

The Application of Artificial Intelligence in Cross-Border Payments by Hong Kong Virtual Banks: A Case Study and Exploration of Opportunities

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ABSTRACT

This study wants to see how virtual banks in Hong Kong use artificial intelligence (AI) to improve the security and speed of cross-border payment, so that more people can use them conveniently. We pay special attention to the practical methods used by ZA Bank and Mox Bank in Payment Connect system. We find that ZA Bank uses network analysis to find out the risks at the group level, while Mox Bank uses behavior modeling to find out the anomalies of individual users. Using these two methods together can make the payment process safer and more convenient for users. We have also noticed that these technologies can help small and medium-sized enterprises get funds faster, and also support new energy enterprises and disabled consumers to use cross-border services. This study uses the methods of literature review, case comparison and basic data analysis to fill a blank in the field of local virtual banking in Hong Kong. It provides new practical evidence for existing theories and practical suggestions for banks and regulators, which will help Hong Kong maintain its position as a leading financial technology center in Asia.

Keywords: Hong Kong virtual banks; artificial intelligence; cross-border payments; ZA Bank; Mox Bank; Payment Connect; Fintech 2030

1. INTRODUCTION

Hong Kong is an important financial center in Asia. It is trying to combine finance with technology. In 2025, Hong Kong Monetary Authority (HKMA) launched Fintech 2030 strategy ^[6], which paid special attention to artificial intelligence (AI). The goal is to make payments faster and safer, and to make financial services more convenient for more people.

On June 22nd, 2025, HKMA and People's Bank of China launched the Payment Connect system ^[5]. This system connects the Faster Payment System in Hong Kong with the NetsUnion Payment System in mainland. Now, people can use Hong Kong dollars and RMB to make real-time small transfers. This measure reduces the handling fee for cross-border remittance. This makes it easier for residents of Greater Bay Area and SMEs to transfer money. Experts predict that cross-border small transactions will increase greatly in the short term, which will contribute to the economic integration of Greater Bay Area.

Real-time cross-border payment also brings new challenges, such as fraud, money laundering, and restrictions on data flow. With the tension between China and the United States, the review of trade agreements has become more stringent. This makes the risk control of virtual banks more difficult. Traditional banks rely on manual audit and simple rules to manage risks, but in real-time transactions, these methods are often too slow and easy to make mistakes.

There are eight virtual banks in Hong Kong. These banks operate entirely through data and have no physical branches. ZA Bank has more than 1 million users in the first half of 2025 ^[10]. Mox Bank has about 750,000 users, accounting for 12% of the population that can open accounts in Hong Kong ^[3]. Both banks actively use artificial intelligence to manage risks, help customers and speed up payment.

Most of the existing research focuses on traditional big banks or global trends, and few studies specifically discuss the specific application of AI in virtual banks in Hong Kong, especially the network analysis of ZA Bank and the behavior modeling of Mox Bank. This research is to fill this gap. We will compare the AI applications of the two banks in Payment Connect, find out the benefits and challenges, and make suggestions.

The goal of this study is clear. We want to know how AI works in cross-border payment. We also want to know what practical benefits these technologies have for small and medium-sized enterprises, new energy companies and disabled

consumers. Finally, according to our findings, we will provide practical suggestions to regulators and banks to help implement the Fintech 2030 strategy.

2. LITERATURE REVIEW

The Bank for International Settlements (BIS) reported (BIS)2025 that artificial intelligence (AI) can make cross-border payment more convenient ^[2]. Using AI to assess risks and discover fraud can reduce the average cost of cross-border transactions by 20% to 35% and shorten the processing time by 30% to 50%. In the small high-frequency payment scenario, AI reduces the agency fee and manual inspection, greatly reducing the total cost. The report specifically mentioned that this effect is most obvious in the real-time payment system. By 2027, AI will become a common technology for global cross-border payment.

JPMorgan Chase's report in 2026 discussed the role of machine learning in real-time fraud detection. The error rate of traditional rule-based system is between 5% and 15%, but after using advanced machine learning model, the error rate is reduced to 1% to 3%, and the correct detection rate is over 95%. In cross-border payment, machine learning combined with behavior and network analysis can effectively find anomalies and reduce the risk of money laundering.

In Hong Kong, HKMA's Fintech 2030 strategy shows that the proportion of banks using AI has reached 75%, a great increase over 2022. According to a KPMG report, the utilization rate of production AI in Hong Kong's financial industry is 38% ^[7], which is mainly used for customer service, compliance inspection and optimization of payment process. These reports show that AI can greatly improve efficiency, make transactions faster and safer, and give us a better experience.

However, a lot of research is still focused on the international general model or the general direction. Few studies have analyzed in detail the specific technologies used by local virtual banks in Hong Kong. Our research fills this gap by comparing ZA Bank and Mox Bank.

3. RESEARCH OBJECTIVES AND METHODOLOGY

This study has a clear goal: to systematically understand the methods and improvement methods of using artificial intelligence (AI) in cross-border payment by virtual banks in Hong Kong. We choose Payment Connect as the research focus, and compare the practices of ZA Bank and Mox Bank.

Our academic goal is to provide local cases in Hong Kong. We hope to summarize the working principle of AI in the field of payment, especially its role in risk detection, network analysis and behavior prediction. We hope to provide local support for financial technology, inclusive finance and regulatory technology theory.

Our practical goal is to help virtual banks optimize their operations. We hope ZA Bank and Mox Bank can make Payment Connect transactions faster and safer, and let more people use this service. We pay special attention to the needs of small and medium-sized enterprises, new energy companies and disabled consumers. We also hope that these findings will help HKMA implement its Fintech 2030 strategy.

This study revolves around two issues. We first consult the literature to find out the main problems of AI in cross-border payment, such as risk detection and compliance challenges. Then, through the method of case study, the network analysis of ZA Bank and the behavior modeling of Mox Bank are carefully analyzed. We compared their technical characteristics, actual effects and performances in Payment Connect. We use the data in the reports of HKMA and KPMG to show the overall situation ^{[6][7]} and present the data in a simple table. Finally, we analyzed the benefits and problems, and gave suggestions for improvement.

This study faces two challenges. The first challenge is that the underlying AI data is scarce and the privacy requirements are high. We only use public reports and announcements to avoid any private information. The second challenge is how to combine qualitative analysis with quantitative data. We use the method of qualitative comparison and simple statistics to describe the technical logic first, and then support the conclusion with data.

We use four methods. Literature review helps us understand the background. Case study analysis is our main method; We carefully compared the two banks. Qualitative analysis is used to summarize benefits and problems. Descriptive quantitative analysis uses tables to show data, which makes the conclusion more convincing.

Our research steps are step by step: first understand the background and theory, then collect public data, then compare the actual practices, and finally give suggestions. This method is simple and feasible.

4. CASE STUDY

By comparing the AI applications of ZA Bank and Mox Bank in Payment Connect, we reveal the implementation path, risk control mechanism and actual effect of AI technology of the two banks.

4.1 ZA Bank

ZA Bank is the first virtual bank in Hong Kong. In the first half of 2025, its users exceeded 1 million^[10], making it the first digital bank in Hong Kong to reach this milestone. Its cross-border payment service is fast and cheap. Its AI system takes X Decision real-time decision engine as the core, and uses network analysis to monitor risks and discover fraud.

ZA Bank's network analysis will generate a dynamic diagram of the relationship between accounts and transactions. It analyzes the transaction amount, frequency, time, equipment fingerprint, IP address and cross-border path to find complex problems, such as multi-account operation or abnormal capital flow. This method is particularly important for small real-time transfer of Payment Connect, because this system supports real-time transfer of Hong Kong dollars and RMB. It helps ZA Bank to quickly assess risks in a high-frequency and low-latency environment.

ZA Bank SME case

ZA Bank has done a great job in helping small and medium-sized enterprises to raise funds. In 2024, it cooperated with Global Payments Asia-Pacific to launch the product Global Payments x ZA Business Loan. This product makes it easier for SMEs to get loans^{[11][4][13]}.

The core technologies of this product are credit modeling and alternative data. ZA Bank uses information such as the actual trading activities of Global Payments merchants to automatically evaluate their credit. Merchants do not need to provide traditional financial statements. This simplifies the approval process and is in line with HKMA's policy of supporting SMEs. Eligible merchants can complete the examination and approval within three working days at the earliest, with a maximum loan amount of HK\$ 4 million and a maximum repayment period of three years.

This cooperation is also related to ZA Remit's cross-border remittance service. It helps SMEs to handle cross-border settlement more easily, and supports the trade needs of SMEs and new energy companies in Guangdong-Hong Kong-Macao Greater Bay Area. Since 2021, ZA Bank has granted loans of over HK\$ 3.5 billion to SMEs^[14].

4.2 Mox Bank

Mox Bank is supported by Standard Chartered Bank, HKT, PCCW and Trip.com. By the end of 2025, it has about 750,000 users^[3], equivalent to 12% of Hong Kong's population suitable for banking. The core of its risk control system driven by AI is behavior modeling. They use artificial intelligence to monitor customers' accounts in real time and find unusual situations, with special emphasis on using data to make accurate decisions.

Mox Bank's behavior modeling creates a dynamic behavior file for each user. This includes trading habits, amount range, time characteristics, equipment usage habits, and cross-border activities. When the cross-border transfer of Payment Connect occurs, the system will quickly calculate the deviation between the current transaction and the historical file, and make a risk assessment in a short time. This method not only ensures security, but also takes care of the user experience, and will not stop legal transactions casually.

In March 2025, Mox Bank got a perfect score of four points in the joint evaluation of Hong Kong police and HKMA^[8]. This shows that their AI system is excellent in anti-fraud and anti-money laundering. After AI optimization, user satisfaction is greatly improved, and the account opening process is controlled within 3 minutes.

Mox Bank SME case

At present, Mox mainly focuses on personal banking services, and has not yet launched a special SME business account. However, its underlying technical architecture has laid the foundation for supporting SME business in the future.

Mox uses Thought Machine's Vault Core cloud native core banking system^[11]. This system shortens Mox's average first decision-making time to 7 seconds, and handles more than 1 million successful transactions every month. The microservice design of Vault Core also improves the deployment speed and system stability.

In risk management, behavior modeling and real-time monitoring technology can help small and medium-sized retail businesses. For example, Mox's Instant Loan allows users to apply for personal loans in a few steps through the App, and the funds will arrive quickly without submitting additional documents. This is a flexible capital turnover tool for small

business owners. Mox's AI system helps users manage cash flow through behavior analysis, and can also support abnormal detection of cross-border payment.

We must distinguish between the convenience of operation of consumer products and the business of institutional commercial banking. Although Mox Bank provides convenient personal loan service for small business owners through simple App interface, it does not provide special SME bank support, such as enterprise entity accounts or special trade financial instruments ^[12].

4.3 Comparison

The AI strategies of ZA Bank and Mox Bank have their own advantages and disadvantages, but they can cooperate with each other. ZA Bank's network analysis focuses on group relationships, and it is especially good at discovering multi-account cooperation or chain risks, especially when there are a lot of transaction data of SMEs. Mox Bank's behavior modeling pays more attention to the characteristics of a single user, and its cloud native system can be updated quickly and make decisions within 7 seconds.

In an environment that requires high frequency and rapid response, the complementarity between the two is obvious. ZA Bank is like a broad-spectrum filter layer, which can quickly screen out chain risks; Mox Bank, like a precise verification layer, makes an in-depth evaluation of a single user. This combination not only improves the overall risk control ability, but also ensures transaction efficiency and user satisfaction.

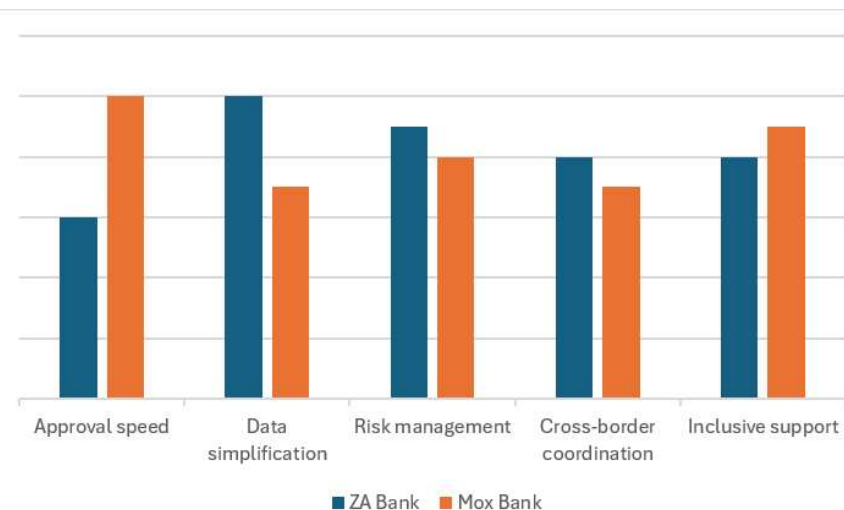
The AI strategies of the two banks to support SMEs are very different. Please see Figure 1 for a detailed comparative analysis.

From the perspective of business impact, ZA Bank is more suitable for supporting large-scale cross-border settlement and rapid financing of small and medium-sized enterprises, while Mox Bank is more suitable for meeting the high-frequency, small-scale and personalized capital needs of small enterprises.

However, these two banks also have their own limitations. ZA Bank's network analysis relies heavily on cross-institutional data, and if the data flow is limited, the characteristics may be incomplete. Although Mox Bank's behavior modeling is accurate, it needs to be iterated with the change of user behavior, and there are relatively few products for SMEs at present.

In contrast, we have summed up a set of dual-engine risk control methods. Network analysis focuses on group risk prevention and control, while behavior modeling focuses on intercepting individual anomalies. This framework provides an empirical basis for the follow-up discussion.

Figure 2. Comparison of AI Technology Application in SME Support between ZA Bank and Mox Bank



5. OPPORTUNITIES AND CHALLENGES

Artificial intelligence has greatly improved the speed, security and inclusiveness of our transactions. The risk control mechanism driven by AI reduces the cost of cross-border payment. ZA Bank's network analytics and Mox Bank's behavioral modeling can complete the risk assessment in a few milliseconds, which is very suitable for the high-frequency and low-latency requirements of Payment Connect. This not only shortens the processing time, but also improves the system security.

AI technology is still promoting financial inclusion. ZA Bank cooperates with Global Payments to provide fast financing services for small and medium-sized enterprises, and the approval can be completed within three working days at the earliest, without the need for traditional reports. It supports the green capital flow of small and medium-sized enterprises and new energy companies in Greater Bay Area. Mox Bank's Instant Loan provides flexible short-term financial support for small business owners ^{[1][4][13]}.

However, AI applications are also facing challenges. The first is the existence of model bias and privacy risks. Behavioral modeling and network analytics both rely on user data, and it is easy to misjudge normal transactions in complex scenarios. Data processing must strictly abide by personal data privacy regulations.

Second, there are restrictions on cross-border data flow. In the context of Sino-US trade war, data sharing faces more obstacles. This brings challenges to ZA Bank's network analysis and Mox Bank's behavior modeling, which may lead to the decline of model performance.

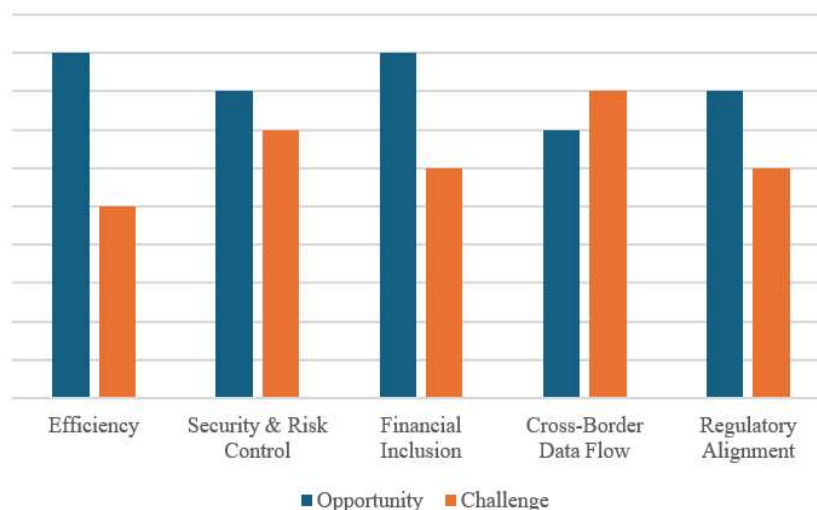
Third, model iteration is a problem. Changes in user behavior can easily lead to model drift, and banks need to continuously invest resources. At the same time, Mox Bank's products for small and medium-sized enterprises are still relatively limited.

In order to meet these challenges, we can take the following measures: First, strengthen the AI sandbox testing mechanism of HKMA and encourage virtual banks to jointly optimize technology. Second, optimize the data compliance framework and explore a secure data flow mechanism while protecting privacy. Third, promote the transparency and fairness audit of the algorithm and reduce the model deviation. Finally, improve the service system of small and medium-sized enterprises and create a complementary ecosystem.

Generally speaking, the benefits of using AI in cross-border payment by virtual banks in Hong Kong outweigh the challenges. Through regulatory guidance and technological upgrading, Hong Kong can give full play to the advantages of virtual banks and consolidate its position as a financial and technological center in Asia.

To put it simply, it is both an opportunity and a risk for virtual banks to make cross-border payments with AI. The related opportunities and challenges can be summarized in Figure 2.

Figure 3. Opportunities versus Challenges of AI Applications in Hong Kong Virtual Banks' Cross-Border Payments



6. LIMITATIONS AND FUTURE RESEARCH

This study mainly uses open data, and only two virtual banks are selected as examples, so the scope is limited. Future research can expand the number of samples, use mixed methods and strengthen long-term follow-up, so as to provide more support for the innovation of Hong Kong virtual banking.

7. CONCLUSIONS AND POLICY RECOMMENDATIONS

This study compares the AI application of ZA Bank and Mox Bank in Payment Connect, and reveals the implementation path and actual effect of AI technology in Hong Kong virtual bank. ZA Bank's network analysis focuses on group risk control, while Mox Bank's behavior modeling focuses on intercepting individual anomalies. This dual-engine model improves the security and inclusiveness of transactions.

This framework improves the efficiency of cross-border payment and supports the financing of SMEs. This study provides local empirical support for inclusive finance and RegTech's theory.

Based on our findings, we put forward the following policy suggestions: First, strengthen the AI sandbox testing mechanism of HKMA and encourage virtual banks to jointly iterate technology. Second, optimize the cross-border data compliance framework and balance security and innovation. Third, promote the transparency and fairness audit of the algorithm and reduce the model bias. Fourth, improve the SME service system of virtual banks and form a complementary structure. Fifth, deepen the implementation of Fintech 2030 strategy and establish a long-term evaluation system.

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