of other consumers' purchases as the primary dimensions of online social interaction in the context of s-commerce.

There are several theories that have been also used in social interaction research, such as consumer socialization theory, contagion theory, information processing theory, social cognitive theory, social capital theory, trust transfer theory, social support theory, etc. (see literature review of theories applied in social commerce studies of Zhang and Benyoucef, 2016). Nevertheless, these theories aim to explain the effects of social interactions per se, while they disregard the twofold categorization of social interactions. Furthermore, the focus of this study is not mainly on social interactions, but on the effects of institutional-based privacy assurance and trust on these two types of social interactions and their consequences. Using WOM theory and observational learning theory contributes to the understanding of the individual effect of each kind of social interaction; that is, to better understand the role of active and passive social interactions in the proposed model.

3. Research Model and Hypothesis development

3.1 Research Model

As the main goal of this study is to understand how consumers' privacy concerns can affect their trust and intentions, we employ the privacy-trust-behavioral intention (PTB) model (Liu et al., 2005) as the theoretical foundation for this study. This model has its roots in the theory of reasoned action (TRA), which contends that behavioral intentions are antecedents to specific individuals' behaviors and that individuals' attitudes and perceptions will influence their actions when they believe that certain behavior will be linked to a specific outcome (Albarracin, Johnson, Fishbein, & Muellerleile, 2001; Fishbein, 1975). Drawing on TRA, this model argues that privacy and trust are the major antecedents of behavioral intention (Liu et al., 2005). This model has been validated in the e-commerce context (Liu et al., 2005), indicating that reducing consumers' concerns about privacy could facilitate their trust toward online transactions, thereby increasing behavioral intention to purchase a product.

Prior studies have applied the PTB model in contexts such as social networking sites (e.g., Shin, 2010) and e-commerce (e.g., Bart, Shankar, Sultan, & Urban, 2005). By conducting a large-scale exploratory empirical study, for example, Bart et al. (2005) found that privacy is one of the most influential determinants of online trust, when information risk and involvement are high. Urban et al. (2009) extend this research and found that online trust needs to be cultivated and maintained by the site privacy and security over time and it eventually influences consumers' actions regarding buying, engagement, and loyalty. A similar conclusion can be drawn from a meta-analysis conducted by Wang et al. (2016), who highlight that the most obvious link is the effect of risk and trust on individual behavior toward social media platforms.

However, the PTB model does not state specific types of privacy concern and trust. On the one hand, it allows for idiosyncratic interpretation; on the other hand, it leaves the applicability debatable. Furthermore, the PTB model is built and validated by the traditional e-commerce contexts, which do

not consider the impact of new design features of s-commerce. In transitioning the PTB model into the s-commerce context, we consider the influence of social interaction as an antecedent of behavioral intention. Indeed, one of the key features of s-commerce website design is to improve consumer engagement by fostering consumers' social interaction (Huang & Benyoucef, 2015). The frequency of social interactions, such as one-to-one communication, customer connection, and interactive behavior, among consumers on s-commerce platforms is higher than on e-commerce platforms (Huang & Benyoucef, 2013). Diverse types of social interaction activity on s-commerce websites can generate user-generated content (UGC), such as online product reviews, ratings, comments, and product recommendations (Panagiotopoulos, Shan, Barnett, Regan, & McConnon, 2015). Consumer behavioral intention may be altered by UGC, as well as social interaction activities. However, frequent interactions in virtual environments may not increase the probability of an eventual sale (Yadav et al., 2013). Yadav et al. (2013) suggest that future research should examine the path from social interaction to transaction. Their study also establishes the consumer purchase decision-making process in the context of s-commerce, which includes need recognition, pre-purchase activities, purchase decision, and post-purchase activities (Yadav et al., 2013). This process captures key aspects of consumer activity during product purchase (Yadav et al., 2013). Following this process, we consider the purchase decision process as actual purchase behavior, which is the dependent variable of our proposed model.

To develop our research model, we first intend to follow the PTB model and rely on its logic and rationale to justify the key constructs in the context of s-commerce. Then, we extend the PTB model to investigate (1) how privacy concern can be shaped by institutional privacy assurances, namely perceived effectiveness of privacy policy and industry self-regulation, (2) how institutional privacy assurances affect institutional-based trust (i.e., trust towards s-commerce sites), and (3) whether institutional-based trust affects the consumer decision-making process in s-commerce environments.

Drawing on Yadav et al.'s (2014) consumer decision-making framework in computer-mediated social environments, social interactions (i.e., word-of-mouth communication and observing consumer purchases) are viewed as pre-purchase activities that help consumers search product information and evaluate alternatives. Intention of purchase and actual purchase are used to capture consumers' purchase behavior. All in all, we consider that the intrinsic characteristics and openness of s-commerce contexts can provoke users' uncertainty about it, mistrust about personal data policy, etc., because of the way information is disclosed in this environment.

Therefore, users' trust toward s-commerce could improve thanks to users' perception of privacy policies and industry self-regulation, which would help to involve users' social interactions there, affecting purchase intention and behavior. Figure 1 shows our research model and Table 1 lists the definition of constructs being studied in the research model. In the following sections, we explain in detail why and how these constructs are incorporated into our extended model in the context of s-commerce and provide justification for each hypothesis.
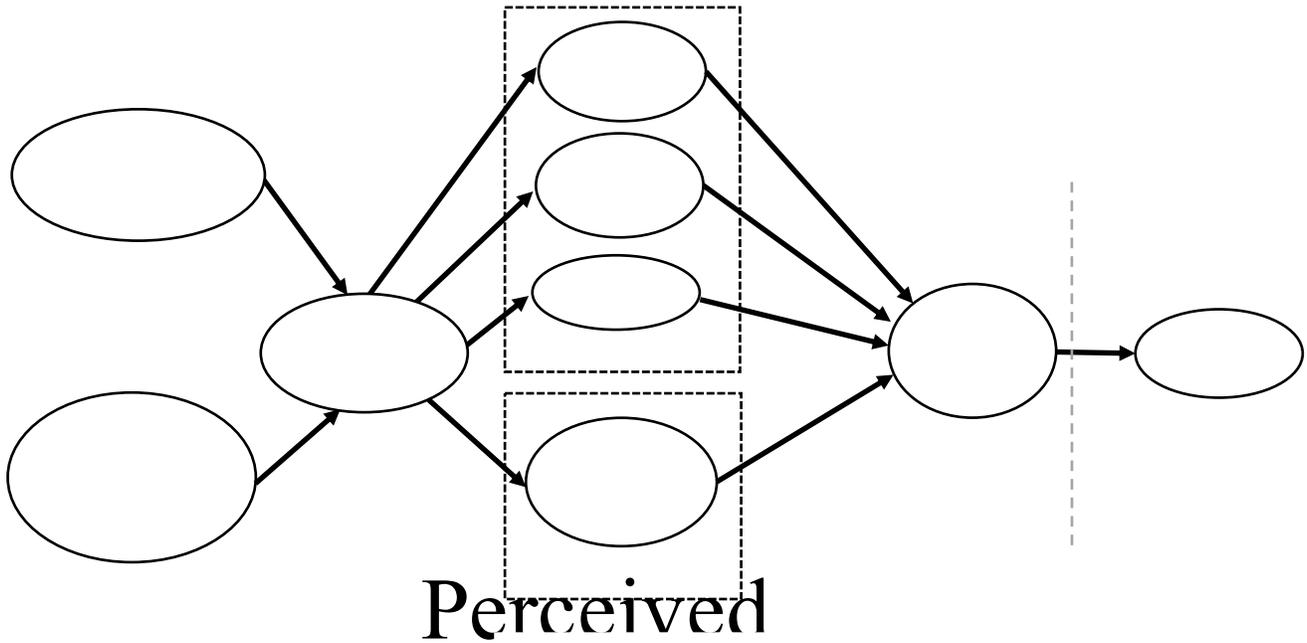
Perceived
effectiveness of
Figure 1. Research model
privacy policy

Table 1. Definition of key concepts

Construct	Definition	Source
Perceived effectiveness of privacy policy	The extent to which a consumer believes that the privacy notice posted online is able to provide accurate and reliable information about the firm's information privacy practices.	Xu et al., (2011) (p.806)
Perceived effectiveness of industry self-regulation	The extent to which consumers believe that self-policing industry groups and certifying agencies are able to assist them in protecting their online privacy.	Xu et al., (2011) (p.806)
Institutional-based trust	An individual's perception of the institutional environment.	McKnight et al. (2002)
WOM communication	Any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet.	Hennig-Thurau et al. (2004) (p. 39)
WOM valence	The preference carried in the WOM information, often measured as positive, negative, or with user ratings.	Duan, Gu & Whiston (2008) (p. 234)

$H_1(+$

Trus

s-co

16

$H_2(+)$

Perceived

WOM content	The quality and variety of the information shared on the website.	Goyette et al. (2010)
Observe consumer purchase	Individuals' observing action previous to making a purchase decision.	Cheng, Wang & Xie (2011)
Intention to purchase	Individuals' willingness to purchase on s-commerce sites.	Wang & Yu (2017)
Purchase	Individuals' actual purchase on s-commerce sites.	Wang & Yu (2017)

3.2 The effect of institutional-based privacy assurance on trust

Institutional-based privacy assurance includes perceived effectiveness of privacy policy and perceived effectiveness of industry self-regulation (Culnan & Bies, 2003), which are selected as the antecedents of institutional-based trust in this study. Perceived effectiveness of privacy policy is defined as "*the extent to which a consumer believes that the privacy notice posted online is able to provide accurate and reliable information about the firm's information privacy practices*" (Xu et al., 2011, p. 806). Privacy policy is a mechanism that aims to keep consumers' information private and safe (Culnan & Bies, 2003) and protects the information from misuse (Xu et al., 2011). In e-commerce, consumer trust can be gradually built through developing a series of privacy policies in terms of notice, access, choice, and security, and integrating them into website design (Liu et al., 2005). When it comes to s-commerce, consumers disclose more personal information in s-commerce sites when they register as a member or request more information from peers (Wang & Yu, 2017). Some s-commerce sites may expose member information to cooperative third-party communities that seek to offer a personalized and tailored online service regarding payment and after-sale. Consumers are reluctant to provide the information when they feel insecure (Bélanger & Crossler, 2011). Such concerns have resulted in online members' negative actions, such as being less willing to release personal information, reducing the intention to use online services (Bélanger & Crossler, 2011), and distrust toward the website (Bansal, Zahedi, & Gefen, 2016). In this regard, s-commerce sites should not only improve transparency and describe

information use, user roles, and user control and permission, but also clearly present the privacy notices during shopping processes to reduce consumers' privacy concerns (Huang & Benyoucef, 2013). We thus argue that consumers are simply willingly to trust s-commerce sites if these sites can guarantee privacy and data protection by implementing privacy features (e.g., a generic 'terms of service and privacy policy' statement) and data and payment protection mechanisms. Based on the argument above, we propose the following hypothesis:

Hypothesis 1 - Perceived effectiveness of a site's privacy policy will positively affect trust in s-commerce sites.

Perceived effectiveness of industry self-regulation is another form of institutional privacy assurance, defined as: "*the extent to which consumers believe that self-policing industry groups and certifying agencies are able to assist them in protecting their online privacy*" (Xu et al., 2011, p. 806). Industry groups and certifying agencies are from third-party institutions, such as banks, consumer unions, or IT service companies. Based on the trust transfer theory (Stewart, 2003, Ng, 2013), a third-party institution can act as the source of trust transfer, which helps a trustee to facilitate trustors' trustworthiness if there is a close relationship between trustee and the third-party institution (Chen & Shen, 2015; Wang, Shen, & Sun, 2013).

In addition to the government regulation that is used to solve well-defined privacy problems, third-party institutions develop rules, enforcement mechanisms compliance procedures, and issue certifications in the form of seals of approval to reduce privacy concerns based on a self-regulatory approach (Culnan & Bies, 2003; Xu et al., 2011). Prior research has emphasized that these certifications in the form of trust seals, such as VeriSign or TRUSTe, can help consumers to trust in shopping websites (Hu, Wu, Wu, & Zhang, 2010; Kim et al., 2008; Xu, Teo, Tan, & Agarwal, 2009). By

conducting a lab-controlled experiment, Hu et al. (2010) explored the interaction effects of the three popular web assurance seal functions (i.e., privacy assurance, security assurance, and transaction-integrity assurance) on building consumers' initial trust. They find that web assurance seals with multiple functions are not necessarily more effective than single-function seals in enhancing online trust. Kim and Kim (2011) argue that a well-known third-party privacy certification could be viewed as an online advertising strategy that helps online retailer websites increase consumer trust in the website. A recent study (Miltgen & Smith, 2015) showed that consumers' impersonal trust (trust in both governmental and commercial entities) can be enhanced if there is privacy-regulatory protection regarding information privacy provided by a trusted third party. On the contrary, Preibusch et al. (2016) report that PayPal uses a data-tracking service provided by Omniture, which amplifies privacy concerns by exposing customers' shopping details (e.g., web tracking information and completed transactions) to a widely deployed third-party tracker. Thus, it is believed that the degree of consumer trust in s-commerce sites will be increased when trusted third-party guarantees are embedded in s-commerce sites effectively. Accordingly, we propose:

Hypothesis 2 - Perceived effectiveness of industry self-regulation will positively affect trust in s-commerce sites.

3.3 The effect of institutional-based trust on social interactions

S-commerce is an online shopping environment where social interactions and information exchange are encouraged (Chow & Shi, 2014; Zhang, Lu, Gupta, & Zhao, 2014). Generally speaking, trust can be established in a holistic and reciprocal way among users and the company in a commercial relationship (Yoon, 2002). In particular, trust towards a s-commerce website could be increased through

social WOM, which is generated through the interactivity and social support of these websites (Chen & Chen, 2015). Kim et al. (2003a) propose that eWOM should be studied through online interactions, such as retweets and suggest that trust is one of the antecedents of eWOM. Further, Lu and Fan (2014) stated that trust allows establishing the interactions among users and with the environment. Likewise, Chow and Shi (2014) point out that trust can positively affect the consumers' intention to disseminate positive eWOM. All in all, we propose that trust towards s-commerce platforms can encourage consumers to socially interact with other peers. Therefore, the following hypotheses are proposed:

Hypothesis 3a - Trust towards s-commerce sites will positively influence positive valence WOM.

Hypothesis 3b - Trust towards s-commerce sites will negatively influence negative valence WOM.

Hypothesis 3c - Trust towards s-commerce sites will positively influence WOM content.

Hypothesis 4 - Trust towards s-commerce sites will positively influence observation of consumers' prior purchases.

3.4 The effect of social interaction on purchase intention

3.4.1 Word-of-mouth communication

WOM is a medium for consumer learning that not only includes specific recommendations about online products and vendors but also supports social interaction among past and potential future consumers on transaction platforms (Lu, Li, Zhang, & Rai, 2014). The positive relationship between WOM-related constructs and consumer purchase behavior has been well acknowledged in the existing literature (see the systemic literature review on electronic WOM communication provided by Cheung and Thadani, 2012). In the current study, we focus on the impact of WOM valence and content on consumer purchase behavior.

Previous studies have indicated that WOM valence can be both positive and negative (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004), and, properly leveraged, not only helps sellers to improve sales, but also supports consumers in making purchase decisions (Goyette et al., 2010). In general, positive WOM from satisfied customers emphasizes the strengths and expected quality of a product, while negative WOM from unsatisfied customers underlines the weaknesses and potential problems of a product (Dellarocas, Zhang, & Awad, 2007). Consumers tend to weigh negative product reviews more heavily than positive product reviews during purchase evaluation and decision-making (Cheung & Thadani, 2012). A recent study by Wang, Wang, Fang & Chau (2013) finds evidence that supports positive online WOM as an effective type of consumer interaction for s-commerce stores' survival.

The content of WOM regarding its volume and quality could be an important factor in influencing consumer purchase intentions (Cheung et al., 2014; Goyette et al., 2010). The volume of WOM can be regarded as an important factor in influencing consumer purchase intention (Cheung et al., 2014; Goyette et al., 2010). For instance, Cheung et al. (2014) found that the increase in the total number of ratings on products of a particular brand provided support for consumer purchase decision. Wang et al. (2013) also emphasize that online WOM content regarding buyer feedback in s-commerce environments, such as faithful description of listing products, service attitudes throughout the transaction, and product dispatching speed, were found to be positively related to s-commerce site survival.

In this study, we focus on the impact of positive and negative valence of WOM, as well as the content of WOM, on consumer purchase decision in the context of s-commerce. We expect that the more positive WOM (and the less negative) content by peer consumers, the more likely a consumer will be to increase their purchase intention and actual purchase behavior.

Hypothesis 5a - Positive valence WOM will positively influence consumer purchase intention.

Hypothesis 5b - Negative valence WOM will negatively influence consumer purchase intention.

Hypothesis 5c - The content of WOM will positively influence consumer purchase intention.

3.4.2 Observing consumer purchase

As mentioned earlier, consumer behavior in e-commerce reveals that the information obtained from observing previous consumer purchases is associated with purchase actions (buy or not buy) (Chen, Wang, & Xie, 2011). Because consumers tend to believe that other consumers' decisions can be a basis for their decision, that might drive them to follow the same course of purchase action. From a herding behavior perspective, consumers may change their perceptions or decisions based on others' observable actions (Banerjee, 1992). Indeed, s-commerce sites provide quality inference functions, such as "like", "share", and "follow" buttons, that allow consumers to frequently engage in observational learning. For example, on the Fancy.com website, next to each product, a "Fancy" icon with a number count displays how many times an item has been clicked by other members. Clicking on the "Fancy" icon adds the product to the custom wish list, so members can see this wish list and the members themselves can see other members who "fancy" the product. The prevalence of SNS characteristics has created observational learning opportunities for consumers and helps them obtain sufficient information to make purchase decisions.

Research has detailed the effect of observational learning on consumer purchase decision-making behavior (Bikhchandani et al., 1998; Cheung et al., 2014). Bikhchandani et al. (1998) developed a consumer product adoption decision-making model, which describes how a consumer's adoption decision is affected by previous consumers, whether or not they adopt or reject the product. A recent study by Cheung et al. (2014) has proven that observational learning information might be perceived as more credible than WOM in increasing the likelihood of customer intention to purchase, because

actions speak louder than words. Therefore, we argue that previous purchase information provided by other consumers can be a strong referral for later consumers regarding product price and quality, and thus leads to an increase in consumer purchase intention.

Hypothesis 6 - Observing consumer's prior purchases will positively influence consumer purchase intention.

3.5 Purchase intention and actual purchase behavior

Drawing on Yadav et al.'s consumer decision-making framework, intention to purchase is a psychological factor that can lead to actual purchase behavior. Consumers on s-commerce sites spend their time searching for information and evaluating alternative options and thus progressively construct their intention to purchase a product. After acquiring sufficient information and evaluating the trustworthiness of the information, consumers will identify the determinants that are used to compare with other alternatives and make decisions based on what they perceive about a product. Thus, we argue that the intention of purchase on a certain s-commerce site is a predictor of a consumer's actual purchase behavior.

Hypothesis 7 - Consumer purchasing intention is positively associated with actual purchase on s-commerce sites.

4. Research methods

4.1 Research context

S-commerce websites can be designed under two approaches: (1) incorporating commercial features into social networking sites (Ng, 2013; Zhang & Benyoucef, 2016; Lin, Li & Wang, 2017); and (2) adding social networking features to traditional e-commerce sites that promotes the overall transactions through social interactions (Liang and Turban, 2011; Huang and Benyoucef, 2013; Zhang et al. 2014;

Aswani et al., 2018). S-commerce sites can also be grouped into several categories, including social network-driven sales platforms, peer recommendation websites, group buying websites, peer-to-peer sales platforms, user-curated shopping websites, social shopping websites, and participatory commerce websites (Indvik, 2013).

This study selects peer recommendations (e.g., Amazon), user-curated shopping (e.g., Fancy.com), and social shopping (e.g., GoTryItOn) as our research context for two reasons. First, these platforms are open to all consumers and allow discussions based on common interests and recommendations on a certain brand or product. Unlike some social networking sites, which merely embed a shopping function in a group page (e.g., a "shop" tab on Facebook brand pages), these s-commerce sites enable consumers to make a purchase without switching to another platform to complete a transaction. Consumers on these platforms can also reach other peers who are looking for the same product and communicate with them prior to making a purchase decision. Thus, the social and commercial features provided by these sites actually capture the forms of social commerce. Second, different to traditional e-commerce platforms, consumers in s-commerce share information, such as product reviews, referrals, recommendations, and personal experiences. The information posted on s-commerce sites is visible to registered consumers in a real-time manner and allow them to join a discussion, provide feedback, or share content. Thus, these s-commerce sites provide an appropriate context to study whether privacy concerns hamper their trust towards these s-commerce sites and how social interaction can occur to increase the likelihood of purchase.

4.2 Data collection and study procedure

To test the research model, a survey was conducted in a university in the southeastern United States. We recruited research participants who were undergraduate students from four courses. These

participants are considered as Millennials (also known as Generation Y). Their birth years range from the early 1980s to the early 2000s. Although students represent only a portion of online consumers, several studies have recognized that they are a reasonable sample for online consumers (Kim et al., 2008; McKnight et al., 2002). The participants were informed that they could complete the two-round questionnaires for extra credits.

Before participants completed our survey, they were asked to sign up for an account on one of our recommended s-commerce sites. Instructions were provided to all respondents to guide them to complete a set of tasks. First, they were asked to read the 'terms of use' provided by the site they had selected and seek to understand the entire online buying process, the specific features offered by the site, and its privacy and transaction policy. Second, after one month, the participants received the first round of the questionnaire that posed questions about privacy perception, trust perception, social interaction, and purchasing intention. Finally, the second round of the questionnaire was sent to participants two weeks later, asking questions related to their actual purchase behavior. The data were collected in two rounds through paper-based surveys. If the participants failed to complete one of the two surveys, the responses were deemed incomplete and were eliminated from our data set.

A total of 318 responses were received and included in the sample for construct validation and hypothesis testing after dropping seven incomplete responses with excessive missing data. The demographic characteristics of the respondents indicated that the majority of the participants in our sample were active online consumers. 78.6% reported that they had purchased products at least five times online in the last year, and nearly 80% had more than one year's experience in using s-commerce sites for shopping. 72% of our participants had spent more than $50 online in the last three months.

4.3 Measures

The survey instruments were adapted from the existing literature and modified as needed for this study. All of the items were reflective and use a five-point Likert scale ranging from 1: "strongly disagree" to 5: "strongly agree". Following Xu et al.'s (2011) study, perceived effectiveness of the privacy policy and industry self-regulation were measured with three items, respectively. The four items for trust toward s-commerce sites were adapted from McKnight et al.'s (2002) institutional-based trust scale. A measurement of WOM communication in the context of s-commerce has not yet been formalized in the existing literature. We therefore chose to operationalize WOM communication using items from the context of e-services (Goyette et al., 2010) because of the similar characteristics to our research context. Thus, WOM communication was measured by three underlying constructs: positive-valence WOM, negative-valence WOM, and WOM content (Chen et al., 2011; Goyette et al., 2010). These three underlying constructs were examined separately, as suggested by Goyette et al. (2010), and have been structured by reflective indicators. Observation of consumer purchase was included to understand consumers' social interaction behavior and whether or not they observe and learn from other members' shopping behaviors. We developed a new three-item scale based on the previous studies (Chen et al., 2011; Cheung et al., 2014) to measure consumers' observing behaviors on s-commerce sites. This measure captures three observational learning behaviors in online environments, including: following other peers, observing other peers' actions, and learning from user-generated content (Chen et al., 2011). The four-item scale for the intention to purchase was modified from Noh et al. (2013) and Sharma and Crossler (2014) to fit our research context. Finally, the purchase questionnaire consisted of one question: Did you purchase a product on your preferred s-commerce site? Participants reported their actual purchase decision by submitting a brief description of his/her purchase experience.

A pilot study was undertaken to appraise and purify the instrument with five researchers, ten doctoral students, and ten students from one of the courses. They reviewed our instrument in terms of

format, content, understandability, and ease and speed of completion. We also asked them to identify specific items that should be added or deleted from the instrument, and to provide suggestions for improvement. Seven items were modified in accordance with their suggestions. The complete survey instrument is presented in Appendix A.

5. Results

The partial least squares (PLS) technique was employed to test the research model (Richard & Chebat, 2016). Previous research has indicated that PLS has more power in maximizing variance explained than covariance-based SEM methods (Gefen, Straub, & Rigdon, 2011). This study intends to explain variance in consumer perception toward s-commerce sites and their social behaviors. We thus believe that PLS is suitable to analyze data in this study. Data analysis proceeded in two stages: the measurement reliability/validity and structural models were performed simultaneously. The measurement model was evaluated by testing each construct's reliability and validity. In the structural model, a bootstrapping procedure was applied to test the statistical significance of the parameter estimates.

5.1 Reliability and validity

We examined the reliability, convergent validity, and discriminant validity for the constructs. First, as Table 2 shows, except one construct, perceived effectiveness of industry self-regulation (0.63, which is also greater than the acceptable threshold of 0.6). All the values for composite reliability (CR) and Cronbach's alpha are greater than the threshold of 0.70, confirming the adequate reliability of the measures (Hair, Anderson, Tatham, & Black, 1998). Second, all but one item of those for perceived effectiveness of industry self-regulation (0.6213, which is also greater than the acceptable threshold of 0.6), have a loading above the threshold of 0.7, suggesting satisfactory convergent validity. Moreover,

we employed two methods to assess discriminant validity: (1) checking whether each item loads more highly on its intended construct than on other constructs, and (2) checking whether each construct's square root of average variance extracted (AVE) is greater than its correlations with other constructs (Fornell & Larcker, 1981). The results in Table 2 indicate the acceptable discriminant validity.

Variance inflation factor (VIF) was used to identify multicollinearity issues. Hair et al. (1998) recommend that multicollinearity is a concern if the VIF value is higher than 5. This study does not have a multicollinearity issue as the VIF value of all the constructs were below 5.

Table 2. Descriptive statistics and correlations

Variable	Mean	S.D.	Alpha	CR	1	2	3	4	5	6	7	8
PP	3.53	.83	.78	.87	**.83**							
ISR	2.47	.58	.63	.80	.52**	**.76**						
T	3.09	.82	.83	.89	.43**	.54**	**.82**					
WOM_P	3.62	.75	.74	.84	.35**	.32**	.36**	**.75**				
WOM_N	2.16	1.14	.87	.94	-.25**	-.12*	-.25**	-.54**	**.94**			
WOM_C	3.71	.80	.85	.90	.22**	.17**	.22**	.47**	-.51**	**.83**		
OCP	3.51	.94	.81	.89	.22**	.15**	.30**	.35**	-.34**	.42**	**.85**	
IOP	3.71	.85	.73	.84	.23**	.17**	.33**	.51**	-.55**	.52**	.43**	**.83**

Note: N=318; CR: composite reliability; Alpha: Cronbach's alpha; S.D.: standard deviation; The bold values on the diagonal line are the square roots of AVE

Legend: PP: Perceived Effectiveness of Privacy Policy; ISR: Perceived Effectiveness of Industry Self-Regulation; T: Trust towards S-commerce Sites; WOM_P: Positive Valence WOM; WOM_N: Negative valence WOM; WOM_C: WOM Content; OCP: Observe Consumer Purchase; IOP: Intention of Purchase
*p<0.05, **p<0.01, ***p<0.001

5.2 Common method bias

To reduce common method bias, Podsakoff, MacKenzie, Lee, and Podsakoff (2003) suggest utilizing structural procedures during the design of the study and data collection processes. Following these guidelines, we protected respondent-researcher anonymity, provided clear directions, and proximally separated independent and dependent variables (Podsakoff et al., 2003). We then assessed the potential

effect of common method bias, statistically, by conducting three tests. First, Harman's one-factor test (Podsakoff & Organ, 1986) generated five principal constructs, and the unrotated factor solution showed that the first construct explains only 29.54% of the variance, indicating that our data do not suffer from high common method bias. Second, we performed a partial correlation technique using a marker variable to eliminate the influence of common method bias. Following Lindell and Whitney (2001), we used the second smallest positive correlation among measurement items (0.01) as a proxy for common method bias to adjust the correlations between the principal constructs. The adjusted correlations were only slightly lower than the unadjusted correlations and their significance levels did not change, suggesting that common method bias did not spuriously inflate the construct relationships (Lindell & Whitney, 2001). Finally, following a procedure suggested by Pavlou et al. (2007), we compared correlations among the constructs. The results revealed no constructs with correlations over 0.7, whereas evidence of common method bias ought to have brought about greatly high correlations ($r > 0.90$). Consequently, these tests suggest that common method bias is not a major concern in this study.

5.3 Hypothesis testing

The results from the PLS analysis are shown in Fig. 2 and Table 4. The hypotheses were assessed by checking the direction and significance of path coefficients (β) between constructs generated by the bootstrapping procedure with 500 resamples. The research results suggest that our proposed research model is a good predictor of consumer decision in an s-commerce environment.

Our dependent variable, purchase, is categorical and dichotomous (purchase or not purchase). We thus conducted a logistic regression analysis of the bivariate relationship to estimate the impact of purchasing intention on actual purchase (Hilbe, 2009). The logistic regression model also included four

other constructs as potential predictors so that the effects of intention on purchase could be isolated from other effects. Table 3 presents the results from the logistic regression analysis for consumers' actual purchase behavior. We found that a greater degree of customer purchasing intention led to higher actual purchase behavior ($\beta = 0.872$, Cox and Snell; $R^2 = 17.7\%$; $p < 0.0001$), while other constructs did not have a strong effect on purchase (Log Likelihood Ratio: L= 394.392, p<0.0001), thus validating H7. The omnibus test was significant (P= 0.001) and the Hosmer–Lomeshow test resulted in p = 0.433, which indicate a good fit in our model. The three control variables for intention to purchase (gender, frequency of online shopping, and years of online shopping), were not significant.

Figure 2. Model testing results

Perceived
effectiven
privacy p
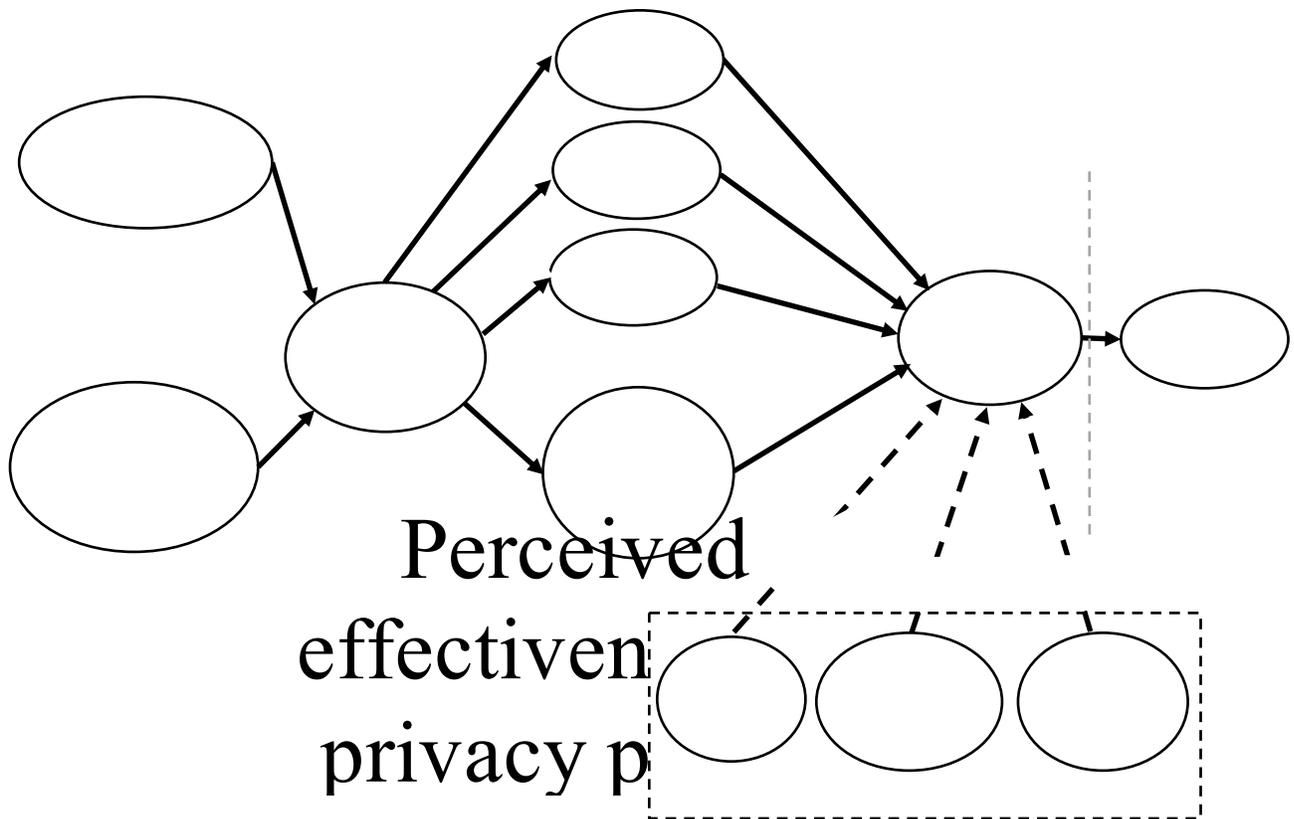
Notes: * p< .05; ** p<.01; *** p<.001; non-significant paths are in dashed lines.
1): Result of a logistic regression analysis of the bivariate relationship.
2): Significant paths are shown as solid lines with a star above the path coefficients; the values for R^2 are displayed immediately under the names of the constructs.

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Table 3. Summary of statistics and logistic regression results. (Dependent variable: purchase).

Purchase	Intention mean	Intention S.D.	N	
Not purchase (0)	3.46	.90	169 (53.14%)	
Purchase (1)	3.99	.69	149 (46.86%)	
Results of logistic regression analysis				
	Chi-square	*d.f.*	Sig.	
Model	45.191	8	.000	
-2Log likelihood (L)	394.392			
Variable	Coefficients	Standard Error	Wald's χ^2	Sig.	R^2
Intention	.872	.206	17.863	.000	.177
Perceived effectiveness of privacy policy	-.283	.186	2.308	.129	
Perceived effectiveness of industry self-regulation	-.487	.278	3.067	.080	
Trust towards s-commerce sites	.108	.188	.330	.565	
Positive valence WOM	.208	.213	.957	.328	
Negative valence WOM	.088	.143	.384	.535	
WOM content	-.095	.195	.236	.627	
Observing consumer purchasing	.238	.149	2.535	.111	
Constant term	-2.959	1.228	5.809	.016	

Table 4. Hypotheses and results

Hypothesis	Results
H1: Perceived effectiveness of privacy policy will positively affect trust in s-commerce sites.	Supported
H2: Perceived effectiveness of industry self-regulation will positively affect trust in s-commerce sites.	Supported
H3a: Trust towards s-commerce sites will positively influence positive-valence WOM.	Supported
H3b: Trust towards s-commerce sites will negatively influence negative-valence WOM.	Supported
H3c: Trust towards s-commerce sites will positively influence WOM content.	Supported
H4: Trust towards s-commerce sites will positively influence observation of consumer prior purchasing.	Supported
H5a: Positive-valence WOM will positively influence consumer purchase intention.	Supported
H5b: Negative-valence WOM will negatively influence consumer purchase intention.	Supported
H5c: The content of WOM will positively influence consumer purchase intention.	Supported

H6: Observing consumers' prior purchases will positively influence consumer purchase intention.	Supported
H7: Consumers' purchasing intention is positively associated with his/her actual purchase on s-commerce sites.	Supported

6 Discussion

S-commerce has increasingly attracted many researchers' attention in both information systems and marketing fields. Evidence from previous studies indicates that social shopping is potentially risky, and therefore trust towards s-commerce sites may be necessary for consumers to keep them engaging in social interaction activities as well as in transactions (Huang & Benyoucef, 2013; Preibusch et al., 2016). Despite its importance for s-commerce prosperity, discussion on consumers' privacy concerns is not sufficient in the existing literature (see a systematic review on social media by Ngai, Tao, & Moon, 2015 and a review on social commerce by Zhang & Benyoucef, 2016). In fact, privacy in online settings is still considered a research priority due to the uncertain cues of the context (MSI, 2016-2018). Little research has explored whether consumers' privacy concerns can be a main factor resulting in distrust toward s-commerce sites and thus reducing the willingness of interacting with other consumers and making a purchase. In this paper, extending from the PTB model, we developed a research model for s-commerce that recognizes that perceived effectiveness of the privacy policy and industry self-regulation may directly influence consumers' trust towards s-commerce sites, and such a trust may also affect WOM communication and observation of consumer purchasing, which in turn increases purchase intention. The empirical findings allow the conclusion that institutional privacy assurance increases users' trust toward social commerce websites, which positively affects social interaction and, consequently, users' purchase intention and actual purchase behavior.

This study presents three main implications. First, it contributes to the research on privacy-trust, specifically in the s-commerce context. Second, it considers a wide view of social interactions by studying not only WOM valence and content, but also passive interactions and observation learning

(Libai et al., 2013). Third, this consideration allows comparison of how different social interactions affect purchase intention and actual purchase. Such a theoretically-extended model helps researchers examine the generalization of a theory or model in a new research context and provides a contribution to business practice. We conclude our theoretical and practical contribution as follows.

6.1 Theoretical contribution

Given the lack of study on the effect of privacy concerns in the s-commerce context, this study makes some important contributions to the marketing and information systems (IS) literature. First, our proposed model explains consumer decision-making by viewing privacy concern and trust as key roles in the context of s-commerce. Specifically, we focus on institutional privacy assurance as the antecedent of institutional-based trust in s-commerce, and we further examine how trust affects consumer decision-making processes. While prior IS and marketing studies focused on exploring the social-oriented factors involved in predicting consumer purchase intention (e.g. Liang et al., 2011; Ng, 2013), this study brings further insights into how institutional-based privacy assurance may influence consumer decision-making. Thus, we fill the research gap identified by Ginosar & Ariel (2017) by exploring the effect of institutional-based privacy assurance on consumers' trust.

Second, although s-commerce sites tend to create an environment where consumers can turn into active consumers by interacting with other peers and service providers, high-frequency social interactions among consumers on the s-commerce sites may not guarantee sales growth and brand value (Yadav et al., 2013). Thus, rather than merely examining consumers' behavioral intention, our study investigates consumers' actual purchase behavior. This provides further insight into the consumer decision-making process on s-commerce sites. This also explains s-commerce consumer behavior as a whole, providing potential contribution to future research.

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Third, s-commerce is characterized by direct and indirect social interactions (e.g. Huang & Benyoucef, 2013), and this study further investigates such social interactions by exploring the nature of WOM and observational learning. In s-commerce sites, consumers interact with consumer peers by sharing information with each other, such as ratings, reviews, recommendations and referrals (Hajli & Sims, 2015). The content of consumer information sharing behavior determines the quality of such interactions and the level of influence in consumer decision-making. S-commerce users are not passive readers; rather, they appreciate the quality of the content and recognize the worth of the information shared. Stepping back to the roots of social interaction, this study has successfully facilitated its three key dimensions including: positive-valence WOM, negative-valence WOM, and WOM content. The results show that negative-valence WOM has a greater influence (negative) on consumers' intention to purchase than the other two dimensions of social interaction. This indicates that the negative valence of WOM negatively influences purchase intention more than the positive valence of WOM positively influences purchase intention; thus, negative social interactions have a stronger effect on consumer decisions than positive ones. One piece of negative-valence WOM may be worth thousands of positive-valence WOM.

Finally, consumers interact with each other by observing consumer purchasing. WOM is a growing concern in s-commerce contexts, not only by its valence and content, but also for those users who seem hidden in the website, those who do not actively interact but learn by observing the behaviors of others. For companies, they can be the most difficult to reach and engage because they are not always approachable in pre-purchase activities. This study advances marketing literature by highlighting the importance of observing learning and investigating its influences on consumer decisions.

6.2 Managerial implications

Given the limited studies on consumer decisions and privacy concerns issues in s-commerce, our study has some significant contributions for practice. First, consumer decision-making is critical for management, to increase scales and achieve success in marketing. Our research results provide a thorough view of consumer purchase decisions in s-commerce, providing some meaningful implications for building consumer trust and increasing sales. Rather than merely presenting privacy notices as well as terms and conditions of use, we suggest that s-commerce site managers should develop reliable privacy policies in terms of payment, information reuse, and information sharing in order to increase consumer trust. Companies can enhance consumers' perception of security by adding seals of trust on their websites, protecting users' personal information, building transparency regarding interaction activities and shopping processes, and offering safer transactions (Huang & Benyoucef, 2013).

Second, our results reveal that perceived effectiveness of the privacy policy and industry self-regulation directly affects consumer trust towards s-commerce sites. However, some previous studies suggest that privacy seals may not have any significant influence on building consumer trust (e.g., Hui et al., 2007; Preibusch et al., 2016). As such, firstly, s-commerce practitioners must be able to integrate privacy policies appropriately; for example, in terms of accessibility. Secondly, they should carefully evaluate and select the certifying agencies to protect consumers' privacy. S-commerce practitioners should bear in mind that the website is in charge of providing security and privacy, as a way of providing trust and facilitating interactions and information-sharing in the form of WOM.

Finally, given the significant effect of negative-valence WOM on purchase intention, s-commerce practitioners should understand how to manage negative WOM, not only because of its negative effect, but also because the information shared in WOM may contain valuable information to understand the

nature of those customers. Consequently, s-commerce sites can address the concerns arising from consumer transactions and create a reward/compensation mechanism for their customers, which may turn negative WOM into business opportunities.

7. Limitations, suggestions for future research, and conclusion

This study has some limitations that may create interesting opportunities for future research. First, this study employs college students as the research sample. Although students may represent a large portion of the online shopper population, there is still a need to use other populations of s-commerce to better generalize our research findings to s-commerce consumers. Future research may assess potential difference among age groups, with a more representative sample. For instance, older consumers may be more concerned about sharing their private information. It is likely that more effort and time may be needed before these adults can develop trust in s-commerce sites, because of their lack of security. This may reflect the different effect of purchase intention and behavior. Second, to complement the general lack of adequate survey methods, future research could consider applying qualitative methodologies or social media analytics approaches (e.g., text mining) that allow researchers to analyze secondary data collected from online communities to answer questions such as 'what types of WOM content attract the most likes or shares from consumers?'. Third, we proposed a new model (which included institutional privacy assurance, institutional-based trust, social interaction, and purchase decision-making process) as the first study to empirically examine the relationships among proposed constructs in s-commerce environments. Specifically, we treated s-commerce sites as homogenous online spaces in this study. Bigger and varied samples that are collected from different types of s-commerce sites, such as social network-driven sales platforms (e.g., Facebook), group buying websites

(e.g., Groupon), peer-to-peer sales platforms (e.g., eBay), and participatory commerce websites (e.g., Kickstarter) may offer more granular insights into privacy management and s-commerce research.

In conclusion, this paper intends to understand consumer purchase decision-making in social commerce and how it is affected by privacy concern, trust, and social interactions. Employing an empirical study, we examined (1) the effects of perceived effectiveness of the privacy policy and industry self-regulation on institutional-based trust; (2) the impact of institutional-based trust on two types of social interactions (i.e., WOM communication and observational learning); (3) the effects of WOM communication and observational learning on the intention to purchase; and (4) the intention to purchase positively affects actual purchase behavior. Overall, this study contributes to marketing and IS literature by showing that institutional privacy assurance, institutional-based trust, and social interactions are three major influences on consumers' purchase decisions.

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Appendix A. Measure and Items

Construct	Coding and Items	Source
Perceived Effectiveness of Privacy Policy	**PP1:** I feel confident that my favorite s-commerce site's privacy statements reflect their commitments to protect my personal information. **PP2:** With their privacy statements, I believe that my personal information will be kept private and confidential by my favorite s-commerce site. **PP3:** I believe that my favorite s-commerce site's privacy statements are an effective way to demonstrate their commitments to privacy.	Xu et al. (2011)
Perceived Effectiveness of Industry Self-Regulation	**ISR1:** I believe that privacy seal of approval programs such as VeriSign and TRUSTe will impose sanctions for my favorite s-commerce site's noncompliance with its privacy policy. **ISR2:** Privacy seal of approval programs such as VeriSign and TRUSTe will stand by me if my personal information is misused during and after transactions with my favorite s-commerce site. **ISR3:** I am confident that privacy seal of approval programs such as VeriSign and TRUSTe is able to address violation of the information I provided to my favorite s-commerce site.	Xu et al. (2011)
Trust towards S-commerce Sites	**T1:** I believe my favorite s-commerce site have enough safeguards to make me feel comfortable using it. **T2:** I feel assured that legal and technological structures adequately protect me from problems on my favorite s-commerce site. **T3:** I feel confident that encryption and other technological advances on my favorite s-commerce site make it safe for me to use. **T4:** In general, my favorite s-commerce site provides robust and safe environment to share private information.	McKnight et al. (2002)
WOM Communication	*Positive Valence WOM* **WOM_P1:** I recommend my favorite s-commerce site to others. **WOM_P2:** I have spoken favorably of my favorite s-commerce site to others. **WOM_P3:** I speak of my favorite s-commerce site's good sides to others. **WOM_P4:** I strongly recommend people buy products online from my favorite s-commerce site. *Negative valence WOM* **WOM_N1:** I mostly say negative things to others on my favorite s-commerce site **WOM_N2:** I have spoken unflatteringly of e-vendors to others on my favorite s-commerce site. *WOM Content* On my favorite s-commerce site, I discuss with others about…… **WOM_C1:** the quality of the product offer **WOM_C2:** the variety of the product offer **WOM_C3:** the user friendliness **WOM_C4:** the security of transactions	Goyette et al. (2010)
Observe Consumer Purchase	**OCP1:** Often before buying the product of the brand, I follow the members who have bought the product on my favorite s-commerce site.	Chen et al. (2011);

	OCP2: Often before buying the product of the brand, I observe other members' past purchase actions by viewing their buy-lists or check-in list. **OCP3:** Often before buying the product of the brand, I read the previous comments on my favorite s-commerce site.	Cheung et al. (2014)
Intention of Purchase	**IOP1:** I am likely to provide my personal information to purchase on s-commerce sites **IOP2:** I plan to provide my personal information for purchasing on s-commerce sites **IOP3:** I intend to provide my personal information for purchasing on s-commerce sites	Noh et al. (2013); Sharma & Crossler (2014)