

Application of big-data lending in the banking industry and strategic recommendations

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Abstract. Building on an analysis of the current state of big-data lending applications, this paper systematically reviews related research progress, probes in depth the core differences between the operating models of traditional banks and internet banks (with particular attention to Xinwang Bank, XWBank) and the challenges they face, and accordingly proposes optimization strategies. Leveraging massive datasets and advanced technologies, big-data lending markedly enhances the inclusiveness of credit services and the effectiveness of risk management. The study finds that, although traditional banks are actively deploying in this field, they remain constrained by issues such as single-source data and rigid processes; internet banks, by contrast, demonstrate advantages through ecosystem data and agile operating models. XWBank's practice of "full customer-segment coverage, end-to-end online processes, and real-time risk management" offers an important reference for the industry. This paper recommends that commercial banks expand the breadth of data dimensions, build differentiated rating systems, optimize approval processes, and deepen cooperation with internet banks to achieve complementary strengths, thereby effectively addressing challenges and advancing inclusive finance.

Keywords: big-data lending, commercial banks, Xinwang Bank (XWBank), inclusive finance

1. Introduction

Academic research on big-data lending has primarily focused on risks, models, efficiency, and regulatory aspects. Mao [1], through a case study of Xinwang Bank (XWBank), emphasized the core value of "real-time risk management" and digitalized processes in enhancing efficiency and expanding coverage, thereby affirming the feasibility of technology-driven inclusive finance. Jia [2] concentrated on the credit risks of small and micro enterprises, noting that big-data-based predictive models and intelligent risk control systems can effectively compensate for the shortcomings of traditional methods, while also cautioning that data quality, model interpretability, and external risk transmission pose potential challenges. Cheng [3] conducted an in-depth analysis of the innovative practices of MYbank's digital lending, affirming its model of constructing a risk-control system based on ecosystem data, but also pointing out the potential concentration risks caused by excessive reliance on a single data ecosystem and the possible exclusion of customers outside that ecosystem. Zhai and Chu [4], from a more macro perspective, explored the impact and reshaping of traditional banking business models by financial technology (including big-data lending), arguing that cooperation and integration will be the future trend.

Existing studies generally acknowledge the positive role of big-data lending in enhancing efficiency, expanding coverage, and serving small and micro enterprises, and they also probe into its distinctive models (such as the ecosystem-driven approach of internet banks and the real-time risk control of Xinwang Bank, XWBank). However, the research also reveals critical challenges: data dimensions and quality (single-source dependence, ecosystem reliance, and the handling of unstructured data), model risks (interpretability, stability, and potential discrimination), risk spillovers (fraud, cross-debt risks, and macroeconomic sensitivity), and regulatory adaptability (data privacy, algorithmic supervision, and consumer protection). These studies provide an important theoretical foundation and perspective for this paper's analysis of current issues and the formulation of strategic recommendations.

2. Current application of big-data lending in China's banking industry

The core of big-data lending lies in the application of big-data technologies, which rely on massive datasets (with data volume being the prerequisite) to process diverse data sources—including semi-structured and unstructured data such as e-commerce

transaction records and social media behavior information. This process involves key stages of data storage, efficient data processing, and in-depth data analysis. Its fundamental objective is to realize data value creation through data mining and value enhancement.

As shown in Table 1, at present, commercial banks and internet companies (including platforms engaged in P2P lending) constitute the main driving forces behind the development of this business. Big-data lending pays particular attention to serving long-tail customer groups inadequately covered by traditional finance. By constructing more comprehensive credit evaluation models, it has significantly improved both the accessibility of credit services and the effectiveness of risk management.

Table 1. Examples of mainstream big-data lending products in China

Traditional Commercial Banks		Internet Companies	
Commercial Banks Name	Credit Product Name	Internet Companies Name	Credit Product Name
Industrial and Commercial Bank of China (ICBC)	Online Small Loans	Ant Group	Jiebei, Huabei
Agricultural Bank of China (ABC)	Data-Based Online Loans	MYbank	Wangshang Loan, Wangnong Loan
Bank of China (BOC)	BOC E-Loan	WeBank	Weiye Loan, Weili Loan
China Construction Bank (CCB)	SME Express Loan	JD Finance	Jingxiao Loan, JD Baitiao
Bank of Communications (BOCOM)	POS Loan	Du Xiaoman Finance	Youqianhua
Postal Savings Bank of China (PSBC)	E-Express Loan	DiDi Finance	Dishui Loan
Bank of Jiangsu	Tax E-Finance Loan	Meituan Finance	Meituan Xiao Loan, Shenghuofei
Industrial Bank	Easy Express Loan	Suning Bank	Suning Yun Loan, Shengji Loan
Huaxia Bank	E-Commerce Loan	Baixin Bank	Baixing Loan, Baifen Loan
Ping An Bank	Lu E Loan	XWBank	Haoren Loan

Data Source: Official websites of commercial banks and internet companies

2.1. Application of big-data lending in traditional banks

Commercial banks' big-data lending primarily relies on internal bank data (transactions, wealth management, loans, etc.) and government data (taxation, social security, etc.). For example, Bank of Jiangsu's Tax E-Finance Loan successfully leverages tax data. However, data sources are relatively single, offering high quality but limited dimensions, which gives rise to multiple challenges: restricted inclusiveness, difficult access for small and micro enterprises, insufficient differentiation in credit ratings, overreliance on collateral, lengthy approval processes, product homogeneity, and underdeveloped risk-control foundations. Differences in technology across banks are minor; disparities mainly exist in institutional arrangements, investment, and focus. Moreover, the industry generally lacks sufficient attention, and the incomplete national credit system further exacerbates these difficulties.

2.2. Application of big-data lending in internet banks

Internet banks, represented by MYbank, deeply leverage shareholder ecosystems (e.g., Alibaba e-commerce platforms and Alipay) to integrate multidimensional data from online transactions, payments, social interactions, and offline QR code scans, thereby constructing efficient risk-control models (such as the "Hydrological Model" for small and micro enterprises and the "Sesame Credit" model for individuals). Their core advantage lies in providing a seamless experience: pure credit, zero collateral, fully online application, second-level approval, minute-level disbursement, and flexible repayment (e.g., Wangshang Loan). Risk management is fully internet-based, scalable, and data-driven, integrating credit, business, and fraud risk under a unified framework [2]. Beyond traditional giants (MYbank, WeBank, JD Finance), emerging players (DiDi Finance, Meituan Finance) are also entering the market by leveraging their ecosystem-based scenarios.

3. Xinwang Bank's big-data lending model

Xinwang Bank is the first bank in China to implement a model of "full customer-segment coverage, end-to-end online processes, and real-time risk management". The core support for its big-data lending business lies in a stable and reliable information

technology system as well as a precise and efficient online real-time risk-control framework.

Compared with MYbank, Xinwang Bank demonstrates distinctive business features, primarily in the areas of "full customer-segment coverage" and "real-time risk management". Regarding full customer-segment coverage, Xinwang Bank opens its customer acquisition channels to the entire internet, whereas MYbank mainly focuses on existing customers within its major shareholder's ecosystem. This means that Xinwang Bank reaches a broader range of customers. The bank adopts an open approach to customer screening, setting no predefined criteria; any applicant is given the opportunity for review.

In terms of real-time risk management, when a customer initiates a credit application at Xinwang Bank, the bank performs a risk assessment and decision in real time based on the information submitted by the customer and other authorized data retrieved. In contrast, MYbank primarily relies on data from existing ecosystem customers and uses a customer whitelist system to pre-approve most clients. A customer's loan application at MYbank essentially constitutes a "loan drawdown" process, without real-time risk assessment. For Xinwang Bank, the average time from application submission to the final review decision is approximately 42 seconds. About 70% of applicants are immediately rejected within a few seconds, while the review process for those who are ultimately approved typically takes 1–2 minutes, followed by disbursement within just over ten minutes. The entire process is fully automated, requiring no manual intervention.

As the first bank in China to fully apply machine learning technology for retail credit risk decisions, Xinwang Bank has designated personal consumer finance as a strategic development priority. The bank employs fully online, automated, and standardized processes. Its flagship product, Haoren Loan, effectively expands the coverage of personal financial services and addresses the financing difficulties faced by individuals seeking small, short-term loans. Compared with WeBank and MYbank, Xinwang Bank draws customers from a more diverse pool and faces more complex challenges in risk management.

4. Challenges and strategic recommendations for big-data lending in the banking industry

In the context of the current application status and literature review, the core challenges of big-data lending [5] can be summarized across four interrelated dimensions. First, at the data infrastructure level, banks face the "island effect" and insufficient data dimensionality, particularly traditional banking institutions. Constrained by limited internal data sources and the difficulty of effectively integrating external heterogeneous data (such as behavioral and contextual data), these banks are unable to construct comprehensive and in-depth customer profiles. Second, risk assessment models encounter dual challenges of generalizability and granularity. Existing models often fail to effectively capture and quantify the highly heterogeneous risk characteristics of small and micro enterprises and long-tail customer segments, limiting both the precision and coverage of risk evaluations. Third, process efficiency suffers from significant bottlenecks. Traditional banks still rely heavily on manual operations and offline verification in credit approval and other procedures. These lengthy, low-automation processes struggle to meet market demands for efficient financial services. Fourth, the complexity of risk control and emerging challenges is increasingly prominent. These include risks inherent to the models themselves (e.g., overfitting, concept drift, poor interpretability), increasingly sophisticated fraud schemes, the accumulation of multi-loan (cross-debt) risks, and critical challenges in data security and user privacy protection. Together, these challenges constitute key bottlenecks restricting the deep application and healthy development of big-data lending.

Big-data lending is an inevitable trend in the banking industry. With the continuous advancement and popularization of big-data technologies, it has become a major development direction for banks. By leveraging big-data technologies, banks can more accurately assess customer credit, reduce credit risks, and improve service efficiency. Internet banks hold distinctive advantages in big-data lending. Institutions such as MYbank and Xinwang Bank, relying on massive data resources from e-commerce platforms, social media, and other sources, have developed efficient credit assessment models and risk-control systems, providing convenient credit services for small and micro enterprises as well as individual consumers.

Finally, commercial banks should strengthen cooperation with internet banks. Each has unique strengths in the big-data lending field, and collaboration facilitates resource sharing and complementary advantages. Commercial banks can learn from the technologies and experience of internet banks to enhance their own big-data lending capabilities, while internet banks can leverage the funding and customer resources of commercial banks to expand their business scale.

First, deepen data integration and ecosystem development to overcome data bottlenecks. In addition to relying on the bank's own data and government data, banks should also strengthen cooperation with third-party data providers, integrating multidimensional data from social media, e-commerce platforms, public utility payments, and other sources to construct more comprehensive and diversified credit assessment models. Currently, commercial banks' data sources are relatively single, making it difficult to meet the requirements of big-data lending for distributed, multidimensional data. Enhancing the diversity of data sources helps improve the accuracy of credit evaluation models and risk-control capabilities. Commercial banks urgently need to reduce their dependence on single internal data, and while strictly complying with regulatory requirements, actively connect with diverse third-party data providers from e-commerce, payments, logistics, public utilities, telecommunications, and other sectors, integrating multidimensional data resources such as user behavior, business operations, and contextual information. At the same time, they should actively explore the establishment of or participation in regional credit platforms and other cross-institutional

data-sharing platforms to legally and compliantly break "data silos" and construct a more comprehensive customer view. Internet banks, while consolidating their data advantages within their ecosystems, should also explore the secure and compliant introduction of external data sources, reducing overreliance on a single ecosystem data source, thereby effectively enhancing the generalizability and robustness of risk models. In addition, strong policy support is crucial, requiring the improvement of fundamental rules for the data element market, further clarification of data ownership, circulation and transaction mechanisms, and unified security standards, so as to promote the efficient flow and value realization of data resources within a legal and compliant framework.

Second, enhance the applicability of credit-rating methods. Commercial banks should accelerate the establishment of credit-rating methods suitable for their own operations, particularly for the high uncertainty of small and micro enterprises, and build an effective dynamic risk management system. In big-data lending practice, commercial banks face problems such as high client admission thresholds and similar credit ratings. Improving the applicability of credit-rating methods helps lower financing barriers for small and micro enterprises and increase the accessibility of credit services.

Third, optimize approval processes. Commercial banks should learn from internet banks such as Xinwang Bank to optimize approval workflows, reduce manual intervention, and achieve fully online, automated, and standardized processes. Traditional approval procedures are lengthy and inefficient, making it difficult to meet the fast-response requirements of big-data lending. Optimizing the approval process helps improve customer experience and shorten loan disbursement time.

5. Conclusion

Big-data lending is a key pathway to improving the efficiency of financial services and expanding inclusive coverage. Traditional banks need to face their shortcomings in data, models, and processes, and be courageous in pursuing reforms, while internet banks must seek a balance between openness and risk robustness. Xinwang Bank's practice provides a valuable reference for a "real-time, online, and open" model. Overcoming data bottlenecks, constructing intelligent risk-control systems, redesigning agile processes, and deepening cross-industry cooperation are the core directions for the future. At the same time, continuously monitoring and effectively managing model risks, data security, and ethical issues, while actively embracing regulatory technology, is crucial to ensuring the sustainable development of big-data lending. Only by doing so can the full potential of big-data lending be realized, truly empowering inclusive finance.

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