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Kewen Wu
Department of Computer Science, University of Saskatchewan, kew259@mail.usask.ca

Julita Vassileva
Department of Computer Science, University of Saskatchewan, jiv@cs.usask.ca

Yuxiang Zhao
Nanjing University, yxzhao@vip.163.com

Qinghua Zhu
Nanjing University, qhzhu@nju.edu.cn

Jie Fang
Urumqi Vocational University, fangjie0701@sina.com

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Kewen Wu, Department of Computer Science, University of Saskatchewan, Saskatchewan, Canada, kew259@mail.usask.ca

Julita Vassileva, Department of Computer Science, University of Saskatchewan, Saskatchewan, Canada, jiv@cs.usask.ca

Yuxiang Zhao, School of Information Management, Nanjing University, Nanjing, Jiangsu, China, yxzhao@vip.163.com

Qinghua Zhu, School of Information Management, Nanjing University, Nanjing, Jiangsu, China, qhzhu@nju.edu.cn

Jie Fang, Urumqi Vocational University, Urumqi, Xinjiang, China, fangjie0701@sina.com

Abstract

Chinese C2C market grows rapidly. However, it is plagued by serious trust fraud problems. The level of price dispersion in C2C platforms is relatively high. The mixed interaction between "lemons market" problem and high level of price dispersion makes it hard for buyers to identify trustworthy sellers with low price. We are interested in the generation of initial trust and purchase intention when the buyers search a product and receive a list of widely distributed prices, rather than a list of narrowly distributed prices. However, limited knowledge can be gained from previous studies regarding this issue. This study puts forward a theoretical model to explain how price dispersion interacts with other important factors in C2C purchase (e.g. initial trust, perceived risk, perceived value and purchase intention). Product type (high- touch/low-touch) is taken into consideration as well since the level of uncertainty faced by buyers is different. A proposal for experiment is described. This research-in-progress has the potential to lead to various theoretical and practical implications. For example, the results will enhance the literature on trust, help buyers do better purchase decision, assist sellers in designing pricing strategy, and be utilized by platforms to propose new mechanisms.

Keywords: consumer to consumer, trust, price dispersion, purchase intention, perceived risk

1 INTRODUCTION

Chinese online consumer-to-consumer (C2C) market has been growing rapidly in recent years. For example, Taobao, a leading Chinese C2C platform with about 90% market share. Its transaction volume started from 30 million CNY (about 4.7 million USD) in 2003 and grew to 900 billion CNY (about 142 billion USD) in 2013 (Iresearch, 2013). Despite the huge amount of transactions, however, the Chinese C2C market faces serious trust fraud problem. Previous statistics report that the percentage of detected fraud transactions in Taobao could account for as high as 47% of all the rated transactions during the period from October 2008 to May 2009 (Zhang et al., 2012). Some critics even estimate that about 80% of Taobao sellers have committed trust fraud during their businesses (Moneyweek, 2011). Other statistics show that 23% of the C2C complaints were related to fraud activities in 2009 (You et al., 2011). Obviously, Chinese C2C platforms, like Taobao, have become "cyber lemons" markets (Pan, 2011) and its buyers face great barriers to build trust with sellers.

Trust has been proven to be one of the most important factors to influence purchase decision (Gefen et al., 2003). To manage trust between buyers and sellers, Chinese C2C platforms (e.g. Taobao) have established various mechanisms, which are more complicated than those established by foreign competitors (e.g. eBay). For example, feedback rating regarding different aspects of transaction (e.g. item as described, communication, delivery efficiency), seven days return guarantee without excuse, statistics about refund and complains for every seller, detailed comment from buyers, proportion of virtual and real goods that have been sold, etc. However, it seems that Chinese C2C sellers can find solutions to game every trust mechanism. More than 1000 active trust fraud companies have been reported to help sellers increase reputation and whitewash negative feedbacks (Zhang, et al., 2012).

Chinese C2C buyers are more price-sensitive than those from other countries. Therefore, sellers usually employ low price strategy to attract buyers (Liu et al., 2013). Since trust and reputation mechanisms in Chinese C2C platforms are unreliable, it is very hard for buyers to find a trustworthy seller with low price. Buyers should balance the importance of price and trust seriously. In this paper, we investigate how price dispersion influences buyers' trust. The question that triggered our interest is how would the buyers decide to trust a seller (leading to purchase intention) when they search a product and receive a list of prices with a high level of price dispersion, rather than a list of narrowly distributed prices? This information-seeking activity mostly happens in the stage of building initial trust (Corritore et al., 2003), which is the focus of our investigation.

The question in this *research-in-progress* is interesting from both academic and business perspectives. First, it is reported that repeat purchase ratio in Chinese C2C market is not high, ranging from 25% to 69% across product catalogues (Ke, 2012). In other words, a big proportion of transactions are conducted by new buyers. Therefore, C2C sellers need to be attractive to stimulate initial trust. Besides, initial trust is considered as the first and foremost important phase of building trust (Lu and Zhou, 2007). Second, trust has been found to be an antecedent of price dispersion, i.e., a seller with higher trust value could enjoy a higher price premium (Brynjolfsson et al., 2000; Pan et al., 2004). However, little attention has been paid to the effect of price dispersion on trust. When price dispersion is high, buyers would be worried about trusting unknown sellers (Biswas et al., 2009). Buyers might be skeptical of the quality of product sold at low price and perceive high transaction risk (Pan et al., 2002). Conversely, buyers also suspect that high-priced sellers might be taking advantage of information asymmetry (e.g., difficulty in pairing sellers and market prices) (Biswas et al., 2006). Third, the knowledge of how price dispersion interacts with trust is important for sellers. The sellers need to know how to price their products to avoid suspicion, increase trust and sales volume. And fourth, since price dispersion cannot be easily controlled by a small proportion of sellers, it is possible for C2C platforms to utilize price dispersion and design mechanisms to help buyers do better purchase decision.

Based on the research and practical needs outlined above, this *research-in-progress* aims to explore the influence of price dispersion on buyers' purchase intention from trust perspective. Additionally, since

price performs as a quality signal when buyers face uncertainty about product or service quality (Kim et al., 2012), and C2C buyers usually cannot physically experience the product before purchase, we try to differentiate the effect of price dispersion under different types of product: "low touch" product (or search goods), and "high-touch" product (or experience goods). Low-touch products are usually standardized goods where not much effort is required to evaluate their quality before purchase, such as CDs and books. High-touch products require buyers to touch or experience before purchase, such as clothes, shoes, and perfume (Levin et al., 2003). Therefore, two research questions related to the Chinese online C2C market are investigated in this paper: (1) how would price dispersion influence buyers' initial trust and purchase intention? (2) Would the effect of price dispersion show differences across product types?

2 LITERATURE REVIEW

2.1 Price Dispersion

Price dispersion refers to the distribution of prices of an item across sellers at a given point in time in the market (Pan, et al., 2004). In online purchase context, previous studies can be generally divided into three streams. The first stream evaluates the levels of price dispersion between online and off-line products. Since online search costs are typically lower, and the operation costs (e.g., menu cost) of online retailing are usually lower as well, it is expected that online price dispersion should be lower than off-line price dispersion (Bakos, 1997; Brynjolfsson, et al., 2000). However, mixed results have been found across different studies. Some studies found online price dispersion is higher than off-line price dispersion (Ancarani et al., 2004), while some studies observed the reverse result (Brown et al., 2002), still others found there was no significant difference (Scholten et al., 2002). The contradicting results can be attributed to product type, sampling strategy, maturity level of e-commerce, calculation methods, etc.

The second stream of studies aims to find the drives of online price dispersion. Homogeneity in sellers and products, search costs and information asymmetry are considered as three core reasons that cause price dispersion (Ghose et al., 2011). Moreover, the online seller's characteristics (e.g., customer support quality, product information quality, trust and reputation), market characteristics (e.g., number of competitors) and category characteristics (e.g., uniqueness) also influence price dispersion (Pan, et al., 2004).

Finally, the third stream concerns with the pricing strategies. Results suggest that products that have high price dispersion usually have higher frequency of price adjustment, fewer but more frequent price increases, and higher number of price reductions (Oh et al., 2006).

In C2C market, it has been reported that the price level is lower and the level of price dispersion is higher than those in other markets (Fu et al., 2007; Lu, Zhou, et al., 2007). However, the sources of price dispersion and effects of price dispersion in C2C market have received little attention in existing research. Inherent from the previous studies mentioned before, it is reasonable to argue that factors, such as quality of the product and services, reputation, price strategy, would also play important roles in determining price dispersion in C2C markets. However, fraud has also been found to lead to (abnormal) price dispersion in C2C market (Zhang, et al., 2012). For instance, some sellers might sell 14-day cell phones (a prototype) as brand new ones at extremely low prices, but these phones will not work after the 7-day return guarantee expires.

The prevalence of abnormal price dispersion in C2C market would undermine the market efficiency in at least two ways. First, the experienced buyers might perceive high risk and spend much effort to identify trustworthy sellers, and the amateur buyers could easily be cheated by low price signals and would hardly ever build sufficient trust in to buy again in the future. Second, according to the Range Theory (Janiszewski et al., 1999), the abnormal low/high prices extend the range of the product price, and the buyers might feel expensive/cheap when they see the fair prices. Therefore, the abnormal price dispersion

could disturb the buyers' perception of fair product prices and cause the buyers much effort to search for price information.

Since the study of price dispersion in C2C is still in early stage, in this paper, we focus on explaining the consequences of price dispersion in C2C market, specifically, the negative effects of price dispersion (e.g., increased perceived risk) on buyer's initial trust.

2.2 Perceived risk and initial trust

Perceived risk is an important factor in consumer decision making (Lin, 2008). It refers to the subjective possible loss when pursuing a desired result (Featherman et al., 2003). Considerable research has been done to examine the impact of perceived risk. Moreover, perceived risk has different types of categorization under different contexts (Lee, 2009; Lim, 2003). Compared to traditional and Business-to-Consumer (B2C) markets, C2C buyers face higher risk due to the physical separation and uncertainty about sellers' profiles (Xu et al., 2010). The types of perceived risk faced by buyers in C2C can be found in Table 1, and their descriptions are drawn based on previous studies (Lim, 2003).

Risk Type	Description	Example
Performance risk	The possibility that the purchased products cannot function well or can be used for only a short period of time	The product comes from unknown factory and its quality is not good.
Social risk	The possibility that buyer's important friends/family/work group do not support the online shopping behaviour	Friends do not recommend the buyer to purchase cell phone in C2C
Time risk	The possibility that the buyer may suffer from time loss and inconvenience due to the delays of receiving the products and return of unsatisfactory products	The time used to return product back to the vendor/factory is too long
Financial risk	The possibility that the buyer may face monetary loss during online shopping	Unreliable money transfer, product reparation cost
Privacy risk	The possibility that the buyer's personal information may be used without permission	Cell phone number or home address sold to 3rd party without permission
Physical risk	The possibility that the product contains harmful ingredients	Shoes or clothes give off irritating smell
Psychological risk	The possibility that the buyer suffer mental stress because of their online shopping behaviour	The buyer feels frustrated if the purchase is not successful

Table 1. Types of perceived risk in C2C transaction.

Besides perceived risk, trust is another factor that has received much attention from e-commerce researchers. However, trust is difficult to be conceptualized (Wang et al., 2005). Researchers usually view trust as either a set of beliefs in the integrity, benevolence, ability and predictability of another party (Gefen, et al., 2003), or a general belief that shows the willingness of a party to be vulnerable to the actions of another party (Wu et al., 2011). Moreover, researchers also distinguish trust at different stages, such as initial trust and continuous trust (Kim, 2012; Siau et al., 2003).

The casual relationships between perceived risk and trust have not gained general consensus. Five kinds of relationships can be found in previous literature. First, trust and perceived risk are used as independent variables (Verhagen et al., 2006). Second, perceived risk acts as a moderator and decreases the positive relation between trust and purchase intention (Stewart, 1999). Third, trust negatively precedes perceived risk (Kim et al., 2008; Pavlou, 2003). Forth, the relationship between these two factors is reciprocal (Chang et al., 2008). And last, perceived risk negatively influences trust (Chen et al., 2012; Corbitt et al., 2003). However, because the generation and maintenance of trust is a dynamic on-going process, whether perceived risk performs as an antecedent or consequence of trust depends on the different stages of trust building and maintenance (Lee et al., 2001).

In this study, we are interested in the early stage of trust building (initial trust). In online shopping, initial

trust is of vital importance since there is no prior experience, and purchase transactions can be only performed after getting initial trust by new consumers (Kim, 2012). However, previous e-commerce studies usually link initial trust with the constructs in Technical Acceptance Model (TAM) (Chen et al., 2007; Hampton-Sosa et al., 2005; Kim, 2012), while the interaction of initial trust with other variables has received limited attention. Furthermore, few studies have focused on the relationship between trust and perceived risk in C2C context. In this paper, we use perceived risk as an antecedent of initial trust to explain buyer's C2C shopping behaviour.

2.3 Perceived value

One of the key links between cognitive elements (e.g., perceived risk, cognitive trust, and perceived quality) and purchase intention is value. Customers are usually "value-driven", therefore how a customer values the product or service is very important for both businesses and researchers (Sweeney et al., 2001). *Perceived value* is defined as the trade-off between the benefit and cost perceived by the customer (Kim, et al., 2012). This concept (*perceived value*) is different from the concept of *satisfaction* since the former occurs during all the stages of the purchase process, while the latter depends on the experience of using/consuming the good or service. Moreover, perceived value is not the perceived price, but rather it is a complementary variable including emotional, social and functional assessments (Sweeney, et al., 2001).

Studies have discussed extensively the concept of perceived value in both the pre-purchase and post-purchase stage. Customer's perception of value can be positively influenced by service quality, seller image and price, and negatively influenced by perceived risk and costs (Agarwal et al., 2001; Chang and Tseng, 2011). Furthermore, perceived value can facilitate loyalty and directly or indirectly (e.g., satisfaction as a mediator) influence customer's post-purchase intention (Kuo et al., 2009; Mcdougall et al., 2000; Tam, 2004; Wang, 2010).

In this paper, we use perceived value as a mediator of the effect of cognitive variables (trust, perceived risk, price dispersion) on purchase intention. The influences of trust and perceived risk on perceived value have been addressed in previous studies (Agarwal, et al., 2001; Kim, 2012). However, how price dispersion influences the perceived value remains unclear.

3 RESEARCH HYPOTHESES

The research model for this *research-in-progress* is presented in Figure 1.

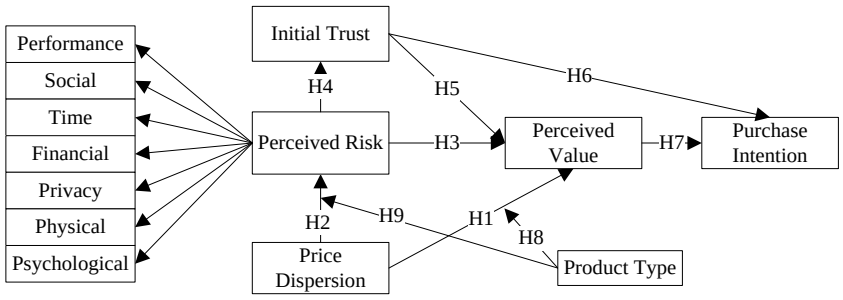

Figure 1. Research model proposed in this research-in-progress

Price dispersion is found to increase buyers' price sensitivity (Pan, et al., 2004). Therefore, when buyers face high level of price dispersion, they would be motivated to execute more search activities to find out the differences among alternatives and locate the most suitable one. Previous studies have found the positive effect of price dispersion on search intention (Biswas, et al., 2009; Caglayan et al., 2008; Head et al., 2005). Since the buyers put more time and effort on the transaction, the cost of transaction increases and perceived value decreases. Therefore, we hypothesize that:

H1: *price dispersion* has a negative influence on *perceived value*.

Moreover, price dispersion also increases the uncertainty of transaction (Biswas, et al., 2006). Buyers might be skeptical of the product sold at both irregular low and high price. For a given product, low price is usually considered as a signal of fraud, low quality, poor warranty, or a way for sellers to gather private information (Kirmani et al., 2000; Miyazaki et al., 2005; Zhang, et al., 2012). For instance, a low quality product may cause various problems during usage and lead to higher performance risk (e.g., not working), social risk (e.g., blamed by friends), time risk (e.g., waiting for replacement) and physical risk (e.g. leakage of electricity). Similarly, high price seller could also be suspected to over-emphasize some unnecessary characteristics of the product or service to enjoy price premium (the buyer may feel regretful after purchase), make the best claims but deliver regular product or service (may lead to performance and financial risk), or execute fraud activities which are more profitable in high priced products than in low priced ones (may lead to financial risk). As a result, buyers' perceived risk increases. The cases of transaction risk when purchasing either high priced or low priced products have been reported in many studies (Chua et al., 2007; Jin et al., 2006; Zhang, et al., 2012). Therefore, we hypothesize that:

H2: *price dispersion* has a positive influence on *perceived risk*.

Risks are indicators of future potential costs, but buyers usually take future cost or benefits into consideration during their perceptions of present cost or benefits (Agarwal, et al., 2001). Therefore, it is reasonable to argue that buyers would consider risks (e.g., a high probability of product replacement after purchase) when they assess product value. The negative influence of perceived risk on perceived value is supported in previous studies (Agarwal, et al., 2001; Chen et al., 2003). Therefore, we hypothesize that:

H3: *perceived risk* has a negative influence on *perceived value*.

Perceived risk can impact consumers' purchase decision process -- consumers usually try to find ways to minimize their perceived risk (Mitchell, 1999). However, the information asymmetry makes it hard for buyers to judge product value and provides the sellers opportunities to act fraudulently (Mishra et al., 1998). Therefore, the buyers would not be willing to trust the product if they perceive high risk (Mitchell, 1999). Moreover, perceived risk is closely related to negative consumption emotions, such as fear and disgust (Chaudhuri, 1997), while these negative emotions were found to undermine trust building (Dunn et al., 2005). The negative influence of perceived risk on trust is supported in previous studies (Eid, 2011). Therefore, we hypothesize that:

H4: *perceived risk* has a negative influence on *initial trust*.

Trust can reduce the time and effort to select a seller (Chiles et al., 1996). Once initial trust is built, customers tend to spend less effort to accomplish transactions with the seller (Kim, et al., 2012). As a result, buyer's perceived value increases. The positive relationship between trust and perceived value has been supported in many studies (Chen, et al., 2012; Chiou, 2004; Kim, et al., 2012). Moreover, trust studies have shown a direct relationship between trust and purchase intention (Pavlou, 2003; Pavlou et al., 2004). Therefore, we hypothesize that:

H5: *initial trust* has a positive influence on *perceived value*.

H6: *initial trust* has a positive influence on *purchase intention*.

The Utility Theory in economics suggests that buyers are economically rational and they will try to maximize utility or satisfaction during transactions (Chen, et al., 2003). When perceived value is defined as an overall calculation of gains (e.g., usefulness of product, satisfaction) minus losses (e.g., monetary loss, discomfort with confusing prices, search effort, risk) in transactions, it reflects buyers' net gain obtained from their purchase behaviour. The higher net gain the buyers expect to receive, the stronger purchase intention the buyers may generate. The strong and significant relationship between perceived value and purchase intention is supported in previous studies (Chang et al., 1994; Chen, et al., 2003; Kim, et al., 2012). Therefore, we hypothesize that:

H7: *perceived value* has a positive influence on *purchase intention.*

The concept of "low-touch" and "high-touch" is closely related to uncertainty (Weathers et al., 2007). The attributes of "low-touch" products can be known prior to purchase, while the attributes of "high-touch" products are difficult to search and they can only be known through direct experience (Chiang et al., 2003). Therefore, price becomes an important signal of quality for buyers (Hsieh et al., 2005; Kalita et al., 2004). But "high-touch" product sellers might take advantage of buyers' difficulty in acquiring information about product attributes and apply various prices accordingly. Such activities would lead to a wide range of price distribution (high level of price dispersion). As a result, it is much harder for buyers to assess the product value. On the contrary, when "high-touch" product buyers face a low level of price dispersion, they will feel that the quality across sellers is stable. Consequently, it is easier to assess the product value and further search cost will be reduced. Therefore, we hypothesize that:

H8: The negative effect of *price dispersion* on *perceived value* will be stronger in the purchase of "high-touch" product than that in the purchase of "low-touch" product.

H9: The positive effect of *price dispersion* on *perceived risk* will be stronger in the purchase of "high-touch" product than that in the purchase of "low-touch" product.

4 RESEARCH METHODOLOGY

4.1 Description of experiment

A survey-based lab experiment will be conducted to test the research hypotheses. The number of participants will meet the requirement of Partial Least Squares (PLS) analysis. Participants will be randomly divided into two groups to test buyers' purchase experience on low-touch and high-touch goods, respectively. In the low-touch goods group, half of the participants will be asked to purchase books and the others will be asked to purchase CDs. In high-touch goods, group, half of the participants will be asked to purchase cell phones and the others will be asked to purchase clothes. We select books and CDs as low touch goods because the product characteristics are more identical and stable. Many studies on price dispersion also select books and CDs as sample of low touch products (Brynjolfsson, et al., 2000; Kim, et al., 2012). We select cell phones and clothes as high-touch goods because they contain many characteristics which are unknown before purchase, for example, the sensitivity of the phone's touch screen, whether the phone contains refurbished parts or not, the feeling of the clothes' material. Our selection is in accordance with previous studies (Girard et al., 2003). The titles of books, CDs, cell phones, and clothes are all selected from Taobao best seller list. The whole set contains 400 product titles, with 100 in each product category. We will also consider other categories of product if necessary.

We built a prototype system to conduct the experiment (see Figure 2). The interface of the prototype looked almost the same as Taobao. We used a self-developed crawler to gather data from Taobao. Therefore, the product information (pictures, description), price distribution, seller names, and location were exactly the same as those in the real market. However, we discarded the information about sales volume, sellers' reputation and service guarantee to reduce the potential influence of social influence, reputation and service quality.

We will provide five product alternatives to every participant and allow participants to choose one as their own target product. The instructor will confirm with the participants that everyone has no prior experience with the selected product before the experiment begins. The experiment is estimated to last for about 10 minutes or more, but the time consumption will depend on each participant's actual decision process. We will treat the action of clicking "check out" as the end of experiment. Electronic questionnaires will be provided to participants immediately after they finished the experiment. The filling of questionnaires will be controlled by a software program which does not allow missing selections.

Figure 2. A screenshot of experimental system (an item with widely distributed prices)

4.2 Instrument development

Initial trust will be measured as a single construct with five items adopted from (Hu et al., 2010; Koufaris et al., 2004). *Perceived risk* will be modeled as a second-order formative latent construct that has seven first-order formative factors (listed in table 1). Every first-order formative factor will contain two items; therefore, *perceived risk* will be jointly measured by fourteen items. The measurement of *perceived risk* is in line with previous studies (Crespo et al., 2009), and fourteen items will be adopted from (Chang et al., 2012; Crespo, et al., 2009; Ko et al., 2004). The six measurement items of *purchase intention* will be adopted from (Kim, et al., 2012; Lu, et al., 2007). The four items used for measure *perceived value* will be adopted from (Chang and Wang, 2011; Sweeney et al., 1999). Finally, *price dispersion* will be measured as the normalized difference between the highest price and the lowest price (i.e., the range divided by the average price) for a particular product. This measurement is consistent with previous studies (Grover et al., 2006; Pan, et al., 2004). We will do small modifications on each item to fit online C2C context and execute pre-test procedure. Moreover, factors such as age, gender will be considered as control variables.

5 CONCLUSION

In Chinese online C2C market, most buyers would like to enjoy a good product or service quality with the minimum amount of payment. However, high level of price dispersion disturbs buyers' selection of target sellers. It is hard to identify trustworthy sellers when the C2C market is essentially a "lemons" market. Meanwhile, price dispersion also determines sellers' pricing strategy, since price is a quality signal when buyers cannot generate knowledge about the product through direct experience. Therefore, knowing how price dispersion influences purchase decision is important for all parties involved in C2C transaction. However, previous studies cannot fully explain this issue, and related mechanisms (e.g., recommendation system based on price dispersion) have not been released. This *research-in-progress* puts forward a theoretical model to explain how price dispersion interacts with other important factors in C2C purchase (e.g. price dispersion, initial trust, perceived risk, perceived value and purchase intention). Product type (high-touch/low-touch) is considered as well since the level of uncertainty faced by buyers is different. If this research-in-progress is implemented properly, it has the potential to lead to various theoretical and practical implications. For example, the results will enhance the literature on trust, help buyers do better purchase decision, assist sellers in designing pricing strategy, and be utilized by platforms to propose new mechanisms.

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