Research on Perceived Risk of WeChat Lending Service Based on CHAID

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Abstract. With the rapid development of Internet finance, online lending services have become an important business. In China, the convenience of WeChat lending services (WCLS) has enhanced consumers' perception of potential risks and greatly affected their willingness to use them. Based on the perceived risk theory and the trust theory, this paper is divided into the dimensions of perceived privacy risk, perceived service risk, perceived operational risk, cognitive trust, emotional trust, etc., in order to construct research variables, and collect 256 valid questionnaires by questionnaire survey. Research data Cronbach's alpha=0.850, KMO=0.848. The CHAID decision tree algorithm is used for in-depth analysis. The research results show that consumers' perceived risk of WCLS is induced by financial, privacy disclosure, fraud, operation, credit and other risks. The risk of personal information disclosure affects the decision to use WCLS, the degree of trust affects the user's judgment of whether there is operational risk, and the reputation comes from the user's evaluation.

Keywords: WeChat; Perceived Risk Theory; Trust Theory; CHAID

1   Introduction

WeChat is an online social platform software launched by Tencent Holdings Ltd. In addition to the basic social chat function, it also integrates payment, mini programs, daily payment and other services. It is a comprehensive life service platform with functions including life service, transportation, shopping consumption, financial management and so on. With 1.5 billion active users, it is one of the most important instant messaging software in the world [1]. WCLS (Webank) is a small credit revolving consumer loan product launched by Tencent, which was launched in 2015 and was not widely promoted until 2024, allowing WeChat community users to carry out revolving consumer loans through the lending service on the WeChat platform [2]. Because

WeChat Pay business cooperates with banks, mobile loan application is convenient, making WCLS a very popular microfinance business.

   With the large-scale advertising of WeChat loan service, which provides popular and convenient financial services, it has become an important way for most social users to obtain consumption funds. Due to the lack of financial knowledge and experience, users' perception of the potential risk of WeChat loan is also increasing, and the existence of perceived risk has greatly affected users' willingness to use it.

2   Literature

2.1   Perceived Risk Theory

Scholars divide perceived risk into uncertainty and consequence, that is, consumers' subjective evaluation of the possibility of something happening and the possible dangerous result [3]. Jacoby and Kaplan divided it into financial risk, functional risk, physical risk, psychological risk and social risk [4]. Based on online shopping, Jarvenpaa divides perceived risks into six categories: economic risk, social risk, functional risk, personal risk and privacy risk [5]. In terms of network application, scholar Dong Dahai (2005) put forward issues such as personal privacy, core services of online retailers, unqualified products, and risks of online shopping [6]. Xiangxiao (2024) proposed in combination with the trust theory that "platform sponsorship risk perceived by consumers" and "regulatory risk" would have an impact on consumers' purchase intention through their trust [7]. From the perspective of perceived risk, Xinyu (2024) believes that consumers have impulse purchase intention between the professionalism, credibility and perceived risk of anchors [8].

   Although scholars have various classifications of perceived risk, this paper divides perceived risk into five aspects: privacy risk, operational risk, service risk, economic risk and psychological risk based on network community service.

2.2   Trust Theory

Robinson (1992) believes that trust is a kind of expectation, that is, a good expectation of the will or behavior of others, and a psychological state that is willing to bear certain risks and the possibility of being vulnerable [9]. Mcallister divides trust into cognitive trust and emotional trust. Cognitive trust refers to the rational judgment made by the trusted party on the reliability of the trusted party according to the facts. Emotional trust refers to the perceptual judgment made by the trusting party on the trusted party due to emotional factors [10].

   In recent years, scholars have proposed relevant studies in the field of information. For example, Bobo and Yugui (2024) divided trust into three dimensions of competence, goodwill and integrity, and discussed the differences of trust in driverless taxi services in different dimensions [11]. Yingying et al. (2023) discussed the influencing factors of users' privacy risk perception in social media intelligent recommendation service based on the trust theory [12]. Ling et al. (2018) analyzed the repurchase intention of sports lottery with the consumption perception trust model, and the results

showed that the perception trust model can be used as the core of consumers' decision to purchase sports lottery [13]. In this paper, two two-dimensional trust classification criteria, cognitive trust and emotional trust, are used to study consumers' willingness to use lending services.

3   Method

This paper divides perceived risk into five dimensions: Perceived privacy risk, perceived operational risk, perceived service risk, perceived economic risk and perceived psychological risk. At the same time, trust was divided into cognitive trust and emotional trust according to two-dimensional trust classification criteria to construct research variables and conduct a questionnaire survey. Then, CHAID algorithm was used to analyze the influence of perceived risk in WeChat lending process on use intention. And the influence of WCLS trust factors on usage intention.

3.1   Study Variable

This paper constructs research variables and measures from multiple perspectives, including five dimensions of privacy, operation, service, economic and psychological risk, as well as cognitive trust and emotional trust, in order to deeply analyze and understand how these factors together affect users' behavior when deciding to use WCLS, as shown in Table 1.

3.2   Questionnaire Survey

The questionnaire design is divided into three parts: (1) to investigate the basic information of consumers who have used WCLS; (2) Intuitive feeling survey when using WCLS; (3) Variable design of the conceptual dimension of perceived risk and trust. Questionnaires were distributed from April 17 to April 20, 2024, 256 valid questionnaires were recovered, and abnormal or missing data were deleted.

3.3   Questionnaire Survey

SPSS software was used to test the reliability and validity of the data. Cronbach's Alpha=0.850, which is greater than 0.8, indicates that the questionnaire has high reliability and consistency. KMO=0.848 was analyzed for component factors, indicating that the correlation between variables was good, indicating good model validity; meanwhile, Bartlett's Test P-value < 0.05 indicated that the research data supported factor analysis, as shown in Table 2.

Table 1. Study variable

Variable	Item	Content
Basic	1-5	Gender, age, income, loan experience, safety concerns, etc
Perceived psychological risk	6	WCLS risk factors: financial, privacy breach, fraud, operational, credit and other risks
	7	WCLS influencing factors: loan interest rate, repayment limit, repayment period, platform reputation, friend recommendation, user evaluation, service quality
Perceived service risk	8	Fear of anxiety online lending platform problems
	9	Fear of ridicule for using online lending platforms
	10	Online lending platform problems are difficult to contact
	11	Online lending platforms take a long time to solve problems
	12	Worried about the network loan platform to take a tough recovery
Perceived economic risk	13	Worry about online lending platform charging extra fees
Perceived privacy risk	14	Worry about online lending platform leakage of identity information
	15	Worried about online lending platform leakage of bank account information
	16	Worried about privacy being exploited by hackers
	17	Fear of WCLS misoperation
Perceived operational risk	18	Fear that WCLS operation error is irreversible
	19	Fear of WCLS operation error loss
Cognitive trust	20	The WCLS operations team can be trusted
	21	WCLS loans are secure
	22	WCLS has low risk
	23	WCLS technology is reliable
Emotional trust	24	Feel comfortable using WCLS
	25	Willing to use WCLS for a long time
	26	Would recommend WCLS to friends
	27	WCLS basically meets the requirements

Table 2. Cronbach alpha and KMO tests

Items	Validity Test		Reliability Statistics	
	KMO	Bartlett's Test P-value	Cronbach α	Cronbach'sαbased on standardized items
27	.848	.000	.850	.850

3.4   CHAID Algorithm

Chi-square Autcnatic Interction Detector (CHAID) statistically selects the independent variable with the strongest interaction with the dependent variable through Chi-square test (Chi-Squared value is the largest and P-value is the smallest). Combine categories of predictor variables that do not differ significantly from the dependent variable to find the best separation, and repeat the separation in turn until the child nodes are not significant. It is usually used to process multi-branch discrete data, and because it can handle a variety of complex nominal fields, it is easy to understand and easy to import into e-commerce business applications.

The modeling process of CHAID in this paper is as follows: select the data (27 variables), specify the data type (nominal/label/ordered fields), specify the target variables (privacy disclosure risk, operational service risk, reputation risk), specify the predictor variables (worry about online loan problems, etc.), select the CHAID algorithm model. The significance level of Pearson verification was set (< 0.05), iteration convergence was set (= 100), decision tree structure was tested, reliability was analyzed, and decision tree model parameters were reset.

4   Results and Discussion

In this study, privacy leakage risk, perceived operational risk and reputation risk were taken as target variables, and the predictors were perceived economy, perceived privacy, perceived operation, cognitive trust and emotional trust variables. CHAID indepth analysis and results discussion were conducted.

4.1   Privacy Disclosure Risk

"Q6. WCLS privacy disclosure risk" was set as the target variable, and the predictive variables were perceived economy, perceived privacy, perceived operation, cognitive trust and emotional trust. Among the 256 people in the study, 159 (62.1%) agreed and 94 (36.71%) disagreed. The most significant correlation was observed with "Q6. WCLS fraud risk" (P=0.021), 162 (63.28%) agreed and 94 (36.71%) disagreed. Among 63.28%, it was most significantly related to "Q6. WCLS financial risk" (P=0.000), with 89 people agreeing (34.76%) and 73 people disagreeing (28.51%); In 34.76% agree with "Q27. WCLS basically meets the requirements", the most significant correlation (P=0.012), in 28.51% disagree with "Q14. Worry about online lending platform leakage of identity infromation", the most significant correlation (P=0.003), as shown in Figure 1.

When using WCLS, people generally worry about the risk of privacy disclosure, and the risk of personal information disclosure affects the decision to use WCLS. More than 60% of users believe that privacy breaches are closely related to the risk of fraud, high interest rates and repayment pressure.
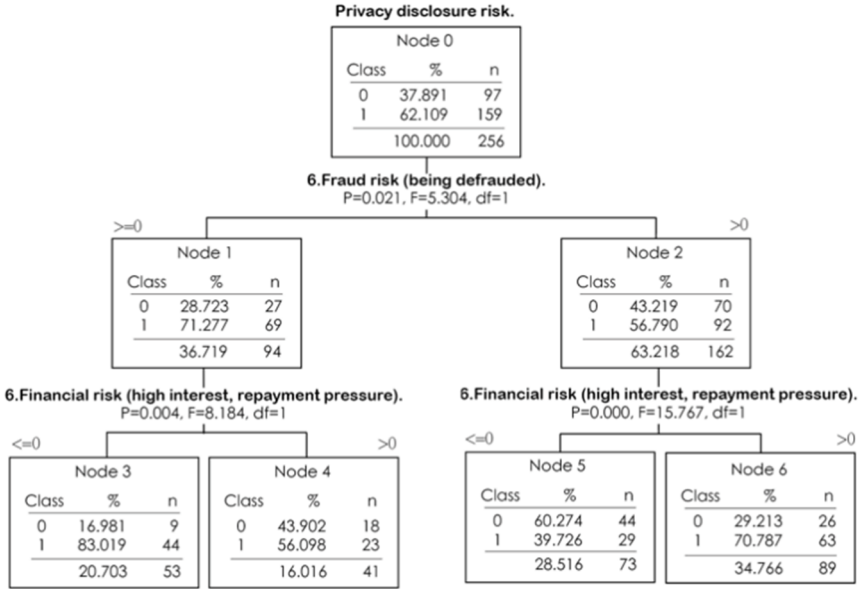
Privacy disclosure risk.

Node 0

Class	%	n
0	37.891	97
1	62.109	159
	100.000	256

6.Fraud risk (being defrauded).
P=0.021, F=5.304, df=1

>=0

Node 1

Class	%	n
0	28.723	27
1	71.277	69
	36.719	94

>0

Node 2

Class	%	n
0	43.219	70
1	56.790	92
	63.218	162

6.Financial risk (high interest, repayment pressure).
P=0.004, F=8.184, df=1

6.Financial risk (high interest, repayment pressure).
P=0.000, F=15.767, df=1

<=0

Node 3

Class	%	n
0	16.981	9
1	83.019	44
	20.703	53

>0

Node 4

Class	%	n
0	43.902	18
1	56.098	23
	16.016	41

<=0

Node 5

Class	%	n
0	60.274	44
1	39.726	29
	28.516	73

>0

Node 6

Class	%	n
0	29.213	26
1	70.787	63
	34.766	89

Fig. 1. CHAID diagram of WCLS privacy breach risk

Operational risk.

Node 0

Class	%	n
0	37.891	97
1	62.109	159
	100.000	256

20.WCLS operations team can be trusted.
P=0.026, F=9.533, df=2

>=2

Node 1

Class	%	n
0	64.516	20
1	35.484	11
	12.109	31

2,4

Node 2

Class	%	n
0	44.706	76
1	55.294	94
	66.406	170

>4

Node 3

Class	%	n
0	65.455	36
1	34.545	19
	21.484	55

17.Fear of WCLS misoperation.
P=0.000, F=15.668, df=1

8. Fear of anxiety online lending platform problems.
P=0.043, F=6.012, df=1

<=4

Node 6

Class	%	n
0	51.408	73
1	48.592	69
	55.469	142

>4

Node 7

Class	%	n
0	10.714	3
1	89.286	25
	16.016	28

<=2

Node 8

Class	%	n
0	0.000	0
1	100.000	3
	1.172	3

>2

Node 9

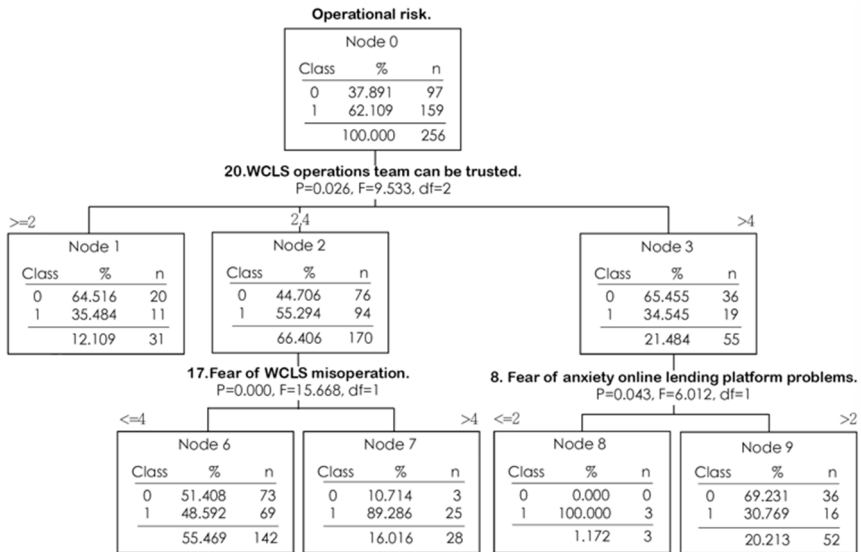| Class	%	n
0	69.231	36
1	30.769	16
	20.213	52

Fig. 2. CHAID diagram of WCLS perceived operational risk

4.2   Perceived Operational Risk

"Q6. WCLS operational risk" was set as the target variable, and the predictive variables were perceived operation, perceived service, perceived economy, cognitive trust and affective trust variables. Among the 256 people in the study, 124 (48.43%) agreed and 132 (51.56%) disagreed. The most significant correlation was observed with "Q20.WCLS operation team is trustworthy" (P=0.026). Generally, 170 people (66.46%), 55 people (21.48%) agree, 31 people (12.1%) disagree; Among the general 66.46%, it was most significantly related to "Q17. Fear of WCLS misoperation" (P=0.000), 28 people agreed (10.93%) and 142 people disagreed (55.46%). Among the 21.48% who agree, there is the most significant correlation (P=0.043) with "Q8. Fear of anxiety online lending platform problems", and 52 people agree (20.31%), as shown in Figure 2.

WCLS is more trusted than other online lending platforms, and the degree of trust affects users' judgment on whether there is operational risk (financial loss caused by operational errors), and more than 50% of users are worried about WCLS operational errors.

4.3   Perceived Reputation Risk

"Q7. platform reputation factor" was set as the target variable, and the predictive variables were perceived operation, perceived service, perceived economy, cognitive trust and emotional trust variables. Among the 256 people in the study, 149 (58.2%) agreed and 107 (41.79%) disagreed. The most significant correlation was found in "Q25. Willing to use WCLS for a long time" (P=0.001). Generally, 78 (30.46%), 121 (47.26%) agreed, 57 (22.26%) disagreed; Among the general 30.46%, it was most significantly related to "Q27. WCLS basically meets the requirements" (P=0.002), 16 people agreed (6.25%), 29 people disagreed (11.32%), and 33 people disagreed (12.89%). Among the 47.26% agreement, the most significant correlation is with "Q7. user evaluation" (P=0.005), 13.28% agreement and 33.98% disagreement, as shown in Figure 3.

The credibility of WCLS comes from the key factor of user evaluation, and most people are guided to consume because of user evaluation, but there is a disagreement on whether WCLS can meet the demand for borrowing.

4.4   The Importance of Predictor Variables

In this paper, in addition to analyzing the decision-making path of users using WCLS with CHAID algorithm, in order to observe the importance of multiple variables at the same time, this section evaluates the relative importance of variables and explores the hidden information behind the data from multiple angles, which helps to determine which variables have a greater impact on WCLS. From the observation of the importance coefficient of the predictor variables, the social credit risk, privacy disclosure, operational risk, platform reputation, fraud risk and other factors of WCLS are more important. The factors that affect the loan interest rate, service quality and repayment

limit of WCLS (high interest and great repayment pressure) are the key points that WCLS operators should pay attention to, as shown in Table 3.
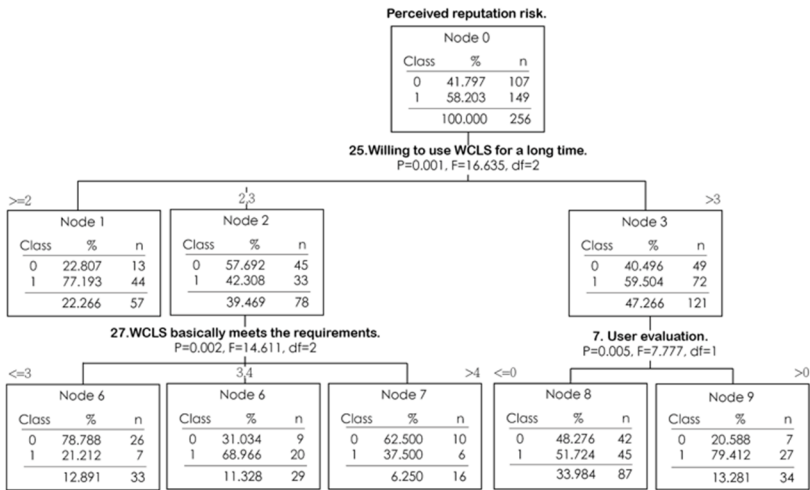
Perceived reputation risk.

Node 0

Class	%	n
0	41.797	107
1	58.203	149
	100.000	256

25. Willing to use WCLS for a long time.
$P=0.001$, $F=16.635$, $df=2$

>=2

Node 1

Class	%	n
0	22.807	13
1	77.193	44
	22.266	57

2,3

Node 2

Class	%	n
0	57.692	45
1	42.308	33
	39.469	78

>3

Node 3

Class	%	n
0	40.496	49
1	59.504	72
	47.266	121

27. WCLS basically meets the requirements.
$P=0.002$, $F=14.611$, $df=2$

7. User evaluation.
$P=0.005$, $F=7.777$, $df=1$

<=3

Node 6

Class	%	n
0	78.788	26
1	21.212	7
	12.891	33

3,4

Node 6

Class	%	n
0	31.034	9
1	68.966	20
	11.328	29

>4

Node 7

Class	%	n
0	62.500	10
1	37.500	6
	6.250	16

<=0

Node 8

Class	%	n
0	48.276	42
1	51.724	45
	33.984	87

>0

Node 9

Class	%	n
0	20.588	7
1	79.412	27
	13.281	34

Fig. 3. CHAID diagram of WCLS perceived operational risk

Table 3. Variable importance evaluation

Item	Content	Predictive importance
6	WCLS risk factor: social credit risk	1.00
7	WCLS influencing factors: loan interest rate	0.84
6	Financial risk: high interest and repayment pressure	0.74
6	WCLS risk factors: privacy breach	0.70
6	WCLS risk factors: operational risks	0.6
7	WCLS influencing factors: platform reputation	0.46
4	Have you ever used an online lending platform	0.38
6	WCLS risk factors: fraud risks	0.38
7	WCLS influencing factors: service quality	0.35
7	WCLS influencing factors: repayment limit	0.27

5   Conclusions

The rapid development of WCLS in China has gradually become an Internet consumer finance model emulated by social platforms. Based on the online consumer borrowing decisions of WeChat users, this paper analyzes and builds prediction models respectively to provide reference for the sound development of WCLS. CHAID model has high significance feature classification ability and high confidence level. When using WCLS, people generally worry about the risk of privacy disclosure, the risk of personal information disclosure affecting the decision to use WCLS, worry about financial losses

caused by WCLS operation errors, and attach importance to user evaluation to improve credibility, etc., which should contribute to understanding the appropriate development of online lending business.

There are still some shortcomings in this study, and it is suggested that comparative analysis with other lending services can be increased in the future to highlight their unique or common problems; Or increase the analysis of massive data to obtain more accurate decision support effect, and can optimize the prediction model through different decision methods.

Acknowledgment

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