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Bank of Japan

## **The Use of Chatbots in the Financial Business**

**The current state of novel communication services and their potential**

*Remarks at the Sixth FinTech Forum*

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(The English translation is based on the Japanese original)

## **Introduction**

It is a great pleasure to welcome you all today to the sixth meeting of the FinTech Forum.

The topic of today's event is chatbots, which have increasingly revolutionized the interface of financial services. For a long time many financial services have been provided through personal communications. Face-to-face conversations have been partly replaced by the telephone, fax, and email, but human involvement in the communication has remained. However, the advent of chatbots has been transforming communication styles in a way that allows robots to interpret the context of questions in the form of text and audio, and then respond with appropriate answers. The key aspect of this innovation is to not only digitalize inputs, but also to be able to provide outputs created solely by robots.

### **I. What are Communication Services?**

Can we indeed call interactions with chatbots communication services? This question reminds us of the Turing test proposed by Alan Turing who was a British mathematician, cryptologist, and computer scientist. The Turing test provides a diagnostic criterion for a machine to be called "intelligent," or in other words to be equivalent to artificial intelligence. The test views the machine as possessing artificial intelligence if a human evaluator cannot tell if their questions are being answered by a human or a machine.

Let us apply the Turing test to chatbots. Chatbots could be deemed to pass the test if they can give answers equivalent to those from a human in response to requests for a certain service from a user. The key factor here would be customer satisfaction. Further enhancement of Artificial Intelligence and Natural Language Processing could result in satisfaction equivalent, or better than, that delivered by a human. This might already be true. In addition to the quality of conversations with customers, chatbots, as we all know, have the advantage of being able to work tirelessly 24/7.

Today's forum will discuss how emerging products coupled with such potential have increasingly reoriented the financial business, and what kind of technology supports this evolution.

## **II. Chatbots Growing from the Cradle**

Chatbots became widely used in business from 2016 to 2017 after they were incubated in the first half of the 2010s. It was in 2011 that artificial intelligence beat the masters of a quiz show in the U.S., and that smartphones were equipped with voice assistance. Smart speakers were released in 2014, while social network services attempted to incorporate chatbot services in 2015.

Many chatbot services came into use in 2016, including trial implementations, such as picking up customers' packages, redeliveries, and for a trash separation guidance for a local government. In addition to providing information in response to inquiries, chatbots can address additional customer needs. For instance, they show application displays to switch smartphone carriers to conclude a contract, and make reservations for air conditioner repairs in response to assessments of error codes. They have evolved into a useful business tool that serves as a communication tool, while integrating contract agreement processes and service provisions in a seamless manner.

## **III. Uses for Financial Institutions**

Although it was sometimes said that chatbots were not practical and were just for entertainment, their improvement allows us to fully apply them in broader areas. Financial institutions have acknowledged this potential from early on, attempting in multiple cases to introduce them.

For example, chatbots are used to consult with customers for asset management and insurance services. Many of you have seen chatbots in the form of concierges and corporate mascots explaining financial products and services on smartphones.

While their applications to customer services often get attention, there are a number of cases where corporations use chatbots for their provision of internal services. Larger companies, along with more segmented and specialized business lines, are likely to receive many internal inquiries in their daily operations. Firms suffering from labor shortages and which are aiming to improve their labor productivity, will wish to avoid wasting their valuable labor force to address internal inquiries. Chatbots can contribute to raising the productivity and profitability of financial institutions by upgrading and streamlining customer services, as well as reducing their internal costs

Moreover, customer needs and their satisfaction records can be stored in the database along with the frequency and content of internal inquiries, after the introduction of chatbots. This is expected to help achieve further customer satisfaction and effective operational restructuring on a continual basis.

#### **IV. “Visualizing” Tacit Knowledge and Revisiting Institutional Knowledge**

There is another benefit that can be expected from chatbots.

The implementation of chatbots in either customer services or internal operations requires the extraction of information and judgemental criteria, accumulated in each staff and business line, which is then transformed into business knowledge and recorded in a database. Humans and organizations make complicated judgments based on various conditions and contexts. In this regard, it would be useful to clearly define these processes as algorithms. Firms could also benefit from reviewing their own judgemental mechanisms that incorporate information in a holistic way, to seek needed answers and actions. These works could “visualize” tacit knowledge that has been embedded implicitly among staff and business lines, while enabling it to be shared within the community as institutional knowledge. At the same time, these works could also provide an opportunity to revisit an organization’s institutional knowledge that has already been shared inside the firm. For example, companies might find room for improvement in their marketing strategies and business and operational processes in an unexpected fashion during the implementation and roll-out phase. More broadly,

remodeling institutional knowledge through the use of chatbots could help enhance corporate value.

## **V. Closing Remarks**

Chatbots propose a novel approach for communication services.

Chatbots are just business tools to improve customer satisfaction and firms' internal services. Nonetheless, their functioning mechanisms are closely involved with human and organizational activities. From such a broad viewpoint, understanding chatbots may help us rediscover ourselves and our organizations.

We will have presentations on specific cases from financial institutions that have already introduced chatbots. Speakers from IT developers will also dive into technical aspects including Natural Language Processing and comprehension measures, that work behind emerging chatbot services.

In addition, I would be grateful if the forum could provide an opportunity to deepen our understanding of the current state of chatbot implementation and its potential in the financial business. It would also give us a chance to consider financial institutions' business models in the future. I would like to close my remarks now by wishing that today's FinTech Forum will contribute to all the participants in terms of sharing new insights and perspectives.

Thank you for your attention.