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The persuasion of borrowers' voluntary information in peer to peer lending: An empirical study based on elaboration likelihood model

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ABSTRACT

This paper investigates the persuasive process of borrowers' controllable voluntary information which can be easily manipulated and is particularly valuable for borrowers to persuade lenders and enhance the likelihood of funding success in P2P lending marketplace. Using a large scale data set from a Chinese leading P2P lending platform, namely Renrendai, based on a dual-processing persuasion theory-Elaboration Likelihood Model, we introduce four newly persuasive features (*Completeness*, *Sentiment*, *Language intensity*, *The number of certificates*) with central and peripheral cues in voluntary information. The results show that the persuasion of borrowers' voluntary information can be accomplished via two distinct routes in P2P lending, suggesting that not only central cues but also peripheral cues have significant effect on lenders' decision making. Specially, negative sentiment is negatively associated with funding success which is contradictory to the findings in fund-raising appeals say using negative emotions can evoke "empathy-helping". Moreover, we find a negative interaction effect on funding success between *Completeness* and *The number of certificates*. Our study shed some light for deeply understanding the dual-route persuasive process in P2P lending.

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1. Introduction

The aim of online lending, for borrowers in Peer-to-Peer (P2P) lending market, is to persuade lenders to fund, and borrowers' voluntary information may plays an important role in persuasion because of its controllable feature. Due to the asymmetric information problem which is especially elevated in P2P lending (Lin, Prabhala, & Viswanathan, 2013), borrowers would disclose as much information as possible on P2P lending platform to alleviate asymmetric information problem and enhance the likelihood of funding success. They can not only provide objective, necessary information demanded by platform, but also submit various voluntary information which is nonstandard, subjective and unverified (Dorflleitner et al., 2016), such as photograph, loan description, and various certificates which are uploaded voluntarily

by borrowers and lenders can only confirm the existence of them.

Objective information is pulled directly from the borrowers' credit report and thus could not be easily adjusted by borrowers in a short period of time (Larrimore, Jiang, Larrimore, Markowitz, & Gorski, 2011). Compared with objective (hard) information, voluntary information is more controllable. Thus, voluntary information is particularly valuable for borrowers to persuade lenders and enhance the likelihood of funding success in P2P lending marketplace. Previous research in this domain examined which factors of voluntary information affect funding success, however, the understanding for the persuasive process of voluntary information is still limited. Previous study in electronic commerce also demonstrated that the key to designing a successful persuasive strategy is to understand the communication process between customers and sellers (Tang, Jang, & Morrison, 2012). For P2P lending, understanding the persuasive process of voluntary information can help borrowers to know how to accomplish effective persuasion, and further foster lenders to fund.

Moreover, previous research explored limited aspects of voluntary information, such as the account, identity, language feature, there are still rich features (such as sentiment analysis,

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language intensity of loan description) have not been concerned. Nevertheless, these features were showed have important significance on persuasion in other contexts, such as online product reviews (Li & Zhan, 2011), donation appeals (Fisher, Vandenbosch, & Antia, 2008; Liang, Chen, & Lei, 2016), advertising (Lewinski, Franssen, & Tan, 2016; Tseng & Huang, 2016), product popularity prediction (Wu & Shen, 2015), attracting much attention for the P2P lending.

In order to investigate the role of richer features of voluntary information in persuasion and understand the persuasive process of borrowers' controllable voluntary information in P2P lending marketplace, we draw on the classical dual-processing persuasion theory of Elaboration Likelihood Model (ELM) as the theoretical base. The ELM is developed in the 1980s proposed by Petty and Cacioppo (Petty & Cacioppo, 1984). As a process-orientated method, the ELM provides a framework for understanding the basic processes which underlie the effectiveness of persuasion and attitude change (Petty & Cacioppo, 1984; Yang, 2016). This theory framework has been well documented in many fields such as social psychology (Robert & Dennis, 2005), information technology (Bhattacharjee & Sanford, 2006; Sussman & Siegal, 2003), and electronic commerce (Kim, Chung, Lee, & Preis, 2016; Zhou, Lu, & Wang, 2016). The ELM proposes two routes to persuasion: the central route and the peripheral route, which differ in the amount of thoughtful information processing or "elaboration" demanded of backers (Bhattacharjee & Sanford, 2006; Petty & Cacioppo, 1984). Under the central route, persuasion will likely result from a person's careful and thoughtful consideration of the true merits of the information presented in support of an advocacy. On the other hand, under the peripheral route, persuasion results from a person's simple inference about the merits of the advocated position (Petty & Cacioppo, 1984). Contrary to the central route, the peripheral route requires less effort involvement. This framework is particularly relevant for our data because lenders in P2P lending could potentially be persuaded either by a centrally processed argument such as strong repayment ability mentioned in the borrower's loan description or by a peripherally processed argument such as a trustworthy image presented by the borrower through submitting many certificates.

Given that, we employ ELM to identify a comprehensive set of features with central and peripheral cues in borrowers' controllable voluntary information and address the following two questions in this paper:

1. Whether or not our newly introduced persuasive cues (*Completeness, Sentiment, Language intensity, The number of certificates*) extracted from borrowers' controllable voluntary information have effect on lenders' decision making?
2. How does the persuasive process accomplish and affect lenders' funding decision?

We investigate these two questions using a large scale and complete data set (590,000 loan requests) from a Chinese leading P2P lending platform, namely Renrendai. We start with a series of works to test the incremental influence of our newly identified features on funding success while controlling for *Readability* of loan description which is previously studied and other objective information that nearly all of what a lender knows about a borrower. Further, in order to have a better understanding of the persuasive process, we also examine the interaction effect between the central route features and the peripheral route features on funding success.

Our research differs from prior research in three aspects. **First**, our paper is the first to understand dual-route persuasive process in online P2P lending. The research of the persuasive process of borrowers' controllable voluntary information base on ELM

- an influential theoretical framework in the persuasion literature. ELM offers us a well-grounded foundation for understanding the dual-route persuasive process in P2P lending. **Second**, the rich information contained in the voluntary information (e.g., sentiment and completeness) are ignored, using text mining technique, we extract four newly features from borrowers' voluntary information: *Completeness, Sentiment, Language intensity, The number of certificates*. Richer features extraction and empirically study offer better understanding of the role of borrowers' controllable voluntary information in persuasion. **Third**, to the best of our knowledge, this is the first study using a large scale data to understand the role of borrowers' voluntary information in P2P lending.

This paper provides unique and complementary insights to previous literature by investigating the dual-route persuasive process of borrowers' controllable voluntary information in P2P lending. As online lending becomes an alternative and increasingly appealing channel for financing, an understanding of the persuasive process of borrowers' voluntary information can provide important implications for borrowers to effectively use their controllable voluntary information to foster lenders to fund. In addition, our research can also help the managers of lending platform to make strategic decisions to facilitate online lending.

The rest of this paper is organized as follows. We outline previous research related to our study in Section 2. We present theoretical framework and show our research hypotheses in Section 3. Section 4 describes variables used in our study and constructs model. Section 5 presents the empirical results and alternative models to test for robustness. Section 6 concludes and discusses theory and practical implications. Finally, Section 7 discusses limitations of this study and concludes with a proposal for future research.

2. Literature review

In this section, we review the literature relevant to the subject of voluntary information and funding success. Specially, we summarize the P2P lending studies of Chinese platforms. In the end, we discuss how our findings add to the work in this area.

2.1. Factors affecting the funding success of P2P lending

The determinants for funding success investigated by previous studies can be categorized into four types: 1) Loan characteristics, including loan rate, loan amount and loan duration. 2) Borrower's personal information, such as credit level, gender, age, working life and so on. 3) Voluntary information, including photograph and loan description. 4) Soft information, including friendship networks and group affiliation.

Loan characteristics are the fundamental information of borrower's loan listing. Puro, Teich, Wallenius, and Wallenius (2010) showed that borrowers who offer higher interest rate and request smaller loan amount are more likely to receive funding. Some personal information of borrowers also has significant impact on funding success of P2P lending. Lee and Lee (2012) found that borrowers on Popfunding with a history of more successfully funded auctions or with a history of fewer failed auctions attract more bids. Ly and Mason (2012) found that loans to women and groups of women raise funds 38% faster than loans to men and mixed groups on Kiva platform.

Besides providing basic personal information requested by P2P platform, borrowers can also voluntarily submit additional information in their listings. Michels (2012) argued that objective quantitative data often are insufficient, and decision makers may turn to subjective, but potentially diagnostic qualitative data. Pope and Sydnor (2011) used borrowers' photographs from Prosper and

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