Current Status of Allocating Loans to Individuals and Prospects for the Implementation of Behavioral Economics in the Lending Process

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Abstract: This research defines the factors of loan repayment behavior based on psychological and behavioral economics theories. One of the main tasks of our country's banks is to further develop the banking system, which is the main link of the economy, and especially to increase the weight of credit operations. The efficient banking systems of countries operate by introducing innovations in banks, providing new types of services, and improving existing assets and passive operations. In our republic, commercial banks currently allocate loans to customers who consider their credit history and salary income. However, it is known from foreign experience that this method of lending has numerous disadvantages and requires attracting customers on a limited scale.

In this article, the credit system, the concept of credit scoring, the rules of the lending procedures and problems of lending the banks and methods of determining the solvency are mentioned. Also, the foreign experience of lending practice based on the factors of the behavioral economy, views of scientific researchers and work are given. Based on these, the importance and prospects of introducing the factor of behavioral economy in the banks and credit organizations of our republic are highlighted.

Key words: credit, debt load, solvency, loan portfolio, problem loans, behavioral economics, consumer loans, car loans, solvency, credit scoring, credit history.

1. INTRODUCTION

Recently, behavioral economics has been widely used in the banks and other financial organizations of the developed countries. Today, as digital technologies are advancing, the decision-making process is becoming more and more difficult among easy, fast and limitless choices. As a result, it is difficult for banks to determine customer behavior with complete accuracy. Therefore, it is becoming increasingly important to study how and why people make financial decisions in the banking system. Because the role of the behavioral economy is incomparable in forming the demand for the offered products, for increasing the loan portfolio and preventing problematic loans. Based on this, it is appropriate to study the behavior of customers in the process of lending to individuals and to determine the factors affecting it, as well as to study the influence of mental and physical behavior on the choice of customers and credit ability.

The development of an economy and its growth rates are directly dependent on the stability of the banking system. Recently, our president, Sh. M. Mirziyoyev developed the initiative in the development strategy of New Uzbekistan for 2022–2026. Development of the national economy and

ensuring high growth rates, the completion of transformation processes in commercial banks have been determined within the framework. In addition to this, to increase the level of digitization of production and operational processes in the financial and banking sectors up to 70% by the end of 2026, to ensure financial stability in the banking system, and to develop a program for developing modern financial services, operations and technologies (fintex) are the main tasks of this strategy [1].

As was mentioned above, increasing the efficiency of banks is considered an important task, and the basis of their activity is the process of lending and proportional improvement of this direction. Credit plays important roles in economic reforms, including the redistribution of financial resources and the flow of capital from one sector to another, from one owner to another. Moreover, it is possible to say that the possibilities of expansion of production, acceleration of economic development, and accumulation of funds are the most effective directions of capital investment.

Nowadays, it is necessary to expand online and mobile service, "scoring" and automated modular loan allocation system, which are widely used abroad in our country. Also, several decisions and decrees are being adopted to simplify lending processes and improve the credit scoring system.

Improving the quality of the credit portfolio and the risk management as the goals and priorities of the reforms carried out in our country, following a moderate level of credit growth, conducting a balanced macroeconomic policy, and implementing technological solutions for assessing corporate governance and financial risks can be the tools to ensure the financial stability of the banking system.

2. LITERATURE REVIEW

To understand the financial decision-making under unpredictable conditions, throughout the development of behavioral economics for more than 20 years, individual behavior and attitude have been closely observed by behavioral economists [2] based on psychological studies [3]. As defined in behavioral economics theories, system-1 - the human model of automatic thinking and system-2- the human model of mechanical thinking directly influence the decision making of humans [4]. Since cognitive bias, thoughts, and attitude are the internal factors that establish the individual, we argue that the identification of the responsible borrower shall rely on the individual's psychological study.

Indebtedness is a planned and rational decision that allows intertemporal redistribution of consumption [5]. However, evidence regarding cognitive bias is that our financial decisions are influenced more by our emotions, attitude, and behavioral traits than by logical thinking.

If we pay more attention to the theoretical aspects of the scoring system in lending to individuals, many of our local scientists have conducted scientific research on determining creditworthiness and solvency. In particular, the economist Mavlanov (2018) cited two different aspects of the creditworthiness of bank customers, classified financial and non-financial indicators from the bank's viewpoint based on certain criteria, and suggested creditworthiness assessment using a scoring model. Based on the financial situation of the enterprise, he proposed a comprehensive analysis approach based on liquidity, balance sheet liquidity, stability and efficiency indicators and showed the effectiveness of its use [6]. G.O. Turdieva, in her scientific work on the theoretical and organizational-methodical aspects of creditworthiness, revealed such issues as the interpretation of terms used in the analysis of creditworthiness, the role of creditworthiness analysis in a comprehensive economic analysis, and the classification of customers using non-financial indicators in the process of analysis.[7]

In our opinion, scientifically based research and the new approaches of these scientists will allow a more accurate and complete analysis of the financial situation of clients. In particular, Mavlanov's electronic program "Scoring model of creditworthiness analysis" identified the possibilities of sharply reducing credit risk through a comprehensive assessment of creditworthiness based on financial and non-financial indicators.

Other economists have also scientifically researched the issues of improving the practice of assessing the creditworthiness of customers in commercial banks based on the fact that the difference between creditworthiness and solvency is a complex process and is aimed at assessing the situation in the future [8]. I.M. Alimardonov paid attention to the method for assessing their credit worthiness and

general cash flows in lending to small business entities and concluded that this method is preferable to the method of financial ratio [9].

In the mentioned literature, the aspects of determining the creditworthiness of legal entities and improving the processes of credit allocation are mainly mentioned. However, not enough scientific research has been conducted on lending to individuals, and simultaneously, in the implementation of general credit scoring, the main emphasis is placed on the income of the population at work. That is, in our Republic, state enterprises or private enterprises engaged in retail trade, handicrafts, agriculture, homesteading, activities of clubs, livestock, poultry, household activities in the homestead and other similar types of enterprises. several problems are related to meeting the demand of the non-employee population for borrowing and increasing the number of loans. One side of this problem is that the current methods for determining creditworthiness are not fully effective and the number of problematic loans is increasing.

Some Chinese researchers have come to the conclusion that since mental instability, thought, thoughts and attitudes are factors in identifying a person, it is possible to rely on these factors in determining a responsible borrower [10]. That is, consumers in financial markets are not always fully aware of how the risks, losses, and cost potentials presented in debt are presented.

Based on the conducted research, the following conclusions can be drawn that, although it requires large financial costs, the benefits of improving credit scores for credit organizations are high. It is not enough to focus only on financial information, because even if the borrower has savings and a high income, it often happens that the borrower avoids the obligation and does not pay the debt on time. Here, their behavior is evaluated based on personal (psychological) and situational factors.

3. DATA AND METHODOLOGY

Loans are not only one of the main sources of income of commercial banks but also an integral part of the modern economy and financial system. Increasing the volume of loans, considering the risks, requires the correct analysis of creditworthiness. The main goal of the credit policies of commercial banks is to satisfy the needs of customers for credit funds, to comply with the current legal requirements and standards in the lending process, to ensure the integrity of lending operations, to regularly diversify risks, to conduct the lending process correctly and in an established order, and most importantly, the bank is to ensure the usefulness and efficiency of its activities.

Throughout historical development, monetary and commodity forms of credit have been used. Currently, money credit is widely used in our country, it takes the forms of bank, commercial, state, consumer and international credit. Bank credit is the main and leading form of credit. It is given by money owners - banks and special credit institutions to borrowers (entrepreneurs, state, household sector) in the form of money loans.

Creditworthiness is one of the main criteria considered when granting a loan. The reason is that for the effective result of the commercial bank's activity, it is necessary to reduce the credit risk by any means. Interest on loans is the main source of income for the bank. The credit solvency of an enterprise allows the commercial bank to determine the possibility of granting a loan, the amount of the loan and the level of the interest rate. Also, determining credit worthiness allows you to repay the loan on time and, as a result, reduce the bank's risk. By credit worthiness, we understand the ability of the client to repay the loan and its interest on time in the future, in terms of the bank's ability to grant a loan to the client and its feasibility. Also, the creditworthiness of a bank client is his ability to settle his debt obligations on time. IIn practice, credit worthiness means the client's ability to repay his/debts from the bank in full and on time. The lending bank may be able to repay the loan in full, even if the enterprise is partially insolvent.

The regulation of lending processes in the Republic of Uzbekistan is based on several legal documents. These are the decisions of the President of the Republic of Uzbekistan No. PQ-4400 dated July 23, 2019 "On measures to increase the popularity of microfinance services," "Calculation of the debt burden of individual borrowers on loans (microloans) procedure, the permissible amount of the debt burden, as well as the regulation on limiting the growth of the debt burden" [11] and the

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regulation "On the minimum requirements for the activity of commercial banks in the implementation of mutual relations with consumers of banking services" [12]. Banks have developed internal rules for lending to individuals. According to them, the borrower must be solvent. Generally, solvency means the ability of the borrower (co-borrowers) to fully fulfill the obligations under the loan agreement on time, which is determined on the basis of the analysis of general income and financial condition.

According to the current legislation in our republic, lenders to individuals are mainly commercial banks, microcredit organizations, pawnshops, insurance organizations, consumer credit providers in the form of goods, persons who lend money to the debtor/client on the basis of a mutual agreement, and other lenders in accordance with the law. In practice, when lending to individuals in the banks of our country, the average arithmetical value of the amount of official income received by the debtor/client in the form of salary and pension in the last 12 months from the date of application to the branch for lending to individuals and, therefore, having a job in a permanent organization or institution is taken the client is considered creditworthy. The term "debt burden indicator" considered when granting a loan means the ratio of the borrower's average monthly payments on loans or microloans to his average monthly income. This ratio is the main indicator that is considered when deciding to grant a loan. Also, the debt burden indicator is the sum of the sum of the principal balance of the borrower under the current loan (microloan) contracts and the sum of the basic amount of the loan (microloan) by banks and microcredit organizations or pawnshops. This was considered when it exceeded 50 times.

There are three main methods used by commercial banks in lending to individuals in the world experience, and they are

➢ Scoring assessment

➢ Learning credit history

➢ Assessment of ability to pay based on financial indicators [13]

It can be seen from international experience that many credit scoring models used in the activity of banks are one of the modern methods that allow us to accurately and comprehensively assess the creditworthiness of the client. With this help this, the most suitable customer is selected and a significant reduction in credit risk is achieved. Therefore, losses related to non-return of the loan are avoided. An accurate, complete and quick assessment of creditworthiness is important not only to reduce the credit risk of banks but also to reduce the risk of default for businesses. Globally, the concept of credit scoring is used in allocating loans, and this concept is defined as a probability system of providing certain credit resources based on mathematical and statistical analysis of information about the borrower [14].

Generally, credit scoring is a system for assessing your ability to pay back a loan. The points awarded to clients depend on the presence or absence of overdue debt, as well as income, type of activity, age and marital status, and other similar factors. The higher the score, the higher the chances of obtaining loans and credit products. In our republic, it is possible to obtain credit history through a single portal (my.gov.uz) or from the infocredit.uz platform. The data are stored in the credit history bureau (KTB), credit information analysis center (KATM). In Uzbekistan, a credit-information analysis center helps collect information on unpaid debts, loans, term payments and contracts from financial and credit organizations and pawnshops. Along with the official salary, credit history is one of the most important indicators of creditworthiness and determines the level of financial responsibility. Accordingly, banks currently make decisions on whether or not to give a loan, how much money to allocate, and what percentage to give a loan/microloan based on credit history and salary data in accordance with the rules of their internal credit policy. However, the credit scoring system in the banks of our republic has not been sufficiently improved and there are many shortcomings in this area.

The history of credit scoring in the United States dates back to the late 19th century, when East Coast businesspersons created the nation's first consumer credit bureaus. In the 1870s and 1880s, merchants began to join together with trade associations to share lists of delinquent and non-paying customer groups. During the same period, independent professionals launched the country's first consumer credit bureaus. These organizations collect information about individuals for selling it to retailers, landlords, employers, and anyone else who may be interested in that information [15]. Agents asked around about individuals' debts, as well as other details that could have moral implications, including information such as drinking and gambling habits.

The first quantitative credit scoring approach to credit appeared in the 1930s. Certain retailers, most prominently a mail-order clothing company in Chicago, as well as some banks and finance companies, have introduced point-based systems to predict who will and who will not make their payments on time. Firms obtain information about a person's profession, marital status, race, income, neighborhood, etc. from credit applications and fixed scores [16]. Professionals scored more than regular workers, homeowners scored more than renters. In our view, these early attempts at quantification were the first steps toward a character-based credit worthiness assessment. Also, the founders of this scoring system could only partially determine creditworthiness in terms of moral character.

Thus, it can be seen from the information given above that in the implementation of credit scoring, a lot of attention is paid to the financial indicators of customers. Although there are many advantages of analyzing the customer's credit history and financial performance for the past period in assessing the solvency and ability of the customers, the economic crisis that caused the worldwide economic difficulties that occurred in 2008 and recently witnessed the resulting losses and the increase in NPLs after the Covid 19 pandemic indicate the flaws in this credit scoring model. In particular, as of June 1, 2022, the total loan portfolio of commercial banks amounted to 345,201 trillion souls, and the share of non-performing loans in total loans reached 5.3%, i.e. 18,282 trillion sums. If we look at the same indicators as of 01.06.2020, total loans amount to 237.98 trillion souls, and the share of problematic loans in total loans is 2.3%, i.e. 5.47 trillion sums [17]. Until now, in crediting processes in our country, the assessment of customers has been based on their financial performance for the past period, and this situation continues. Although this seems to be true in one respect, if we consider that giving loans is considered a big risk, it is appropriate to evaluate not only the client's history but also his future. In other words, establishing a credit scoring system based on behavioral economics factors will greatly help determine the future solvency of customers.

4. RESULTS AND DISCUSSION

As mentioned above, the commercial banks and other credit organizations in the Republic of Uzbekistan issue loans to customers based on their credit history and source of income. This traditional lending method has numerous disadvantages. The main thing is that the growth of the loan portfolio in this direction will be low, and simultaneously, this does not mean that the weight of problematic loans will decrease. The share of non-performing loans in the total loan portfolio has increased in the banks of our Republic, especially during the pandemic. The daily increase in its weight shows the ineffectiveness of the traditional lending system.

In other words, as of January 1, 2021, there are 25,762,909 people between the ages of 16 and 64 who can get a loan [17]. Among them, the percentage of people with low income and those who do not work in state enterprises and organizations is quite high. So, if we can assess their creditworthiness and how to meet their credit requirements. It can be seen that by introducing the factor of the behavioral economy, it is possible not only to increase the loan portfolio and bank income but also to reduce the weight of problem loans. Until now, scientific research in this direction has not been conducted in Uzbekistan. However, scientific research has been done or is being conducted in many countries in this direction. We can see that the factors of behavioral economics are widely used in the experience of developed countries in all areas of the economy, and in the last decade, around the world, unlike economic and demographic factors, the character, behavior and attitudes of customers as a potential factor in paying off credit debts. under review [18].

Therefore, in addition to traditional methods, studying the behavior of people based on economic psychology in the allocation of credit will help understand their future behavior more clearly. The evaluation of human behavior provides an opportunity to effectively control credit risks, correctly redistribute resources and invest more. Also, another important aspect of this factor is its usefulness for customers who can pay the loan but cannot get a positive credit score according to the current procedures, and in improving the lending process. In this regard, there is only one important aspect of behavioral economics, the first is which behavior differs from the standard model, and the next is in which state it is observed in economic processes.

In our opinion, although psychological and behavioral factors are rejected according to the standard economic model, the use of this model has many advantages in the fields of banking and finance, as mentioned above, and is of great importance in maximizing economic profitability. Although formal financial and socio-demographic data on borrowers are well used in the banking industry, collecting psychological data is more challenging. For this, it is necessary to develop much data and analytical tests. Simultaneously, psychological analysis must meet standards such as psychometric reliability and validity, so that the client does not need to spend time or effort.

Currently, in many developed countries of the world, banks pay attention to the following aspects when obtaining information from the customer's social network profile to determine the creditworthiness of a customer to determine the behavior of a person when granting a loan to a customer:

➢ Contact information

➢ User login activity

➢ Relations with friends

➢ Interests of the client

➢ Activity at the Internet store, level of use of paid services

➢ Client's interest in gambling

It is worth noting that using only the social scoring system to determine the customer's ability to pay a loan, abandoning the current traditional methods, is not appropriate. It is advisable to comply with the current legislation and prevent credit risks. So this system is an additional factor in making decisions on lending. Using social scoring, that is, the factors of behavioral economics, it is possible to assess the solvency of customers in modern lending in the following ways:

Table 1. Criteria for determining the ability to repay the borrowed funds taken by customers

Criteria for selecting a data source	Font size and style
1. Demographic characteristics of the client:	Gender, age, marital status, children, relatives
2. Validity of contact information	Telephone number, e-mail address, actual place of residence
3. Education, training, or work place	Education, educational institution, level of language knowledge, position
4. Customer's social and consumption interests:	The number of friends, political views, attitude to changes in the environment, personal development, hobbies, groups he is a member of, and his interests in terms of the "like" button.
5. Technical data analysis	The time spent on the web page

Factors affecting human behavior and the assessment of customer solvency have been introduced in many banks in Russia. Through this, it will be possible to know how the customer reacts to a payment and whether his behavior tends to pay off his debts on time or vice versa.

According to research, despite having few friends and high likability scores, highly neurotic people spend most of their face-to-face contact away from negative emotions. In contrast, shy people spend less time on social networks to reveal less information about themselves.[19]

Notably, in conclusion from the above, there are many disadvantages of understanding personal characteristics through the Internet, which are misunderstandings and cheating in answering test questions or sharing false information on social networks. is cited [20]. That Thus, people do not always provide complete information about themselves through social networks.

Based on the fact that demographic and economic factors are not sufficient to determine the ability to repay a loan and the need to consider behavioral factors, we turn to psychological research. Human behavior has been studied by a number of researchers. In particular, there are the "Big Five" basic personality traits, which are most widely used in psychology to determine behavior. They consist of the following features [21]:

1. Self-awareness refers to characteristics and behaviors such as thoughtfulness, good control, good organization, and goal orientation. Self-awareness leads to less borrowing.

2. Openness. It includes features such as imagination, creativity, curiosity, desire to learn new things and trying to gain experiences.

3. Agreeableness, which includes such qualities as trust, kindness, affection and cooperation.

4. Extraversion includes features such as impressionability, politeness, talkativeness, assertiveness, and a high level of emotional immediacy.

5. Nervousness includes features such as sadness, moodiness and emotional instability.

With the help of these characteristics, the determination of human behavior is modeled, and according to this, the creditworthiness can be assessed. In other words, the character of people and their attitude toward paying bills on time can be determined by means of these 5 characters.

In our opinion, as lending to individuals occupies an important place in the modern economy, it is important to improve the scoring model in the credit organizations of our republic to determine the solvency of the client in increasing the loan portfolio. It is known that, according to the current credit scoring model in commercial banks, decisions on loan allocation is based on income at work, family status, workplace of family members, number of children, available daily expenses, KATM information, financial status. will be considered during acceptance. Generally, the study of these aspects helps determine whether the customers collect the loan and interest payments on time. In this, the main emphasis is on studying the credit history of the client. Credit history is available to any person who has used the credit services of banks, microcredit organizations, pawnshops, leasing companies, household appliances, furniture and similar stores at least once in a lifetime.

Credit history is detailed information about where an individual or legal entity borrowed from, from which credit organization, how much and how it was later paid, that is, it is a reflection of your financial discipline as a borrower. Based on the credit history, the financial condition of debtors, as well as the ability to repay the debt, are evaluated, as well as the rating system (scoring) debtors are formed.

Social scoring (Big Data) is one of the modern banking technologies used to determine the creditworthiness of the borrower [22]. According to him, there are many opportunities for large-scale analysis and determination of customer solvency using social network data.

Big Data Scoring is a virtual service database that helps lenders provide loan quality, reduce their risk, and approve loans using a large database. The company was founded in 2013 and has offices in the UK, Finland, Chile, Indonesia and Poland. The company's services are used by all lenders,

including banks, payday lenders, P2P lending platforms, microfinance organizations and leasing companies.

Below is a comparison of the current credit scoring model in our country and the proposed scoring model based on behavioral factors. This table outlines some of the advantages of the current credit scoring system and the proposed behavior-based credit worthiness approach:

Table 2 Advantages of a scoring model based on behavioral factors

1. Current credit scoring model	2. The proposed scoring model based on behavioral factors
-Takes into account the client's financial situation, salary income, sources of additional income -research and evaluates the credit history of clients -To prevent risks when granting a loan, a guarantee or an insurance policy is requested	- considers the financial situation of customers, their place of work, additional income and credit history. -Studies the client's financial decision-making process and the influence of their behavior on it.
	-He evaluates the future of the client after studying his character
	- It takes into account the age, gender, customs and daily activities of customers - Learns activities and interests in social networks.
	- Information about close relatives and friends is obtained

It can be seen that although financial analysis and customer credit history are important in crediting customers, they may not be sufficient for evaluating customers without permanent employment and no credit history. With this in mind, assessing customers by introducing behavioral factors is likely to provide a more accurate estimate of their future solvency.

5. CONCLUSION

So, if we can conclude from the above, there are 2 different methods for lending to individuals in the world experience, they are carried out by the underwriting method using artificial intelligence based on the automatic scoring method. The bank employees enter the information about the borrower into a special program and calculate the points. Based on the accumulated points, a decision is made on whether to grant a loan or not. Such a crediting process can take from 5 min to 1 h.

Many banks in our republic have implemented effective customer service by optimizing crediting processes, reducing the human factor in reviewing applications, correctly assessing borrowers' solvency, effectively managing risks associated with lending practices expected in banks, and qualitatively organizing the review of applications.

In our opinion, behavioral economics, as one of the modern fields of science, is critical for preventing problems, in other words, risks, especially in credit organizations. In difficult economic situations, especially after the coronavirus pandemic, the risk of non-return of loans and the large number of bad loans have created the need to focus on people's behavior to eliminate shortcomings in the lending process in many countries. Also, after the pandemic, we witnessed a decrease in the income of the population, or in other words, a further increase in the demand for credit, and this, in turn, requires reducing credit risk by using modern credit scoring models. Here, it is appropriate to rely on the factors of behavioral economics.

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