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Skewing users' rational risk considerations in Social Commerce: An empirical examination of the role of social identification

Abstract

Social commerce has emerged as a new platform that enables users to conduct shopping assisted by inputs from other members and to publicly comment on transactions or products. It therefore adds a social aspect to traditional online commerce environments. Nevertheless, the role of the social facet embedded in such transactions in influencing user behaviors is not fully understood. In this study, we rely on theories of risk deterrence in decision-making and the “risky/choice shift” logic to suggest that the social identification of users regarding their community members skews the way they consider risks in decision-making on these sites. Using data from 175 users of etsy.com, we show that perceived commerce risk reduces users' intentions to buy from the website and that their perceived participation risk curtails their intentions to post comments on social commerce forums. The findings further show that the influence of these risk assessments is reduced when the degree of social identification of the user increases; these risk considerations become negligible in decision-making processes when users' social identification is one standard deviation above the mean. Hence, users' social identification with the social commerce website community skews their rational decision-making. Implications for research and practice are discussed.

Keywords: Social Commerce, Perceived Risk, Social Identity, Rational Decision-Making

Introduction

Social commerce is a form of electronic commerce that employs social media in addition to conventional commerce facilities, as a means to facilitate user interactions and information contributions [1]. Social commerce users can share their consumption experiences related to products/services and also seek advice and recommendations from their online community members. The intent of these social facets is to make it easier for users to explore and express their opinions regarding products and vendors. The growth of social commerce has been fueled by the increased acceptance of social media sites [2]. Consequently, many websites that support social commerce emerged, e.g., Etsy, Pinterest, and Facebook fan pages. There is also increased growth in social commerce activity and revenues [3]. Global revenue from social commerce is expected to increase to \$80 billion US dollars by 2020 [4].

Given the above-mentioned growth trajectory, users' motivations to engage in social commerce activities and specifically to use social commerce platforms for purchasing or posting comments on products or vendors have been the foci of recent studies. At least two gaps exist in the current literature. First, it primarily examined factors that drive social commerce use (e.g., [5–7]), and has been relatively silent regarding factors that may demotivate or deter the use of social commerce (e.g., [8]). Second, these studies have largely taken a rational perspective regarding social commerce use decisions by relying on the planned behavior model and largely ignored potential biases in decision-making in this context. This study addresses these gaps.

To address the first gap, we note that the prospect theory [9] suggests that behavior deterrents are often more important than drivers in decision-making. They indeed have a strong negative influence on website use [10–12]. Hence, the first objective of this study includes examining the role of negative factors in deterring social commerce behaviors including purchasing and posting. The deterrent we focus on is perceived risk, defined as users' beliefs regarding potential negative consequences of online transactions with a specific website [13]. Our study has taken this focus because risk perceptions tend to be

overemphasized compared to perceptions regarding the benefits in decision-making processes and can consequently be weighed much higher and heavily influence decision outcomes [14]. Given that typical social commerce behaviors (purchasing and posting comments) can pose some risks for users, we contend that such risks may hinder users from participating in social commerce activities.

To address the second gap, we note that a prime difference between social commerce and traditional forms of electronic commerce is that social commerce often involves a broader social context, namely, the members of the social group (members of the website) to whom one interacts with (e.g., shares information with, or purchases from). Hence, the above-mentioned risk factors do not work in isolation, and their effects may be influenced by the social context. Although several studies allude to the importance of contexts in determining the behaviors of individuals [15], the social commerce literature has been relatively silent regarding this role with regard to the social group to which one interacts. The social identity theory [16] is a reasonable lens for capturing this social aspect of social commerce. In the context of social commerce, social identification can be defined as users' perceptions regarding their similarity to and the strength of the bonds and affiliation with other website-based group members.

What makes social identification important is its rational-biasing potential, as dictated by the “risky/choice shift” perspective. This perspective suggests that being a part of a group (e.g., as manifested in having high social identification with it) can promote risky behaviors by reducing the cognitive weighing of risks in decision-making [17,18]. The importance of social identification, albeit as related to other aspects of social interaction, has been demonstrated in other online community contexts (e.g. [19–21]). Following the risk deterrence and “risky/choice shift” logics, we specifically examine how two types of perceived risk that are highly relevant to typical social-commerce behaviors (perceived participation risk and perceived commerce risk) may affect two types of common social commerce user behaviors (intention to post comments in the social commerce forums and intention to purchase from the website) and how social identity may bias these relationships. Hence, the second research objective of this paper is

to understand whether and how social identification can bias rational risk considerations in common decisions in the social commerce context.

Our study makes two key contributions: First, we focus on social commerce deterrence factors (risks) rather than motivating factors (benefits). Risk perceptions are not just important for decision choices but are often more influential than benefit considerations in this processes [9]. Hence, the focus on the effects of risk on social commerce behavior is worthy. Second, we contribute to the social commerce literature by introducing risky/choice shift caused by social identity into a research framework that shifts away from previous models that only relied on rational-based theories. The remainder of this paper is organized as follows: the following section provides a background on key concepts we focus on. Next, the proposed research framework and the hypotheses are presented. This is followed by methodology and reporting data analyses results. Finally, we conclude by discussing the implications for research and practice as well as by acknowledging limitations and pointing to future research.

Background

Social Commerce

Social commerce includes “any electronic business transaction conducted from or involving a social network site or social networking activity” [22]. We hence treat social commerce here as a form of commerce that uses social media features for conducting or supporting commercial activities [1,22]. By integrating user-generated content into typical commercial transactions, social commerce websites enable users to participate in the process, before and after commercial transactions. Such sites also allow businesses to better cater to customer needs, listen to customers, and adjust their performance as needed. Users of social commerce websites can indirectly collaborate with each other, exchange their experience and information about products and services, and obtain advice and recommendations from other site members [23]. Social commerce websites can be categorized into two types. The first includes the purchasing option, and users can directly buy items from the website (e.g., Groupon and Etsy). The

second does not support direct purchasing, and its focus is on marketing and advertising the products and services (e.g., fan pages on Facebook) [5]. Nonetheless, all social commerce websites include three common traits: social media features, user interactions inside communities, and commercial activities [24].

While many online intended behaviors are feasible to study on such sites, two have been the prime foci of prior research: intentions toward participation in social activities (e.g., posting reviews on the website) and purchasing from the website. Intention to participate encapsulates a user's plan to be an active member of and be engaged in the online activities, which include writing comments, publishing posts, liking other users' activities, and so on [25,26]. Intention to purchase reflects users' plan to purchase products offered by the social commerce website [26].

In such studies, users' intentions to engage in social commerce have been often conceptualized as guided by rational choice; a path that we partially follow in this paper. Applying this view, users' perceptions regarding the benefits as well as their attitudes toward social commerce were theorized as predictors of social commerce website or features use intentions. For instance, social support, social presence, trust, flow experience [7], relationship quality [26], consumer–consumer interaction [27], and passion [28] have been shown to increase social commerce use intentions. This literature has mainly focused on drivers of social commerce usage. There is limited research regarding negative factors that can demotivate users from using these platforms (e.g., risk factors in using e-services [8]); and it has focused on e-services in general rather than on social commerce platforms, which can have unique characteristics.

In this study, one extension of the current social commerce literature is achieved by considering the negative elements (i.e., perceived risk) that exist in the social commerce platforms. The second extension of the literature is achieved by using social psychological theories that extend rational-based models to the biased decision-making domain. We specifically study how social elements such as social identification might bias users' decision-making. Specifically, we propose that given that social context,

and especially group affiliation [17,18], can bias the way risk perceptions are interpreted and weighed [29]; people's risk-based decisions are not fully rational. Rather, we argue that they may be skewed by one's social identification with the members of the social commerce site.

Perceived risk in online communities

Perceived risk reflects users' feelings of uncertainty regarding potential negative outcomes of using a product or a service. It is based on a combined assessment of the uncertainty and the seriousness of outcomes involved in actions [30]. It therefore encapsulates an expectation of losses associated with actions, and it often acts psychologically to inhibit actions that are deemed to have likely negative consequences, including some online purchase behavior [31]. Risk is a multifaceted concept because it can apply to many aspects of one's behavior, each of which presents some uncertainty and potential for negative outcomes. For instance, posting private information on a website may lead to financial damages, privacy loss, and psychological stress, all of which are reflected in separate risk assessments. Consequently, the literature has pointed to prevalent risk facets, which may include financial risk, performance risk, physical risk, psychological risk, social risk, time risk, and opportunity cost risk [32]. The decision field theory suggests that risk is an important consideration in decision-making. According to this theory, risk drives deliberation, which may deter approach-oriented behaviors [29]. Indeed, it has been shown that risk is one of the most significant barriers for online shopping [33]. Risk is also an important deterrent of social interactions [34,35]. The deterring effects of perceived risk on consumer transactions have received much support. For instance, in e-commerce, perceived risk deters online purchasing (e.g., [11,13,36,37]). Product risk and financial risk, specifically, have been identified as two primary categories of risks related to purchasing behavior in online environments (e.g., [13,38]). These two risk facets have been often aggregated into a “commerce risk” assessment, which captures uncertainties regarding the purchased products as well as regarding possible financial losses [36,39,40].

Hence, commerce risk is an overarching assessment of the potential negative outcomes of purchasing from the social commerce website; it includes both the product (e.g., receiving a malfunctioning or inferior product) and financial (e.g., losing their money due to fraud) risk facets [41].

The commercial side represents one risky element in social commerce. The other is the social community that presents users with privacy risk and social risk [11]. Privacy risk reflects users' potential loss of control over their information. In social commerce transactions, the loss of privacy may occur when users engage in posting and participating activities. For instance, by writing comments on the site, their profile page including their personal information can be disclosed and affiliated with their opinions; which may lead to discomfort. The other relevant risk related to the social community is perceived social risk, which reflects potential loss of social status in the group. The combination of these two risk facets creates an overall “participation risk” for individuals, defined as users' assessment of the potential negative consequences of acting (purchasing, posting) on the social commerce website. These risk facets are important for understanding social commerce behaviors because such concerns may deter two types of common behaviors on which we focus: participating in social commerce discussions and purchasing.

Social identity

Social identity captures individuals' identification within a group and the extent to which they view themselves as members of this group [42]. It is related to the psychological status that describes users as the members of collective rather than as separate individuals. The formation and activation of social identity is often explained through the lens of the social identity theory [43–45]. This theory distinguishes between within-group and intergroup relations. This can be important for group interactions, such as in social commerce, because it explains how group affiliation influences one's behavioral choices. Given the potential relevance of social identification for online communities and organizational units, several studies ventured to understand how social identification can affect user behaviors in these situations. For instance, social identity increases user acceptance of IT: when users feel fewer differences between them

and the IT group, and when they believe they have similar values with the IT group, their acceptance of the IT is increased [20]. In virtual communities, it has been shown that social identity plays an important role in the development of behavioral participation [19] and purchasing intentions [46]. Nevertheless, how social identification might influence risk weighing processes, especially in social commerce settings, is still largely unknown. Given the possible biasing effect of social membership in group settings [17,18], we seek to explore such effects. From a theoretical perspective, this gap represents an opportunity to integrate theories of risk deterrence in decision-making with the social identity theory using the “risky/choice shift” logic, which we explain later.

Social identity can include three facets of identification: cognitive, affective, and evaluative [47]. Cognitive social identity encapsulates categorization processes, in which individuals become aware of the community membership, the similarities with other members, and dissimilarities with nonmembers [21]. Affective social identity relates to the members' feelings of attachment and belongingness. It is characterized as “identification with, involvement in, and emotional attachment to” the social group ([48], p. 253). Finally, evaluative social identity is defined as the evaluation of self-worth regarding the belongingness to the group. It reflects users' perceptions of their value and importance as being members of the group [21]. We follow this conceptualization and the consequent operationalization in this study.

Risky/Choice Shift Logic

The social psychology literature indicates that a person's risk-taking behavior can be influenced by social factors such as his/her membership in a group. A “risky shift” was found by early research, whereby people seem more willing to take risky decisions when they were members of a group compared to when they were alone [49]. This phenomenon, called “risky/choice shift”, was reaffirmed by several researchers investigating group risk-taking behaviors (e.g., [50–53]). The “risky/choice shift” can be theoretically explained through the “diffusion of responsibility” notion. This notion suggests that group members are willing to take more risks because they assume that they are protected by their group members and that

responsibility for the potential failure of risky decisions would be shared with others [17,50]. In other words, people with strong affiliation with a group psychologically and irrationally distance themselves from the potential harms and blame of risky choices associated with the group. Risky/choice shift phenomenon has been studied in different contexts such as gambling behavior (e.g., [54]), making health-related decisions (e.g. [55]), and financial decision-making (e.g., [53]).

In this study, we integrate the social identity theory with risky/choice shift logic to study the possible biasing role of social membership. Table 1 summarizes the related theories/concepts we discussed in the background section. We have used concepts of “decision field theory” and “prospect theory” to contend that risk elements that exist in the social commerce platforms demotivate social commerce users from engaging in key activities (e.g., purchasing and posting comments). We adapted the “social identity” theory to suggest that social commerce members develop social identification that can affect their perspective on the situation. To propose the biasing role of social identity on risk weighing, we relied on the “risky/choice shift” perspective.

Theory	Description
Social Identity Theory	People's behaviors with their group are influenced by their often-biased evaluations of in-group members and the strength of their affiliation with the group
Risky/Choice Shift	Being a part of group can promote risky behaviors through under-weighing (and in extreme cases ignoring) the risks associated with the behaviors
Decision Field Theory	Explains decision-making behavior under uncertainty; it suggests that for rational people risks would deter approach-oriented behaviors
Prospect Theory	People assess gains and losses differently and are more susceptible to losses than gains.

Table 1. Description of relevant theories

Hypotheses development

We rely on the theories described in Table 1 to suggest that (1) two relevant risk facets, participation risk and commerce risk, deter people from intending to engage in, correspondingly, social commerce

participation and purchasing behaviors, and (2) one's social identification with the group (members of the website) may bias (weaken) the translation of risk assessments into behavioral intentions.

Risk and behavioral intentions

The risk deterrence principle suggests that humans and animals tend to prefer less risky than more risky behavioral choices [9]. Hence, risk is a major deterrent of approach-oriented behavior (e.g., jumping into a burning room) and a major promoter of avoidance-oriented behavior (e.g., leaving a burning room). As such, risk is a key consideration in decision-making, and it consequently has the capacity to influence behavioral plans [56]. It specifically deters people from intending to engage in behaviors that can increase the chances of a person to be harmed [57]. Particularly in online environments, risk has become an inevitable element that can deter people from transacting with websites and other people online [58,59]. We expect the same association here because uncertainties regarding possible negative consequences of online purchase transactions (e.g., delivery issues, getting the wrong product, and not getting a product) can deter individuals from purchasing from the social commerce website. Hence, we propose that

H1: Perceived commerce risk would reduce users' intention to purchase on the social commerce website.

Participating in discussions on the social commerce website may include different activities such as writing comments, following other users, and liking others' posts. In this study, we focus on writing comments/reviews as a focal users' participation activity because this behavior is prevalent, presents social risks, and is very important for service providers. Among other activities, writing comments and sharing the experiences have stronger effects on other members' behaviors (e.g., purchasing) [60]. Moreover, this behavior is common; approximately 83% of users are interested in sharing their shopping experiences on social media, and nearly 67% of them make their purchasing decisions based on their contacts' suggestions [61].

Participation risk relies mostly on the assessment of social and privacy threats that may stem from participation in the above-mentioned discussions. When users consider such behaviors, they may reflect on two types of potential negative outcomes: receiving negative judgments and reactions from other

members such that they lose their social status and possible violations of their privacy as a result of revealing their information and opinions to others.

Because users can have uncertainties regarding possible negative consequences of participation transactions (e.g., disliked by others, offending others, retaliation by others, and reduced self-image), it is reasonable to expect, based on prospect [9] and decision field [29] theories, that such concerns may deter their intentions to engage in the behavior that produces these risks. That is, participation in (and specifically posting on) forums on social commerce websites is less likely when users perceive participation risk. Therefore, we postulate

H2: Perceived participation risk would reduce one's intention to post comments in social commerce forums.

Group Identification Effects

The social commerce context provides a fertile ground for developing social identities and for allowing these social identities to influence user behaviors. First, social commerce users develop varying degrees of social identification. Each user feels to some extent affiliated with other members of the website given the natural tendency of humans to evaluate where they socially stand with regard to other group members, as well as with regard to people who are external to the group [63].

Second, one way in which social identification can guide behavior in this context is rooted in the “risky/choice shift” phenomenon, which indicates that given the same level of risk, individuals will demonstrate more risk-taking behaviors when they are in groups. That is, when individuals feel they are part of a group to which they strongly affiliate (i.e., their social identity is high), they will underweigh (downplay) the risks associated with their choices in a group setting [64,65]. This happens because group members have the illusion that they are sheltered by the group, and given their social ties to the group, it will be easier for them to deal with negative outcomes associated with the risk [66]. Indeed, studies have shown that having interactions in groups leads to enhancement in individual's risk-taking choices [17,18,66]. Applying this logic here, we propose that in a social commerce community, users who have strong social identification with the group (i.e., sense stronger belongingness and affiliation to the

community, perceive more similarities with other members, and consider themselves as important members of the community) will feel more sheltered by the group. This should increase their likelihood to underweigh the risks and to consequently be more favorably disposed toward acting on the website. Thus, we hypothesize that:

H3: Social identity will moderate the relationship between perceived commerce risk and intention to purchase, such that the negative relationship will be weaker when social identity is high.

H4: Social identity will moderate the relationship between perceived participation risk and intention to post comments such that the negative relationship will be weaker when social identity is high.

Figure 1 depicts the proposed model.

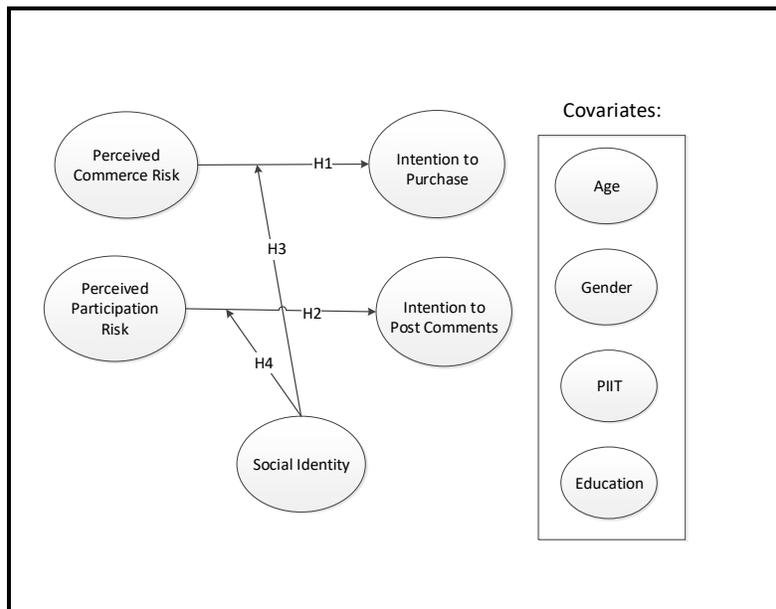


Figure 1. Proposed research model

Alternative Model

It is possible that risk assessments are being weighted by individual to produce an overall risk estimate [67] and that this risk estimate deters purchasing and posting intentions. According to this view, social commerce users may assess the potential risk by weighing its different facets (i.e., social, privacy, and commerce risks in our case) and behave based on their overall risk assessment. This view is consistent with those in the marketing literature that suggests that an overall risk consisting of different risk facets

influences consumers' behaviors [e.g.11,35,74]. Adapting this view and the logic of H1-H4, we propose to test an alternative model that includes the following hypotheses:

H5a: Perceived overall risk would reduce users' intentions to purchase on the social commerce website.

H5b: Perceived overall risk would reduce users' intentions to post comments on the social commerce website.

H5c-d: Social identity will moderate the relationship between perceived overall risk and (c) intentions to purchase and (d) intentions to post comments, such that the negative relationships will be weaker when social identity is high.

Methodology

The study commenced with pilot-testing the study materials with a sample of 50 graduate students who had used social commerce sites for purchasing and posting. It was done to check the reliability and validity of the adapted measurement scales. All scales had alphas, composite reliability, and average variance extracted (AVE) scores >0.7 and presented the expected factor loading structure. All scales were clear to users, relevant, and captured the intended concepts, as postpilot-study interviews with the users indicated. Next, data for hypothesis testing were collected from 175 active users of etsy.com, which is one of the most popular social commerce websites with 21.7 M active users. This website connects its members to each other and enables them to have social and commercial interactions. Users of this website can create a profile for themselves, follow other members, become members in different groups, and take different social actions such as “liking” other members' posts and writing comments. The collected data were then analyzed with SmartPLS 3.0 [69].

Participants and procedure

Data were collected using an online survey, which was distributed through market research firms to etsy.com users, in two rounds. The research firms recruited the participants through research panels, and all respondents were compensated by the company. This data collection method was demonstrated to be valid and useful (e.g., [70–72]). We specifically targeted active users who have purchased from the website and posted on discussion forums in the past two months to ensure experience (rather than

heuristic)-based perceptions, social identification, and intentions. In the first round of data collection, we obtained 135 valid responses; the sample comprised more number of females. We employed a smaller second round of data collection (exact same survey) with a second marketing firm to increase sample size and increase the representation of men in the sample. The use of different panels reduced the risk of repetitive sampling. The second round yielded 40 more responses. Multivariate analysis of variance indicated that the two data subsets were statistically similar. Only “cognitive social identity” was higher in the first dataset. This was probably due to the difference in the gender ratio of the two datasets. Hence, we used the combined dataset in analyses but also included the data collection round as a control variable. Overall, 175 valid responses were obtained (the response rate is unknown; it is managed by the marketing firm that collected the data). They included 115 women and 60 men; 39% of them were in the 30-39 years age group and 33% were in 21-29 years age group. The sample was relatively experienced with the website; 70.9% of the respondents were members of the website for more than a year. Out of the sample, 38.3% held bachelor's degree, 23.4% had some college training, and 10.3% had master's degree.

Measurement

The measurement items were adapted from well-established scales (See Table 1). All items were measured on a 7-point Likert scale and were operationalized in a way that is consistent with their operationalization in prior research. Participation risk was measured as a second-order formative construct, which supports its conceptualization as the mental weighted sum of privacy risk and social risk. This operationalization stems from the logic that the two dimensions of participation risk (i.e., privacy risk and social risk) do not have to covary and that they can be viewed as adding up to, rather than being caused by an overarching participation risk (i.e., the total risk is a weighted sum of the subdimensions) [73]. To alleviate concerns regarding the possibility that a reflective operationalization is better, we have also post-hoc tested the framework modeling—perceived participation risk as a reflective construct; the results were qualitatively the same, and no path changed in significance or sign. All other constructs were operationalized as reflective. Social identity was modeled as a second-order construct that is reflected through three sub-dimensions—evaluative social identity, affective social identity, and cognitive social

identity. This is consistent with the operationalization in Tsai and Bagozzi [19]. In this case, the three dimensions are expected to reflect the underlying latent concept of social identification.

Control variables

The study controlled for user age, gender, and education level as a means to account for possible influences of demographics on the model's constructs. Furthermore, we controlled for users' personal innovativeness with IT (PIIT). PIIT is “the willingness of an individual to try out any new information technology” ([74], p. 206). It has been shown to predict online shopping behaviors (e.g., [75–78]). Therefore, we considered accounting for its possible effects.

Construct	Items	Developed from
Perceived Privacy Risk <i>Alpha=0.782</i> <i>CR=0.873</i> <i>AVE=0.697</i>	By writing comments in this social commerce website, my personal information from the online profile might be collected and used for other purposes. By giving my information to this social commerce website, I increase my exposure to privacy violation risks. By posting my name on this social commerce website, I increase the chances of misuse of my private information.	[11]
Perceived Social Risk <i>Alpha=0.848</i> <i>CR=0.908</i> <i>AVE=0.767</i>	What are the chances that writing comments in this social commerce website will negatively affect the way others think of you? Writing comments in this social commerce website would lead to a social loss for me because other members would think less highly of me. Please rate the likelihood that writing comments in this social commerce website would affect how others view you unfavorably?	[11] [79]
Perceived Commerce Risk <i>Alpha=0.811</i> <i>CR=0.888</i> <i>AVE=0.725</i>	Purchasing from this social commerce website would involve more product risk (e.g., not working, defective product) compared with other ways of shopping. By purchasing from this social commerce website, there is a chance I will lose my money. Purchasing from this social commerce website poses a risk that I will not be satisfied with product, service, or delivery.	[13,40]
Evaluative Social Identity <i>Alpha=0.680</i> <i>CR=0.862</i> <i>AVE=0.757</i>	I am a valuable member of this social commerce website community. I am an important member of this social commerce website community.	[19]
Affective Social Identity <i>Alpha=0.676</i> <i>CR=0.859</i> <i>AVE=0.753</i>	How attached are you to members of this social commerce website? How strong would you say your feelings of belongingness are toward the community of members on this social commerce website?	[19]
Cognitive Social Identity <i>Alpha=0.708</i> <i>CR=0.872</i> <i>AVE=0.773</i>	How would you express the degree of similarity between your personal identity and the identity of members of this social commerce website? Please indicate to what degree your self-image is similar to that of the members of this social commerce website as you perceive it.	[19]

Intention to Purchase <i>Alpha=0.841</i> <i>CR=0.904</i> <i>AVE=0.758</i>	I intend to purchase from this social commerce website in the next three months.	[80]
	I plan to purchase from this social commerce website in the next three months.	
	I predict I would purchase from this social commerce website in the next three months.	
Intention to Post Comments <i>Alpha=0.786</i> <i>CR=0.875</i> <i>AVE=0.700</i>	I intend to participate (write comments) in activities on this social commerce website in the next three months.	[80]
	I predict I would participate (write comments) in activities on this social commerce website in the next three months.	
	I plan to participate (write comments) in activities on this social commerce website in the next three months.	

Table 2. Measurement item

Results

Measurement model

First, reliability, convergent, and discriminant validity were assessed and deemed to be appropriate (see Table 3). For discriminant validity, the square root of AVE for each construct was compared with the bivariate correlations between that construct and all others [81] and was found to be higher than all the corresponding correlations (See Table 3). Thus, reasonable discriminant validity was established. An assessment of loadings and cross-loadings indicated an appropriate loading pattern (see Appendix A).

For the formative construct (participation risk), we examined the multicollinearity between the dimensions. Variance inflation factor (VIF) below 3.3 assures that multicollinearity is reasonable [82]. In our study, VIFs for privacy risk and social risk were 1.443. Furthermore, the bivariate correlation between privacy risk and social risk was below 0.7, which provides additional support for the nonexistence of multicollinearity in the formative construct [83]. We also conducted multicollinearity analysis for reflective constructs. VIFs for all reflective constructs were below 3.3.

	Mean	SD	1	2	3	4	5	6	7	8
1. Intention to post comments	5.615	0.749	0.837							
2. Intention to purchase	5.891	0.759	0.629	0.871						
3. Affective social identity	4.314	1.232	-0.139	-0.075	0.868					
4. Cognitive social identity	4.408	1.015	-0.058	0.018	0.644	0.879				
5. Evaluative social identity	5.202	0.950	0.317	0.389	0.187	0.173	0.870			
6. Perceived commerce risk	3.859	1.419	-0.291	-0.386	0.357	0.313	0.120	0.851		
7. Perceived privacy risk	4.177	1.228	-0.180	-0.357	0.377	0.331	0.131	0.660	0.835	
8. Perceived social risk	3.187	1.511	-0.297	-0.344	0.305	0.276	0.120	0.639	0.554	0.876

Table 3. Descriptive statistics and discriminant validity (N=175)

Common method variance concerns were addressed by including common latent factor as described in Liang *et al.*[85]. The results (Table 4) demonstrated that the AVE explained by indicators was 0.74,

whereas the average method-based variance was 0.007. Moreover, most loadings of the latent method construct were not significant. We hence concluded that common method variance is unlikely to be a major component in the data.

Construct	Indicator	Substantive factor loading (R1)	R1 ²	Method factor loading (R2)	R2 ²
Intention to post comments	IPC1	0.898***	0.804604	0.131*	0.017161
	IPC2	0.767***	0.588289	-0.093	0.008649
	IPC3	0.846***	0.715716	-0.035	0.001225
Intention to purchase	IPU1	0.875***	0.765625	0.012	0.000144
	IPU2	0.904***	0.817216	0.027	0.000729
	IPU3	0.833***	0.693889	-0.039	0.001521
Affective social identity	ASI1	0.849***	0.720801	0.015	0.000225
	ASI2	0.888***	0.788544	-0.014	0.000196
Cognitive social identity	CSI1	0.912***	0.831744	-0.056	0.003136
	CSI2	0.846***	0.715716	0.060	0.0036
Evaluative social identity	ESI1	0.860***	0.7396	-0.106**	0.011236
	ESI2	0.900***	0.81	0.106**	0.011236
Perceived commerce risk	PCR1	1.047***	1.096209	-0.101*	0.010201
	PCR2	0.699***	0.488601	0.114*	0.012996
	PCR3	0.817***	0.667489	-0.011*	0.000121
Perceived privacy risk	PPR1	0.869***	0.755161	-0.054	0.002916
	PPR2	0.812***	0.659344	0.078	0.006084
	PPR3	0.827***	0.683929	-0.030	0.0009
Perceived social risk	PSR1	0.699***	0.488601	0.209**	0.043681
	PSR2	0.955***	0.912025	-0.1	0.01
	PSR3	0.972***	0.944784	-0.108	0.011664
Average		0.860714286	0.747042238	0.000238095	0.007505762

Table 4. Common method bias analysis

* P<0.05; **P<0.01; *** P<0.001

Structural model

Given the adequacy of the measurement model, the proposed hypotheses were tested with a bootstrapping procedure with 300 resamples [86]. As shown in Figure 2, all hypotheses were supported. The model managed to explain 31% of the variance in intention to purchase, and 25% in intention to post comments. Among the control variables, only PIIT had a significant effect on intentions to post comments. We have also accounted for “round of data collection” as a control variable; it was not a significant predictor of the outcome of our model. Hence, we can conclude that age, gender, and round of data collection did not influence the research model.

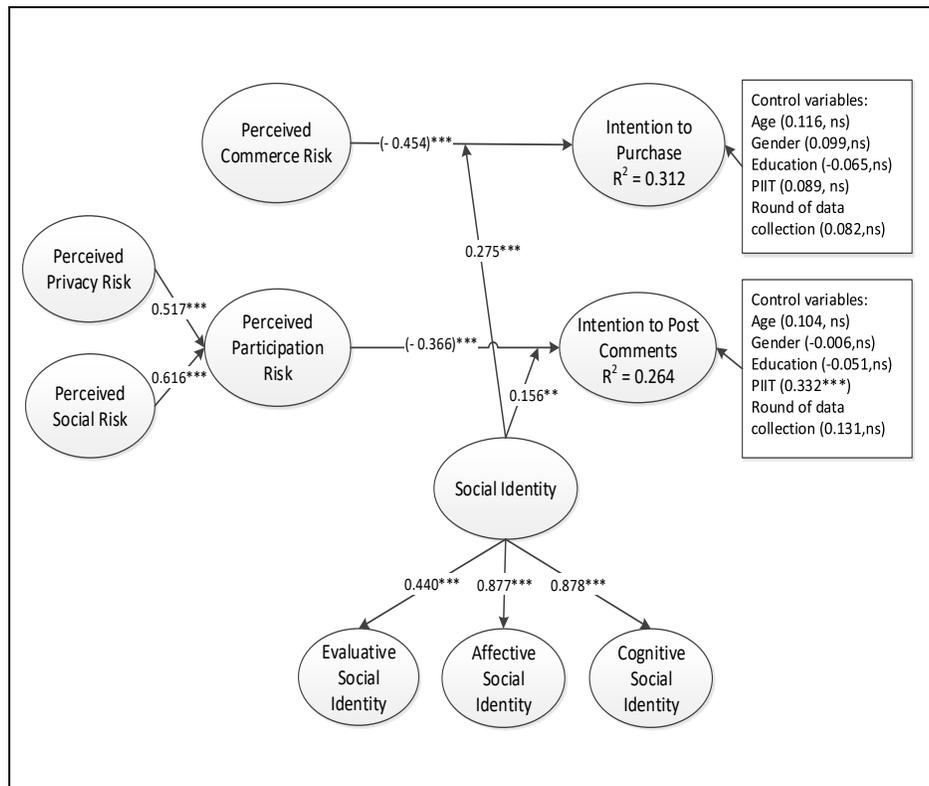
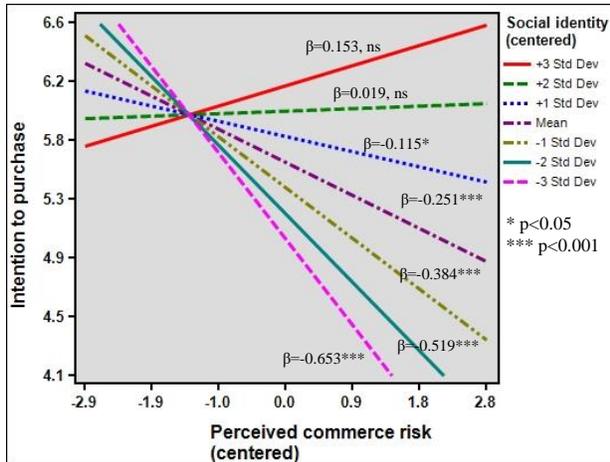


Figure 2. Analysis results of the structural model
 * P<0.05; **P<0.01; *** P<0.001

Given the significance of the moderating effects of social identity, we explored them to obtain a more refined understanding of the levels of social identity at which risk considerations do not matter. Figure 3 portrays the results of this analysis. In panel A, as social identity changes from low to high, the relationship between commerce risk and intention to purchase, represented by the slope of the line, becomes weaker (less negative). Similarly, in panel B, when social identity changes from low to high, the relationship between participation risk and intention to post comments becomes weaker (less negative). The graphs show that for social identity values more than one standard deviation from the mean, the risk factors we have identified become irrelevant in decision-making processes because their effects on purchasing and posting intentions become nonsignificant.

A.



B.

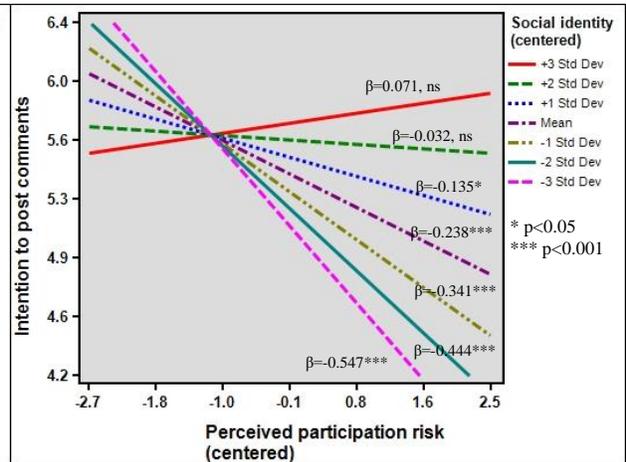


Figure 3. Interaction plots.

Alternative Model Estimation

First, we tested post-hoc for possible cross-effects of perceived risks on the other intentions. We added the paths between perceived participation risk (perceived commerce risk) and intention to purchase (intention to post comments) in the model. The results (path coefficients and their signs) remained qualitatively the same. The added paths were somewhat significant but with small effects, which is reasonable given the a-theoretical basis for such effects.

Second, we tested an alternative model to explore H5a-d (see results in Figure 4). Alternative hypotheses (H5a-d) remained significant. We hence concluded that this perspective (an overall risk assessment) is also viable. Comparing the R-squares of the research (Figure 2) and alternative (Figure 4) models, it seems that the alternative model is slightly better in explaining purchase and posting intentions.

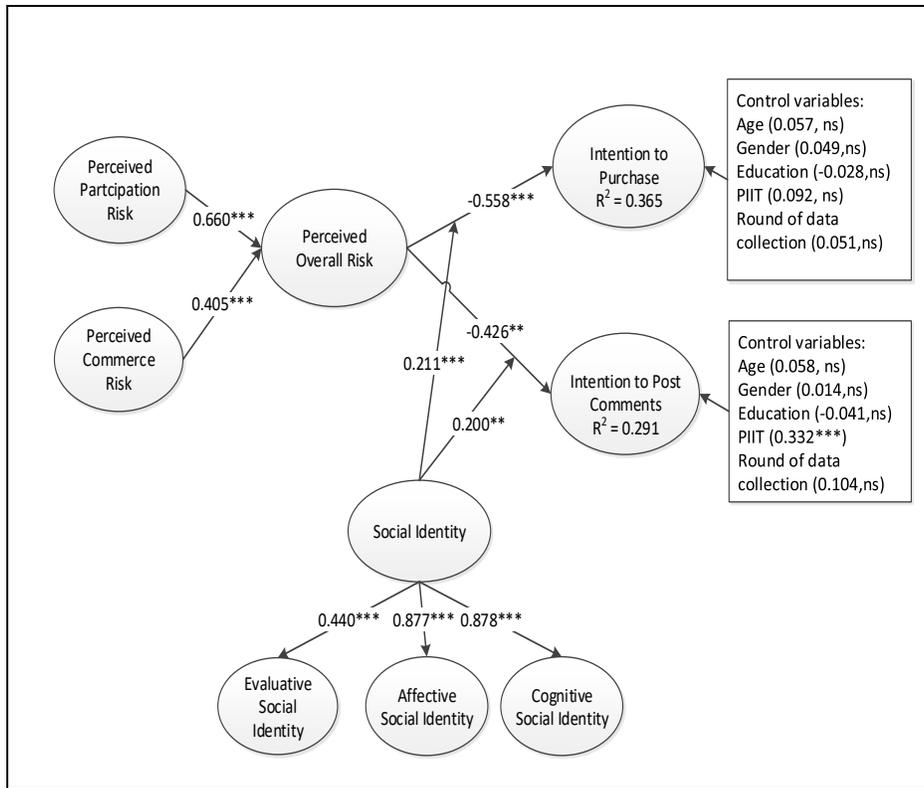


Figure 4. Analysis results of the alternative model

Discussion

This research aimed to understand (1) the deterring role of users' perceived participation and commerce risk in reducing intentions to purchase from the social commerce website and post comments in social commerce discussions and (2) how these risk-based decision-making processes may be distorted by social identification, as dictated by the risky/choice shift logic. To do so, we integrated theories of risk deterrence in decision-making (decision field and prospect theories) with the social identity theory using the “risky/choice shift” logic to produce a research model. The results showed consistently with risk deterrence (decision field and prospect) theories that these risk factors deter purchasing and participation in social commerce, correspondingly, and hence support H1 and H2. An alternative model suggested that people weigh such risks rather than use them independently for relevant decisions and that this weighted overall risk assessment deters behavior. This model was also supported (hence supporting H5a-b). The

alternative model did a slightly better job than the main model in explaining variance in purchase and posting intentions on social commerce sites. This increased the confidence in our results; regardless of risk perception modeling, the results consistently showed that risk demotivates behaviors on social commerce sites.

We next applied the “risky/choice shift” logic and sought to examine whether users' social identification with the social commerce community on the website influences the way they weigh risk factors for deterring action. We expected lower attention to risk considerations under conditions of high social identification. The findings support the hypotheses (H3 and H4 in the case of discrete risk assessment effects and H5c-d in the case of overall risk assessment effect). Support across risk conceptualization increased confidence in the finding; it indicated that social identity moderates (weakens) both relationships: between commerce (or alternatively, overall) risk and purchase intentions, and between participation (or alternatively, overall) risk and posting intention. This means that when users of social commerce feel that they have strong social identification with other members of the website, they downplay the potential risks of social commerce. Our moderation analysis indicated that for somewhat high social identity values (more than one standard deviation from the mean), the relevance of social and commerce risk factors disappears, as the effect of such risk assessment on users' decisions evaporates.

Contribution to theory and implications for practice

Our study contributes to the IS literature in several ways. First, while current social commerce literature has mostly focused on rational-based theories and models [e.g. 27,29,82], this study takes a different perspective and shifts away from pure rationality; an approach which likely better accounts for how users actually act on such sites. This study develops and validates a context-specific (social commerce) integration of common risk deterrence theories (decision field and prospect theories) with the social identity theory using the “risky/choice shift” logic. This model explains reduced rationality in user behavior on social commerce sites, which can elucidate why in many cases purchases on such sites seem excessive and irrational [88,89]. The model shows that when people socially identify with website users, they overlook and downplay risk factors in purchasing and posting decisions, which is consistent with the

social identity theory and the risky/choice shift logic, according to which decision-making in groups is biased and tends to be “overconfident” and “risk-immune” [16–18]. Considering this biasing effect of group membership, we showed that as opposed to other commerce settings in which groups do not exist, they do exist in social commerce settings and can skew users' risks perceptions. This finding extends the mostly rational-based theories social commerce and general e-commerce research had relied on. It suggests that future research studying risk factors in social commerce and possibly other group settings (e.g., virtual teams) should consider possible biases in users' risk weighing for decision-making. This finding also adheres to recent calls in IS research to shift away from purely rationale-based models [90], as we know that users and online consumers are not always fully rational. We hence encourage future research to reflect on possible deviations from rationality, in social commerce contexts and beyond.

Second, the extant social commerce literature has focused mostly on drivers of social commerce acceptance (e.g., [3,5,26,91]) and largely neglected the role of negative facets that can deter social commerce use. Nonetheless, negative factors such as risk perceptions can play a significant role in or deterring online user behaviors [10–12]. We found only one study that examined users' risk assessment in an e-commerce context (e-bill-pay service) [8]; it differs from the social commerce context because the relevant risks did not involve interaction among users and community memberships did not exist in it. Our study takes a different approach and focuses on users' risk perceptions in an interactive social environment. It therefore focuses on social-commerce-specific risks that have not been extensively covered in prior research. Given that the standardized path coefficients and explained variances in our study are similar to those observed in prior risk research (e.g. [11,8,68,92]), it is reasonable to assume that we managed to capture two highly relevant risk perceptions in the social commerce context. Future research in the social commerce domain can therefore rely on these risk facets and is also encouraged to consider and test possible effects of additional risk facets. Future research in social commerce should also consider examining models that integrate drivers and deterrents factors' effects.

On the practical side, our results suggest that social commerce website developers may consider two ways to increase the use of their website. They can try to reduce risk perceptions while increasing social identification. To deal with reducing users' risk perceptions, social commerce developers should understand the possible risks their users perceive and focus on reducing the ones that matter most to the users. For instance, to mitigate the commerce risk, managers could consider having risk-reduction strategies such as money back guarantees and consumer satisfaction guarantees [11], or respond quickly to unfavorable comments or incidents. Having a contact person to chat with, e.g., having live chat facilities, can also help [93]. Ultimately, when users are confident that the social commerce website stands behind its services, their perceived risk would be mitigated. These kinds of assurances should also be reflected in the website policy statements. Moreover, to address the privacy risk, social commerce websites should refrain from shady privacy practices and clearly state their privacy policies on the website [11].

The study also showed that users' social identification with the social commerce community can mitigate the effect of perceived risks on purchase and posting intentions. Social commerce cultivators should therefore focus on increasing members' identification with the community. They can do so by portraying and emphasizing their communities in a more favorable light, create engaging community-based activities, and encourage the sharing of personal information and creating friendships [19,94]. For instance, social commerce websites can include various types of groups within their general community, and use clustering techniques for suggesting related groups to their members [95]. Other e-commerce websites may also consider providing online tools that increase feelings of membership among their users. Some of these online tools can be as follows: notifying members about responses to their posts, establishing different forums, providing detailed profiles of their members, and establishing informal chat rooms [20,96].

Limitation and future research

Several limitations that may spawn future research should be acknowledged. First, the study was cross-sectional in nature. Future research can employ longitudinal designs. Second, this study focused on a limited set of predictors of behaviors with a risk- or deterrence-focus. Future research may consider more predictors. Third, we considered a limited set of behavioral outcomes. Nevertheless, users may be engaged in more activities such as following other members, liking other members' posts, following a product, and sending messages. Future research can extend our model into such behaviors. For instance, it can examine the referral behavior of social commerce users and the social elements that can influence it (e.g., social distance as studied in [97]).

Fourth, we focused on the network on the social commerce website as a whole as a basis for social identification. Users, however, can also develop identification with specific groups on the website. Future research can look into this hierarchical structure, the resultant identification hierarchy, and its effect on risk weighing. Fifth, the majority of our sample included women (65%). This percentage is similar to the gender distribution reported in industry report [98], according to which 68% of etsy.com users are female. Although gender can influence perceptions and behaviors in various contexts (e.g., risk perceptions ([99]) and social identification ([100]) and location sharing behavior (e.g., [101]), we did not find significant gender-based difference in our context. Future research may theorize and examine gender differences with regard to extension of our model in terms of predictors, outcomes, and contexts.

Sixth, we have employed two rounds of data collection conducted by two different market research firms. As the two companies use different panels, we reduced the likelihood of having duplicate subjects. Nevertheless, there is always a chance of people registering to multiple panels (note that this chance exists in any online survey and certainly in the case of using a single panel where a person could have multiple identities). Hence, although unlikely, we acknowledge this as a limitation of the current design. To alleviate it, we tested the model with the first sample (n=135) and the results remained the same. Future research may further alleviate this risk by replicating our findings with users with verified identities. Finally, the participants of our study were active users of social commerce (who have made a recent purchase and also wrote a comment recently). The reason for this sampling frame was that we were

interested in collecting data from users with experience-based basis for their perceptions, assessments, and intentions. Users with no use experience or with remote memories of use experience will likely develop perceptions and intentions based on heuristics rather than on actual experience. However, because nonusers or users who stopped using such sites can also be relevant, we call for future research to extend our findings to nonactive social commerce users.

Conclusion

This study aimed at integrating the idea of biased (more risky) decision-making in groups into models of user behavior in social commerce. To this end, it theorized on and examined the effects of social identity and risk assessments on social commerce users' purchasing and posting intentions. The results showed that social identity weakens (moderates) the effects of perceived risk on intentions to engage in both behaviors. They highlight the important role of social identity in skewing social commerce users' rational risk weighing. It paves the way for better understanding user behaviors in social commerce environments and in other online settings in which social identification can emerge. We call for future research to continue examining models involving rational and bias-related drives of user behaviors in online environments.

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Appendix A

	Intention to post comments (IPC)	Intention to purchase (IPU)	Affective social identity (ASI)	Cognitive social identity (CSI)	Evaluative social identity (ESI)	Perceived commerce risk (PCR)	Perceived privacy risk (PPR)	Perceived social risk (PSR)
IPC1	0.824	0.422	-0.117	-0.028	0.295	-0.134	-0.080	-0.197
IPC2	0.814	0.647	-0.062	0.018	0.237	-0.312	-0.198	-0.277
IPC3	0.871	0.513	-0.177	-0.145	0.251	-0.283	-0.171	-0.269
IPU1	0.552	0.875	0.006	0.074	0.256	-0.353	-0.329	-0.283
IPU2	0.547	0.877	-0.105	-0.016	0.362	-0.313	-0.291	-0.285
IPU3	0.543	0.860	-0.106	-0.017	0.405	-0.342	-0.312	-0.330
ASI1	-0.145	-0.120	0.832	0.413	0.130	0.314	0.333	0.274
ASI2	-0.110	-0.023	0.902	0.677	0.190	0.313	0.325	0.260
CSI1	0.014	0.069	0.649	0.901	0.186	0.251	0.280	0.205
CSI2	-0.143	-0.048	0.471	0.857	0.112	0.309	0.305	0.288
ESI1	0.361	0.427	0.170	0.138	0.868	0.021	0.036	0.028
ESI2	0.194	0.251	0.157	0.163	0.873	0.183	0.191	0.180
PCR1	-0.191	-0.279	0.256	0.160	0.113	0.811	0.485	0.457
PCR2	-0.301	-0.350	0.376	0.346	0.048	0.879	0.615	0.585
PCR3	-0.239	-0.350	0.273	0.273	0.148	0.861	0.574	0.576
PPR1	-0.077	-0.287	0.255	0.223	0.227	0.553	0.830	0.475
PPR2	-0.229	-0.331	0.342	0.314	0.063	0.582	0.877	0.510
PPR3	-0.138	-0.275	0.351	0.293	0.036	0.521	0.796	0.395
PSR1	-0.291	-0.348	0.263	0.270	0.155	0.685	0.544	0.870
PSR2	-0.215	-0.277	0.241	0.217	0.098	0.503	0.475	0.874
PSR3	-0.270	-0.276	0.298	0.236	0.058	0.485	0.431	0.883

Table A1. Cross-loadings analysis