

## Determinants Of Loan Repayment on Time of Individual Customers at the Hau Giang Branch of Construction Bank of Vietnam

The Bao Nguyen<sup>1</sup>, Quoc Duy Vuong<sup>2\*</sup> 

<sup>1</sup> Master In Economics, Department of Administrative Organization, HCM City University of Technology and Education, Email: [thebao@hcmute.edu.vn](mailto:thebao@hcmute.edu.vn)

<sup>2</sup> Associate Professor in Economics, Faculty of Economics, HCM City University of Technology and Education

\*Corresponding Author: [duyvq@hcmute.edu.vn](mailto:duyvq@hcmute.edu.vn)

**Citation:** Nguyen, T. B. and Vuong, Q. D. (2025). Determinants Of Loan Repayment on Time of Individual Customers at the Hau Giang Branch of Construction Bank of Vietnam, *Journal of Cultural Analysis and Social Change*, 10(2), 1578-1596. <https://doi.org/10.64753/jcasc.v10i2.1856>

**Published:** November 15, 2025

### ABSTRACT

This paper investigates of factors affecting the ability of individual borrowers to repay loans on time at The Construction Bank - Hau Giang Branch. Data used were interviewed 200 individual borrowers directly at the bank. The model is built on credit allocation theory, credit score theory, insolvent risk assessment theory, and factors influencing the probability of repayment. Logistics model is used to predict factors affecting customers' ability to repay loans on time. The findings show that factors affecting the probability of on-time repayment of individual borrowers at Construction Bank – Hau Giang Branch include gender, education level, loan interest rate, total income payment which are negatively affecting on the probability of repayment on time and loan amount, the field of real estate lending is in favorable correlation with the probability of repayment on time. The remaining variables include: age, other income, number of dependents, number of supervisions, proper use of purposes, repayment period, and the field of consumer loans are not statistically significant. The results also make recommendations to bank administrators in the risk management of the ability to repay loans of individual borrowers at the Construction Bank - Expenditure Hau Giang branch.

**Keywords:** Repayment loan, Individual borrowers, Logistics model, Vietnam

**JEL Classification:** G21, H24, I38, L84

### INTRODUCTION

Commercial banks play an important role in the allocation of economic resources in countries. The banking sector is crucial to the economy, acting as a financial intermediary between savers and borrowers, while also implementing government policies by managing the money supply and facilitating the flow and interaction of economic activities. However, the operational effectiveness of commercial banks is influenced by internal management decisions and external factors, often beyond the control of the bank (Al-Tamimi and Hussein, 2010). One of the main challenges facing commercial banks is the repayment ability of customers. Vu Mai Chi and Tran Anh Quy (2018) argue that the issue of loan repayment is an unresolved problem that most commercial banks face.

Therefore, the research literature has provided a fairly rich empirical framework regarding the factors affecting the ability of borrowers to repay loans at financial institutions or commercial banks. These factors can be divided into groups such as: personal characteristics of the borrower, characteristics of the lending organization, characteristics of the loan product, and characteristics of the business production plan. These factors exhibit different levels of significance when empirically tested in various research contexts. For instance, the study by Tran The Sao (2017) found that the amount of debt is inversely related to the ability to repay, while the results of Mai

Van Nam and Vuong Quoc Duy (2016) indicated a direct correlation. Another factor, regarding the purpose of using capital, showed positive significance for repayment ability according to Nguyen Quoc Nghi (2012) and Truong Cong Tru and Bui Van Trinh (2018), while the results of Truong Dong Loc and Nguyen Thanh Binh (2011) showed the opposite.

This may be due to the development of the credit market and the socioeconomic development of different countries. Additionally, there are variations in the behavioral cultural characteristics of customers—borrowers, especially in their financial behavior: "borrowing money and using borrowed funds." Therefore, the empirical research results have not been consistent. Thus, there is a need for applied research conducted in specific scopes on particular customer groups to more accurately determine the positive or negative impact of factors affecting the repayment ability of borrowers. New evidence will not only contribute to reinforcing theory but also provide useful support for beneficiaries of the research results, particularly lending organizations and borrowers.

Based on this practical context, the main goal of the study is "To investigate the factors affecting the ability of individual customers to repay loans on time at the Hau Giang Branch of Construction Bank." The findings and new contributions from this research will be beneficial for both the bank and borrowers to develop policies that minimize the level of loan defaults and insolvency. Additionally, credit institutions will gain insights into the repayment ability of customers in the area to build defensive policies for loan screening and minimize loan defaults.

## LITERATURE REVIEW

### Research in Vietnam

The study by Truong Dong Loc and Nguyen Thanh Binh (2011) on factors affecting the timely repayment ability of farmers in Hau Giang province used data from a direct survey of 436 households and applied a Probit regression model. The results indicated that the timely repayment ability of farmers is positively correlated with income after borrowing and the number of income-earning members in the family, but negatively correlated with the borrowing interest rate. The research also showed that higher education levels correspond to a higher ability to repay on time, and the quantitative results indicated that the ability to repay on time for households borrowing for agricultural production is higher than for those borrowing for non-agricultural purposes. The study contributes significant empirical evidence for banks to enhance risk control and for farmers to improve access to credit. However, the research is limited to Hau Giang and the authors did not clearly argue the empirical basis and theoretical foundations to establish the author's quantitative model.

The study by Mai Van Nam and Vuong Quoc Duy (2016) examined the factors determining the repayment performance of borrowers in rural areas of the Mekong Delta. Data was collected from three provinces: Tra Vinh, Soc Trang, and Can Tho City, using Tobit and Probit regression models with instrumental variables. The results show that agricultural households have better repayment performance than non-agricultural households. The findings also indicate that repayment performance in group lending programs is positively influenced by education level and loans for agricultural households, but negatively influenced by the amount borrowed. In contrast, the repayment performance of independent borrowers is positively influenced by the amount borrowed, the borrower being a farmer, and the borrower's gender. The study provided more specific empirical evidence on the factors affecting repayment ability for both agricultural and non-agricultural households under individual and group lending forms. However, the article mainly focuses on borrower characteristics affecting repayment performance and assumes that the procedures for loan recovery are similar for lenders. Therefore, a more detailed analysis is necessary to draw conclusions.

The research by Nguyen Van Huan and Do Nang Thang (2018) on a credit risk warning model for individual customers in Vietnamese commercial banks utilized a survey sample of 240 individual customers and Binary Logistic regression technique. The article argues that banks face risks not only due to internal causes but also due to risks posed by customers. The estimation results show that the probability of repayment is positively related to monthly income, job position, job characteristics, collateral value relative to total debt, purpose of capital use, and the borrower's education level. Simultaneously, the probability of repayment is negatively related to loan duration and the number of dependents. The results provide statistically significant empirical evidence regarding factors influencing individual customer repayment ability. However, the article did not compare and control for differences in lending mechanisms among commercial banks, and it also had limitations in obtaining a representative sample during verification.

### Research Abroad

The study by Nawai and Shariff (2012) on factors influencing repayment performance in microcredit programs in Malaysia used survey data from 309 borrowers of TEKUN Nasional in Peninsular Malaysia, employing a

multinomial Logit model for empirical verification. The analysis results showed that gender, formal religious education, distance to the borrowing office, formal business engagement, monthly income, total debt, debt control, and loan disbursement delays affected borrowers' repayment performance. The findings also revealed that customers would delay payments or only make minimum repayments if microfinance institutions do not exert pressure for repayment. The study suggested offering lower interest rates for good borrowers to encourage timely repayment without delays and establishing a specialized microfinance banking institution to meet the financial needs of micro and small businesses in Malaysia.

The research by Kwambai and Wandera (2013) on the impact of credit information sharing on loan recovery: The case of commercial banks in Kenya utilized survey data from 284 employees at various management levels working at the head office of Kenyan commercial banks, where lending decisions are made. The primary analysis method was descriptive statistics. The analysis results indicated that the main factors leading to bad debts in most cases include lending to suspicious group borrowers, multiple debts for lenders, high-interest rates, misuse of loan funds, lack of borrower commitment to repay loans, poor planning by borrowers regarding how they would use the loans for actual work, and lack of collateral for the bank. However, the research results only identified qualitative causes without conducting better quantitative modeling to arrive at more robust conclusions.

The study by Mohammed and Wobe (2019) on factors affecting the loan repayment performance of borrowers from microfinance organizations: The case of Omo Microfinance in Wondo Genet Woreda, Ethiopia, used survey data from 225 borrowers of Omo Microfinance. Using a Binary Logistic model, the probability of loan repayment was estimated. The results showed that approximately 45% of borrowers in the study area did not repay their loans on time. The main factors influencing repayment performance included gender, education level, family size, borrowing experience, loan term, repayment time, and the number of consultations. The study provides important empirical evidence for Omo Microfinance to enhance risk control effectiveness and better screen borrowers. However, the research focused solely on borrower characteristics while neglecting other factors, such as the purpose of using borrowed capital. Furthermore, the research established a quantitative model based on empirical foundations without referring to theoretical foundations.

## **General Conclusion**

The research literature has provided a rich empirical framework regarding the factors affecting borrowers' ability to repay loans at financial institutions or commercial banks. These can be summarized and categorized into groups such as: (i) personal characteristics of borrowers, (ii) characteristics of the lending organization, (iii) characteristics of the loan product package, and (iv) characteristics of the business plan (business project). These factors have different significance levels and expectations when empirically tested in the research context.

Thus, based on the empirical evidence provided in the research literature on the factors influencing the ability of borrowers to repay loans, this study continues to inherit these influencing factors to establish a quantitative research model specific to the case of Construction Bank – Hau Giang Branch. Construction Bank is one of the commercial banks with branches located in Hau Giang province, providing official credit sources for individuals and households in need of loans for their business activities. However, no applied empirical research has yet evaluated the repayment ability of customers in the case of Construction Bank; therefore, this study identifies this as a gap for conducting empirical research.

## **RESEARCH METHOD**

### **Data Collection Method**

Secondary data on lending activities was collected from the financial reports and internal reports of the Hau Giang Branch of Construction Bank. Other relevant secondary data were gathered from the electronic information pages of the General Statistics Office and the State Bank of Vietnam. Additionally, other research materials, including scientific articles and reports related to the topic of loan repayment ability at the individual or household level, were collected from domestic scientific journals such as the Can Tho University Journal of Science, Banking Journal, Banking Technology, and Banking Science & Training, as well as from scientific articles published in international journals sourced via Google Scholar.

Primary data were collected directly from borrowers at the Hau Giang Branch of Construction Bank during the period from January 1, 2016, to December 31, 2019. During the data collection period from May 1, 2020, to July 31, 2020, a total of 200 observations with sufficient information and reliability were obtained for empirical testing of the research model. Therefore, the research sample size is  $n = 200$  observations.

## Data Analysis Method

To achieve the stated research objectives, the study employs data analysis methods including: comparative analysis, descriptive statistics, and Logistic regression. This study aims to identify the factors affecting the ability of individual customers to repay loans on time at the Hau Giang Branch of Construction Bank. The study utilizes a Logistic regression model in the following form:

$$y_i^* = \beta_0 + \sum_{i=1}^k \beta_i X_i + \varepsilon_i \quad (3.2)$$

In this,  $y_i$  is the latent dependent variable that cannot be observed. The variable measures the probability of repayment of the customer with two possibilities: taking the value 0 = 'Borrower does not repay on time' and taking the value 1 = 'Borrower repays on time'.  $\beta$  is the slope coefficient;  $\alpha$  are the regression coefficients in the model, and  $\varepsilon$  is the residual, which follows a Logistic distribution.  $X_i$  are the explanatory variables (independent variables).

## RESEARCH RESULTS

### Characteristics of the research sample

Table 4.1 presents some important information about the survey subjects used to test the research model. The survey data were collected from 200 individual customers. Among these, the proportion of customers repaying on time is approximately 79% ( $n = 157$ ), while the proportion of customers not repaying on time exceeds 21% ( $n = 43$ ).

Regarding the personal characteristics of the customers: 61% of the borrowers are male, and 39% are female. The average age of individual customers borrowing from the bank is 39 years (with the youngest being 24 and the oldest being 57). This indicates that the customers are all within the working age, and the age distribution is not overly volatile (with a standard deviation of 7.8 years).

The education level is grouped, showing that 9% have completed high school or below, while 91% have education beyond high school (with the majority holding university and college degrees, followed by vocational training and master's degrees). Higher education levels indicate a better repayment trend, as customers with education beyond high school typically have jobs that generate a good income and are capable of repaying their loans.

**Table 4.1.** Characteristics of the Sample

Observed variable	Unit	Mean	SD	Min	Max
Repayment Ontime	%	0,79	0,41	0	1
Gender (Male)	%	0,61	0,49	0	1
Borrowers Age	Year	39,03	7,80	24	57
Dependance	Person	1,15	0,69	0	3
Educational level ( $\leq$ High School)	%	0,09	0,28	0	1
Major Income/Month	Million VND	10,60	3,94	5,5	30,0
Other income	%	0,41	0,49	0	1
Out-State Staff	%	0,59	0,49	0	1
Loan amount	Million VND	281,03	261,63	50	2.360
Investigation times	Time	39,37	18,06	12	80
Loan interest rate	%/year	11,51	0,67	9,0	12,5
Monthly repayment	Million VND	5,68	4,08	1,88	37,56
Loan duration	Month	118,11	54,18	36	240
Real estate loan	%	0,59	0,49	0	1
Consumption loan	%	0,37	0,48	0	1
Promised use	%	0,96	0,21	0	1

Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020.

The average monthly income of borrowers at the bank is 10.60 million VND/month, with the lowest income being 5.5 million VND/month and the highest being 30 million VND/month, indicating a relatively high level of variability with a standard deviation of 3.94 million VND/month. Additionally, 41% of customers have other sources of income. Income is the most important factor determining a customer's ability to repay well or the risk involved. Therefore, having a high primary income along with an additional secondary income source will help customers reduce the risk of late repayment or falling into bad debt.

Regarding occupation (the job that provides the customer's main source of income): the majority of customers at the Hau Giang Branch of Construction Bank are engaged in the private sector, such as self-employment, working for private enterprises, or other occupations, making up 59%, while government officials and employees account for 41%. The job generates income and serves as the basis for loan repayment. Different jobs yield different income levels, which may also be a factor affecting the timely repayment ability of customers.

Characteristics of Loan Amounts: The analysis data indicates that the average loan amount for individual customers at Hau Giang is 281 million VND, but there is a significant variation in loan values (with a standard deviation of 261 million VND). Similarly, repayment terms also show considerable variability, with the shortest repayment period being 36 months and the longest being 240 months, averaging 118 months per loan. Determining an appropriate repayment period will contribute to increasing the likelihood of repayment for borrowers. This affects income flow; cash flow is a key determinant of a borrower's ability to repay (Ledgerwood, 1998).

The interest rate on loans in the sample shows that the average interest rate is 11.51% per year (with a standard deviation of 0.67%). The interest rates across loans do not vary significantly, but the difference between the highest interest rate (12.5% per year) and the lowest (9% per year) is quite large at 3.5%, which may affect the timely repayment ability of customers, as higher interest means more repayment.

The average monthly repayment amount for customers in the sample is 5.68 million VND/month, with a standard deviation of 4.08 million VND/month, the lowest being 1.88 million VND/month and the highest being 37.56 million VND/month. The data shows that the repayment amounts of customers at Hau Giang Bank are quite variable. However, this has been calculated by the bank based on the primary income and loan amount, leading to inconsistencies due to the loan values and customer incomes. Therefore, if the loan is secured by the customer's stable income source at a suitable ratio, the probability of repayment will increase, and conversely, the probability of repayment will decrease. This also indicates that accurately assessing customers' income sources will help the bank reduce the risk of borrowers failing to repay on time.

Another factor that may affect timely repayment is loan supervision. The analysis data shows that the average number of supervisory visits per loan is 39.37 months (with a standard deviation of 18.06 months). The number of supervisory visits is calculated based on the loan term, whether long or short. Pasha and Tolosa (2014) also argue that monitoring and the frequency of inquiries can reduce the probability of non-repayment.

Characteristics of the Lending Sector: First, the factor of the purpose of using the loan. Proper usage of loan funds increases customers' repayment probabilities. The analysis results show that the ratio of customers using funds for the intended purpose is quite high at approximately 96%. In addition to appropriate loan usage, the study also examines which lending sectors have higher repayment capabilities. Based on survey data, the study categorizes three lending sectors: real estate lending accounts for 59%, consumer lending 37%, and the remaining is other loans (including business capital supplementation and vehicle purchases). Empirical evidence shows that different lending sectors have different repayment risks (Roslan and Karim, 2009). Therefore, the study also controls for the lending sector variable to provide evidence of the repayment abilities of individual customers at the Hau Giang Branch of Construction Bank.

## **CURRENT STATUS OF LOAN REPAYMENT BY INDIVIDUAL CUSTOMERS AT CONSTRUCTION BANK – HAU GIANG BRANCH**

### **Current Status of Repayment Analyzed by Customer Characteristics**

Table 4.2 presents the results of statistical analysis of some characteristics of individual customers borrowing from Hau Giang Bank.

Group of Customers Not Repaying on Time: 74% are male, with an average age of 38 years, more than one dependent, an average monthly income of 10.91 million VND, and an average household income of 21.83 million VND/month. Educational levels of this group show that 28% have education at or below high school, and 86% work in the private sector (self-employed, freelance work, or employed by privately-owned enterprises).

Group of Customers Repaying on Time: 57% are male, with an average age of 39 years, more than one dependent, a personal income of 10.52 million VND/month, and an average household income of 22.80 million

VND/month. Educational levels show that 3% have education at or below high school, and 51% work in the private sector.

Analysis of the data indicates that the observed criteria for the personal characteristics of customers between the two groups (those repaying on time and those not repaying on time) are quite similar regarding age, number of dependents, and income. However, education level, workplace, and gender show differing distributions between the two groups

**Table 4.2:** Debt classification by the customer's characteristics

Observed variable	Unit	Repayment on time			
		No		Yes	
		Mean	SD	Mean	SD
Gender (Male)	%	0,74	0,44	0,57	0,50
Age	Year	38,30	7,88	39,22	7,80
Dependance	Person	1,05	0,72	1,17	0,68
Individual income (*)	Million VND	10,91	4,50	10,52	3,78
Household Income (*)	Million VND	21,83	8,95	22,80	8,93
Educational level	%	0,28	0,45	0,03	0,18
Working place	%	0,86	0,35	0,51	0,50

Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020.

Table 4.3 presents the results of the analysis of the distribution ratios of various income sources of individual customers. According to the survey data from the sample, there are income sources from family business activities, income from renting houses/land, and income from various other activities. Overall, the group of customers not repaying on time tends to have a lower income ratio (25.6%) compared to the group of customers repaying on time (74.4%). Among the three groups of other income sources, the group from renting houses/land accounts for the highest percentage at 58.5% (of which 9.8% belong to the group not repaying on time). Income from household business activities represents the lowest percentage at 15.9% (of which 4.9% belong to the group not repaying on time).

As expected, a customer with multiple income sources will find it easier to repay loans to the bank on time. This will be verified in the subsequent regression analysis.

**Table 4.3:** Analysis of Characteristics of Other Income Sources

Observed variable		Repayment on time		Total
		No	Yes	
Income from the household's business	Frequency	4	9	13
	% raw	30,8	69,2	
	% Column	19,0	14,8	
	% total	4,9	11,0	15,9
Income from rent housing/land	Frequency	8	40	48
	% raw	16,7	83,3	
	% Column	38,1	65,6	
	% total	9,8	48,8	58,5
Other incomes	Frequency	11	15	26
	% raw	42,3	57,7	
	% Column	52,4	24,6	
	% total	13,4	18,3	31,7
Column total	Frequency	21	61	82
	% total	25,6	74,4	100,0

Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020.

Table 4.4 presents the results of the analysis of various expenditures of customers. For the group not repaying on time: on average, the total monthly expenditure is 14.95 million VND, of which expenditures for living costs are 3.95 million VND, social communication is 0.77 million VND, health is 0.71 million VND, education is 0.88 million VND, rent and utilities (electricity, water) are 1.16 million VND, and other expenditures are 0.86 million VND.

For the group repaying on time: on average, the total monthly expenditure is 14.81 million VND, of which expenditures for living costs are 4.11 million VND, social communication is 0.80 million VND, health is 0.45 million VND, education is 1.07 million VND, rent and utilities (electricity, water) are 1.18 million VND, and other expenditures are 1.82 million VND.

**Table 4.4:** Analysis of Customer Expenditures

Monthly expenditure (Billion VND/Month)	Measure	Repayment On time	
		No	Yes
Daily	Mean	3,95	4,11
	SD	1,11	1,28
Social communication	Mean	0,77	0,8
	SD	0,33	0,3
Healthcare (***)	Mean	0,71	0,45
	SD	0,46	0,28
Education	Mean	0,88	1,07
	SD	0,68	0,67
Renting house, Electricity, Water	Mean	1,16	1,18
	SD	0,54	0,84
Others(**)	Mean	0,86	1,82
	SD	1,44	2,41
Average Cost	Mean	14,95	14,81
	SD	6,18	6,48

Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020.

The analysis of the spending characteristics of the two customer groups shows that total expenditures do not differ significantly on average. However, a detailed examination of individual expenditure categories reveals that health expenditures and other expenditures show statistically significant differences. High spending on health may indicate an unstable health condition. Health plays a crucial role in an individual's ability to work well and generate income. Therefore, in the loan application assessment process, banks need to pay attention to customers' spending characteristics, as expenditures exceeding income can signify potential risks.

### Repayment performance of the groups of customers

Table 4.5 presents the results of the analysis of loan characteristics based on the groups of customers who repay on time and those who do not. First, analyzing the amount repaid to the bank, the group not repaying on time shows that the ratio of monthly repayment to total personal income averages approximately 62%, corresponding to an average monthly repayment amount of 6.6 million VND. Meanwhile, the group repaying on time has an average debt repayment ratio of 51.37% of total personal income, corresponding to an average monthly repayment of 4.06 million VND. The T-test results indicate a significant average difference between the two customer groups. As analyzed in the customer characteristics section, the average monthly income is quite similar between the two groups (10 million VND/month) and does not show a statistical difference. Thus, this could be an important factor influencing the behavior of customers not repaying on time at Hau Giang Bank.

Next, the average interest rate for the group of customers not repaying on time is 11.75% per year, while the average interest rate for the group repaying on time is 11.44% per year. The average difference is statistically

significant ( $p = 0.006 < 0.01$ ). This result indicates that the second reason affecting the probability of timely repayment may be the interest rate of the loan. This will be further analyzed in the regression analysis step.

Regarding the average loan amount, the group not repaying on time tends to borrow more than the group repaying on time (295.8 million VND and 277 million VND, respectively). However, the loan amounts for both customer groups are highly variable, with standard deviation values approximately equal to the mean. This variability depends on the financial usage needs and the customers' ability to ensure income sources for debt repayment.

Regarding the loan term and the number of supervisory visits, the group not repaying on time also shows a tendency for greater variability compared to the group repaying on time. Thus, the analysis of the current status of loan characteristics highlights a notable point affecting the ability to repay on time: high loan interest rates and relatively high repayment amounts compared to customers' average income.

**Table 4.5:** Analysis of Current Status of Repayment by Loan Characteristics

Observed variable	Unit	Repayment On Time			
		No		Yes	
		Mean	SD	Mean	SD
Repayment/Income (**)	%	61,61	26,76	51,37	25,12
Repayment amount(*)	Million VND	6,616	4,055	5,424	4,068
Loan size	Million VND	295,8	196,2	277,0	277,3
Interest rate(***)	%	11,75	0,438	11,44	0,708
Debt duration	Month	120,28	48,53	117,52	55,76
Checking times	Time	40,09	16,18	39,17	18,59

*Note:* ( ) ( ) (\*) The T-test shows significant average differences at the 1%, 5%, and 10% levels (Appendix: T-test Results).

Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020.

Table 4.6 presents the results of the analysis of loan repayment status according to real estate loan products (housing loans, land purchases, home repairs, and construction). The proportion of real estate lending accounts for 58.5%, with 52% of loans being repaid on time and 6.5% not repaid on time. The proportion of those not repaying on time is statistically 30.2%. The Chi-square test results also indicate that the distribution ratio is statistically significant ( $p = 0.000 < 0.01$ ). This suggests that the timely repayment of loans in the real estate sector is quite high. Therefore, continuing to explore this lending sector may help increase profits for the bank. However, it should be noted that real estate loans are often long-term, so they can be affected by economic cycles.

**Table 4.6:** Loan Repayment and Real Estate Lending

Observed variable	Unit	Debt repayment		Total
		No	Yes	
No	Frequency	30	53	83
	% raw	36,1	63,9	100,0
	% column	69,8	33,8	41,5
	% total	15,0	26,5	41,5
Real Estate Debt	Frequency	13	104	117
	% raw	11,1	88,9	100,0
	% column	30,2	66,2	58,5
	% total	6,5	52,0	58,5
Total	Frequency	43	157	200
	% total	21,5	78,5	100,0

\*Note: Chi-square test result  $p = 0.000 < 0.05$  (Details in Appendix).

Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020.

Table 4.7 shows the correlation between loan repayment and consumer lending at Hau Giang Bank. The Chi-square test results indicate that the two variables are statistically correlated ( $p = 0.000 < 0.05$ ). The proportion of consumer loans repaid on time is 37%, with 24.5% of loans repaid on time and 12.5% not repaid on time. Analyzing the group not repaying on time shows that consumer lending accounts for 58.1%, while the proportion of late repayments for other loans is 41.9%. This indicates that consumer lending also poses significant risks for the bank. Therefore, the bank needs to pay close attention to risk management regarding consumer lending.

**Table 4.7:** Loan Repayment and Consumer Lending

Observed Variable	Unit	Repayment On time		Total	
		No	Yes		
Expenditure Loan	Frequency	18	108	126	
	No	% raw	14,3	85,7	100,0
		% column	41,9	68,8	63,0
		% total	9,0	54,0	63,0
	Frequency	25	49	74	
	No	% raw	33,8	66,2	100,0
		% column	58,1	31,2	37,0
		% total	12,5	24,5	37,0
Total	Frequency	43	157	200	
	% total	21,5	78,5	100,0	

\*Note: Chi-square test result  $p = 0.000 < 0.05$  (Details in Appendix).

Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020.

Table 4.8 shows the correlation between loan repayment and other types of lending at Hau Giang Bank. The Chi-square test ( $p = 0.024 < 0.05$ ) indicates that the two variables are statistically correlated. The survey data shows that the proportion of other loans (such as car loans, agricultural loans, and business loans) is 4.5%, which is relatively low compared to real estate and consumer lending. However, the proportion of other loans has a higher rate of late repayment compared to the rate of timely repayment (2.5% and 2.0%, respectively). Analyzing the group not repaying on time, the proportion is 11.6%. Although it represents a negligible percentage in the survey sample, the other loans category accounts for a relatively high proportion within the group not repaying on time.

**Table 4.8:** Loan Repayment and Other Lending

Observed variable	Unit	Repayment On Time		Total
		No	Yes	
Others	Frequency	38	153	191
	% raw	19,9	80,1	100,0
	% column	88,4	97,5	95,5
	% total	19,0	76,5	95,5
Other loans	Frequency	5	4	9
	% raw	55,6	44,4	100,0
	% column	11,6	2,5	4,5
	% total	2,5	2,0	4,5
Total	Frequency	43	157	200
	% total	21,5	78,5	100,0

\*Note: Chi-square test result  $p = 0.011 < 0.05$  (Details in Appendix).

Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020.

Table 4.9 shows some risks affecting customer income that were encountered during the information survey period. The results indicate that over the past year, customers faced risks such as natural disasters, crop failures,

epidemics, family members losing their jobs, illness, and unstable product prices. Among the various types of risks encountered, the most significant is family members losing their jobs, which accounts for 66.1% (9.4% in the group not repaying on time and 56.7% in the group repaying on time). The second significant risk is price fluctuations affecting income, accounting for 17.2%. The third notable risk is family members falling ill, which accounts for 13.7%. The remaining risks account for negligible percentages in the survey sample.

**Table 4.9:** Risks Affecting Customer Income

Observed	Unit	Repayment On Time		Total
		No	Yes	
Natural Disasters	Frequency	0	1	1
	Ratio	0	0,4	0,4
Crop failures, epidemics	Frequency	2	2	4
	Ratio	0,9	0,9	1,7
Family member loses job	Frequency	22	132	154
	Ratio	9,4	56,7	66,1
Family member is ill	Frequency	13	19	32
	Ratio	5,6	8,2	13,7
Unstable product prices	Frequency	13	27	40
	Ratio	5,6	11,6	17,2
Others	Frequency	1	1	2
	Ratio	0,4	0,4	0,9
Total	Frequency	51	182	233
	Ratio	21,9	78,1	100,0

Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020

Overall, the group of customers repaying on time tends to face more risks compared to the group not repaying on time. Although the analysis results do not show a statistically significant correlation between risks and customer repayment behavior, they provide information indicating that if the level of risk becomes more severe and the likelihood of customers losing income increases compared to the current situation, it leads to a potential risk that customers may be unable to repay their loans to the bank.

#### Analysis of Advantages and Difficulties When Borrowing from the Bank

##### Advantages

Table 4.10 presents customer evaluations when borrowing money from Hau Giang Bank. Out of a total of 399 customer opinions, 49.6% stated that the borrowing costs at the Construction Bank are low.

**Table 4.10:** Advantages of Borrowing from the Bank

Biến quan sát	Response		Sample ratio
	N	(%)	
Simple Procedures	37	9,3	18,5
Short waiting time	6	1,5	3,0
Low borrowing cost	198	49,6	99,0
Freedom to use money	9	2,3	4,5
Close to home	1	0,3	0,5
Flexible repayment	55	13,8	27,5
Low interest rate	64	16,0	32,0
Good support and Consultant from staff	29	7,3	14,5

Total	399	100,0	199,5
-------	-----	-------	-------

Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020

Next, 16% of respondents indicated that the interest rates for borrowing are low, and the third-highest rating was for flexible repayment terms, which accounted for 13.8%. These are the three criteria that customers highly value compared to the other surveyed criteria. This reflects positively on the bank's lending policy in recent times. The bank supports civil servants in borrowing money to purchase housing or land at preferential interest rates. Additionally, costs related to the appraisal process have been reduced for customers. The bank also offers project housing loans at low interest rates. Customers also noted that the borrowing procedures are simple and that staff provide good support and consultation. These advantages should be further developed by the bank.

Table 4.11 provides information about the difficulties customers encounter when borrowing from Hau Giang Bank. The criteria are rated on a scale of 5 (with 5 being the highest level of difficulty). A higher score indicates a greater level of difficulty. Among the six measured criteria, the penalty for early repayment of principal and interest received the highest average score of 3.6, followed by the completion of administrative procedures as required by the bank with a second-highest average score of 3.20. The interest rate and related fees had an average score of 3.17. Income certification or verification of repayment sources averaged 3 points. These are the four criteria that customers rated as difficult when seeking loans from Hau Giang Bank. This information merits the bank leadership's attention regarding the reform of certain processes in the application, appraisal, and lending stages. Furthermore, when signing loan contracts with customers, credit staff (or support staff) of the bank need to clearly explain the terms of rights and obligations of both parties to reduce the incidence of penalties for early repayment of principal and interest. Another important point is that income certification or verification of repayment sources is crucial to ensure repayment sources after borrowing. Therefore, while this issue may pose challenges for customers, it is essential for credit risk management.

**Table 4.11:** Difficulties When Customers Borrow from the Bank

Observed variable	Mean	SD
Income certification/Verification of repayment source	3,00	0,59
Proof of loan purpose	2,42	0,67
Proof of collateral	2,28	0,51
Complete administrative procedures as required	3,20	0,52
Interest rate of the loan	3,17	0,82
Penalty for early repayment of principal and interest	3,60	0,64

Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020

Table 4.12 provides information about the preferred interest repayment methods and promotional programs that customers wish for when borrowing. The analysis shows that 99.5% of customers chose the monthly interest repayment method based on the decreasing principal balance, and 98.5% selected the promotional program for reduced loan interest rates. This information is valuable for the leadership of Hau Giang Bank to develop credit packages with preferential interest rates for customers. Therefore, the bank needs to categorize customers more diversely by narrower segments to design loan products with interest rate promotional programs, rather than just offering discounts on related fees. The previous analysis also indicated that low interest rates are viewed by customers as a significant advantage of Hau Giang Bank.

**Table 4.12:** Interest Repayment Methods and Promotional Programs

Observed variables	Frequency	Ratio (%)
Interest payment method:	Fixed monthly interest payments	1
	Monthly interest payments based on decreasing principal balance	199
Promotional program	Reduced loan interest rate	197
	Support for costs related to the loan	3
Total	200	100

Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020

Table 4.14 provides information about loans at Hau Giang Bank. The survey results show that the majority of customers receive loan information from the bank's credit staff (75%). This indicates that credit staff are actively engaged in sales and generating profits for the bank. Therefore, the bank needs to offer better incentives for its credit staff, and loan products should be marketed directly through the credit team rather than through other channels. The bank's marketing programs are known to customers but account for only a low percentage of 8%. Additionally, information from relatives and colleagues is also a potential source that the bank can use to attract customers to borrow from Hau Giang Bank.

Through the analysis of the repayment status of individual customers borrowing money from Hau Giang Bank, the following points are noteworthy: (i) regarding customer personal characteristics: the group of customers not repaying on time and the group repaying on time are quite similar in age, number of dependents, and income, but education level, workplace, and gender show uneven distribution; in terms of total expenditures, there is no average difference, but a detailed examination of each expenditure category reveals statistically significant differences in health and other expenditures. (ii) regarding loan characteristics: the group of customers not repaying on time has higher average interest rates and repayment amounts compared to the group repaying on time. (iii) regarding loan product characteristics: real estate loans account for the highest proportion, followed by consumer loans with timely repayment being the second highest, and the remainder is other loans (car loans, agriculture, and business); among these three product groups, real estate loans have the lowest rate of late repayment, while consumer loans have the highest rate of late repayment.

### **ANALYSIS OF FACTORS AFFECTING THE TIMELY REPAYMENT ABILITY OF INDIVIDUAL BORROWERS AT THE CONSTRUCTION BANK – HAU GIANG BRANCH**

Table 4.13 presents the results of the binary Logit regression estimating the factors influencing the timely repayment ability of individual customers at Hau Giang Bank. The analysis results show that the overall correct prediction rate of the model is 88%, which is quite good. The Pseudo R<sup>2</sup> coefficient is 0.3984, and the LR chi<sup>2</sup> test is 82.940 with Prob > chi<sup>2</sup> = 0.000, indicating that the estimated model is statistically significant and highly reliable at 99%. This result allows us to conclude that the estimated model fits the survey data and can be used to explain the correlation between the dependent variable and the explanatory variables.

The estimated model includes a total of 14 independent variables. Among them, 7 variables have statistical significance (at 1%, 5%, and 10%), including (1) gender, (3) education, (6) loan amount, (8) loan interest rate, (9) repayment amount relative to total income, (11) working in the private sector, and (13) real estate lending sector. Variables that are not statistically significant at the 5% level include (2) age, (4) other income, (5) number of dependents, (7) repayment term, (10) number of monitoring instances, (12) proper use of funds, and (14) consumer lending sector.

Using the Z test, when the significance level of the regression coefficients is at 1%, 5%, and 10%, it can be concluded that there is a statistically significant correlation between the independent variables and the ability to repay loans on time (detailed regression estimation results are presented in Appendix 2).

The Gender variable has a p-value of 0.002 < 0.01, indicating that gender is significantly correlated with the ability to repay loans on time with 99% confidence.

The Age variable has a p-value of 0.237 > 0.05, indicating that age is not significantly correlated with the ability to repay loans on time at 95% confidence.

The Education variable has a p-value of 0.001 < 0.01, indicating that education is significantly correlated with the ability to repay loans on time with 99% confidence.

The Other Income variable has a p-value of 0.274 > 0.05, indicating that other income is not significantly correlated with the ability to repay loans on time at 95% confidence.

The Number of Dependents variable has a p-value of 0.138 > 0.05, indicating that the number of dependents is not significantly correlated with the ability to repay loans on time at 95% confidence.

The Loan Amount variable has a p-value of 0.083 < 0.1, indicating that the loan amount is significantly correlated with the ability to repay loans on time at 90% confidence.

The Loan Interest Rate variable has a p-value of 0.047 < 0.05, indicating that the loan interest rate is significantly correlated with the ability to repay loans on time at 95% confidence.

**Table 4.13:** Logit Regression Estimation Results

Explanation Variables	Coefficients	Error	dy/dx
(1) Gender (Male)	-1,7943***	0,5773	-0,1463
(2) Age	0,0398	0,0336	0,0036
(3) Educational level( $\leq$ High School)	-2,6150***	0,8155	-0,4660
(4) Other income	-0,6029	0,5514	-0,0567
(5) Dependence	0,5216	0,3516	0,0467
(6) Loan size	0,0035*	0,0020	0,0003
(7) Repayment term	-0,0159	0,0249	-0,0014
(8) Loan interest rate	-1,1092**	0,5592	-0,0993
(9) Amount paid relative to total income	-5,1721***	1,5216	-0,4632
(10) Number of monitoring instances	1,5773	2,6609	0,1413
(11) Working in the private sector	-1,7126***	0,6003	-0,1446
(12) Proper use of funds	0,8130	1,0186	0,0974
(13) Real estate lending sector	2,8207***	0,9908	0,3320
(14) Consumer lending sector	1,2612	0,9669	0,1022
Constant	10,535	8,5672	-
Observations (N)	200		
LR chi2(14)	82,9400		
Prob > chi2	0,0000		
Pseudo R2	0,3984		
Overall forecast accuracy rate(%)	88		

Note: \*\*\*, \*\*, \*: statistical significance levels of 1%; 5%; 10% respectively; dy/dx = Marginal effect  
Source: Survey data from 200 observations at the Hau Giang Branch of Construction Bank, 2020

The results of the binary Logit regression estimation of the factors influencing the timely repayment ability of individual customers at Hau Giang Bank show statistical significance at permissible significance levels, including gender, education, loan amount, loan interest rate, repayment amount relative to income, working in the private sector, and real estate lending. The results are explained as follows:

The Gender factor of borrowers shows a negative correlation with the ability to repay loans on time. The estimated coefficient is -1.7943, which is statistically significant at the 1% level. This means that, holding other factors constant, the probability of timely repayment for male customers is on average lower than that for female customers by  $dy/dx = 14.63\%$  ( $-0.1463 \times 100$ ). This finding is consistent with conclusions from previous studies such as Roslan and Karim (2009), Nam and Duy (2016), Nawai and Shariff (2012), and Mohammed and Wobe (2019). This indicates that when grouping customers by gender, female borrowers at Hau Giang Bank have a better repayment ability compared to male customers. The better repayment ability of women may be due to their discipline in financial management. The survey sample indicates that the rate of misusing borrowed funds is higher for males than for females, and males also have a higher ratio of dependents. Additionally, female customers tend to have lower average interest rates compared to male customers (11.46% vs. 11.53%, respectively). Higher interest rates increase the amount of debt owed. Male customers also tend to have more dependents, leading to higher basic living expenses for those dependents (e.g., education costs, daily food, medical expenses). The average income of male customers is 10.98 million VND/month, with an average repayment amount of 6.11 million VND/month, which is higher than that for female customers (10 million VND and 5 million VND, respectively). These factors explain why males have a lower repayment ability than females. Thus, this result allows us to conclude that the group of female customers has a lower repayment risk compared to the group of male customers.

The Education factor of borrowers shows a negative correlation with the ability to repay loans on time. The estimated coefficient is -2.6150, which is statistically significant at the 1% level. This means that, holding other factors constant, the probability of timely repayment for customers with an education level of high school or lower is lower than that for customers with an education level above high school, with an average probability difference of  $dy/dx = 46.60\%$  ( $-0.4660 \times 100$ ). This can be explained by the fact that education is a component of human capital, allowing borrowers to make better economic decisions that generate income, thus borrowers with higher

education levels are more likely to repay on time. Survey data shows that customers with lower education levels primarily work in agriculture or run small businesses, leading to unstable income. In contrast, most customers with vocational training to master's degrees have stable jobs that provide a relatively stable monthly income.

Income is the most crucial factor ensuring the repayment capacity of customers. Furthermore, customers with lower education levels tend to borrow at significantly higher interest rates compared to those with higher education levels, and they also experience fewer monitoring checks. This explains why lower education levels correlate with poorer repayment probabilities. These findings align with conclusions from several studies, such as Nghi (2012), Nam and Duy (2016), Trần Thế Sao (2017), Tru and Trinh (2018), and Mohammed and Wobe (2019). Thus, it can be concluded that education level is an important factor influencing the timely repayment ability of customers.

The loan amount is positively correlated with the ability to repay loans on time. The estimated coefficient is 0.0035, which is statistically significant at the 10% level. This means that if other factors remain constant, the probability of timely repayment for customers will increase by  $dy/dx = 0.03\%$  ( $0.0003 \times 100$ ) when the bank allows customers to borrow an additional 1 million VND. This indicates that the bank has lent below the actual demand for the loan amount that customers expect. At the same time, the actual capital demand of customers is at a level of certain repayment ability. In other words, customers have managed their income and expenses well to ensure repayment to the bank. However, the conclusion by Sao (2017) indicates that the loan amount is inversely related to the probability of timely repayment. This is due to the lending mechanism of the Agricultural Bank and the differences in customer profiles compared to the Construction Bank's target customers. The empirical evidence from this study aligns with Roslan and Karim (2009) and Nam and Duy (2016), suggesting that differences in the socioeconomic conditions of borrowers affect the bank's lending mechanism. This finding is valuable for Hau Giang Bank to enhance business profits by redefining certain loans and customer profiles to increase credit limits. This is also consistent with the reality of the Construction Bank's main lending products, which support customers in purchasing or renovating housing, indicating that credit values need to be expanded. Thus, this result adds evidence of a positive correlation between the probability of repayment and the loan amount in the case of Hau Giang Bank.

The loan interest rate is negatively correlated with the ability to repay loans on time. The estimated coefficient is -1.1092, which is statistically significant at the 5% level. This means that if other factors remain constant, the probability of timely repayment for customers will decrease by  $dy/dx = 9.93\%$  ( $-0.0993 \times 100$ ) when the loan interest rate increases by 1% per year. This implies that customers who accept a higher-than-average interest rate have a lower repayment ability, indicating higher risk for these customers. This conclusion aligns with the credit allocation theory by Stiglitz and Weiss (1981), which posits that loan interest rates serve as a tool for banks to screen for risk. Therefore, if an individual accepts a loan with an above-average interest rate, they are aware of their lower ability to repay. Similarly, Chatterjee et al. (2011) suggest that loan interest rates are a tool for assessing default risk; customers with lower credit scores must pay higher interest rates for new loans at the same credit limit, or higher rates as default probabilities increase, based on the bank's assessments (due to limited information about debt groups and the borrower's actual income). This result is consistent with empirical evidence from Loc and Binh (2011), Nghi (2012), Kwambai and Wandera (2013), and Tru and Trinh (2018), all of whom provide evidence of the negative impact of loan interest rates on the ability to repay on time. Therefore, this allows us to conclude that loan interest rates are a key factor affecting the ability to repay loans on time for individual borrowers at Hau Giang Bank.

The amount paid relative to income is negatively correlated with the ability to repay loans on time. The estimated coefficient is -5.1721, which is statistically significant at the 1% level. This means that if other factors remain constant, the probability of timely repayment for customers will decrease by  $dy/dx = 46.32\%$  ( $-0.4632 \times 100$ ) when the amount paid on the loan increases by 1% of their monthly income. The ratio of payment to total income has the highest marginal effect among the statistically significant estimated variables in this study. This indicates that cash flow is a critical determinant of a borrower's ability to repay (Ledgerwood, 1998). Therefore, if borrowers must pay a significant portion of their income toward monthly debt repayments (where their primary income is used to repay the bank), the probability of default or late repayment will significantly increase. It becomes difficult for customers to balance their finances when a large portion of their primary income is used to repay the bank. The results align with expectations and provide empirical evidence to better explain the relationship between income and a borrower's repayment ability, which has not been clearly explained in the literature by Peter and Peter (2011), Loc and Binh (2011), and Tru and Trinh (2018). These studies measure and explain post-loan income or household income without indicating the ratio of debt payments to customer income.

Employment in the private sector is negatively correlated with the ability to repay loans on time. The estimated coefficient is -1.7126, which is statistically significant at the 1% level. This means that if other factors remain constant, the probability of timely repayment for customers working in the private sector is lower compared to those employed by government agencies, with  $dy/dx = 14.46\%$  ( $-0.1446 \times 100$ ). Survey data indicates that customers working in government agencies have fixed and stable monthly incomes from salaries, while those

working in the private sector often have less certain income from wages or business activities (e.g., business, agricultural production, casual labor, and employment that typically carries higher risks and unstable income). Peter and Peter (2011) also argue that skilled professions can help borrowers achieve better income, thus lowering their risk of default. Nam and Duy (2016) found that farmers have a better repayment ability than those engaged in non-agricultural work. Similarly, Huan and Thang (2018) showed that borrowers with stable jobs significantly increase their chances of repayment. Thus, this result aligns with previous research showing that customer job characteristics influence the probability of timely repayment at Hau Giang Bank.

Real estate lending is positively correlated with the ability to repay loans on time. This result aligns with expectations. The estimated coefficient is 2.8207, which is statistically significant at the 1% level. This means that if other factors remain constant, the probability of timely repayment for the real estate lending group is higher by  $dy/dx = 33.20\%$  ( $0.3320 \times 100$ ) compared to other lending groups. This indicates that the bank's primary lending area, real estate, performs better than other product groups. Most customers borrow money to build housing or purchase land, and the majority belong to the civil servant group (interest rate of 11.44% per year), benefiting from relatively lower interest rates compared to the non-civil servant group (interest rate of 11.60% per year).

Moreover, the average monthly income of customers borrowing for real estate is relatively higher (10.748 million VND/month) compared to the average income of other lending groups (10.395 million VND/month). These factors demonstrate that customers in real estate loans have advantages in ensuring repayment sources for the bank. This result is consistent with conclusions from several studies, such as Roslan and Karim (2009), which found that service loan projects have better repayment rates than production loans, and Loc and Binh (2011), which indicated that agricultural loans have higher probabilities of timely repayment. Thus, this allows us to conclude that real estate lending has a higher probability of timely repayment compared to other sectors at Hau Giang Bank.

The estimation results indicate that the factors influencing the probability of timely repayment for individual customers at Hau Giang Bank include gender, education, loan amount, loan interest rate, payment amount relative to total income, employment in the private sector, and real estate lending. Among these, the factors with the strongest impact are the payment amount relative to total income and the customer's education level. However, the current sample has not shown statistical significance at the 5% level for factors including age, other income, number of dependents, loan term, number of monitoring instances, proper use of funds, and consumer lending sector. Thus, these results provide important scientific empirical foundations for the management of credit risk at Hau Giang Bank.

## **CONCLUSION AND RECOMMENDATIONS**

### **CONCLUSION**

One of the main challenges for commercial banks is the repayment capacity of customers. Low repayment ability can lead to defaults. Therefore, the objective of this study is to investigate the factors affecting the timely repayment ability of individual customers at the Construction Bank – Hau Giang Branch. The quantitative model was built based on credit allocation theory, credit scoring theory, risk pricing theory of defaults, and factors influencing the probability of debt repayment, which have been validated in the literature on borrower default risk. The data used to validate the quantitative model were obtained from direct interviews with 200 individual borrowers at the bank from January 1, 2016, to December 31, 2019. Logistic regression was used to predict the factors affecting the ability to repay loans on time.

The results of the logistic regression estimation indicate that the factors influencing the probability of timely repayment for individual customers at Hau Giang Bank include gender, education, loan interest rate, repayment amount relative to total income, and employment in the private sector, which negatively correlate with timely repayment. In contrast, the loan amount and the real estate lending sector positively correlate with timely repayment. The most significant factor is the repayment amount relative to total income. However, the sample size of this study did not show statistical significance at the 5% level for variables such as age, other income, number of dependents, number of monitoring instances, proper use of funds, loan term, and consumer lending sector.

The study highlights an important finding: customers with a higher debt-to-income ratio are significantly less likely to repay on time. Additionally, employment characteristics that generate income (typically customers working outside the public sector) also significantly affect the probability of loan repayment to the bank.

The analysis of the repayment status of individual customers at Hau Giang Bank shows that the two groups—those who repay on time and those who do not—are quite similar in age, number of dependents, and income. However, education level, workplace, and gender show uneven distribution. In terms of total expenditures, there are no average statistical differences, but specific categories like health expenditures show statistically significant differences. Regarding loan characteristics, the group that does not repay on time has higher average interest rates

and repayment amounts than the group that repays on time. Among the loan products, real estate loans have the lowest rate of late repayment, while consumer loans and other loans (e.g., car loans, agricultural production, business) have nearly double the rate of late repayment. This indicates that real estate loans are less risky compared to other products.

## RECOMMENDATIONS

### Recommendations for the Leadership of Construction Bank – Hau Giang Branch

#### Enhancing Timely Repayment Ability Based on Customer Characteristics

**Gender:** The study shows that male customers have a lower probability of timely repayment compared to female customers. Therefore, the bank should consider increasing the lending ratio for female customers. Economic and family conditions (number of dependents, expenditures, household income) between the two genders are quite similar. The loan conditions (interest rates, loan amounts, repayment terms, monitoring instances) also show similarities. This suggests that women tend to be more disciplined and responsible in repaying debts. Women have a lower risk tolerance for investments, making them more cautious in utilizing funds appropriately. The bank could further expand credit limits for female customers, as the study indicates that loan amounts are positively related to repayment ability. Additionally, priority should be given to women in public service and those with good credit histories to enhance debt recovery efficiency.

**For Male Customers:** The bank needs to classify and review overdue loans to adjust repayment schedules and monthly debt amounts to a level that aligns with their income. The average income for male customers is 10.98 million VND/month, with an average repayment amount of 6.11 million VND/month, which is higher than for female customers (10 million VND and 5 million VND, respectively). Therefore, reducing the monthly repayment amount for male customers is crucial to increase their probability of timely repayment. For those with good credit histories, the bank should consider reducing interest rates, as male customers generally face higher interest rates than female customers.

**Education Level and Employment Characteristics:** The study shows that lower education levels (high school and below) and employment outside the public sector lead to reduced probabilities of timely repayment, indicating a significant increase in default risk. Thus, the bank's leadership should exercise caution in the loan assessment and approval process. The interest rate policies for customers with lower education levels are significantly higher than for those with higher education, and monitoring instances are fewer. Therefore, the bank should adjust these interest rates downward to help customers reduce their total debt amounts while enhancing monitoring practices.

Additionally, employment characteristics also need to be considered in lending decisions. Customers working outside the public sector generally have lower probabilities of timely repayment due to unstable income. Consequently, the bank should develop tailored repayment plans that align with the income cycles of these borrowers, such as seasonal repayment schedules for farmers or more frequent repayment schedules for small traders.

Moreover, the bank should gather information on the risk levels related to borrowers' occupations to determine suitable loan amounts. The greatest pressure when borrowing is the monthly repayment amount. Under normal conditions, stable jobs and incomes should make repayment manageable. However, unexpected events like health issues or economic downturns can complicate repayment. Collecting detailed information about each customer's job characteristics, especially in the private sector, will help the bank better identify financially capable borrowers.

**Enhancing Timely Repayment Ability Based on Loan Characteristics:** The analysis indicates that loan characteristics, including interest rates, loan amounts, and repayment amounts relative to income, significantly affect customers' timely repayment abilities. First, higher interest rates and repayment amounts relative to total income decrease repayment ability. Second, larger loan amounts increase repayment ability. This evidence suggests that the bank's lending mechanisms are not optimally designed. Therefore, it is recommended that the leadership of the Construction Bank (directors, deputy directors, and credit department heads) consider lowering interest rates by 0.5% to 1% compared to current levels.

Additionally, the bank should reduce the monthly repayment amounts for customers, ensuring that the repayment ratio does not exceed 51.34% of their income. If a loan's repayment amount exceeds this ratio, the likelihood of default increases significantly. Thus, determining appropriate repayment levels that align with customers' financial capabilities is crucial for improving debt recovery.

Furthermore, evidence shows that loan amounts are still below borrowers' actual needs, while many customers have strong financial capacities. Therefore, the bank's leadership should consider expanding credit limits for these customers. This would not only enhance the bank's profits and debt recovery efficiency but also better meet customers' financial needs.

Enhancing Timely Repayment Ability Based on Loan Products: The results show that the characteristics of loan products also impact repayment ability. Among the three product groups, real estate loans demonstrate a distinct repayment performance compared to the others. This indicates that consumer loans and other types present higher risks. Therefore, the study recommends the following for bank leadership:

**Consumer Loans:** These pose a higher default risk than real estate loans. The bank must adhere to credit risk management principles and should not extend large amounts of credit over long repayment periods to customers with unstable financial capacities. Strengthening pre- and post-disbursement management and supervision, along with enhancing the skills of bank staff in loan evaluation, is essential. The bank should also avoid imposing excessively high consumer loan targets on credit staff to reduce misjudgment.

**Other Loans:** This includes loans for purchasing vehicles and additional business capital. The study indicates that these areas have lower repayment probabilities, indicating higher risks compared to real estate loans. Although the loan structures differ, the purposes are quite similar, primarily for vehicle rental or business liquidity. However, both types show that customers using bank financing have not derived effective results. Consequently, income from these business activities is insufficient to cover debt obligations, especially when the loan amounts and monthly payments are relatively high compared to borrowers' incomes. Therefore, the bank needs to limit lending in these areas and establish specific credit limits for these loans.

**Real Estate Loans:** This sector has the best repayment performance among the bank's products. However, it still has a certain proportion (6.5%) of loans not repaid on time. Thus, it is recommended that leadership continuously refine loan policies regarding interest rates, repayment periods, and amounts relative to borrowers' primary income sources. Special attention should be given when lending to customers with unstable incomes, particularly male customers. Additionally, the bank should conduct thorough legal assessments of real estate loan projects and collaborate with customers to calculate appropriate repayment periods and monthly amounts based on their income at given times, rather than over a long period.

A repayment mechanism aligned with customers' incomes at various times will improve the bank's debt recovery and increase the likelihood of timely payments from borrowers.

### **Recommendations for Borrowers**

The study also offers recommendations for customers wishing to borrow from Hau Giang Bank to avoid falling into late repayment situations. First, customers should not borrow at interest rates higher than 12% per year, as this increases the debt burden significantly. Second, customers should not allocate more than 50% of their income to monthly loan repayments. Third, customers need to proactively devise repayment plans that align with their personal or family income, rather than relying solely on the bank's proposed plans. Fourth, careful research on the necessary conditions to access support credit packages is crucial, particularly in demonstrating repayment ability to the bank, including regular income from individuals and family members, living expenses, and available funds for periodic loan repayments.

Finally, customers must balance their income and expenditures, anticipate unexpected future risks (such as illness or job loss), and consider purchasing loan insurance. This is vital to ensure that customers consistently meet their repayment obligations on time.

### **REFERENCES**

- Al-Tamimi, H., & Hussein, A. (2010). Factors influencing performance of the UAE Islamic and conventional national banks. *Global Journal of Business Research*, 4(2), 1-9.
- Awunyo-Vitor, D. (2012). Determinants of loan repayment default among farmers in Ghana. *Journal of Development and Agricultural Economics*, 4(13), 339-345.
- Balogun, E. D., & Alimi, A. (1988). Loan delinquency among small farmers in developing countries: a case study of the small-farmer credit programme in Lagos State of Nigeria.
- Beck, T., Levine, R., & Demirgüç-Kunt, A. (2002). Law and finance: why does legal origin matter?. The World Bank.
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2004). Finance, inequality, and poverty: Cross-country evidence. The World Bank.
- Chatterjee, S., Corbae, D., Nakajima, M., & Ríos - Rull, J. V. (2007). A quantitative theory of unsecured consumer credit with risk of default. *Econometrica*, 75(6), 1525-1589.
- Chatterjee, S., Corbae, D., & Rios-Rull, J. V. (2011). A theory of credit scoring and competitive pricing of default risk. Unpublished paper, University of Minnesota.[672], 31.
- Fama, E. F. (1980). Banking in the Theory of Finance. *Journal of Monetary Economics*, 6(1), 39-57.
- Chen, J. 2019. Default. <https://www.investopedia.com/terms/d/default2.asp>. [online]. Access dated 12/12/2019.

- Derban, W. K., Binner, J. M., & Mullineux, A. (2005). Loan repayment performance in community development finance institutions in the UK. *Small Business Economics*, 25(4), 319-332.
- Do Doan Trang. (2019). On Credit Risk Management at Commercial Banks in Vietnam. *Finance Magazine*. <http://tapchitaichinh.vn/ngan-hang/ve-quan-tri-rui-ro-tin-dung-tai-cac-ngan-hang-thuong-mai-o-viet-nam-302221.html>. Accessed on January 30, 2020.
- Dinh Hoang Thang. (2013). *Quantitative Methods*. Fulbright Economics Teaching Program for the 2013-2014 academic year.
- Dinh Mai Long. (2015). Handling Bad Debts in the Banking System: A Public Policy Perspective. *Vietnam Journal of Science and Technology*, 1, 34-39.
- Kwambai, K. D., & Wandera, M. (2013). Effects of credit information sharing on nonperforming loans: the case of Kenya commercial bank Kenya. *European Scientific Journal*, 9(13).
- O'Sullivan, A., & Sheffrin, S. M. (2003). *Economics: Principles in Action*. Upper Saddle River, New Jersey 07458: Pearson Prentice Hall. p. 261. ISBN 0-13-063085-3.
- Hoang Trong and Chu Nguyen Mong Ngoc. (2008). *Data Analysis in Research with SPSS*. Hanoi: Hong Duc Publishing House.
- Ledgerwood, J. (1998). *Microfinance Handbook: An Institutional and Financial Perspective*. The World Bank.
- Le Khuong Ninh. (2016). *Applied Economics in Microfinance*. Hanoi: Education Publishing House.
- Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, 7(1), 77-91.
- Modigliani, F., & Miller, M. H. (1959). The cost of capital, corporation finance, and the theory of investment: Reply. *The American Economic Review*, 49(4), 655-669.
- Mohammed, A. F., & Wobe, M. H. (2019). Factors Affecting Loan Repayment Performance of Microfinance Institution Borrowers: The Case of Omo Microfinance at Wondo Genet Woreda, Ethiopia. *International Journal of Applied Behavioral Economics (IJABE)*, 8(2), 27-43.
- Nawai, N., & Shariff, M. N. M. (2012). Factors affecting repayment performance in microfinance programs in Malaysia. *Procedia-Social and Behavioral Sciences*, 62, 806-811.
- Construction Bank – Hau Giang Branch. (2020). Financial reports for 2017, 2018, 2019. Accounting and Credit Administration Department, Construction Bank – Hau Giang Branch.
- Nguyen Van Huan and Do Nang Thang. (2018). A credit risk warning model for individual customers of Vietnamese commercial banks. *Journal of Economics & Business Administration*, 6, 86-92.
- Pasha, S. A. M., & Negese, T. (2014). Performance of loan repayment determinants in Ethiopian microfinance – An analysis. *Eurasian Journal of Business and Economics*, 7(13), 29-49.
- Peter, V., & Peter, R. (2011). Risk management model: An empirical assessment of the risk of default. *Journal of Risk and Diversification*, 1, 7-18.
- Pham Huu Tai and Nguyen Thu Nga. (2017). The impact of credit risk on the business efficiency of banks from a non-parametric approach. *Banking Journal*, 17.
- Sharpe, W. F. (1977). The capital asset pricing model: a “multi-beta” interpretation. In *Financial Decision Making Under Uncertainty* (pp. 127-135). Academic Press.
- Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *The American Economic Review*, 71(3), 393-410.
- Stiglitz, J. E. (1990). Peer monitoring and credit markets. *The World Bank Economic Review*, 4(3), 351-366.
- Roslan, A. H., & Karim, M. A. (2009). Determinants of microcredit repayment in Malaysia: The case of Agrobank. *Humanity & Social Sciences Journal*, 4(1), 45-52.
- Nguyen Thi Kim Nhung, Pham Thi Thu Hien and Nguyen Thi Thuy Quynh. (2017). Some issues regarding credit risk of commercial banks. *Financial Journal*. <http://tapchitaichinh.vn/kinh-te-vi-mo/mot-so-van-de-ve-rui-ro-tin-dung-cua-ngan-hang-thuong-mai-133627.html> Accessed on January 30, 2020.
- Tran The Sao. (2017). Factors affecting the ability to repay loans of farmers in Ben Luc district, Long An province. <http://www.tapchicongthuong.vn/bai-viet/cac-yeu-to-anh-huong-kha-nang-tra-no-ngan-hang-cua-nong-ho-tren-dia-ban-huyen-ben-luc-tinh-long-an-46830.htm>. [online]. Accessed on December 12, 2019.
- Thomas, L. C., Edelman, D. B., & Crook, J. N. (2002). *Credit scoring and its applications*. Society for Industrial and Applied Mathematics.
- Truong Cong Tru and Bui Van Trinh. (2018). Analysis of factors affecting the repayment ability of poor households in Soc Trang province. *Banking Journal*, 15, 25-31.
- Truong Dong Loc. (2010). Factors affecting credit risk of state-owned commercial banks in the Mekong Delta region. *Development Economics Journal*, 156, 49-57.
- Truong Dong Loc and Nguyen Thanh Binh. (2011). Factors affecting the timely repayment ability of farmers in Hau Giang province. *Banking Technology Journal*, 64, 3-7.
- Nguyen Quoc Nghi. (2012). Factors affecting the timely repayment ability of households in rural Tra Vinh province. *Banking Science & Training Journal*, 120, 43-47.

- Standard Chartered Bank Vietnam. Loan terminology. [pdf]. <https://www.sc.com/global/av/home-loan-glossary-VN.pdf>. Accessed on December 12, 2019.
- State Bank of Vietnam. (2013). Circular 02/2013/TT-NHNN regulating asset classification, provisions, methods of risk provision, and the use of provisions to handle risks in the activities of credit institutions and foreign bank branches. Hanoi, January 21, 2013.
- State Bank of Vietnam. (2016). Circular 39/2016/TT-NHNN regulating lending activities of credit institutions and foreign bank branches to customers. Hanoi, December 30, 2016.
- Van Nam, M., & Duy, V. Q. (2016). Determinants of repayment performance of borrowers in the rural Mekong Delta of Vietnam. *International Journal of Innovative Science, Engineering & Technology*, Vol. 3 Issue 1, 305-322.
- Vo Thi Thanh Loc and Huynh Huu Tho. (2015). Textbook on scientific research methods and writing research proposals. Can Tho City: Can Tho University Press.
- Vu Mai Chi and Tran Anh Quy. (2018). The situation of handling bad debts in Vietnam through various phases – issues of concern and recommendations. *Banking Journal*, No. 21. <http://tapchinganhang.gov.vn/tinh-hinh-xu-ly-no-xau-tai-viet-nam-qua-cac-giai-doan-cac-van-de-can-quan-tam-va-khuyen-nghi.htm>. [online]. Accessed on November 20, 2019.
- Walsh, C. E. (2017). *Monetary theory and policy*. MIT Press.