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2016	503	1.320	1.220	2.372	0.476	21	5.3	>10.0	0.00...	0.372	100.00	0.06...	33.870
2015	346	1.275	0.960	1.741	0.083	24	5.5	8.6	0.00...	0.347	100.00	0.06...	47.578
2014	352	1.773	0.931	2.020	0	26	5.4	8.8	0.00...	0.319	96.15	0.05...	67.286
2013	242	1.632	0.578	1.663	0.320	25	4.6	6.7	0.00...	0.268	100.00	0.04...	61.084
2012	208	1.553	0.578	Not A...	0.053	19	5.7	7.7	0.00...	Not ...	94.74	Not ...	63.003
2011	119	0.971	0.942	Not A...	0	19	5.3	8.4	0.00...	Not ...	94.74	Not ...	41.855
2010	110	0.552	0.552	Not A...	0.053	19	6.2	7.8	0.00...	Not ...	94.74	Not ...	18.044

Does friendship quality matter in social commerce? An experimental study of its effect on purchase intention

Qi Li¹ · Ni Liang¹ · Eldon Y. Li^{2,3}

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Abstract Friendship plays a critical role in social commerce in contemporary societies. This study aims to theorize and examine how friendship quality impacts purchase intention. Product-related risk is introduced to gain insight into its moderating effects on intention to purchase from three different seller groups. Through empirical evidence, we confirm that friendship quality has positively effect on purchase intention. In particular, friends with high friendship quality (i.e., good friends) are more conducive to selling high-price high-risk products. However, friends with low friendship quality (i.e., simple friends) are not as attractive as strangers having good user reviews (i.e., reputable strangers). In other words, people are more willing to buy from reputable strangers than from simple friends. Theoretically, these results contribute to a better understanding of the effect of friendship quality on purchase intention. Finally, this research offers several practical implications for developing successful businesses in social commerce.

Keywords Social commerce · Friendship quality · Good friends · Simple friends · Strangers · Purchase intention · Product-related risk

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1 Introduction

The advent of Web 2.0 technology has catalyzed the rapid and dramatic growth of the digital economy. Recently, a new e-commerce model, social commerce (SC), has attracted wide attention from both academia and industry [31, 45]. As a subset of e-commerce [26], it leverages social media (SM) and Web 2.0 technologies to support social interaction and information exchange among social-network members (either business or individual, or both), and assist them in online buying and selling of products and services [71]. On an SM platform, such as Facebook, Twitter, and LinkedIn, each consumer can form a social network with three levels of tie strength (see Fig. 1): strong, weak, and potential. Tie strength is the degree of dyadic interpersonal relationships in social networks, including closeness, intimacy, support, and association [60]. Kavanaugh et al. [35] define *strong ties* as members having high degrees of trust, bonding social capital, and intensive daily contacts for support and mutuality within a homogeneous and exclusive community. In contrast, *weak ties* comprise members who have low degrees of trust, share less information, and bridge social capital to link homogeneous groups and integrate them into one

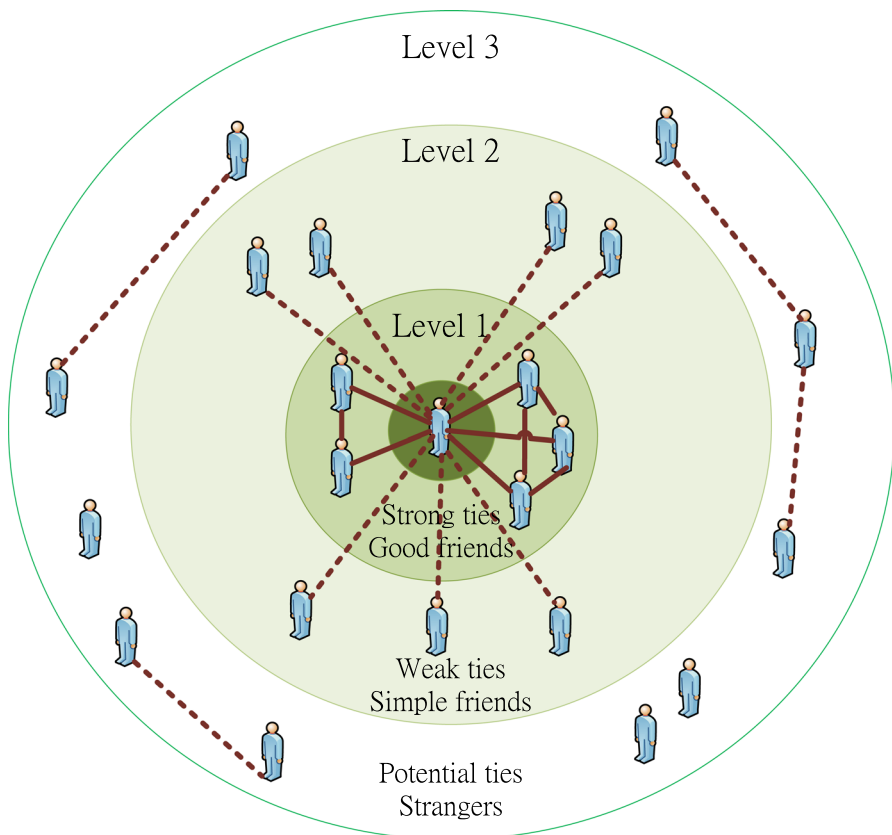


Fig. 1 Levels of ties in a consumer's social network

social environment. The former group includes immediate or extended kin, and intimate friends or neighbors; whereas, the latter consists of non-intimate relatives, acquaintances, and co-workers. Lastly, *potential ties* are people whose names one may or may not know on or off the network. Similarly, Grayson's [22] measures the preexisting relationship at three levels: (1) close friend; (2) acquaintance; and (3) do not know the person at all, corresponding to the three levels of tie strength. All these ties maintain different levels of friendship quality. This quality comes from the opportunities provided to users by SM platforms such as social interaction, exposure of self-information, and sharing of interests that often serve as the basis for friendship building [63]. As tie strength reflects friendship quality, one may regard those who have strong ties as *good friends* (Grayson's close friends) and weak ties as *simple friends* (acquaintances); and those who are not yet connected as friends on the social network are potential ties and can be treated as *strangers* (unknown persons).

Based on social learning theory [2], members in a social network acquire knowledge through observing or socializing with other members outside media influences. When a person does not know what to behave under a certain situation, he or she will look to other people to imitate what they are doing and to provide guidance for his action [13]. The process by which a person acquires the knowledge, skills, and dispositions that makes him or her more or less an able member of a collective is called "socialization" [7, p. 3]. Through socialization, the collective attracts or loses members as seen in a social network. Within a social network, exchanging resources and knowledge often happen; but members tend to repeat such exchange actions only when they are fairly rewarded and a long-term relationship (or trust) is formed by the fairness of exchanges [48]. This phenomenon has been explained by social exchange theory [30]. As a social network lives on, it becomes an ecosystem. Members with trusting relationship in the network could obtain useful resources or knowledge from their collectives, known as social capital [49]. Given the ecosystem of a social network, marketing activities in SC must target consumers in this system according to the different levels of ties in order to influence their buying decisions effectively.

Essentially, SC is a business activity [46] that uses SM to help sell products and services [39]. For example, Facebook can facilitate business-to-consumer, as well as consumer-to-consumer, electronic-commerce transactions. To achieve this, it offers online interactive services to engage its users with SC [61], e.g., messaging, chat, dating, video-sharing, and virtual groups. In China, however, the government has a conservative policy regarding the new media economy, in which all foreign SM sites are blocked by firewalls. This action has allowed certain domestic SM sites, such as Weibo and WeChat, which are respective counterparts of Facebook and Twitter in the US, to grow into enormous social networks. Currently, WeChat is the largest SM platform, offering mobile instant text and voice messaging services in China [42]. It combines the functions of messaging, voice/video calling, shopping, payment gateway, banking, gaming, tourism, transportation, etc., into a powerful integrated solution for its over 960 million monthly active users, and its size has continued to increase 19.7% annually [65]. WeChat brings enormous social and commercial value [56]. For example, since consumers often pay attention to

products or services mentioned by friends on WeChat, friendship can play a critical role in SC when people purchase something on WeChat.

The essence of SC is business for all social members. In this context, consumers purchase intention still plays an important role in its sustainable development. The effect of relationships in social networks on purchase intention has been studied by various researchers [1, 25, 28, 41, 50, 67, 68]. However, relationship is a broad term; it refers to the way in which two or more people feel and behave towards each other [10], e.g., a user and a website, a customer and a seller, and any two friends on an SM platform. Some scholars have examined the relationship quality between a user and a website on purchase intention (e.g., [25, 41, 50]), while others have studied that of a buyer and a seller [1, 28, 67, 68]. Yet, few studies have paid specific attention to relationship quality between friends (i.e., friendship quality—an analogy of tie strength), even though research interest has increasingly focused on the effect of relationship quality on consumer purchase intention [16, 62, 68]. This study intends to fill this gap by examining the effects of friendship quality on purchase intention in three different circles of ties corresponding to *good friends*, *simple friends*, and *strangers*, as depicted in Fig. 1.

In the marketing arena, Grayson [22] examines friendship and business relationships, and provides evidence that friendship is not only beneficial for business, but also creates role conflict between friends. In other words, friendship has both positive and negative effects on business outcomes. Specifically, the positive effect is that friends are more loyal as business partners; whereas, the negative effect comes from the fact that the objective of business (i.e., to receive a benefits) is incompatible with the friendship that one desires. Furthermore, Grayson [22, p. 121] suggests that “conflict is more severe for friendships that become business relationships than for business relationships that become friendships”. In SC, especially on Twitter or WeChat, people begin as friends. So, when one receives one or more product messages from a friend and initiates a business relationship, an interesting question arises: Will the person buy the product from the friend because of the positive effect deriving from friendship loyalty, or not buy because of a negative effect from role-conflict. If the negative effect prevails, will one buy the product from a stranger who has good reviews? Answers to these questions remain undetermined. In fact, the answers may depend on the risk condition. For example, some scholars suggest using the price of a product to represent a consumer’s perception of risk and consider high price as high risk [23, 67]. These researchers demonstrate that product-related risk positively moderates the relation between the strength of social ties and purchase intention.

Friendship quality is an analogy of tie strength on a social network, as shown in Fig. 1. After an extensive review on related literature, we found a lack of research into the effect of friendship quality on consumer purchase intention that occurs specifically in the context of SC. Despite that friends are normally familiar with each other and perceived as trustworthy, few papers have examined the relationships between friendship and trust, and their subsequent impacts on purchase intention. As such, the question of “Would one buy things from a friend or a stranger?” remains unanswered. To redress this research gap, this study intends to explore friendship and its quality, and elucidate their relationships with purchase intention

and how the relationships are moderated by product-related risk. The specific research questions are as follows:

- RQ1* Does friendship matter to purchase intention in social commerce?
- RQ2* Does the quality of friendship positively affect purchase intention?
- RQ3* Would consumers purchase from strangers with good reviews rather than from friends with unknown reviews?
- RQ4* When the product-related risk is high, would one buy from friends or strangers?
- RQ5* When the product-related risk is high, would one buy from good friends or simple friends?
- RQ6* When the product-related risk is high, would one buy from friends with unknown reviews or from strangers having good reviews?

This study aims to provide evidence that different levels of friendship quality have different levels of purchase intention. To verify this relationship, we collected data through an online survey questionnaire, manipulating the levels of friendship quality and product-related risk. The purpose of this investigation is to gain a deeper understanding of the business relationship between friends in order to advise SM providers (e.g., WeChat and Weibo in China and Twitter and Facebook in the US) in developing successful SC businesses.

2 Literature review

2.1 Friendship and its quality

Friendship is a crucial interpersonal concept in the social network [40, 63]. It constitutes a kind of social relationship, and has received much attention in the business arena. With respect to the role of friendship, Price and Arnould [57] identify four critical properties: intimate self-disclosure; voluntary social interaction; communal orientation; and exclusively intrinsic orientation. Frenzen and Davis [20] use four indicators to measure social-tie strength of a dyad: closeness, intimacy, support, and association. Halpern [27] examines the effects of friendship on the expectations of pricing in personal business transactions. He reveals that friends expect to pay more (as a buyer), but charge less (as a seller), for a variety of commodities than do strangers, leading to an unfavorable condition for trading between friends. Liu et al. [43] investigate friendship relationships in a large online peer-to-peer (P2P) lending site, and distinguished between online friends (who only communicate online) and offline friends (who communicate offline and possibly online) of a money borrower. They find that offline friends of the borrower are more likely to bid on the lending list than online friends. Recently, Amatulli et al. [1] explore the relation between friendship and purchase decision, and shed light on decision outcomes. They point out that the number of online friends on a social network site (SNS) does not influence its users' purchasing choices, but users with fewer friends on an SNS are influenced by the perceived intensity of their friendships. Zhu et al. [72] extract a dataset of users who purchased membership

services on QQ (the largest instant messaging system in China), and found that those who have a large number of online friends can impact more followers to buy the membership services. Hence the impact of friendship on purchase intention has gradually received the attention from scholars; however, the measure of friendship quality has been rarely discussed.

The quality of relationships between sellers and buyers has been defined as a multidimensional construct consisting of three major components: trust, commitment, and satisfaction toward a seller [21, 53, 68]. Researchers have confirmed that relationship quality between a user and an SM platform has a positive effect on intention-to-purchase [41]. In contrast, friendship quality is the degree to which the friendship meets specified relationship needs [55]. It can be regarded as the qualities of interactions between individuals [66] measured from three aspects: perceived intimacy; likeability of the friend; and having fun in the relationship [52]. A high-quality friendship has a high level of pro-social behavior, intimacy, and other positive features, but a low level of conflict, rivalry, and other negative features [5]. In summary, *good friends* are those friends who have high quality in friendship with high level of intimacy, likeability, prosocial behavior, having fun in the relationship, and intrinsic orientation. On the contrary, *simple friends* have low friendship quality with low-level prosocial behavior, intimacy, and other positive attributes. In an individual social network context (see Fig. 1), good friends constitute a circle of strong ties within which members trust and care for each other, possessing high level of social capital. Meanwhile, simple friends form a circle of weak ties within which members have low trust and minimal information sharing; they infrequently communicate but might not meet each other at all. With all of these different characteristics, how would friendship quality affect the intention of one friend to buy products from another friend? To answer this question, we divide friends into two groups: good friends (with high friendship quality) and simple friends (with low friendship quality), and compare their differences in purchase intention.

2.2 Purchase intention in social commerce

SC was first introduced by Yahoo! in 2005 [59]. It is a business paradigm in which consumers share information, experiences, and opinions about what, where, and from whom to buy. Scholars have reviewed SC from four respects: (1) information/content; (2) business strategies; (3) technologies; and (4) people's behavior [17]. In this study, we focus on people's behavior, especially their relationships and attitudes toward purchasing products via SC. To this end, many scholars have considered trust, a dimension of relationship quality, to be an antecedent of purchase intention in SC [25, 37, 45]. However, few studies have examined how relationship quality (both friendship relationship and business relationship) affects consumers' levels of purchase intention in SC. This study intends to fill this void.

2.3 Product-related risk

Product-related risk has been defined as the perceived risk of purchasing a product [67]. It has been shown to be an important factor influencing purchase intention [18]. Such kind of risk is multidimensional and consists of financial, performance, psychological, physical, and social risks [34]. In addition, time-risk is introduced to reflect the concern with speed, convenience, or easiness of a behavioral process [29, 47]. Some researchers confirm the significant negative effects of perceived risk on individual adoption and sharing behaviors on SM platforms [69]. Others show that customers tend to search for more information about a product having a higher price than those having a lower price [4, 70]. For this reason, people tend to regard low-priced products as less risky products, and high-priced products as riskier products [19]. Using price to indicate product-related risk, Wang and Chang [67] show its moderating effect on the relation between the strength of social ties and perceived diagnosticity. They further confirm the positive effect of perceived diagnosticity on purchase intention. Following Wang and Chang [67], this study adopts price as the surrogate of product-related risk, and examines its moderating effect on the relation between friendship quality and purchase intention in SC.

3 Hypotheses development

3.1 Friendship and purchase intention

In numerous prior studies, trust is an important antecedent of purchase intention in SC (e.g., [24, 37, 50]). From this perspective, several scholars have examined trust-related factors and their subsequent effects on purchase intention [24, 37, 44, 45, 50]. For example, Hajli [24] proposes a theoretical framework and predicts that SC constructs (e.g., reviews, recommendations, etc.) create trust and increase intention to use SC. Kim and Park [37] prove that the effects of various SC characteristics (e.g., reputation, transaction quality, word-of-mouth, etc.) are mediated by trust on consumer's purchase intention. Ng [50] demonstrates that closeness and familiarity with SC websites have a positive influence on trust in social network communities and subsequent purchase intention in SC. In addition, Lu et al. [45] propose that trust in sellers significantly impacts purchase intention in SC. Liu et al. [44] further confirm the impacts of interpersonal interaction factors (i.e., perceived expertise, similarity, and familiarity) on flow experience and then on purchase intention in SC.

As mentioned above, trust is critical to purchase intention in SC. Because friends are those who feel that they know and trust each other, we expect that friendship will bring trust and foster purchase intention. As Liu et al. [43] note regarding P2P lending, being a friend of a borrower yields a greater probability of lending. Consequently, friends are more likely to be a source of product purchase than strangers, as perceived by a given consumer. However, no study has yet investigated the differences in trustworthiness between friends and strangers having good user reviews. In our opinion, consumers are not likely to purchase from strangers who

have poor reviews or no review at all (hereafter referred to as “nonreputable strangers”), due to a lack of trust. Instead, they might purchase from reputable strangers because online reputation could bring some trustworthiness to any seller. Nevertheless, we believe that people should value friendship relationships more than business relationships, and trust their friends more than strangers. Hence, we propose the following hypothesis:

H1 A consumer’s intention to purchase from a friend is higher than from a stranger.

3.2 Friendship quality and purchase intention

Based on role theory, heterogeneous behaviors are appropriate for different people in different social situations [6]. For example, people can play different social roles in their daily lives. They may find themselves in a situation in which they meet some expectations while falling short of others, sometimes resulting in “role conflict”.

As Grayson [22] notes, two kinds of social roles exist among friends: friendship and business. With respect to the friendship role, the last attribute of friendship identified by Price and Arnould [57]—exclusively intrinsic orientation—indicates the desire to maintain a relationship because of its inherently enjoyable aspects [11]. In this vein, true friends are not extrinsically motivated, and are expected to be unmotivated by benefits that can be used beyond the relationship. In contrast, the business role possesses an instrumental orientation, which emphasizes relational benefits that have value to be utilized outside of the relationship. Consequently, when the friendship role meets the business role, a conflict emerges [22]. However, no research currently exists that discusses friendship and its quality in SC under the condition of role conflict between friends.

Pangle [54] describes the best form of friendship, as the one in which the partners love each other for themselves, cherishing each other for their characters. In Grayson’s [22] view, partners who seek benefits beyond the relationship are merely friends coincidentally. He expects the friendship role to be impacted by the instrumental orientation of the business role. In our opinion, if the friendship quality is high, it is close to “the best form of friendship”, and people expect that their good friends will do the best things for them and will not pursue instrumentality beyond their relationship just for a business gain. On the other hand, when the friendship quality is low, the exclusively intrinsic orientation of friendship will be low; thus, people cannot be certain whether their simple friends will do everything good for them. When this kind of (simple) friend sells something, instrumental orientation may exist, and role conflict may arise. Crosby et al. [16] suggest that the relationship quality between the seller and the buyer determines the probability of continued interchange between these two parties in the future. Wang and Hajli [68] also confirm that relationship quality has positive effects on co-branding intention between partners in SC. Therefore, it is reasonable to assume that high-quality friendships have lower role-conflict expectations than low-quality friendships. As Grayson [22] asserts, having lower role-conflict will improve the relation between

friendship and business outcomes (e.g., retail selling, recruitment, and network management), which results from higher purchase intention. Thus, we propose the following hypothesis:

H2 A consumer's intention to purchase from a good friend is higher than from a simple friend.

3.3 Strangers with high or low reputation

In the SC context, retailer reputation is essential for reducing risk when a product or service is exchanged [36]. Kotha et al. [38] suggest that, when all else is equal, consumers are more likely to buy from an online retailer with a better online reputation (i.e., better user reviews). Since reputation typically constitutes the key indicator of trust [64], it directly affects consumers' trust in SC [37]. Kim and Lennon [36] also find that reputation has a significant positive effect on consumers' emotions and a significant negative effect on perceived risk, and both perceived risk and emotion have a significant impact on purchase intention. Many other researchers confirm that trust is very important to purchase intention in the SC context (e.g., [24, 25, 37, 50]). Therefore, it can be inferred that a consumer will have a greater intention to purchase from a stranger with a good reputation because trust in this stranger is higher than in those having a bad or no reputation. Thus, we propose the following hypothesis:

H3 A consumer's intention to purchase from a reputable stranger is higher than from a nonreputable stranger.

3.4 Good friends, simple friends, and strangers

Research has confirmed that the more an exchange partner experiences conflict in expectations between the friendship role and the business role, the less the strength of the relation between friendship and retail selling [22]. As greater purchase intention could bring more retail selling, role conflict is very likely to negatively affect the strength of the relation between friendship and purchase intention. Halpern [27] indicates that friends as buyers usually will not bargain with their friends being in the role of sellers, but strangers will. So, even though there is more trust in friends than strangers, people may prefer not to buy things from friends to avoid hurting or destroying the friendship if the deal fails or they feel restrained from bargaining. As such, one should avoid a situation in which a friend being the seller exhibits a heavy emphasis on the business role, and thus presents high role-conflict. This is why people sometimes prefer to buy things from a stranger rather than from a friend, especially a stranger who has gained trust from consumers through good reviews. Nevertheless, role conflict is usually low between good friends. Considering the case in which a buyer is a good friend of the seller with unknown reviews, the trust in this seller will be high and the emphasis on the business role will be low, leading to high intention to buy from a good friend. This decision should not change even if an alternative reputable stranger is available

because good friends usually place less emphasis on the business role than do reputable strangers. We hereby posit the following:

H4 A consumer's intention to purchase from a good friend with unknown reviews is higher than from a reputable stranger.

Based on the above discussion, if a seller is a simple friend of the buyer, emphasis on the business role will be high and the trustworthiness of this seller will be low. Although the extant literature has not compared levels of trustworthiness and role conflict between sellers who are simple friends and reputable strangers, one can reasonably assume that consumers are more likely to buy products from reputable strangers because simple friends with unknown reviews may not be as trustworthy as a reputable stranger who has good user reviews. This is consistent with the social proof theory [13]. The theory maintains that a person usually looks to other people to imitate what they are doing and to provide guidance for his action when he or she does not know what to behave under a certain situation. This explains why we trust online reviews of users because they have experienced the products or services while we have not. We hereby propose the following hypothesis:

H5 A consumer's intention to purchase from a reputable stranger is higher than from a simple friend with unknown reviews.

3.5 Purchase intention under high product-related risk

Previous studies have noted that a consumer requires more trust in the seller to buy if the product-related risk is relatively high [67]. However, if the product-related risk is low, the trustworthiness of a seller is not very important for the buyer in making a purchase decision. Moreover, if the product offering comes from a friend, instead of a stranger, role conflict may exist due to the difference in expectations between the friendship role and the business role [22]. Because a low-risk product only requires low trustworthiness, people are likely to buy the product from any source, be it a friend or a stranger. On the contrary, if the product-related risk is high, the trustworthiness of a seller is important for the buyer in making a purchase decision; it is more likely to buy the product from a friend, rather than from a stranger, because friends are more trustful. Hence, we hypothesize the following hypothesis that complements H1 and contrasts friends with strangers:

H6 When product-related risk is high, a consumer's intention to purchase from a friend is higher than from a stranger.

When a consumer is among friends, a good friend is more likely to sell a product than is a simple friend when the product-related risk is high, because that the consumer needs more trust under high product-related risk condition [67], and that good friends have less role conflict and are more trustworthy in the role as sellers [22]. Conversely, when the perceived risk is low, trustworthiness does not matter; buying from good friends or simple friends makes no difference. Thus, we

hypothesize the following hypothesis that complements H2 and contrasts good friends with simple friends:

H7 When product-related risk is high, a consumer's intention to purchase from a good friend is higher than from a simple friend.

Based on H6, consumers prefer not to buy high-risk products from strangers, as they require more trust from the seller to make the purchase decision [67]. In addition, H7 asserts that consumers prefer to buy high-risk products from good friends, as they are more trustworthy than simple friends [22]. Taken together, we can posit that consumers prefer to buy high-risk products from good friends, rather than strangers, even though the reviews of good friends have unknown reviews and strangers have good reviews. Therefore, we can derive the following hypothesis that complements H4 and contrasts good friends with reputable strangers.

H8 When product-related risk is high, a consumer's intention to purchase from a good friend with unknown reviews is higher than from a reputable stranger.

Based on the above discussion, if the seller is a simple friend of the buyer, the seller will have low trustworthiness and be influenced by role conflict. Compared to a reputable stranger, the simple friend with unknown reviews will have lower trustworthiness. Furthermore, a buyer would usually consider the seller's role conflict prior to making the purchase decision and attempt to avoid potential damage to the relationship. Consequently, he or she may choose to buy the product from a reputable stranger, instead of a simple friend with unknown reviews. This is especially the case when the perceived risk is low. Conversely, the perceived risk is high, buying from simple friends or good friends can constitute a struggle between the friendship role and the business role. In this case, a consumer would most likely buy the product or service from a simple friend and not to bother a good friend. Hence, we posit the hypothesis below. This hypothesis also complements H5 and contrasts simple friends with reputable strangers.

H9 When product-related risk is low, a consumer's intention to purchase from a reputable stranger is higher than from a simple friend with unknown reviews.

3.6 Research model

Based on the discussion above, we propose a parsimonious research model, as shown in Fig. 2. In this model, the antecedent and moderating variables are all categorical. Specifically, while the relationship with the seller comprises three categories, the product-related risk is of high and low dichotomy values. The dependent variable of purchase intention is on the right side. Both friendship quality and purchase intention are measured on a continuous scale. In addition, the product-related risk plays a moderating role between the relationship of the seller (i.e., good friend, simple friend, reputable stranger, and nonreputable stranger) with purchase intention.

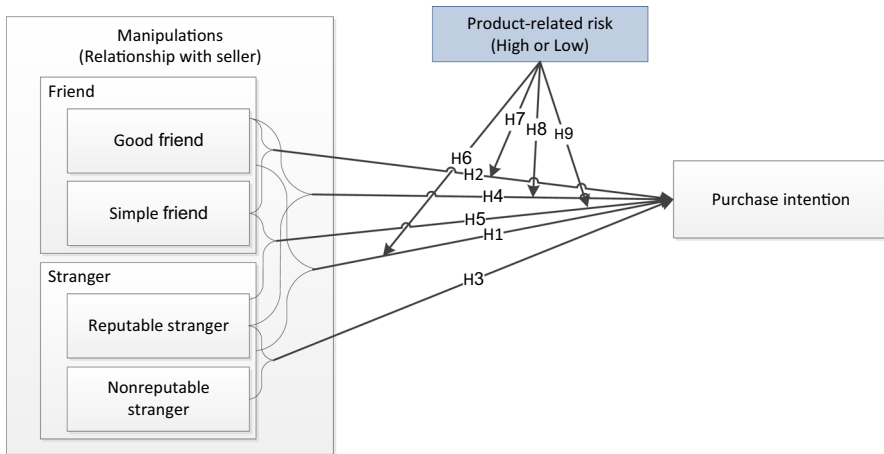


Fig. 2 Research model

4 Methodology

4.1 Sample and data collection

After designing the initial questionnaire, we conducted a focus group meeting, which consists of the first two authors, one university professor, and two doctoral students from Northwest China, all with extensive purchase experience on WeChat and Weibo platforms. Both WeChat and Weibo were selected because they are the largest two SM platforms in China, corresponding to Twitter and Facebook in the US, respectively. In addition, their platforms offer SC capability. While WeChat users who join a chat group already have friendship relationships in real life, Weibo’s users may not know each other initially and start their business relationships as trading partners, rather than friends. The focus group also identified adult students as the subjects and dress accessories (i.e., earrings and necklaces) as the target products for the experiment. The rationale is that these products are commonly bought and sold by young adults on the two platforms. Finally, the focus group reviewed and modified the questionnaire to ensure its face validity.

For the experiment, we employed a between-subjects design to investigate the levels of purchase intention under the conditions of friendship quality (good friend,

Table 1 The eight experimental treatments

Relationship with seller	Product-related risk	
	High	Low
Good friend	Treatment 1	Treatment 2
Simple friend	Treatment 3	Treatment 4
Reputable stranger	Treatment 5	Treatment 6
Nonreputable stranger	Treatment 7	Treatment 8

simple friend, or reputable stranger, nonreputable stranger) by product-related risk (high or low). Table 1 shows that there are eight possible treatment combinations: (1) good friend and high risk; (2) good friend and low risk; (3) simple friend and high risk; (4) simple friend and low risk; (5) reputable stranger and high risk; (6) reputable stranger and low risk; (7) nonreputable stranger and high risk; and (8) nonreputable stranger and low risk.

To collect the data, we utilized university students who had purchased earrings and/or necklaces on both WeChat and Weibo sites, as suggested by the focus group. We first invited 282 instructors in various universities across China to assist in recruiting their students for the experiment. One week later, 43 instructors volunteered to participate in the study. They recruited a total of 404 qualifying students to fill out the treatment questionnaires. Students who did not purchase any earrings or necklaces on neither WeChat nor Weibo sites could not participate in the experiment. Each instructor and the recruited students were assigned to only one treatment. Multiple instructors were systematically assigned in sequence into one treatment to ensure that the number of participating students in each treatment reached 30 or more [14]. Then, we randomly assigned one of the eight treatments to each group. The students recruited by each instructor took the identical treatment as a group. The result of this assignment process is listed in Table 2, showing that the numbers of students assigned to the eight treatments are all more than 30. We also made sure that each student had participated in only one treatment group to avoid response bias.

After assigning the participants to treatment conditions, we asked each instructor to email a welcome message to each participant in his or her treatment group, with a link to a popular online survey platform in China (<http://www.sojump.com/>) to fill out the treatment questionnaire. Two weeks later, each student received a reminder to complete the questionnaire. All participants returned their questionnaires by the end of the 4th week. Of the 404 participants, 170 (42.08%) are male and 234

Table 2 Participants and summary statistics of purchase intention in each treatment

Relationship with seller	Instructors (N = 43)	Students (N = 404)	Student group mean	SD
Treatment 1 (good friend × high risk)	7	64	5.68	1.28
Treatment 2 (good friend × low risk)	6	41	5.70	1.49
Treatment 3 (simple friend × high risk)	5	38	4.45	1.78
Treatment 4 (simple friend × low risk)	6	56	4.50	1.12
Treatment 5 (reputable stranger × high risk)	5	65	4.67	1.55
Treatment 6 (reputable stranger × low risk)	5	51	5.29	1.20
Treatment 7 (nonreputable stranger × high risk)	5	48	2.38	1.42
Treatment 8 (nonreputable stranger × low risk)	4	41	2.95	1.42

(57.92%) are female; the average age is 23.5 years old. The summary statistics of purchase intention are presented in Table 2.

4.2 Questionnaire

The questionnaire comprises three parts: (1) an explanation that the researchers are working on an academic research project and the data will be kept strictly confidential; (2) the main content of the experiment, containing the manipulation of eight treatments and a different scenario description for each treatment, followed by the questions for purchase intention and friendship quality (omitted for treatments 5–8); and (3) demographic questions. Regarding the question of purchase intention, we adapted four scale items from Putrevu and Lord [58] and Coyle and Thorson [15], each of which is measured on a 7-point scale, ranging from 1 (“strongly disagree”) to 7 (“strongly agree”). Moreover, five scale items adapted from four studies [8, 9, 52, 55] are utilized to test the friendship quality manipulation, each of which is measured on a 7-point scale, ranging from 1 (“not at all”) to 7 (“very much”). To assure the face validity of the questionnaire, the focus group examined the initial measurement items adapted from the existing literature one-by-one for relevance, clarity, and practicality. The items were repeatedly modified until no further improvement was necessary. Descriptions of the final measurement items are listed in Table 3.

Table 3 Questionnaire items for constructs

Constructs	Items	Sources
Purchase intention	It is likely that I will buy products from him or her	Putrevu and Lord [58], Coyle and Thorson [15]
	I will purchase products from him or her the next time that I need accessories	
	If other friends called me to get my advice about which accessories to buy, I would advise them to buy from him or her	
	I definitely will buy products from him or her if he or she recommends them to me	
Friendship quality	I share secrets with him or her	Frenzen and Davis [20], Parker and Asher [55], Brendgen et al. [8], Grayson [22] and Ojanen et al. [52]
	I spend a free afternoon with him or her	
	I can make fun of him or her	
	He or she likes me	
	He or she truly cares about me	

4.3 Procedure

In each treatment, all participants view the three-part questionnaire online. For the first two treatments, we ask the corresponding participants to identify five good friends, without knowing their online-review quality, from their WeChat address books and select the one who is their most favorite from the five selected friends. This friend is considered as the *good friend* for this study. Likewise, for the next two treatments, we ask them to identify five simple friends without knowing their online-review quality and select the least favorite one. This friend is considered as the *simple friend* for the study. For the next two treatments, we ask the participants to identify five sellers on the Weibo site who are strangers to them, but have good reviews, and select the one who is their most favorite from the five selected strangers. This stranger is regarded as the *reputable stranger* in this study. Similarly, for the last two treatments, we ask the participants to identify five strangers having poor reviews or no review at all and select the least favorite one. This stranger is regarded as the *nonreputable stranger* in this study.

Concerning product-related risk, we adopt price as the measure. The rationale is that price is the easiest and most objective measure among the six risk components (i.e., financial, performance, psychological, physical, social, and time). This is consistent with the practice of Wang and Chang [67], who treat product price as a surrogate of product-related risk. During the focus group meeting, we reached a consensus that the price of an ordinary *earring or necklace* (usually inexpensive and less than 10 RMB) is low risk; whereas, the price of a name-brand *earring or necklace* (usually expensive and higher than 200 RMB) is high risk.

Before filling out the questionnaire items about purchase intention, the informant is asked to read a scenario displayed upfront three times in order to prepare him or her for the questions. Examples of the scenarios in the first two treatments are as follows.

Treatment 1 Please recall the most favorite friend that you chose earlier and imagine the following scenario. Assume that he or she is doing business in WeChat, selling expensive dress accessories, such as earrings and necklaces that are from a name brand, such as Swarovski or Pandora. The price is usually more than 200 RMB. Please answer the following questions assuming this situation

Treatment 2 Please recall the most favorite friend that you chose earlier and imagine the following scenario. Assume that he or she is doing business in WeChat, selling inexpensive dress accessories, such as ordinary earrings and necklaces. The price is usually less than 10 RMB. Please answer the following questions assuming this situation

We next ask the informants to imagine a scenario in which the particular good or simple friend is selling dress accessories on the WeChat platform and their online reviews are unknown in the first 4 treatments. In contrast, the particular reputable stranger or nonreputable stranger is selling the same merchandise on the Weibo platform in the remaining 4 treatments. We further ask each informant whether he or she will buy the accessories from this friend or stranger. All

informants are asked to indicate their levels of purchase intention under different levels of product-related risk.

5 Analyses and results

5.1 Reliability and validity

We first examine the reliability and validity of the two major constructs in the study. Cronbach's alpha for friendship quality is 0.93, and for purchase intention is 0.951, both of which demonstrate adequate internal consistency reliability for the two constructs [51]. Then, to assess the convergent and discriminant validity of the two constructs, we conduct the Kaiser–Mayer–Olkin (KMO) test for sampling adequacy and the Bartlett's [3] test of sphericity prior to performing the exploratory factor analysis (EFA). The KMO value for the two constructs is 0.920, and greater than the recommended level of 0.80 [12]. The Bartlett's test is significant at $p < 0.001$. Both confirm that the data set exhibits a multi-variant normal distribution and is adequate for EFA. By using the varimax with Kaiser normalization rotation [32, 33], a two-factor solution emerges, which explains 82.353% of the total variance. As shown in Table 4, all indicators loaded on the expected factors are higher than 0.7, while loadings on the other factor are lower than 0.42. Moreover, the values of composite reliability and average variance extracted are all higher than the recommended levels of 0.7 and 0.5, respectively. All of these results indicate acceptable convergent validity and discriminant validity.

5.2 Manipulation check

We next examine the difference in mean values of relationship quality between groups. The Mann–Whitney test is selected because it is nonparametric, and our

Table 4 Exploratory factor analysis

Indicator ID	Factor 1	Factor 2
Friendship quality ($CR = 0.907$; $AVE = 0.660$)		
fri1	0.826	0.262
fri2	0.802	0.374
fri3	0.807	0.391
fri4	0.787	0.418
fri5	0.842	0.295
Purchase intention ($CR = 0.920$; $AVE = 0.746$)		
pur1	0.354	0.877
pur2	0.360	0.860
pur3	0.370	0.826
pur4	0.331	0.890
Variance explained	3.806	3.606
Cumulative %	42.287	82.353

Bold value is the maximum factor loading

CR composite reliability, AVE average variance extracted

dataset contains a small sample size and discrete measurement scales. We first confirm that the mean values of friendship quality are different between good friends and simple friends, given that product-related risk is constant. Regarding high risk, the mean values of good friends and simple friends are 5.65 and 3.69, respectively; for low risk, they are 5.62 and 3.28, respectively. Both mean differences are significant at $p < 0.001$, indicating that the good friend group consistently has higher mean values of relationship quality than the simple friend group. Next, we confirm that friendship quality is not different within good or simple friends given different levels of product-related risk. For good friends, the mean values from the high-risk group and the low-risk group are 5.65 and 5.62, respectively; for simple friends, they are 3.69 and 3.28, respectively. Both mean differences are not significant at $p = 0.178$ and $p = 0.739$, respectively. The results are shown in Table 5, which confirm the validity of our manipulation.

5.3 Hypotheses testing

5.3.1 Friendship and purchase intention

Our first research question concerns how friendship relates to purchase intention. To answer the question, we conduct the Mann–Whitney test to examine the difference between friend groups (treatments 1, 2, 3, and 4) and the stranger group (treatments 5, 6, 7, and 8). The result is significant (means = 5.11 vs. 3.94; $p = 0.000 < 0.001$), which indicates that friendship engenders much more purchase intention than the stranger group. Thus, H1 is supported, which is consistent with the finding of Grayson [22].

Table 5 Manipulation check for mean values of friendship quality

Treatment	N	Mean	SD	Mann–Whitney test	
				Z	p
Treatment 1 (good friend × high risk)	64	5.65	1.19	– 5.73	0.00***
Treatment 3 (simple friend × high risk)	38	3.69	1.64		
Treatment 2 (good friend × low risk)	41	5.62	1.06	– 6.54	0.00***
Treatment 4 (simple friend × low risk)	56	3.28	1.68		
Treatment 1 (good friend × high risk)	64	5.65	1.19	– 1.35	0.178
Treatment 2 (good friend × low risk)	41	5.62	1.06		
Treatment 3 (simple friend × high risk)	38	3.69	1.64	– 0.333	0.739
Treatment 4 (simple friend × low risk)	56	3.28	1.68		

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5.3.2 Friendship quality and purchase intention

Concerning the second research question, we compare the effects of high-quality friendship with low-quality friendship on purchase intention, using treatments 1 and 2 against treatments 3 and 4. The comparison shows that buyers with high-quality friendships with sellers have a greater purchase intention than those with low-quality friendships (means = 5.69 vs. 4.48, $p = 0.000 < 0.05$). Thus, H2 is supported.

We then investigate whether the intention to purchase from good friends may be higher than from reputable strangers, using treatments 1 and 2 against treatments 5 and 6. The answer is affirmative (means = 5.69 vs. 4.94; $p = 0.000 < 0.001$). For a consumer to purchase a product, good friends appear to be a better choice than reputable strangers. Thus, H4 is supported.

Finally, we use the reputable stranger group from treatments 5 and 6 to test against the simple friend group from treatments 3 and 4. The result confirms that the mean value of reputable strangers is significantly larger than that of simple friends (means = 4.94 vs. 4.48; $p = 0.010 < 0.01$). In other words, instead of simple friends, people may buy from reputable strangers. Thus, H5 is supported.

5.3.3 Reputation and purchase intention

Then, we utilize the Mann–Whitney test to examine reputation and purchase intention. We investigate the difference between reputable stranger groups (treatments 5 and 6) and nonreputable stranger groups (treatments 7 and 8). The result is significant (means = 4.94 vs. 2.64; $p = 0.000 < 0.001$), which indicates that the intention to purchase from a reputable stranger is higher than from a nonreputable stranger. Thus, H3 is supported.

5.3.4 Purchase intention under high product-related risk

Furthermore, we utilize the Mann–Whitney test to examine the effects of high product-related risk on purchase intention. We first compare the friend group (including treatments 1 and 3) with the stranger group (treatments 5 and 7), under the high-risk condition. The result demonstrates that people have more intention to purchase high-risk products from friends than from strangers (means = 5.23 vs. 3.69; $p = 0.000 < 0.001$), supporting H6.

We next investigate whether high product-related risk affects the relationship of friendship quality and purchase intention. Using the Mann–Whitney test, we compare good friends (treatment 1) with simple friends (treatment 3) under the high-risk condition. The result demonstrates that people have more intention to purchase high-risk product from good friends than from simple friends (means = 5.68 vs. 4.45; $p = 0.000 < 0.001$). Thus, H7 is supported.

Next, we examine the effect of high product-related risk on one's purchase intention between good friends and reputable strangers. Using the Mann–Whitney test, we compare good friends (treatment 1) with reputable strangers (treatment 5) under the high-risk condition. The result reveals that a significant difference exists

Table 6 Results of hypothesis tests of group mean differences

Hypothesis	Treatments (N)		Mean (SD)		<i>p</i>	Test result
	Group 1	Group 2	Group 1	Group 2		
H1	1, 2, 3, 4 (199)	5, 6, 7, 8 (205)	5.11 (1.51)	3.94 (1.84)	0.000***	Supported
H2	1, 2 (105)	3, 4 (94)	5.69 (1.36)	4.48 (1.42)	0.000***	Supported
H3	5, 6 (116)	7, 8 (89)	4.94 (1.44)	2.64 (1.44)	0.000***	Supported
H4	1, 2 (105)	5, 6 (116)	5.69 (1.36)	4.94 (1.44)	0.000***	Supported
H5	5, 6 (116)	3, 4 (94)	4.94 (1.44)	4.48 (1.41)	0.010**	Supported
H6 (HR)	1, 3 (102)	5, 7 (113)	5.23 (1.59)	3.69 (1.88)	0.000***	Supported
H7 (HR)	1 (64)	3 (38)	5.68 (1.28)	4.45 (1.78)	0.000***	Supported
H8 (HR)	1 (64)	5 (65)	5.68 (1.28)	4.67 (1.55)	0.000***	Supported
H9 (LR)	4 (56)	6 (51)	4.50 (1.12)	5.29 (1.20)	0.000***	Supported

SD standard deviation, *HR* high risk, *LR* low risk, *ns* not significant

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

between good friends and reputable strangers (means = 5.68 vs. 4.67; $p = 0.000 < 0.001$), supporting H8. It indicates that good friends are better sellers than reputable strangers.

Finally, we investigate H9 about whether one prefers to purchase from simple friends or reputable strangers when the product-related risk is low. We employ the Mann–Whitney test to compare the simple-friend group (treatment 4) with the reputable-stranger group (treatment 6) under the low-risk condition. The result reveals a significant difference (means = 4.50 vs. 5.29; $p = 0.000 < 0.001$), indicating that reputable strangers are better sellers than simple friends, supporting H9. Table 6 summarizes the results of all of the hypothesis tests based on the Mann–Whitney test.

6 Theoretical contributions

This study contributes to the SC literature by introducing the concept of role conflict between friendship relationships and business relationships that exist among buyers and sellers [22]. It introduces the concepts of *good friend*, *simple friend* and *reputable stranger* to represent the circles of ties in a social network at different levels of strength [22, 35, 60]. It surprisingly identifies that reputable strangers are more effective than simple friends in marketing a low-risk product to consumers by demonstrating that the intention of a consumer to purchase low-risk products from a reputable stranger is stronger than from a simple friend.

Moreover, this study is the first to investigate the effect of friendship quality on purchase intention in SC. Despite the abundant research focusing on relationship quality in SC (e.g., [1, 28, 67, 68]), few studies have dealt with friendship quality. In this study, we introduce two levels of friendship quality using the identities of *good friend* and *simple friend*. Combining with the concept of *stranger*, these three

groups represent the circles of ties and accurately reflect the C2C key actors in SC [22]. They can be adapted in future research to examine various business activities on SM platforms.

Finally, the study reveals that the choice of friendship or business relies heavily on product-related risk. To the best of our knowledge, no study has yet associated such kind of risk with friendship quality. Most studies have identified the direct relation between relationship and purchase intention (e.g., [16, 62, 68]), but overlooked the role of product-related risk in this relation. We not only consider product-related risk, but also explore its interaction with friendship quality. Surprisingly, we found that good friends are the best marketers for high-risk products because the purchase intention of a consumer under this condition is the highest of all groups. However, when both reputable strangers and simple friends are the sellers of low-price dress accessories, consumers prefer to buy products from good friends, rather than from simple friends. These findings substantially enrich the theoretical body of knowledge in the SC literature.

7 Practical implications

The findings of this study also offer several practical implications. First, the study reveals that friendship improves purchase intention. This finding is very useful for those who are doing business in SC. It informs us that sending product information to all friends in one's address book on a social network site does not constitute a good marketing practice. Specifically, it does not always generate business from friends, but instead may damage the friendship as a consequence of role conflict. However, sending product information to good friends, instead of simple friends, will be more effective, as they should have a higher level of trust in you and a greater intention-to-purchase from you.

Second, given that simple friends and reputable strangers are the sellers, consumers are much more likely to purchase from reputable strangers than from simple friends. Therefore, distributing product information to simple friends is not a good marketing practice, i.e., they might feel disturbed and decide to stop being your friend. A better practice is to distribute only information about high-price high-profit products to all of one's WeChat or Twitter friends. Regarding low-price low-profit products, one should recruit reputable strangers on Weibo or Facebook to make a public announcement about them and sell them on SM sites.

Finally, different groups of sellers are suitable for selling different types of products. Overall, good friends are better marketers, and are suitable for selling any type of product. Specifically, when one wants to do business in SC, it is better to recruit good friends to sell products. Of course, high-price high-risk products usually have a high profit margin, and thus it is better to entrust good friends to sell them, followed by simple friends. Concerning selling low-price low-risk products, one could recruit reputable strangers as salespeople because they are better marketers than simple friends. SC business owners should formulate their marketing strategies according to the aforementioned findings in order to obtain higher profits in the future.

8 Limitations and future research

Although this study sheds light on friendship quality and its effects on purchase intention in SC, some limitations exist due to our research design. First, “dress accessories” are selected as the experimental products, which may render the conclusions inapplicable to other products. Additional studies using various products are needed to generalize the conclusions. Second, the study follows Wang and Chang’s [67] approach and uses product price as the surrogate of product-related risk, overlooking other potential risk factors, such as functional risk, social risk, psychological risk, etc. Although these additional factors are less objective to measure than financial risk, such as price, future research could incorporate these factors and elucidate their effects on purchase intention in SC, as well. Third, this research distinguishes between high-quality friendships (good friend) and low-quality friendships (simple friend), and finds that good friends are the most important actors in SC. However, this elite group of friends is limited in size, and the vast majority of friends are either medium or low quality. Yet, friends of medium quality are not examined in this study. Thus, determining the precise role played by the group of medium friendship quality in SC remains to be identified. Fourth, conflict between the friendship role and the business role of an exchange partner has been shown to lessen the relation between friendship and retail selling [22]. However, whether or not this relationship eventually becomes negative as role conflict increases has not yet been verified. Future studies could investigate this issue and provide valuable insight into the effects of role conflict.

Finally, friendship and reputation constitute critical factors of trust-building. In this study, we neither compared their differences in the direct effects on purchase intention nor investigated their interaction effect. One could expect that the trust level derived from friendship or reputation alone should be lower than the level developed by both together. In other words, if a simple friend possesses a high reputation level, he or she could be a more attractive seller in a social network than a reputable stranger. Future research should study this issue by comparing their differences in intention levels and analyzing the interaction effects from the two trust-building factors of friendship and reputation.

9 Conclusions

The findings of this study allow us to draw several interesting conclusions. First, friendship fosters purchase intention with the confirmation from H1 and H2. This finding is consistent with Grayson’s [22] that friendship can positively influence business outcomes. It further confirms that friendship strengthens purchase intention when the product-related risk is high. Second, friendship quality has a positive impact on purchase intention. This is consistent with previous research that relationship quality affects willingness-to-buy [16, 25]. After testing H9, a novel insight emerges: consumers are more willing-to-buy from a reputable stranger than from a simple friend when the perceived risk is low. This phenomenon may be

explained by Grayson's [22] finding regarding role conflict, i.e., when friendship quality is not high, people are afraid of damaging the friendship because of the bargaining process, making them reluctant to buy from simple friends.

Finally, product-related risk significantly moderates the relationship of friends and strangers with purchase intention. This study confirms that people tend to purchase from a reputable stranger for low-risk products; whereas, they often buy high-risk products from friends, especially good friends. These conclusions enrich the extant literature regarding the effects of friendship on purchase intention.

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