**AI’s Profound Impact on the Financial Industry**

2023-10-02

Artificial Intelligence include key technologies such as computer vision, natural language processing, information analysis and reasoning, swarm intelligence, unmanned autonomous systems, and brain-computer interfaces…. Its nearly infinite computing power greatly makes up for the shortcomings of the human brain in processing massive amounts of complex information. Recently, the human-computer interaction model ChatGPT has entered the application field, which means that the development of artificial intelligence has reached a new height. So, what are the applications and future development trends of artificial intelligence in the financial field? What challenges will it bring to financial institutions?

**Application Scenarios and Future Development Trends of Artificial Intelligence in the Financial Sector**

Recently, ChatGPT has attracted attention from all parties. It has the most powerful machine brain and knowledge base in history. It can not only help people better understand the world, but also break language and cultural barriers, promote human cross-border communication and cooperation, and even Change the way human thinking and cognition to a certain extent. How should we view the application and future development trends of artificial intelligence in the financial field?

In recent years, financial technology has been widely used and developed rapidly, and has profoundly changed the financial industry, the internal logic of finance, and the behavior of the financial workplace. Big data, blockchain, artificial intelligence, Internet of Things, etc. are originally the main components of financial technology. As the level of artificial intelligence technology improves, financial technology will have a more extensive and profound impact on the financial industry.

**First, customer service and digital marketing of financial products.** Customer service is the application scenario where artificial intelligence can quickly exert its effects and effects. So far, various trading platforms have widely adopted robot customer service. But overall, the effect is not ideal. The reason is that robot customer service lacks the ability to respond to customers' diverse language expressions, lacks empathy for customer needs, and does not have a wide range of knowledge. Judging from the performance of ChatGPT, high-level artificial intelligence may be more experienced, have broader knowledge, and respond faster than human customer service. It can be expected that in the near future, manual customer service will be completely replaced by intelligent robots , the number of customer service positions will decrease sharply, and huge customer service workplaces will no longer exist, thus reducing the labor costs of financial institutions to a great extent. and administrative costs .

With the development of financial technology, digital marketing has played a large role in tapping a large number of "long tail" and "sleeping" customers of financial institutions. Artificial intelligence deepens understanding and dialogue functions in the marketing process, improves recognition accuracy, and enables high-quality one-to-one communication with respondents, effectively solving the problem of high manual follow-up costs, difficulty in managing manual seats, and Data is difficult to monitor in real time and other issues. In recent years, personalized services, which have been highly popular, have put forward extremely high requirements for marketers' professional capabilities, accuracy of demand identification, and flexibility of responses. The widespread application of artificial intelligence can help quickly improve the product marketing capabilities of financial institutions.

**Second, financial risk management.** Preventing risks is the bounden duty and core responsibility of financial institutions. As intermediaries for funds, financial institutions face various types of risks, such as credit risk, market risk, management risk, liquidity risk, legal and compliance risk , etc. In the face of risks, financial institutions must first establish a complete internal control and risk management system, and establish a complete risk management framework to classify, evaluate and manage various risks. In this process, artificial intelligence can fully play its role, including monitoring the implementation of the system, quickly responding to violently fluctuating markets, scientifically assessing the type and degree of risks, etc. Secondly, employees' understanding of risks and their ability to implement systems are the key to risk management in financial institutions. Risk managers, in particular, must have rich risk management experience and theoretical knowledge. Financial institutions introducing artificial intelligence into the process of providing systematic training and education for employees can effectively improve training efficiency and accurately detect the risk management capabilities and levels of personnel in key positions. Thirdly, the disclosure and disclosure of risk information is the responsibility and obligation of financial institutions to the public. Information disclosure involves a large amount of data and information, and it is difficult to process this information scientifically, accurately, and quickly by manpower alone. Artificial intelligence can also greatly improve efficiency in this field.

**Third, product pricing.** The essence of financial product pricing is risk assessment. It is necessary to conduct risk assessment on customers based on their credit status, repayment ability, financial status and other factors, and formulate different risk premiums or discounts to avoid losses that customers may suffer due to default. Due to the diversity and complexity of financial products, a large amount of knowledge and skills in mathematics, statistics, and economics are required. Taking actuarial science as an example, reasonable actuarial science can not only protect the insurance company’s own interests, but also help protect the rights and interests of customers. Actuarial factors involve at least: risks of insurance products (underwritten risk type, risk level, insurance liability, insurance period, insurance amount, deductible, etc.), historical data and statistical analysis (average life span, accident probability, weather changes, etc. ) ), insurance product risks (forecast losses, probability distributions, time value, etc.), policies, regulations and regulatory requirements, economic environment (inflation, interest rates, etc.) and market competition, insurance company underwriting capabilities (asset and liability status and matching, investment portfolio , profit budget, reserves, solvency), etc.

The risk model of a financial institution is a very complex system that requires the comprehensive application of knowledge and skills in risk assessment, data collection, mathematical modeling, model verification, and risk management. In fact, financial institutions have already made extensive use of financial technology in the process of establishing, applying and testing risk models. The addition of high-level artificial intelligence will further enhance the scientific nature of these models. Artificial intelligence can replace actuaries to a certain extent. It is possible.

**Fourth, insurance survey and claims settlement.** The biggest risk an insurance company faces after a policy crash is fraud. Billions of dollars in fraudulent claims occur every year. In order to reduce such risks, insurance companies must conduct necessary investigations and reviews of claim applications, carefully screen the authenticity and extent of losses, and provide a basis for claims settlement decisions. In addition, due to the large volume and wide coverage of insurance policies, involving multiple fields and high complexity, survey and claim settlement work is often time-consuming and laborious. Artificial intelligence can greatly simplify this process, eliminate human errors, and improve the scientific nature and speed of claims settlement.

**Fifth, investment consultants.** Fintech has begun to be widely used in the field of securities investment, including quantitative investment, providing customers with personalized investment advice and recommendations, optimizing customers' investment portfolios while ensuring risk control and maximizing returns, etc. However, in the field of PE and VC investment, artificial intelligence mainly appears as an investment object rather than as an investment decision-making tool. In the future investment advisory scenario, artificial intelligence should be able to use its powerful database, knowledge base and analytical capabilities to help the private equity investment industry make more scientific investment decisions and improve the return and risk control capabilities of the investment portfolio.

**Sixth, family asset management.** Relative to the investment advisory industry, which mainly serves institutional and high-net-worth clients. The data processing capabilities of artificial intelligence will help financial institutions and third-party service agencies develop the huge market of home asset management, thereby further improving the efficiency of financial services.

Based on the huge power of artificial intelligence in improving response speed and work efficiency, financial institutions will use artificial intelligence more in the future, and will use this to create more financial service scenarios and new profit models. It can be expected that the development of financial technology will continue to develop in the direction of digitalization, intelligence, personalization, and cross-border development, thereby further deepening the differentiation of financial services and making different types of financial services more integrated and innovative.

**Data Security: A Key Factor in Digital Transformation of Financial Institutions**

Data security is a risk factor that must be paid attention to in the era of artificial intelligence, and it is also a key factor affecting the digital transformation of financial institutions. How should data security be ensured?

At present, data security in a broad sense involves the security of customer information and personal privacy, the data security of the entire business cycle and various business processes of financial institutions, the security of financial institutions’ information systems and infrastructure, and the security of financial institutions’ online and offline business scenarios. Data security and many other aspects. The most sensitive thing for society and the public is the risk of "batch leakage" after personal data is collected and used centrally.

The paradox is that to maximize the value of data, we must rely on the aggregation, flow, processing and analysis of large amounts of diverse data. During this process, it is inevitable to encounter hacker attacks, poor user management, and malicious use of data. question. The "2021 Data Breach Investigation Report" released by Verizon pointed out that 85% of data breaches involve human factors, and human negligence has become the biggest threat to data security. In order to properly handle data flow and security issues, the European Union has successively introduced a number of data protection-related regulations since 1995, clarifying several principles in the data acquisition process, and by formulating high fines, establishing government supervision agencies, and requiring enterprises to adopt new laws and regulations. The level of data protection has been greatly improved by adding data protection specialists and other methods. In May 2022, the "Data Governance Act" was approved by the European Council and became law after being voted by the European Parliament, further enriching and refining the connotation of data governance.

Although a legal framework has been established to protect data security, data security will still be a major challenge for society as a whole. For financial institutions, relevant laws and systems have increased their legal responsibilities for developing data resources. There is an urgent need to accelerate the construction of data security capabilities from both business and technical levels, establish a data security system, and improve data risk verification capabilities, risk warning capabilities, and data protection capabilities, and improve the data management organizational system and organizational structure. These measures will increase costs to varying degrees.

**Challenges Faced by Financial Institutions in Developing Artificial Intelligence**

The process of deep integration of artificial intelligence technology with the economy and society carries significant opportunities and will play an increasingly important role in financial technology. However, financial institutions will definitely face many challenges in the process of developing artificial intelligence. Specifically, it mainly includes the following aspects:

The first is how to effectively improve computing power. Machine deep learning that supports artificial intelligence involves massive amounts of data and complex algorithms, requiring supercomputing power and large amounts of energy. For small and medium-sized financial institutions, there are inherent shortcomings such as weak financial strength and lack of talents, and it is difficult to afford the huge investment required to improve computing power. One solution is to put artificial intelligence algorithms on the cloud, but many small and medium-sized financial institutions still have great concerns about moving to the cloud due to the privacy and confidentiality of data.

The second is how to deal with the bias of artificial intelligence development institutions. In reality, more and more people are paying attention to the bias of artificial intelligence technology and the discrimination it causes. This bias is caused by program development. Differences in nationality, religious beliefs, race, gender, and area of residence of developers will lead to cognitive biases to a certain extent. In addition, there are differences in data sources and frequencies of the training algorithms behind the AI. The final model formed the system must be double-standard. For example, it is predicted that Asians will plagiarize more papers than Europeans, and the crime risk of blacks and low-income families will be much higher than that of whites and wealthy families.

Third, the development of artificial intelligence is restricted by the degree of industrial digitalization. Computing power, as infrastructure, requires relevant data to provide support.

The fourth is regulatory pressure. The disruptive development of artificial intelligence represented by ChatGPT has posed challenges to human legal systems, standards and rules, rights protection and judicial remedies. While technology is changing life, it is also changing the traditional laws of society. The potential impacts and risks cannot be ignored. In particular, the hybridization and intersection of infrastructure, new technology applications, data and operational service providers, and supply chains, as well as the widespread use of remote operation and control technologies, have brought about extremely complex regulatory difficulties. Before regulatory capabilities, especially financial regulatory capabilities, are effectively improved, the development and use of artificial intelligence in the financial field may be restricted to a certain extent due to the need to prevent risks.

In short, the era of artificial intelligence has arrived, and artificial intelligence will be used more extensively and deeply in the financial field in the future. For financial institutions, it is better to actively embrace the intelligent era than to passively accept it. But as far as a single market entity is concerned, it is still necessary to act within its capabilities. At the same time, in the face of problems and challenges existing in the development of artificial intelligence, it is necessary for the government to cooperate closely with industries and enterprises to strengthen communication, speed up the filling of shortcomings, and jointly promote the healthy development of artificial intelligence while ensuring safety.