Some things are just better rich: How social commerce feature richness affects consumers' buying intention via social factors

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Abstract

The social commerce discipline has produced several different social commerce features that can be integrated into e-commerce platforms. Thereby, it is assumed that using multiple social commerce features in combination can better stimulate consumers' social interactions. Yet, little is known about the effects of such strategies. This paper introduces the concept of social commerce feature richness and investigates its effects on consumers' buying intention via social factors. The results of a controlled online experiment, in which 237 participants used variants of an e-commerce platform with functionally diverse social commerce feature sets, confirm that the social commerce feature richness positively affects social factors, which increase consumers' buying intention. With the social commerce feature richness, we provide a novel, theoretically grounded and empirically verified concept to better understand how the use of functionally richer sets of social commerce features can maximize the success of social commerce initiatives.

Keywords

Social commerce, Feature richness, Buying intention, Social factors

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Introduction

Inspired by the success of social networking websites, many companies are integrating social media into their e-commerce platforms to provide consumers a more interactive shopping experience and thereby increase sales volumes (Yadav et al. 2013). In literature, the term *social commerce* has been coined to summarize initiatives, in which social media are used to support e-commerce transactions (Liang and Turban 2011; Zhou et al. 2013). To facilitate the implementation of such initiatives, several social commerce features (i.e., readily usable social media applications) are available that can be integrated into e-commerce platforms. The most prominent features include rating and review tools, social wish lists, share buttons, like buttons, community feeds, and question and answer tools (Curty and Zhang 2013; Huang and Benyoucef 2015). By means of these features, consumers can for instance state and exchange opinions about products on e-commerce platforms, which can influence the buying decisions of others (Cheung and Thadani 2012; King et al. 2014). Such information, which is generated and shared using social media, is also referred to as social information (Cheung et al. 2014; Yadav et al. 2013).

In general, the features provided on an e-commerce platform (e.g., product search engines or product images) can significantly influence the shaping of consumers' buying intentions, which is a central determinant of their buying behavior (Hausman and Siekpe 2009; Parboteeah et al. 2009). Recent studies suggest that social commerce features might have a similar potential (Ding et al. 2017; Huang and Benyoucef 2017). They build on a characteristic mechanism that affects the buying intention by influencing social factors. Specifically, social commerce features are designed to stimulate interactions among consumers, which can lead to an increased perception of social factors such as social presence, social support, or social influence (Amblee and Bui 2011; Hajli and Sims 2015; Kumar and Benbasat 2006; Zhu et al. 2010). These social factors can significantly impact consumers' buying intention by positively shaping their attitudes towards the e-commerce platform (Bai et al. 2015; Kwahk and Ge 2012; Liang et al. 2011; Xi et al. 2016; Zhang et al. 2014). The successful influencing of social factors is hence assumed to be a key performance indicator of social commerce initiatives (Liang et al. 2011; Wang and Zhang 2012).

The available social commerce features differ significantly in terms of the provided functionality, the conveyed social information, and, accordingly, the social interaction that is stimulated between consumers (Curty and Zhang 2013; Huang and Benyoucef 2013). By combining multiple social commerce features with differing functionality, e-commerce platforms can hence support the generation and sharing of a broader variety of social information. For instance, by means of a rating and review tool, social wish lists, and a community feed, consumers can publish product evaluations, encourage others to buy products, and discuss shopping activities. In this manuscript, we

introduce the term *social commerce feature richness* to express the functional diversity of a set of social commerce features that is provided on an e-commerce platform. Note that different social commerce features can also provide similar functionality. The social commerce feature richness does hence not necessarily correspond to the number of social commerce features, which is contained in the set, but rather characterizes the extent of functionality.

Considering that functionally diverse sets of social commerce features convey different kinds of social information and stimulate varying forms of social interactions, it seems conceivable that the effects on social factors might be stronger if multiple social commerce features are provided on an e-commerce platform (Curty and Zhang 2013; Huang and Benyoucef 2013). Platforms with functionally richer sets of social commerce features might hence more effectively stimulate consumers' buying intention (Huang and Benyoucef 2017). However, there also exist indications that platforms with multiple social commerce features could overwhelm consumers with "social overload" and therefore might even negatively affect consumers' buying intention (Baethge et al. 2016; Olbrich and Holsing 2011). To better devise social commerce strategies, it is hence essential to understand if and how social commerce features should be provided in combination and how this impacts consumers' buying intention.

While considerable research focuses on examining the impacts of social commerce features, little is known about the effect that multiple social commerce features have on social factors and consumers' buying intention. So far, only the effects of individual social commerce features have been investigated. For instance, Kumar and Benbasat (2006) provide evidence that rating and review tools can positively influence the social presence of an e-commerce platform. Zhu et al. (2010) show that collaborative shopping features can have a similar effect. Literature also indicates that social commerce features such as rating and review tools, share buttons, or like buttons can generate social support and social influence (Amblee and Bui 2011; Hajli and Sims 2015; Kuan et al. 2014). Yet, no conclusion can be drawn if the effects on social factors and the buying intention can be strengthened when providing multiple social commerce features in combination. It hence remains unclear if and to what extent companies should integrate functionally rich sets of social commerce features into their e-commerce platforms.

With the study described in the manuscript at hand, we intend to contribute to the closure of this research gap. In particular, we pursue the investigation of two research questions: *(RQ1) How can the social commerce feature richness be conceptualized and how can it be increased on e-commerce platforms? (RQ2) What impact does the social commerce feature richness unfold on social factors and, ultimately, on consumers' buying intention?* To answer these questions, we theorize on the concept of social commerce feature richness and develop a research model that connects the social commerce feature richness with consumers' buying intention through its effects on several social factors. We evaluated the research model in a controlled online experiment. In this experiment, 237

participants used and reported on different versions of an e-commerce platform, which varied only with respect to the level of social commerce feature richness.

The findings of our research provide novel contributions to the knowledge base about social commerce and help explaining the determinants of successful social commerce initiatives. On the one hand, we introduce social commerce feature richness as a new construct to represent the diversity of social media-based functionality on an e-commerce platform. The construct is derived from media richness theory and takes findings from prior studies regarding the design of social commerce initiatives into account. The construct helps to better understand how functionally richer sets of social commerce features can be conceptualized. On the other hand, we provide insights into the question whether e-commerce platforms can be made more successful by integrating functionally richer sets of social commerce features. Given the results of early studies, this question is of immediate interest, but has hardly been investigated until now. The developed research model illustrates how the social commerce feature richness affects consumers' buying intention via social factors. It provides a novel instrument that can be used to explain the unique effects that are generated by using functionally richer sets of social commerce features.

We proceed as follows: in the next section, we discuss the theoretical background underlying our study. In the third section, we develop our research model. In the fourth section, we describe the research methodology. The results of the controlled online experiment are presented in the fifth section. In the sixth section, we discuss the implications for academia and practice as well as the limitations that apply to our findings. In section seven, we conclude with a summary of the results and by highlighting future research directions.

Theoretical background

Social commerce

Definition and types of social commerce

Social commerce combines economic, social, and technological concepts. It has gained attention in various research disciplines, including information systems, marketing, sociology, and psychology (Huang and Benyoucef 2013; Zhou et al. 2013). Accordingly, current literature provides a variety of social commerce definitions (a list of definitions can be found in Wang and Zhang 2012). Out of them, we adopt the definition of Liang and Turban (2011, p. 6), who define social commerce as "a subset of e-commerce that involves using social media to assist in e-commerce transactions and activities".

By investigating how the use of social commerce features can help companies to increase the effectiveness of their e-commerce platforms, our study furthermore focuses on business-to-consumer scenarios. While several studies consider social commerce to be centered around businesses and consumers (Liang and Turban 2011; Wang and Zhang 2012; Yadav et al. 2013), it has to be pointed out that social commerce can also occur in consumer-to-consumer settings (Chen et al. 2016; Stephen and Toubia 2010). In addition, literature distinguishes between two major types of social commerce initiatives (Liang and Turban 2011): (1) initiatives, in which commercial features are added to social media platforms to facilitate transactions; and (2) initiatives, in which social media-based features are added to e-commerce platforms to facilitate social interactions and exchanges. We focus on the latter type of initiatives, in which social media-based features are integrated into e-commerce platforms.

Social factors in context of social commerce

The successful influencing of social factors is considered a core mechanism of social commerce initiatives (Baethge et al. 2016; Wang and Zhang 2012). Several studies have examined, which social factors can be affected by stimulating consumers' interactions with social commerce features, and how these factors in turn influence consumers' buying behavior. A structured overview of prior studies, the examined social factors and their effects can be found in Friedrich (2016) and Zhang and Benyoucef (2016). Based on the findings of prior studies, we decided to focus our analysis on the three social factors *social presence*, *social support*, and *social influence*, since each of them has been emphasized to significantly influence consumers' buying intention in more than one study (Bai et al. 2015; Kwahk and Ge 2012; Liang et al. 2011; Xi et al. 2016; Zhang et al. 2014). The selected factors hence seem to be important determinants for the success of social commerce initiatives.

According to Short et al. (1976, p. 65), *social presence* is "the degree of salience of another person in the interaction" and is considered as "being a quality of the communication medium". Based on their argumentation, it is assumed that communication media vary in their degree of social presence and that these variations are important in determining how individuals interact (Fulk et al. 1987; Short et al. 1976). Social presence has received considerable attention in the social commerce literature since social commerce platforms usually enable consumers to perceive each other and thus are accompanied by higher levels of social presence (Lu et al. 2016; Shen 2012; Zhang et al. 2014). In the according studies, social presence has been conceptualized as the sense of human warmth, sociability, and human contact that can be conveyed through a website.

Social support refers to "the information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations" (Cobb 1976, p. 300). Social support is considered as an

important determinant of an individual's well-being since humans have a fundamental need of frequent personal interaction or contact with someone who cares about their welfare and who likes and/or loves them (Baumeister and Leary 1995; Crocker and Canevello 2008). The social commerce literature contains evidence that social commerce platforms can also provide social support, especially informational support and emotional support (Hajli and Sims 2015; Liang et al. 2011; Zhang et al. 2014). Informational support refers to the information (e.g., advice, guidance, suggestions) given to someone for problem solving, while emotional support involves the provisioning of empathy, love, caring, and trust (House 1981).

Social influence is described as "the pressure that people perceive from important others to perform, or not to perform, a behavior" (Rivis and Sheeran 2003, p. 568). Following Deutsch and Gerard (1955), two types of social influence can be distinguished: normative social influence and informational social influence. In the social commerce literature, normative social influence has been conceptualized as the extent, to which consumers' buying decisions are based on the expectations of others, while informational social influence has been conceptualized as the extent to which consumers accept information provided by other consumers when making their buying decisions (Kwahk and Ge 2012; Lee et al. 2011; Xi et al. 2016).

Social commerce features and richness

Definition and classification of social commerce features

Social media applications, which can be integrated into websites as features, are an important technical enabler of social commerce (Wang and Zhang 2012; Zhou et al. 2013). We refer to them as *social commerce features* (Curty and Zhang 2013; Huang and Benyoucef 2015) and adopt the following definition: "A social commerce feature is a software artifact that is integrated into a website and provides a specific social media-based functionality to promote and support interactions among consumers" (Friedrich et al. 2016, p. 3). The term "functionality" thereby refers to the set of functions (or capabilities) that the social commerce feature can perform once it has been integrated into the website. On an e-commerce platform, the basic functionality of a rating and review tool, for instance, is to enable consumers to create and share subjective evaluations of products (Amblee and Bui 2011).

Today, several different types of social commerce features are available, which can vary significantly in functionality and can hence stimulate different forms of social interactions. To maintain an overview of the functionality that is provided by social commerce features, several classifications have been proposed in literature (Curty and Zhang 2013; Grange and Benbasat 2010; Huang and Benyoucef 2013). In the following, we refer to a reference

model for the design of social commerce platforms, which has been proposed by Huang and Benyoucef (2013). It groups social commerce features into four layers according to their basic functionality:

(1) The *individual layer* summarizes features, which mainly enable consumers to identify themselves and be recognized by others. Features such as social profile pages, which show a consumer's name and picture, belong to this layer. According to Huang and Benyoucef (2013), providing a sense of self identification is a basic functionality of social commerce platforms. The individual layer is hence also viewed as a facilitator to realize the other layers.

(2) The *conversation layer* contains social commerce features that primarily enable consumers to create content and make it available to others. Features like rating and review tools, which allow consumers to publish product evaluations, and like buttons, which enable them to express their appreciation of products, belong to this layer.

(3) The *community layer* comprises features that mainly support the building and/or maintaining of interactive relationships between consumers. It encompasses features such as community feeds, which enable consumers to stay informed of and discuss the shopping activities of others, or question and answer tools, which enable consumers to answer product-related questions of others.

(4) The *commerce layer* consists of social commerce features that are specifically provided to stimulate commercial transactions on social commerce platforms. This layer accordingly is made of features like social wish lists, which encourage others to buy a desired product, share buttons, which allow consumers to recommend shopping-relevant information to others, group buying tools, which allow consumers to collaboratively purchase products, or product recommendation tools, which propose products based on consumers' social interactions.

Social commerce feature richness

To conceptualize the functional diversity of a social commerce feature set, we introduce the *social commerce feature richness* as a new concept. We define social commerce feature richness as the *diversity of social media-based functionality that is provided by a set of social commerce features to stimulate interactions among consumers* (e.g., on an e-commerce platform). Our conceptualization of social commerce feature richness is based on the media richness theory, which broadly defines the richness of a communication medium as its capabilities to transmit information (Daft and Lengel 1986). This theory suggests that the ability of communication media to convey information, which is determined by the medium's features, can vary (Lengel and Daft 1988; Rice 1992). The broader the range of information that a medium can convey, the richer the medium is considered to be (Daft and Lengel 1986). Face-to-face communication, which includes speech, eye-contact, facial expression, and body

language, for instance, is considered a rich medium because it conveys a broad range of information. Written documents are considered a lean medium since they convey a limited range of information (Lengel and Daft 1988).

Modern e-commerce platforms typically provide several features (e.g., product descriptions, product images, navigation menus, etc.) that enable the transmission of information (Palmer 2002; Simon and Peppas 2004). The media richness concept characterizes the overall information transmission capabilities of such a platform, which result from all its features. In contrast, the concept of social commerce feature richness specifically refers to the range of social information that is transmitted by the social commerce features of the platform. Depending on their functionality, social commerce features can transmit different kinds of social information (Curty and Zhang 2013; Huang and Benyoucef 2013). Social profile pages, for instance, allow consumers to express themselves and to be recognized by others. Rating and review tools enable consumers to create and share their opinions about products. A platform that contains social commerce features with differing functionality (such as the before-mentioned ones) conveys a broader range of social information. Conceptually, the social commerce feature richness hence is defined by the functional diversity of the social commerce feature set and the kinds of social information it conveys.

Note that the social commerce feature richness of an e-commerce platform (or any website for that matter) does not necessarily correspond to the number of its features. Since there exist various social commerce features with similar functionality, adding a new feature to the platform does not automatically increase its social commerce feature richness. In a similar way to rating and review tools, for instance, like buttons enable consumers to express subjective opinions on products (albeit in condensed form). Adding like buttons to a platform that already provides a rating and review tool would hence increase the number of its features but not affect its social commerce feature richness. To increase the social commerce feature richness of the e-commerce platform, one would instead have to add social commerce features, which differ from the already incorporated ones in functionality.

To operationalize the abstract concept of social commerce feature richness and to better understand how it can be maximized on an e-commerce platform, additional knowledge is required about what constitutes differences in the functionality of social commerce features. As social commerce is still an emerging approach, this aspect is subject to ongoing research. Nevertheless, some approaches to classify social commerce features according to their characteristic functionalities already have been proposed (Curty and Zhang 2013; Grange and Benbasat 2010; Huang and Benyoucef 2013). As discussed in the last section, we adopt the reference model for the design of social commerce platforms (Huang and Benyoucef 2013) to show how social commerce features can be distinguished and combined according to their basic functionality. However, we emphasize that our conceptualization of social

commerce feature richness is not dependent on this reference model and could be operationalized using others as well.

The adopted reference model groups social commerce features into four layers according to their basic functionality (cf. previous section). Building upon this classification, we argue that the more layers a set of social commerce features encompasses, the more its functional diversity and hence its social commerce feature richness will increase. A set of social commerce features that encompasses the individual, conversion, and community layers will accordingly have a higher social commerce feature richness than a set, which only contains features of the individual and conversation layers. Augmenting a set with social commerce features from a layer, which is already covered, will accordingly increase the number of features, but leave the social commerce feature richness unchanged. Taking the reference model as a scale, we can hence measure the social commerce feature richness of a social commerce feature set as the number of functional layers that is covered by its features.

Research model and hypotheses development

Against this background, we develop a research model that links the social commerce feature richness to consumers' buying intention via social factors. In our research model, the independent variable is the *social commerce feature richness*. Investigating the effects of the social commerce feature richness is an important concern given the assumption that social commerce initiatives might be more effective if they use multiple social commerce features in combination (Curty and Zhang 2013; Huang and Benyoucef 2013).

The success of e-commerce platforms considerably depends on their ability to influence consumers' buying decisions (DeLone and McLean 2004; Kim and Lee 2002). The dependent variable in our research model therefore is represented by *consumers' buying intention*, which we use as a proxy for the actual buying behavior. Predicting consumers' buying behavior through their intention is common practice in the e-commerce and social commerce literature (Gefen et al. 2003; Pavlou and Fygenson 2006; Zhang and Benyoucef 2016). Note that buying intention in our context does not refer to the intention to buy a specific product. Consistent with prior studies in the e-commerce and social commerce domains, it instead refers to consumers' intention to use a specific commercial platform to buy products (Bai et al. 2015; Hsiao et al. 2010; Loiacono et al. 2007; van der Heijden et al. 2003).

Standing between the social commerce feature richness and consumers' buying intention, social factors represent the mediating variables in our research model. We decided to focus on social factors in this study since influencing these factors is considered a core mechanism in social commerce initiatives (Liang et al. 2011; Wang and Zhang

2012). Following the discussion in section 2, our research model includes the three social factors *social presence*, *social support*, and *social influence*. Figure 1 depicts the overall structure of our research model.

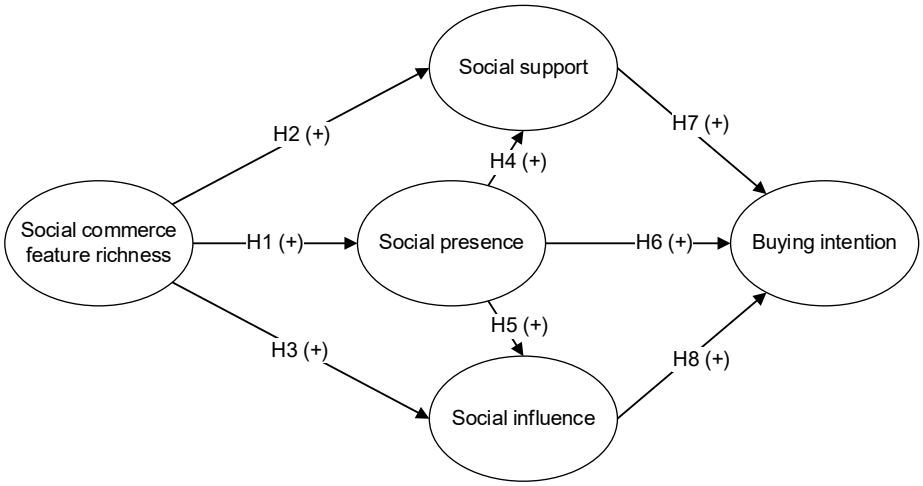

Figure 1 Research model

Effects of social commerce feature richness on social factors

Previous studies showed that incorporating socially rich design elements, such as human images, human videos, personalized greetings, or socially rich product descriptions, can significantly increase the social presence of an e-commerce platform (Cyr et al. 2009; Gefen and Straub 2003; Hassanein and Head 2007; Kumar and Benbasat 2002). Social commerce features also provide various means to incorporate socially rich design elements into e-commerce platforms (Curty and Zhang 2013). For instance, rating and review tools enable consumers to share their opinions and experiences about products with other consumers (Mudambi and Schuff 2010). Kumar and Benbasat (2006) found that websites incorporating rating and review tools can convey a greater sense of human contact and thus increase a website's level of social presence. Besides ratings and reviews, social commerce features can provide many other forms of socially rich design elements. Examples are lists of favorite products created and shared through social wish lists, recent activities of customers displayed in community feeds, or numbers of shares visualized through share buttons on product pages (Curty and Zhang 2013; Huang and Benyoucef 2015).

Consequently, if an e-commerce platform incorporates a greater diversity of functionally different social commerce features, such as combining a rating and review tool with social wish lists and a community feed, it seems plausible that the range of socially rich design elements will likewise increase. According to social presence theory, the level of social presence depends on the different types of social cues a communication medium can

convey (cf. section 2). It is hence likely that platforms, which provide a higher level of social commerce feature richness and accordingly convey different kinds of social information, will also be associated with a higher level of social presence. For this reason, we hypothesize:

H1: Social commerce feature richness is positively related to social presence.

Literature indicates that social commerce features can generate different forms of social support, that is, informational support and emotional support (Hajli 2016; Hajli and Sims 2015; Liang et al. 2011; Zhang et al. 2014). For instance, through rating and review tools or question and answer tools consumers can exchange valuable shopping information, which may help them solving shopping-related problems such as deciding, which product to buy (Hajli and Sims 2015). Moreover, consumers can also use social commerce features, such as like buttons or social wish lists, to express their interests and feelings and thus address emotional concerns, such as caring, understanding, or empathy (Liang et al. 2011).

Using social commerce features to provide consumers a personalized shopping experience can also generate social support. Specifically, Zhang et al. (2014) could show that a personalized web interface can increase the likelihood that consumers believe that the people behind the platform care about their interests, which resulted into higher levels of social support. Social commerce features provide various means to provide consumers a more personalized shopping experience (Kumar and Benbasat 2006). Using social product recommendation tools or community feeds, for instance, e-commerce platforms can display what other consumers with similar preferences bought to better address consumers' interests, support them in their decision-making, and thereby provide social support. By using functionally richer sets of social commerce features, e-commerce platforms can broaden the path, through which consumers can generate and receive different forms of social support. For instance, by combining rating and review tools with like buttons, consumers can not only exchange product knowledge (i.e., informational support), but also express their feelings by liking products (i.e., emotional support). Accordingly, we hypothesize:

H2: Social commerce feature richness is positively related to social support.

When consumers possess limited knowledge or perceive certain amounts of risk, it is likely that they will consider the experiences of other consumers before making a buying decision on an e-commerce platform (Lee et al. 2011). Moreover, consumers are more likely to trust information provided by other consumers than information provided by the company operating the platform (Chen and Xie 2008; Lee and Jin Ma 2012). If consumers rely on the information provided by other consumers, the effect is considered as informational social influence (Amblee and

Bui 2011; Lee et al. 2011). Social commerce features are considered an important instrument to generate informational social influence (Kim and Srivastava 2007). For instance, by enabling consumers to exchange their experiences about products, rating and review tools can help consumers to better assess the quality of products and/or services (Benlian et al. 2012; Mudambi and Schuff 2010). Further examples, which can be considered as forms of informational social influence, are product answers generated by question and answer tools, comments and advices generated through commenting tools, and product suggestions generated by discussion forums.

Social commerce features also have a potential to generate normative social influence (Kwahk and Ge 2012). For instance, to conform to the expectations of others, consumers might base their buying decisions on the likes on product pages generated through like buttons. Similar forms of social influence might also be generated if consumers consider other consumers' recent activities generated through community feeds or other consumers' favorite products generated through social wish lists when making their buying decisions. Putting the above-mentioned examples together, it can be argued that social commerce features can generate social influence in different ways. Consequently, if functionally different social commerce features are used in combination that convey different kinds of social information, it becomes likely that the generated amount of social influence will also increase. For instance, by combining rating and review tools with social wish lists and like buttons, consumers might not only consider the information provided by other consumers but also consider their shopping preferences, wishes, and expectations. Therefore, we hypothesize:

H3: Social commerce feature richness is positively related to social influence.

Effects between social factors

Generating social support through an e-commerce platform requires that the platform provides consumers with messages that involve supportive emotions and/or supportive information. Prior research has shown that social support is especially generated on websites that incorporate social media functionalities, such as social networking sites, online community sites, or social commerce websites (Ballantine and Stephenson 2011; Huang et al. 2010; Liang et al. 2011). By using features that facilitate social interactions, these websites typically provide a wide range of social cues and thus are associated with higher levels of social presence (Zhang et al. 2014; Zhu et al. 2010). According to these studies, it can be argued that if an e-commerce platform provides different socially rich design elements that enable consumers to perceive and to interact with each other in various ways, it is likely that the platform will also generate a greater amount of social support. Therefore, we hypothesize:

H4: Social presence is positively related to social support.

According to Latané (1981), the amount of influence between an individual and other people is considerably determined by three social forces: the number of people that are present, how important these people are to the individual, and how close in space and time these people are to the individual. With respect to social presence, research in the offline retail context could show that the mere presence of other individuals in a retail store can lead to higher levels of social influence (Argo et al. 2005). Accordingly, if an e-commerce platform enables consumers to perceive and to interact with each other and thus is associated with a higher level of social presence, it is likely that the platform will also generate a greater amount of social influence. Hence, we hypothesize:

H5: Social presence is positively related to social influence.

Effects of social factors on consumers' buying intention

Social presence is considered an important means to overcome the impersonal and transaction-focused nature of online shopping environments (Cyr et al. 2007; Hassanein and Head 2007). In the e-commerce domain, several studies could show that social presence can positively affect consumers' buying intention through factors such as perceived usefulness, perceived enjoyment, or trust (Animesh et al. 2011; Cyr et al. 2007; Gefen and Straub 2003; Hassanein and Head 2005; Weisberg et al. 2011). Similar results have also been found in the social commerce domain (Lu et al. 2016; Shen 2012; Zhang et al. 2014). As the results of these studies demonstrate, the higher the social presence of an e-commerce platform, the more likely it is that consumers will have positive attitudes towards the platform, resulting in an increased buying intention. Therefore, we hypothesize:

H6: Social presence is positively related to consumers' buying intention.

In the social commerce literature, several studies could show that social support can positively affect consumers' buying intention (Liang et al. 2011; Shin 2013; Zhang et al. 2014). In line with these studies, we argue that if a commercial platform gives consumers the impression that they will receive support from other consumers when needed, such as when consumers need help to decide between different products, it becomes more likely that consumers associate the platform with positive feelings, which increases the likelihood that consumers intend to buy from the platform. In line with prior social commerce studies, we therefore hypothesize:

H7: Social support is positively related to consumers' buying intention.

Solid evidence is also given that social influence, for instance generated through the information provided by other consumers or by confirming to other consumers opinions, can positively affect consumers' buying intention

(Kwahk and Ge 2012; Lee et al. 2011; Xi et al. 2016). Note that recent studies suggest to differentiate between positive and negative social influence (Baethge et al. 2017; Liu et al. 2016). Negative social influence is generated if consumers influence other consumers in a negative way, such as not to buy a specific product (e.g., via negative product reviews). Negative social influence can have a detrimental effect on consumers' intention to buy a specific product (Ballantine and Au Yeung 2015; Lee et al. 2008). In this study, however, we focus on consumers' intention to use a specific website and not to buy a specific product. In line with prior studies that also investigate buying intention with respect to website use (Kwahk and Ge 2012; Xi et al. 2016), we argue that social influence in general has a positive effect on buying intention. The positive effect seems reasonable because any form of social influence can help consumers to make buying decisions (Purnawirawan et al. 2015). For instance, positive as well as negative reviews can make it easier for consumers to decide whether to buy a specific product or not (Mudambi and Schuff 2010). Consequently, if an e-commerce platform enables consumers to generate social influence (either positive or negative), it can be assumed that consumers will more likely intent to use the platform. As any form of social influence can support consumers' buying decisions, we do not explicitly differentiate between positive and negative social influence. Following this argumentation, we hypothesize:

H8: Social influence is positively related to consumers' buying intention.

Research methodology

Experimental design

To evaluate our research model, we conducted a controlled online experiment. Choosing this experimental setting enabled us to manipulate the social commerce feature richness systematically, which would not have been possible in natural e-commerce environments. Moreover, this setting helped us to rule out the effect of exogenous variables as much as possible and hence to obtain measurements that are more accurate.

When designing our experiment, we closely followed recommendations of related experiment-based studies, which explore the effects of website features on the users' attitude (Brengman and Karimov 2012; Cyr et al. 2009; Hassanein and Head 2007; Kumar and Benbasat 2006). As treatment, we designed six different versions of an e-commerce platform, which we then provided to disjoint participant groups. The six platform versions only differed with respect to the social commerce features that were integrated. We based the integration of social commerce features to the platform versions on the reference model for the design of social commerce platforms developed

by Huang and Benyoucef (2013). This allowed us to increase the social commerce feature richness systematically by selecting social commerce features from different layers of the reference model. As control group, we also implemented a platform version without any social commerce features. We used this "zero" treatment condition to investigate if the absence of social commerce features indeed leads to the lowest effects on social factors.

According to Huang and Benyoucef (2013), social commerce initiatives should first address the individual and conversation layers of the reference model. For this purpose, the second platform version incorporated social profile pages and a rating and review tool. Social profile pages enable consumers to create their own profiles and to view the profiles of other consumers, which targets the individual layer of the reference model. Note that the individual layer is not represented as a separate treatment condition since it mainly offers basic functionality that is used by the other layers. Rating and review tools enable consumers to publish product evaluations, which addresses the conversation layer of the reference model. We refer to this version as the "low" treatment condition.

After the conversation and individual layers, social commerce initiatives should pay attention to the commerce layer (Huang and Benyoucef 2013). The third platform version hence incorporated social wish lists besides the rating and review tool and the social profile pages. By enabling consumers to encourage others to buy a desired product, social wish lists address the commerce layer. This version is labeled as the "medium" treatment condition.

To cover all four layers of the reference model (i.e., individual, conversation, community, and commerce layer), the fourth platform version incorporated a community feed in addition to social wish lists, a rating and review tool, and social profile pages. A community feed enables consumers to stay informed of and discuss the shopping activities of others. Such a functionality addresses the community layer of the reference model. This version represents the "high" treatment condition.

However, since Huang and Benyoucef (2013) did not empirically evaluate the suggested reference model, we were interested if we could further increase the effectiveness of our platform by extending the sheer amount of social commerce features. We therefore created two additional platform versions, in which some layers of the reference model were covered with more than one social commerce feature.

The first additional platform version, which represented an extension of the third platform version (i.e., medium condition), additionally incorporated share buttons besides social wish lists, a rating and review tool, and social profile pages. By enabling consumers to recommend shopping-relevant information to others, share buttons target the commerce layer of reference model. Like the third platform version, this version provided features for two of the three suggested layers of the reference model (i.e., individual, conversation, and commerce layer). However,

one layer (i.e., commerce) was covered with more than one social commerce feature. We refer to this version as the "medium-plus" treatment condition.

The second additional platform version, which represented an extension of the fourth platform version (i.e., high condition), additionally incorporated a product question and answer tool and share buttons besides a community feed, social wish lists, a rating and review tool, and social profile pages. Question and answer tools enable consumers to answer product-related questions of others and thus address the community layer of the reference model. Like the fourth platform version, this version covered all four layers of the reference model (i.e., individual, conversation, community, and commerce layer). However, two (i.e., the community and commerce) layers were equipped with more than one social commerce feature. This version is called the "high-plus" treatment condition.

Table 1 presents the different treatment conditions used in the experiment ordered by the provided level of social commerce feature richness. Figure 4 (see Appendix) provides screenshots of the different treatment conditions. Note that the platform was created in German language as we conducted the study with participants from Germany.

Table 1 Overview of treatment conditions

Treatment condition	Level of feature richness	Layers in reference model (Huang and Benyoucef 2013)	Level of feature amount	Integrated social commerce features
Zero	Zero	-	-	-
Low	Low	Individual Conversation	Normal	Social profile pages Rating and review tool
Medium	Medium	Individual Conversation Commerce	Normal	Social profile pages Rating and review tool Social wish lists
Medium-plus	Medium	Individual Conversation Commerce	Extended	Social profile pages Rating and review tool Social wish lists Share buttons
High	High	Individual Conversation Commerce Community	Normal	Social profile pages Rating and review tool Social wish lists Community feed
High-plus	High	Individual Conversation Commerce Community	Extended	Social profile pages Rating and review tool Social wish lists Share buttons Community feed Question and answer tool

Using a professional web-based platform to create our e-commerce platform enabled us to quickly integrate additional social commerce features using an app store and consequently allowed us to reproduce a realistic shopping scenario. To moreover provide a shopping domain with which the participants are familiar with, but where they might nevertheless appreciate additional information about the goods, we decided to create an online shop for unbranded gift gadgets. Following recommendations in literature, we deemed unbranded gift gadgets to be appropriate for the subsequent reasons (Lowry et al. 2008): first, their selection is partially based on social and emotional aspects; second, gift gadgets have a low financial risk; third, potential branding effects are avoided. Each version of the platform was filled with an identical set of gift gadgets to avoid potential biases arising from differences in the product portfolio. The set consisted of 42 gift gadgets that we took over from real platforms after acquiring permission. In addition, we generated all the information necessary to populate the social commerce features with content. The content was primarily generated based on information that we found on real platforms selling the gift gadgets. For instance, the content for the rating and review tool was generated from customer reviews provided on Amazon Germany (i.e., amazon.de). In so doing, we ensured that the platform provided participants an authentic shopping experience.

A pilot test was conducted prior to the experiment to verify that our setting worked as intended. Within that test, five participants carefully browsed, selected, and bought a product from each of the six versions of the e-commerce platform. Any problems that occurred were recorded and appropriate changes were made. Additionally, the participants verified that each platform version provided a different set of social commerce features, which indicated that our treatment conditions worked appropriately.

Scenario

Simulating a realistic e-commerce setting and following recommendations for related experiment-based studies, we designed a task that comprised browsing an e-commerce platform as well as selecting and buying a product (Brengman and Karimov 2012; Cyr et al. 2009; Hassanein and Head 2007). The entire experiment was conducted online and followed the procedure depicted in Figure 2.

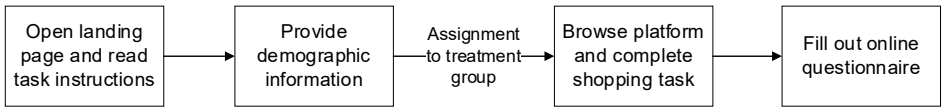

Figure 2 Experimental procedure

The participants first were directed to a landing page, which contained general instructions about the task as well an inquiry about relevant demographic information. Afterwards, the system automatically and randomly assigned the participants to one of the six treatment conditions and gave them access to exactly one of the six versions of the e-commerce platform. For instance, participants assigned to the low feature richness scenario did have access to the platform, in which social profile pages and a rating and review tool were implemented. The platforms' features and content were identical for all participants in that treatment condition.

As regards the task, participants were asked to select and buy a gift of their choice for a good friend's upcoming birthday party. The description of the task was adapted from Brengman and Karimov (2012). Participants were given an identical amount of virtual money (i.e., 20 EUR), which was enough to buy a gift of their choice. The participants had no time limit, i.e. they had as much time as they needed to browse the platform and select a gift. The platform as well as all included features were fully functional to enable the participants to interact with them. However, note that the shopping task did not require the participants to use any social commerce features. In so doing, we ensured that the shopping task was as realistic as possible and identical for all participants. Furthermore, we did not mention the social commerce features in the shopping task description to avoid any potential bias that might come from the participants' awareness of the treatment. After the participants completed the shopping task, they were directed to the online survey in which they had to rate the factors contained in our research model.

Measures

The social commerce feature richness represented the independent variable in our experimental setting. It was measured as categorical variable with four levels (i.e., zero, low, medium, high). We designed the levels in a way that each subsequent level comprised a functionally richer set of social commerce features based on the reference model proposed by Huang and Benyoucef (2013). Specifically, we selected features that address different layers of the reference model to increase the social commerce feature richness in a systematic manner. With respect to the statistical analysis, we followed recommendations in literature and converted the social commerce feature richness into a formative construct that consisted of three binary dummy variables, each representing one treatment level (Henseler et al. 2016). Using such dummy variables to represent the treatment conditions is also in line with other experimental-based studies (Chen et al. 2009; Cyr et al. 2009; Kamis et al. 2008). In addition, we asked the participants directly if they experienced the treatment manipulation, which is recommended to verify the manipulation of independent variables (Straub et al. 2004). For each social commerce feature, we accordingly asked: "Did you notice <social commerce feature> in this online shop?" (Brengman and Karimov 2012).

To measure the dependent variable (i.e., consumers' buying intention) and the mediating variables (i.e., social presence, social support, and social influence), we adapted validated scales from literature with minor wording changes to the context of our study. Social presence was measured using four items adapted from Gefen and Straub (2003), social support with five items adapted from Liang et al. (2011), social influence with four items adapted from Bearden et al. (1989) and Shen et al. (2010), and consumers' buying intention with three items adopted from Loiacono et al. (2007) and van der Heijden et al. (2003). We measured all items on a seven-point Likert scale. A list of the measurement items is provided in Table 6 (see Appendix).

In addition, we included several control variables to account for individual characteristics that might affect the social factors and the buying intention. Based on advice from literature, we measured the age, gender, internet usage duration, online shopping frequency, and social media usage duration of the participants (Mikalef et al. 2013; Pavlou and Fygenson 2006; Wakefield et al. 2010; Wells et al. 2011). Moreover, we included the feature amount as a control variable to account for potential effects that might be generated when covering layers of the reference model of Huang and Benyoucef (2013) with more than one social commerce feature. The variable was coded as a binary dummy variable to represent the two levels of feature amount (i.e., normal, extended) used in our experimental setting.

Subjects

We invited students of a large university in Germany as participants for the experiment. Even though substituting everyday users with students is sometimes put into question in literature, we decided to do so as students are highly familiar with online shopping and open to test new approaches (McKnight et al. 2002; Wells et al. 2011). Additionally, this enabled us to conduct the experiment in a controlled setting, which helped us to minimize the number of confounding variables. We invited students participating in our current lecture courses via an online learning platform of the university and personally during our lecture courses. As we wanted to recruit intrinsically motivated participants, we gave no incentive apart from a personal motivation.

Data analysis and results

Of 347 data sets in total, we retained 288 responses after sorting out incomplete data sets. In line with of Straub et al. (2004), we only included responses for our data analysis in which the participants correctly assessed the social commerce features provided in the e-commerce platform. For instance, in the zero-treatment condition, in which

no social commerce features were provided, we eliminated all responses where the participants noted that they perceived any social commerce feature. In so doing we could ensure that the participants' engagement was credible and that their assessment of the platform was valid. This left us with a total of 237 responses, of whom 150 (63.3%) were male and 87 (36.7%) were female. They were 24 years old on average and all studied computer science, information systems, or business administration in undergraduate or graduate programs. In the four groups, the number of participants ranged from 35 to 44. The demographic profile of the participants is illustrated in Table 2.

Table 2 Participants' demographic profile

Demographics	Category	Frequency (%)
Age	≤ 19	12 (5.1)
	20 - 29	215 (90.7)
	30 - 39	8 (3.4)
	≥ 40	2 (0.8)
Gender	Female	87 (36.7)
	Male	150 (63.3)
Internet usage duration (hours per day)	Less than 1	2 (0.8)
	1 - 2	39 (16.5)
	2 - 3	62 (26.2)
	3 - 5	94 (39.7)
	6 - 10	29 (12.2)
	More than 10	11 (4.6)
Online shopping frequency (times per month)	Never	4 (1.7)
	Less than 1	45 (19.0)
	1 - 2	89 (37.6)
	3 - 5	70 (29.5)
	6 - 10	21 (8.9)
	More than 10	8 (3.4)
Social media usage duration (hours per day)	Do not use social media	10 (4.2)
	Less than 1	78 (32.9)
	1 - 2	97 (40.9)
	2 - 3	44 (18.6)
	3 - 5	7 (3.0)
	More than 5	1 (0.4)

We conducted a one-way analysis of variance (ANOVA) to test if the participants were equally distributed for each of the demographic statistics. The results of the tests confirmed that there were no statistically significant differences between the treatment conditions as far as age ($F = 0.770$, $p > 0.1$), gender ($F = 1.182$, $p > 0.1$), internet usage duration ($F = 0.897$, $p > 0.1$), online shopping frequency ($F = 0.665$, $p > 0.1$), and social media usage duration ($F = 0.385$, $p > 0.1$) were concerned. Accordingly, the random assignment of participants across the treatment conditions was successful in terms of participant characteristics.

To analyze our theoretical model, we employed partial least squares (PLS) with SmartPLS 3 (Ringle et al. 2015). As our model is comparably complex and includes various control variables, we deem PLS structural equation modeling (PLS-SEM) to be appropriate. In particular, PLS is often referred to have the advantage to be more stable to non-normal distributed data than other (co-)variance based approaches (Chin 1998). With 237 participants, our sample size is sufficient for a robust PLS calculation considering the number of variables and paths in our model (Chin 1998; Hair et al. 2012). Note that social commerce feature richness is modelled as formative construct that consists of three binary dummy variables to capture the four different treatment levels (cf. section 4). The remaining variables are modelled as reflective constructs.

Reliability and validity testing

We began our analysis with various tests to check the reliability and validity of our measurement model. First, we tested for common method bias since all reflective items were collected from the same questionnaire. We therefore conducted a Harman's one-factor test and ran an exploratory factor analysis. The result shows four factors with eigenvalues greater than 1, which account for 78.51% of the total variance. The first factor captures 42.06% of the variance, which is below the 50% threshold as recommended by Podsakoff et al. (2003). This indicates that our data is not likely to be affected by common method bias.

Table 3 Construct reliability and convergent validity statistics

Construct	Item	Mean	Std. dev.	Item loading	Cronbach's alpha	Composite reliability	AVE
Social presence (SP)	SP1	3.461	1.742	0.901	0.937	0.955	0.841
	SP2	3.129	1.603	0.950			
	SP3	3.134	1.671	0.922			
	SP4	2.776	1.636	0.894			
Social support (SS)	SS1	4.157	1.479	0.854	0.891	0.920	0.696
	SS2	4.261	1.574	0.864			
	SS3	4.775	1.395	0.807			
	SS4	4.207	1.572	0.867			
	SS5	4.136	1.593	0.776			
Social influence (SI)	SI1	3.382	2.130	0.870	0.881	0.918	0.737
	SI2	3.545	2.133	0.884			
	SI3	3.664	2.047	0.855			
	SI4	3.578	1.964	0.824			
Buying intention (BI)	BI1	5.056	1.445	0.895	0.914	0.946	0.853
	BI2	4.714	1.602	0.952			
	BI3	4.245	1.583	0.924			

To further validate the reflective measures, we calculated the construct reliability as well as the convergent and discriminant validity. Table 3 summarizes the results of the reliability and convergent validity testing. As shown, the Cronbach's alpha and composite reliability values are consistently higher than the suggested threshold of 0.7 (Nunnally 1978; Rivard and Huff 1988; Werts et al. 1974). This indicates good construct reliability. For convergent validity, all item loadings are above the recommended value of 0.7 (Gefen et al. 2000). Moreover, all average variance extracted (AVE) values are above the desired threshold of 0.5 (Fornell and Larcker 1981). This suggests adequate convergent validity.

Table 4 illustrates the results of the discriminant validity testing. As shown, the square roots of all AVE values are higher than the recommended value of 0.707 and exceed the correlations to the other constructs, which suggests adequate discriminant validity (Gefen et al. 2000).

Table 4 Discriminant validity statistics

Construct	SP	SS	SI	BI
Social presence (SP)	**0.917**			
Social support (SS)	0.544	**0.834**		
Social influence (SI)	0.269	0.316	**0.858**	
Buying intention (BI)	0.311	0.355	0.323	**0.924**

Bold numbers are the square root of the AVE.

To validate the formative measure (i.e., social commerce feature richness), we examined the weights and the variance inflation factor (VIF) values of the three formative items (i.e., the three binary dummy variables) (Cenfetelli and Bassellier 2009). All item weights are significant (0.479, $p<0.05$; 0.985, $p<0.001$; 1.374, $p<0.001$). Moreover, the VIF values do not exceed the recommended threshold of 5 (1.810, 2.159, 2.082), which suggests that multicollinearity is not likely a concern (Hair et al. 2011).

Hypotheses testing

Following the suggestions of Hair et al. (2011), bootstrapping with 5.000 subsamples was performed to test the statistical significance of each path coefficient. Note that PLS-SEM does not generate an overall goodness-of-fit index. Therefore, model validity is primarily assessed by examining the structural path and the R^2 values (Chwelos et al. 2001). The results of the PLS analysis are shown in Figure 3. All control variables (i.e., age, gender, internet usage duration, online shopping frequency, social media usage duration, and feature amount) were included in the PLS analysis. For readability, Figure 3 illustrates only the significant effects of the control variables.

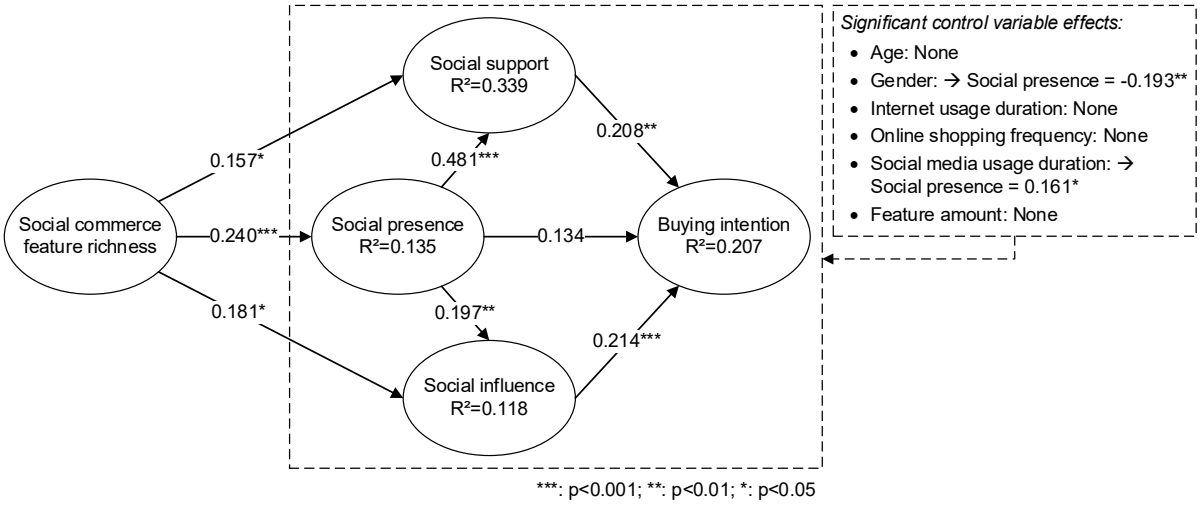

Figure 3 PLS results

Social commerce feature richness has a significant positive effect on social presence (0.240, $p<0.001$), social support (0.157, $p<0.05$), and social influence (0.181, $p<0.05$). Thus, hypotheses H1-H3 are supported. Social presence significantly influences social support (0.481, $p<0.001$) and social influence (0.197, $p<0.01$), thus lending support for hypotheses H4-H5. Buying intention is significantly influenced by social support (0.208, $p<0.01$) and social influence (0.214, $p<0.001$), which supports hypotheses H7-H8. However, H6 was not supported since the effect of social presence on buying intention was not significant (0.134, $p>0.05$). Table 5 summarizes the results of the hypotheses testing.

Referring to the R^2 values, social commerce feature richness combined with the control variables explain 13.5% of the variance of social presence. Furthermore, social commerce feature richness combined with social presence and the control variables explain 33.9% of the variance of social support and 11.8% of the variance of social influence. In addition, social presence, social support, social influence, and the control variables explain 20.7% of the variance of buying intention. As recommended by literature, all R^2 values exceed the threshold level of 0.10 (Falk and Miller 1992).

The results of the control variables show that gender (i.e., male participants) has a significant negative effect on social presence (-0.193, $p<0.01$). In addition, social media usage duration has a significant positive effect on social presence (0.161, $p<0.05$). All other effects of the control variables are non-significant. This particularly applies to the feature amount. Table 7 (see Appendix) illustrates the effects of all control variables, including the non-significant effects.

Table 5 Results of hypotheses testing

Hypothesis	Path coefficient	t-value	Supported
H1: Social commerce feature richness → Social presence	0.240***	3.484	Yes
H2: Social commerce feature richness → Social support	0.157*	2.458	Yes
H3: Social commerce feature richness → Social influence	0.181*	2.390	Yes
H4: Social presence → Social support	0.481***	10.031	Yes
H5: Social presence → Social influence	0.197**	3.028	Yes
H6: Social presence → Buying intention	0.134	1.798	No
H7: Social support → Buying intention	0.208**	2.596	Yes
H8: Social influence → Buying intention	0.214***	3.518	Yes

***: $p<0.001$; **: $p<0.01$; *: $p<0.05$.

Discussion

Key findings

Based on the media richness theory, we proposed the concept of social commerce feature richness to characterize the diversity of the functionality that an e-commerce platform provides by the set of social commerce features it incorporates. The results of our study show that the social commerce feature richness is a determinant for the effectiveness of the e-commerce platform, as it positively affects the buying intention of consumers. More specifically, we found that the social commerce feature richness positively affects the three examined social factors social presence, social support, and social influence. Whereas social presence seems to stimulate the other two factors social support and social influence, the latter unfold a significantly positive effect on consumers' buying behavior.

These findings support our assumption that an e-commerce platform with a higher social commerce feature richness can stimulate social interactions among consumers more effectively, since it conveys different kinds of social information. As a result, the platform seems to convey a higher sense of human warmth and sociability to its users (social presence). A higher level of social commerce feature richness moreover appears to increase consumers' feeling that others will support them in their decision-making if needed. The e-commerce platform thus conveys a greater sense of caring (social support). As a consequence of the more intensive interactions, it also seems more likely that consumers consider the information provided by others and conform to their expectations and preferences (social influence). Both the increased social support and the higher level of social influence make it more likely that consumers will buy from the platform. The results of our study hence indicate that increasing a

platform's social commerce feature richness can be a viable strategy to strengthen the effect of social commerce initiatives.

The results of our study furthermore show that adding social commerce features with a functionality similar to those already incorporated in the platform does not produce a significant effect on the examined social factors and, accordingly, consumers' buying intention. In the conducted experiment, significant effects could only be observed when social commerce features were added, which differed from the others in functionality. These findings suggest that merely maximizing the amount of social commerce features is probably not an advisable strategy to strengthen the effect of social commerce initiatives. It rather seems to be crucial to maximize the amount of provided functionality, which is characterized by the social commerce feature richness of the platform. Compared to the number of social features, the introduced concept of social commerce feature richness hence seems to provide a more suitable measure to maximize the effectiveness of social commerce initiatives.

To show how the social commerce feature richness can be measured and systematically increased on e-commerce platforms, we built upon the reference model proposed by Huang and Benyoucef (2013). It classifies social commerce features into four layers of different basic functionalities. While we did not specifically aim at verifying this reference model, the results of our study show that the effects on social factors and consumers' buying intention increase when augmenting a platform with social commerce features from different layers. With respect to the reference model, we could hence confirm that a social commerce strategy might indeed be most effective if it covers all layers with features. Moreover, we found that covering individual layers with more than one feature did not generate a significant effect. Together with the before-mentioned observation, this finding corroborates that the layers of the reference model can serve as a scale to measure a platform's social commerce feature richness. Yet, as we did not examine other classifications of social commerce features, alternative scales might exist as well.

Coming back to the effect of the examined social factors, we were surprised not to find a significant effect of social presence on consumers' buying intention. Instead, we found that social support and social influence fully mediate the relationship between social presence and consumers' buying intention. This finding indicates that enabling consumers to perceive each other and to interact with each other, which is reflected by social presence, does not yet affect their buying intention on its own. Social presence rather seems to act as a facilitator that unfolds a positive impact on social support and social influence. Although we found its direct effect on consumers' buying intention to be non-significant, social presence should hence nevertheless be considered as an important factor that can determine the success of social commerce initiatives. As our analysis of demographic data indicates, social presence seems to be particularly felt by female participants and frequent users of social media applications. The

observation seems plausible, since women are considered to be more attentive to social cues (Croson and Gneezy 2009; Cyr et al. 2007). There might be a similar receptivity to social presence in individuals, who are frequently using social media applications and thus might be more oriented towards seeking human contact and sociability.

Implications for academia

Our study yields several implications for academia. First, and most importantly, we provide a new conceptual basis that helps to better understand the effects of combining multiple social commerce features, which has been identified as an important determinant for the success of social commerce initiatives but hardly been studied systematically yet (Curty and Zhang 2013; Huang and Benyoucef 2013). With the social commerce feature richness, we introduce a new concept that characterizes the diversity in social media-based functionality, which is provided by a set of social commerce features. The concept is rooted in the media richness theory and explains the functional richness of a set of social commerce features in terms of its capabilities to convey different kinds of social information.

While the media richness theory describes the overall ability of a communication medium (e.g., an e-commerce platform) to convey information, the social commerce feature richness specifically describes the ability of a set of social commerce features to transmit different kinds social information. So far, studies that investigated consumers' buying intention on e-commerce platforms through the lens of the media richness theory mainly focused on the effects of general product information (Jahng et al. 2007; Simon and Peppas 2004). The social commerce feature richness introduces a new lens to analyze the effects of social information that is generated and shared by consumers. It conceptually differs from media richness by means of its specific perspective.

Second, we provide empirical evidence that increasing the social commerce feature richness and hence the range of conveyed social information is an effective strategy to increase the success of social commerce initiatives. Based on the results of our study, we can also delimit the concept of social commerce feature richness from the number of features as a potentially competing concept. We found that increasing the number of social commerce features without raising the feature richness does neither increase the examined social factors nor consumers' buying intention. As we only achieved such effects when raising the social commerce feature richness, this concept hence seems to be responsible for the observed outcomes.

With respect to the observed outcomes, we found that the social commerce feature richness positively affects social presence, social support, and social influence. While the effect of social commerce features on these factors has

already been examined, prior studies have not considered feature combinations (Hajli and Sims 2015; Kumar and Benbasat 2006; Liang et al. 2011; Zhang et al. 2014). Regarding the effects of the social factors, prior studies found that social presence can positively affect consumers' buying intention through factors such as perceived usefulness, perceived enjoyment, and trust (Cyr et al. 2007; Gefen and Straub 2003; Hassanein and Head 2005). To our best knowledge, however, the effects of social presence on social support and social influence have not been considered so far. We hence also provide novel contributions to the research stream that investigates how social presence affects consumers' buying intention (Lu et al. 2016; Shen 2012; Zhang et al. 2014). Specifically, we could show that social presence does not have a direct impact on consumers' buying intention but indirectly influences it through its effect on social support and social influence. By showing that social support and social influence have a significantly positive effect on consumers' buying intention, our results furthermore corroborate previous findings (Hajli and Sims 2015; Liang et al. 2011; Zhang et al. 2014; Zhang and Benyoucef 2016).

Third, we demonstrated how the social commerce feature richness can be operationalized and measured using the functional layers of the reference model proposed by Huang and Benyoucef (2013) as a guideline. Although it was not the aim of the study to evaluate the model, the results indicate that adding features of different functional layers contributes to increasing the social commerce feature richness while adding features of the same layers does not. The results of our study hence corroborate and empirically substantiate the relevance of the functional layers of the reference model. While we found that the functional layers of the reference model provide a scale to measure the social commerce feature richness of a platform, more refined functional classifications of social commerce features might exist outside the scope of this study. We therefore ensured that the concept of social commerce feature richness can also be operationalized by using other taxonomies.

Implications for practice

The results of our study also have implications for practice. With the increasing popularity of social commerce, a broad variety of social commerce features has been made available and can be integrated into e-commerce platforms. Companies therefore need to better understand if and how social commerce features should be used in combination on their platforms to maximize the success of social commerce initiatives. With the concept of social commerce feature richness and its operationalization based on the reference model for the design of social commerce platforms, this study explains how social commerce features can be combined efficiently. Most importantly, our findings indicate that platform operators should not simply aim at increasing the number of social

commerce features to maximize the effect on consumers' buying intention. Instead, they should combine features that differ in functionality and hence can convey different kinds of social information.

The results of our experiment, for instance, show that adding like buttons to a platform that already contains a rating and review tool does not increase the effect of a social commerce initiative, since both features are similar in functionality (i.e., they both allow consumers to express subjective opinions on products). Adding features that differ with respect to their basic functionality (such as a community feed) increases the effect of the social commerce initiative, however. By taking the functional layers of the above-mentioned reference model or another feature classification as a benchmark, platform providers can hence select a minimalistic feature set that maximizes the social commerce feature richness and, accordingly, the effect on consumers' buying intention. Since providing multiple social commerce features can cause social overload (Olbrich and Holsing 2011), such a minimalist approach also appears to be the most appropriate way to balance the intended effectiveness of social commerce strategies and the resulting social load on the platform.

As the social interactions stimulated among consumers are an important part of the mechanism of social commerce initiatives, companies should aim at strengthening them by integrating functionally richer sets of social commerce features into their e-commerce platforms. Apart from using functional classifications such as the above-mentioned reference model, desirable functionalities of social commerce features can basically also be identified based on the stimulated social factors. Accordingly, companies should ensure that the selected social commerce features convey a sense of human warmth and sociability to enhance social presence. The selected features should also enable consumers to generate supportive messages to increase social support. Finally, they should enable consumers to consider the information and/or behavior of other consumers to generate social influence.

Companies furthermore ought to stimulate consumers to frequently use these features to interact with each other and to generate socially rich content. Frameworks such as the customer engagement cycle developed by Sashi (2012) might help to find out how customers can effectively be turned into supportive advocates.

Limitations

Although we have taken several precautions to enhance the validity of our findings, the presented study is not without limitations. First, we conducted our experiment in a laboratory setting. While this allowed us to manipulate the social commerce feature richness in a systematic manner and to control all other variables as much as possible, the results of a real-world setting might nevertheless differ. However, we tried to simulate a realistic case as much

as possible to increase the external validity of our findings. To enhance the validity of our independent variable, we decided to directly ask if the participants correctly experienced the treatment manipulation. Participants that did not correctly assess the social commerce features provided in the e-commerce platform were excluded from the data set. Note that website features do not necessarily need to be consciously perceived by consumers to trigger a reaction (Ahn and Lee 2012; Brengman and Karimov 2012). It is thus possible that the participants who were excluded from our data set were nevertheless affected by them. However, since we could not make use of advanced tracking mechanisms such as eye tracking or EEG, we were not able to objectively determine whether a participant might have experienced a social commerce feature. Accordingly, we followed recommendations in literature and asked the participants directly if they perceived the treatment condition (Straub et al. 2004). Future studies should ideally complement our findings with field data and verify them by making use of advanced control mechanisms.

Second, the participants of our study consisted solely of students from a German university. Consequently, we were not able to examine demographic and/or cultural differences, which can have a significant impact in the e-commerce domain (Cyr 2008; Moon et al. 2008; Ng 2013; Pavlou and Chai 2002). Additionally, by choosing students as participants, we are not able to generalize the reported effects to other types of customers. As our experiment was based on a fictitious company that sells unbranded gift gadgets, we moreover cannot claim that the reported effects apply for social commerce scenarios in general. Finally, the participants had never seen the platform before and hence acted as first-time buyers. As social interactions and relationships, which are reflected by social factors, typically develop over time, we recommend to further investigate the effects of the social commerce feature richness on social factors in longitudinal studies.

Third, we only incorporated six different social commerce features into our experiment. While we carefully selected the features and systematically varied the level of social commerce feature richness based on the reference model of Huang and Benyoucef (2013), there exist additional features that we did not examine. Most prominently, we left out social commerce features that require group interactions, such as live chat tools or group buying tools. However, to examine such features, we would have had to ensure that the participants simultaneously browse the platform. This would have required a much more restrictive experimental setting, which would have interfered with our goal to design the experiment as realistically as possible. It should additionally be noted that the reference model, which helped us to determine the implementation order of features, has not been empirically evaluated so far and only makes suggestions about the order of abstract design layers. For instance, the reference model suggests that every social commerce initiative should start by addressing the individual and conversation layers. However, the reference model does not suggest if one should for instance do so by implementing rating and review tools or

like buttons, which both address the conversation layer. Future studies are hence encouraged to examine the effects of different implementation orders of social commerce features in more detail.

Conclusion

To provide consumers a more interactive shopping experience and to increase sales volumes, many companies are integrating social commerce features into their e-commerce platforms. By providing multiple social commerce features in combination, e-commerce platforms might support the generation and sharing of a broader variety of social information and hence strengthen the effect of social commerce initiatives. Yet, literature so far has not considered if and how social commerce features should be provided in combination and how this impacts consumers' buying intention. With the study presented in this manuscript, we emphasize that social commerce initiatives should focus on combining social commerce features, which differ in functionality. Social commerce features should hence not be combined to increase the number of features, but to increase the functional diversity that a set of social commerce features provides. Our results suggest that increasing the social commerce feature richness on an e-commerce platform can positively influence consumers' buying intention via social presence, social support, and social influence. Our findings hence lend support to so far unproven hypotheses that social commerce features might better work in concert (Huang and Benyoucef 2013), albeit only if they differ in functionality. Accordingly, using functionally richer sets of social commerce features can be an effective strategy to stimulate the buying intention of consumers.

With the construct of social commerce feature richness, we provide a new theoretical construct to characterize the functional diversity of a set of social commerce features that is integrated into an e-commerce platform. The developed research model moreover provides a novel instrument that can be used to explain the effects that are generated by functionally richer sets of social commerce features. Despite existing limitations, in the light of which our results ought to be interpreted, our study hence provides novel insights that inform the design and implementation of social commerce initiatives as well as research endeavors to study their effects.

Future research could verify our results in different contexts or study the effects of the social commerce feature richness on additional factors, such as perceived usefulness, perceived enjoyment, or trust, which can be integrated into the presented research model. Higher levels of social commerce feature richness may also induce negative side effects, such as social overload or fatigue effects, which could be addressed by future research (Park and Lee 2008). As we kept the content provided by a social commerce feature identical across the treatment conditions,

future studies could also investigate the effects of varying content in more detail and, for instance, examine the effects if either positive or negative product reviews are provided. In addition, future research should focus on developing more refined categorizations of social commerce features based on the provided functionality and the conveyed kind of social information. While the reference model chosen in our study provides a first approach, it broadly concentrated on the basic functionality of features. On social commerce platforms, consumers moreover can also perform other activities than purchasing products, which include participating in the community, sharing information with other consumers, or seeking for information from other consumers (Zhang and Benyoucef 2016). Consequently, future studies could enrich our findings by also taking different consumer activities into account. With the study presented in this manuscript, we hope to provide a starting point for such endeavors.

Appendix

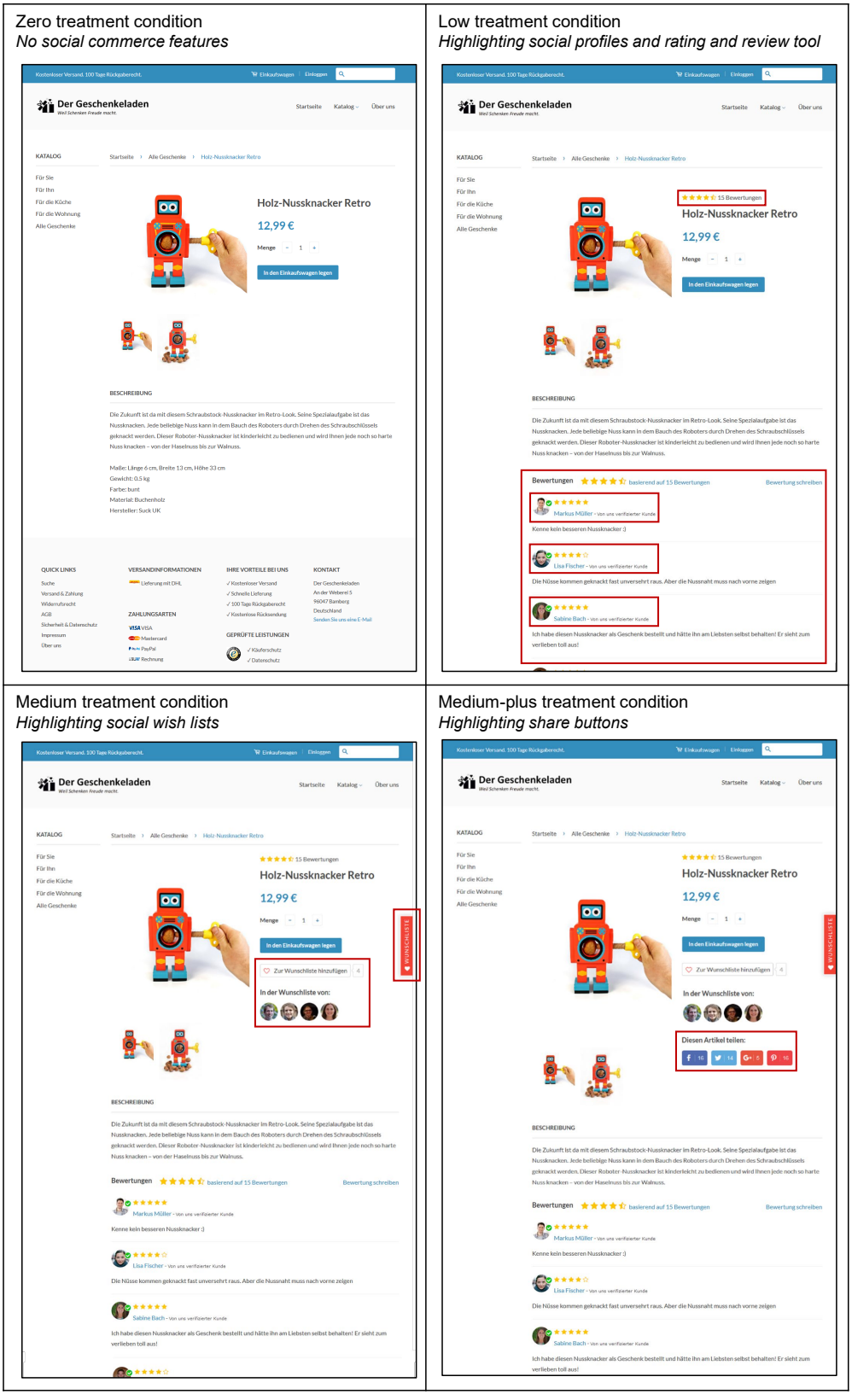

Figure 4 Screenshots of treatment conditions (product page examples)

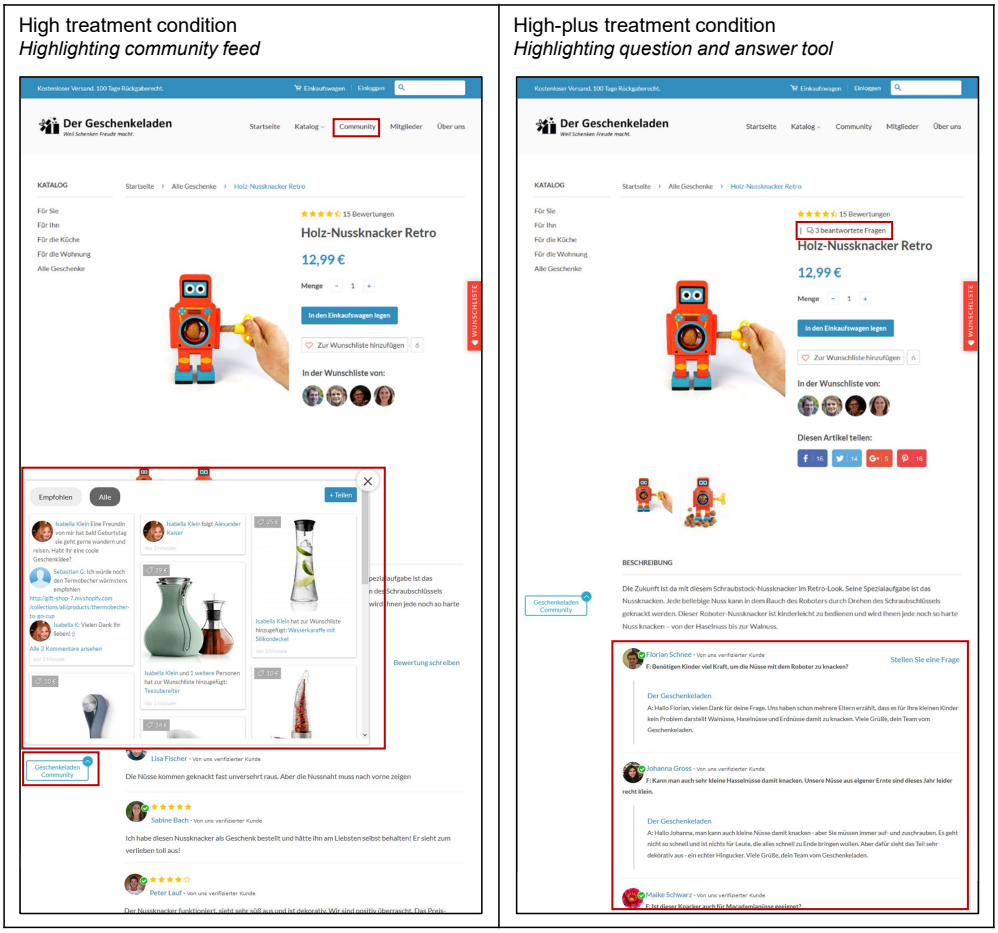

Figure 4 (continued)

Table 6 Survey instrument

Construct	Item
Social presence (SP)	*Adapted from Gefen and Straub (2003):*
	SP1: There is a sense of human contact in this online shop.
	SP2: There is a sense of personalness in this online shop.
	SP3: There is a sense of sociability in this online shop.
	SP4: There is a sense of human warmth in this online shop.
Social support (SU)	*Adapted from Liang et al. (2011):*
	SU1: I think that other customers would make suggestions for gifts.
	SU2: I have the impression that other customers would give me advice when selecting a gift.
	SU3: I think that other customers would give me information about the gifts.
	SU4: I think that other customers would show an interest in helping me to select a gift.
	SU5: I think that other customers would listen if I would report problems during the selection of a gift.

Social influence (SI)	*Adapted from Bearden et al. (1989) and Shen et al. (2010):*
	SI1: During the selection of a gift, I searched for information provided by other customers.
	SI2: During the selection of a gift, I oriented myself according to the opinion of other customers.
	SI3: It was important for me to know which gifts appealed to others.
	SI4: I chose a gift, which I assumed to be popular among other customers.
Buying intention (BI)	*Adapted from Loiacono et al. (2007) and van der Heijden et al. (2003):*
	BI1: I would consider buying gifts from this online shop.
	BI2: If I need a gift in the future, I would probably revisit this online shop.
	BI3: If I need a gift in the future, I would probably buy it from this online shop.
Manipulation check items	*Adapted from Brengman and Karimov (2012):*
	1. Did you notice other consumers' profiles in this online shop?
	2. Did you notice product ratings and reviews in this online shop?
	3. Did you notice social wish lists in this online shop?
	4. Did you notice share buttons in this online shop?
	5. Did you notice a community feed in this online shop?
	6. Did you notice product questions and answers in this online shop?

Table 7 Effects of control variables

Path	Path coefficient	t-value
Age → Social presence	0.009	0.148
Age → Social support	0.040	0.628
Age → Social influence	-0.047	0.608
Age → Buying intention	0.068	0.834
Gender → Social presence	-0.193**	2.826
Gender → Social support	-0.038	0.692
Gender → Social influence	-0.081	1.141
Gender → Buying intention	0.021	0.328
Internet usage duration → Social presence	-0.039	0.549
Internet usage duration → Social support	-0.052	0.730
Internet usage duration → Social influence	0.035	0.426
Internet usage duration → Buying intention	0.084	1.148
Online shopping frequency → Social presence	0.081	1.268
Online shopping frequency → Social support	-0.067	1.204
Online shopping frequency → Social influence	0.074	1.122
Online shopping frequency → Buying intention	0.017	0.267
Social media usage duration → Social presence	0.161*	2.280
Social media usage duration → Social support	0.116	1.717
Social media usage duration → Social influence	0.025	0.346
Social media usage duration → Buying intention	0.028	0.421
Feature amount → Social presence	-0.022	0.307
Feature amount → Social support	-0.003	0.046
Feature amount → Social influence	0.000	0.005
Feature amount → Buying intention	0.041	0.653

***: $p<0.001$; **: $p<0.01$; *: $p<0.05$.

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