



# Investment Intention Towards Online Peer-to-Peer Platform: A Data Mining Approach Based on Perceived Value Theory

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**Abstract.** The financial industry has experienced a wide range of changes and innovations that bring from technology and Internet. The online Peer-to-Peer (P2P) lending platform is a relatively new phenomenon that thoroughly change the finance and e-commerce industries. In fact, in China the number of P2P online lending platforms has grown rapidly and will probably continue to increase over the next decade. However, researches in this field is still in its infant stage. Deeply understanding this business pattern has significant implications both theoretically and practically. We studied the investors' investment intention towards P2P platform based on perceived value theory. Unlike most empirical researches that employ questionnaire to collect data, this paper crawled data from WDZJ ([www.wdzj.com](http://www.wdzj.com)) which is a third-party online loan information platform. We collected 517 platforms data to investigate the relationship between platform characteristics and investment intention. Results derived from data suggest that simply offering higher return rate is less attractive for investors. Those platforms which possess high registered capital and have successful financing history along with low risk are more favored by investors.

**Keywords:** Online lending platforms · Perceived value theory  
Investment intention

## 1 Introduction

P2P lending platforms enable individual lenders make unsecured loans to other individual borrowers over the Internet without traditional middlemen [1, 2]. As a novel financing model, P2P has attracted increasingly attention since its emerging. Compared with traditional finance industry, P2P online lending platforms, which eliminate the involvement of financial intermediary, can raise funds quickly, increasing the efficiency of finance landscape. With a high return on investment and a low investment threshold, P2P lending platforms satisfy individuals' investment needs under the current economic situation [3].

Due to these benefits, a wide range of P2P platforms have come to appear over the last decade in China, such as RenrenDai, LuP2P, Jinyingmao and so forth. According to data from WDZJ ([www.wdzj.com](http://www.wdzj.com)), by June 2018 there have been approximately 1800 P2P lending platforms in China. The latest monthly report shows that the overall volume of online lending turnover has exceeded 100 billion yuan. P2P lending market

plays an important role in improving the efficiency of financial system and encouraging innovation and entrepreneurship.

Although P2P lending platforms has developed rapidly in terms of financing scale and diversity, it has not been deeply investigated. In the perspective of literature, previous studies mainly discuss this topic from two aspects, one is the determinants of P2P platform success [4–6], another relates to participant behaviors [7, 8]. Besides, most of previous studies examined lending intention towards different projects on an identical platform. Conversely, we considered several dimensions of P2P lending platform and focused on the question: which platform features are related to users' investment intention towards the platform. We wrote a program via Python to collect data from the Internet Lending Home (WDZJ). Multiple regression analysis was employed in this paper to test the research model which based on perceived value theory. To the best of our knowledge, this study is the first effort to apply it in the context of Chinese P2P lending market. Our will be of interest to both academia and industries. For researchers, we proved that platforms with good operating capability are more attractive to investors. For practitioners, the findings can serve as an instruction for platforms' continuous improvement and contribute to strengthening lenders' investment intention.

The remainder of the paper is organized as follows: Sect. 2 provides the theoretical foundation of P2P lending and perceived value. In Sect. 3, we propose our research model and hypotheses, followed by a summary of the results. In the last section, we conclude this paper by discussing the study's implications for research and practice.

## 2 Literature Review

### 2.1 Chinese P2P Lending Background

P2P platform is of great importance for Chinese small and micro-enterprise (SME) because of the lack of mature finance mechanism in most developing countries [9]. A considerable number of enterprises especially SMEs and individuals suffer from the repression of traditional finance mechanism in China. The limited private capital investment channels make this problem even severe. Therefore, the contemporary financial environment has resulted in a rapid advancement of Chinese P2P lending platforms.

There are some general challenges that need to be solved in P2P lending market. Risks such as information asymmetry risk, default risk and legal risk threat the healthy development of P2P lending market. Lin discussed the causes of default risk in the context of Chinese lending platform [10]. They also presented some characteristics of borrowers with low default risk. These features include female gender, young adults, long working time, stable marital status, high educational level, working in large company, low monthly payment, low loan amount, low debt to income and no default history. To mitigate the information asymmetry problem, suggestions like introducing "soft" information into P2P lending marketplace were proposed [11]. Healy and Palepu [3] suggested that the participation of third-party information mediators can also reduce the asymmetry of information.

In addition to the common problems mentioned above, Chinese lending platforms also face some other challenges. It has been found that some criminals use the P2P platform to deliberately defraud and launder money. According to the latest data from WDZJ (<https://shuju.wdzj.com/problem-1.html>), over 2000 P2P lending platforms were categorized as “problematic platforms” by June 2018. A majority of them were investigated for business termination or runaway. The fact is that Chinese investors should not only consider how to choose a right investment project but also a trustworthy P2P platform.

## 2.2 Related Studies on P2P Lending

### 2.2.1 Behavior Patterns

Behavior science, as the mainstream research of IS field, including topics like analyzing motivations of a particular behavior or behavior patterns in a particular context. Therefore, many IS scholars have worked on the behavior analysis on P2P lending platform. As P2P lending market belongs to crowdfunding community [12], in this section we reviewed the related behavior research either on the P2P lending platforms or on crowdfunding platforms.

Generally, there are four types of investors: active backers, trend followers, altruists, and the crowd [13]. Trend followers paid relatively less attention to the project creators’ social capital and were more likely to invest in projects that were in later stage of the funding process. Similarly, [14] found that donor’s support of the project is in line with the U-shaped model, which means that project fundraisers receive more support at the beginning and the end of the project. Mohammadi analyzed the data on Fundedbyme, an equity crowdfunding platform in Sweden [15]. Their study provided evidence of gender difference with investor behavior. Female investors are unlikely to invest in start-ups (such as high-tech companies). This may be due to female investors have a higher degree of risk aversion. Moreover, they found that projects with a higher proportion of male investors are more likely to attract female investors.

Behaviors like herding effects are relatively common in both P2P lending environment and crowdfunding context. Burtch [16] studied the dynamic of herding effects with the project process of financing. They found that herding effects decreased along with the project financing rate increased. Investors feel that their investment become less important, which is called crowding-out effect. Similarly, Brekovich confirmed the impact of herding effects by analyzing data from Prosper. They also emphasized the significance of hard facts and soft facts in explaining investors’ decisions [17]. Lee also found the strong evidence of herding behavior on Popfunding, one of the biggest P2P lending platforms in South Korea [8].

### 2.2.2 Determinants of Lending Intention

About what factors affecting lending intention, prior scholars mainly consider individual’s lending intention towards a particular project. Thus, individual information and trust relationship between borrowers and lenders were extensively employed in prior literature. For example, Wang’s research suggested that the lender’s trust of the borrower had impact on lending willingness [18]. Larrimore investigated how to

establish and increase trust in P2P lending interactions [19]. According to their work, extending the length of loan description as well as more narrative and concrete description were effective to increase trust and the likelihood of funding success. Herzenstein found that the borrower's debt-to-income ratio has a negative effect on bidding [20]. Chen investigated the factors affecting online lending intention in Chinese P2P environment [9]. They argued that trust is the most significant factor influencing individuals' lending intention. While trust is affected by borrowers' perceived information quality, perceived social capital, and perceived risk. Their conclusions are consistent with prior studies which focused on lending behavior.

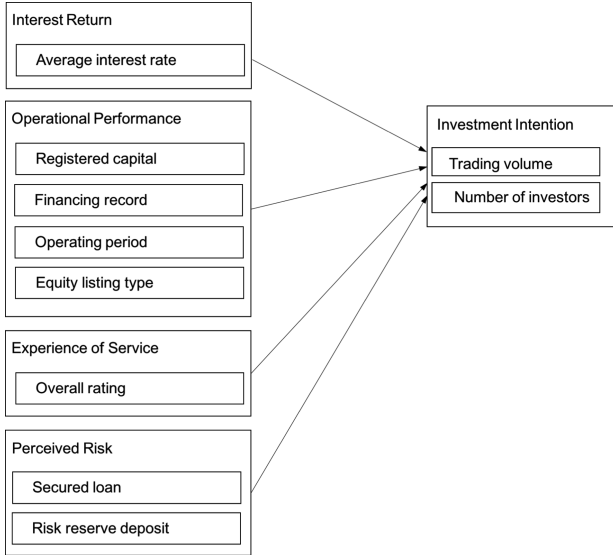
### **2.2.3 Perceived Value Theory**

It has been acknowledged that online users' value perceptions steer their purchase decisions [21]. Perceived value, which has been extensively applied to behavior studies, are strong correlated to customer loyalty, satisfaction and continuance intention. Parasuraman argued that perceived value is one of the most important factor for service providers to gain competitive advantage [22]. Given the fact that many Chinese P2P platforms compete with each other, offering similar rewards. It's imperative to help platforms survive in the fierce competition. In the e-commerce context, [23] verified that product price, perceived product quality, and valence of experience have impact on perceived customer value. While perceived value is an effective predictor of customer purchase intention. Motivated by their work, we assume that users' lending intentions towards platform are influenced by the features of the platform. Despite of the valuable findings in prior work, rare studies have highlighted the relationship between investors' lending intention with platform attributes. Our paper fills this knowledge gap.

## **3 Research Method**

### **3.1 Research Model and Hypotheses**

Young Kim studied customers purchase intention by identifying the dimensions of online shopping attributes [24]. They used eight attributes, such as credit card security, fast delivery time etc., to represent the transaction factor. Other factors included incentive programs, site design and interactivity. While the impact of site design on purchase intention were not supported, other factors were proved as important predictors of purchase intentions concerning clothes. Besides, results of [23] provided evidence of a highly significant positive relationship between perceived customer value and online purchase intention. They summarized some key factors with a particular e-store, such as customer service, ease of use of the website, e-retailer's reputation. As investor's lending intention concerning a platform resemble to purchase intention towards a particular e-store. We thus examined lending intention towards platform by four factors: perceived risk, interest return, experience of service, and operational performance. The research model is shown in Fig. 1.



**Fig. 1.** Research model

The dependent variable (investment intention) were composed of two attributes: trading volume and the number of lenders. The first factor (perceived risk) included secured loan and risk reserve deposit. The experience of service was measured by the overall rating, which derived from individuals’ rating towards each platform. We used average interest rate of the platform to represent platform interest return. The platform operational performance was associated with four attributes, including registered capital, financing record, operating period, equity listing type. The description of each attribute can be found in Table 1.

Some P2P lending platforms serve as comprehensive financial platforms. They not only offer P2P lending project, but also providing users with investment projects. The interest rate of the former project type is determined either through an auction or by the platform, while interest rate of investment projects is usually decided by the platform. Previous literature argued that investors were easily lured by P2P platform’s high interest rate [25]. This implies the following hypothesis:

H1: Interest return is positively associated with investment intention towards platform.

[26] suggested that customer’s perception of brand have positively impact on purchase intention. For the same product, customers prefer to purchase them from brand that has high reputation. [27] proved that perceived reputation had significant impact on users’ initial trust which was a positive determinant of users’ initial investing intention. The operational indicators such as listing company and remarkable financial record are conducive to long-term reputation establishment. So, our hypothesis is proposed as follows:

**Table 1.** Descriptions of measurements

Factors	Attributes	Interpretation
Investment intention	Trading volume (TV)	Total transaction amount on a particular platform
	Number of lenders (NL)	The accumulated number of people who participated in transactions within the latest month
Interest return	Average interest rate (AIR)	The average number of interest rate reference (weighted by transaction amount)
Operational performance	Registered capital (RC)	Legal registered capital
	Financing record (FR)	Discrete variable The platform has financing record was marked as 1. Otherwise, it was 0
	Operating period (OP)	Operating period since official launched online
	Equity listing type (ELT)	Discrete variable There are six listing types: unlisted, new third board, growth enterprise market, small and medium enterprise board, main board, and international listing, marking as 1–6 accordingly
Experience of service	Overall rating (OR)	Users (including the third-party users and users from a particular platform) rating towards the platform
Perceived risk	Secured loan (SL)	Discrete variable Platforms that guarantee the secured loan was marked as 1. Otherwise, it was 0
	Risk reserve deposit (RRD)	Discrete variable Platform that has deposit system was marked as 1. Otherwise, it was 0

H2: Operational performance is positively associated with investment intention towards platform.

When investor faces the same benefit and risk, an important consideration for them to choose a platform is the service provided by the platform. Customer's behavior research reckoned that shopping service affects purchases intention. We thus posit the following hypothesis:

H3: Experience of service is positively associated with investment intention towards platform.

Literature in economics suggest that individuals' risk appetite can be divided into risk preference, risk neutral and risk aversion [27]. According to Featherman's definition, perceived risk refers to the potential for loss in the pursuit of a desired outcome of using an e-service [28]. It was considered as an inhibitor to purchase behavior [29]. Platforms with risk reserve systems can secure investors' capital, which probably improve individuals' investment intention. Therefore, our hypothesis is proposed as follows:

H4: Perceived risk is negatively associated with investment intention towards platform.

**3.2 Data Analysis**

The Internet Lending Home (<http://www.wdzt.com>) is one of the largest and most authoritative third-party platforms that provides online P2P platform information and loan information. We crawled 517 P2P platforms data from Internet Lending Home. Multiple regression approach is employed for data analysis. Corresponding equations areas follows:

$$Y_1 = \beta_0 + \beta_1X_1 + \beta_2X_2 + \dots + \beta_8X_8 + \varepsilon$$

$$Y_2 = \beta_0 + \beta_1X_1 + \beta_2X_2 + \dots + \beta_8X_8 + \varepsilon$$

Where  $Y_1$  represents the trading volume (TV), and  $Y_2$  refers to the number of lenders (NL).

The total 5,170 platform features were collected. Table 2 gives the result of descriptive statistics.

**Table 2.** Descriptive statistics

	Min	Max	Mean	SD
TV	5.20	1092935.11	31098.48	95963.39
NL	.000	301075.0	7662.82	26015.35
AIR	4.84%	21.04%	10.885%	2.783%
RC	76	315804	7719.54	25197.073
FR	0	1.0	.211	.408
OP	4.42	8.20	6.846	.412
ELT	1	6	1.46	1.264
OR	0	4.8	3.233	1.311
SL	0	1	.61	.488
RRD	0	1	.11	.318

Table 3 shows the correlation coefficient and significance level of each variable. The correlation coefficient between the independent variables is less than 0.7, so there is no multicollinearity among variables.

**Table 3.** Correlation analysis results

	AIR	RC	FR	OP	ELT	OR	SL	RRD
AIR	1							
RC	-.172**	1						
FR	-.112**	.024	1					
OP	.088*	.176**	.139**	1				
ELT	-.035	.138**	.112*	.067	1			
OR	-.041	.038	.081	.105*	.052	1		
SL	-.174**	.056	.072	.079	.074	.156**	1	
RRD	-.080	.118**	.068	.104*	.071	.086	.124**	1

Significance level \*P < 0.1, \*\*P < 0.05, \*\*\*P < 0.01

### 3.3 Result Discussion

We applied multiple regression analysis on trading volume and the number of lenders respectively. The R square of trading volume is 39.2%, the adjusted R square is 38.2%. While the R square of the regression analysis on the number of lenders is 34.1%, and the adjusted R square is 33.0%. Table 4 summarized regression results.

**Table 4.** Regression results

	Interest return	Operational performance				Experience of service	Perceived risk	
Attributes	AIR	RC	FR	OP	ELT	OR	SL	RRD
TV	-.265**	.238**	.213**	.223**	.118**	.110**	0.032	.125**
NL	-.162**	.235**	.216**	.165**	.093*	.164**	0.048	.172**

Significance level \*P < 0.1, \*\*P < 0.05, \*\*\*P < 0.01

The results show that average interest rate is negatively correlated with the trading volume and the number of lenders, rejecting H1. A possible explanation for this result may be that high interest rate are usually accompanied with high risks. The higher interest rate the platform offers, the higher level of risk the customers perceive, decreasing their lending intention. In fact, the correlation results in Table 3 reveals that the platform's interest rate is negatively correlated with the secured loan and risk reserve deposit, proving evidence for the explanation.

In the dimension of platform operational performance, all attributes show great impact on both trading volume and number of lenders, supporting H2. This is consistent with prior study that claim the significant influence of platform reputation on users' initial investing intention [27]. Overall rating was also found to have significantly influence on both trading volume and number of lenders. As such, H3 is supported.

Regarding the two attributes in perceived risk, risk reserve deposit shows strong relationship with trading volume as well as number of lenders. However, the direct influence from secured loan to lending intention was not significant. As such, H4 is partially supported.

## 4 Conclusion

In this study, we analyzed the data from WDZJ through multiple regression approach to examine the factors affecting lenders' lending intention towards P2P lending platform. Results of our study show that the significant factors are interest rate, overall rating, risk reserve deposit and operational performance. Contrary to our hypotheses, the impact of secured loan on investment intention towards platform is not significant.

Since the overall interest rate of P2P marketplace is higher than the traditional investment channels, investors pay more attention to the risk of investment. They are likely to choose projects with relatively low risks, revealing that most investors are in risk neutral.



This work also provides several insights for P2P industry. First of all, improving platform operational performance. Investors believe that platform with strong operating capability and high reputation offers better lending and investment projects, reducing the probability of investment failure. P2P Platforms can improve their operating capability by increasing the amount of registered capital, conducting successful financing activities, etc. Secondly, providing better service. P2P online lending is a web-based service. An excellent experience of service, coupled with platform's high reputation in the P2P community, can enhance investors' investment intention towards the platform. Efforts, such as offering a wide variety of investment projects and facilitating the lending process, are highly encouraged. Moreover, it's necessary to reduce users' perceptions of investment risks. For customers, there is a trade-off between risk and return rate. Our findings suggest that most of them prefer relatively low risks regardless of the interest rate. Building risk reserve deposit system along with cooperation with third-party evaluation institutions can contribute to improving lending intention.

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