The Impact of Cloud Computing and Big Data Technology on Digitalization in Financial Industry

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Abstract: As synthesizer of information technologies, cloud computing and big data produce a profound impact on all walks of life. Therefore, financial industry should tread on the heels of times and explore reform paths. Under the background, this study analyzes how reform of traditional financial industry is affected by cloud computing and big data technology. Moreover, in view of shortcomings of traditional finance, it narrates importance and significance of cloud computing and big data technology. Finally, it proposes application fields and prospects of cloud computing and big data technology in financial industry.

1. Introduction

Financial technology is flourishing worldwide so that it is widely used in financial field, such as artificial intelligence, cloud computing, blockchain and big data. In particular, their applications have been upgraded from simple electronic stage, Internet-based financial business to financial technology stage. Currently, technology and finance are in a new trend of accelerating integration. On the one hand, traditional financial institutions energetically increase investment in technologies that are used to promote business and product innovation. On the other hand, emerging technology enterprises, especially Internet enterprises, begin to set foot in financial field, which dramatically transforms industrial competition pattern.

2. Main features of new round of financial technology innovation

The new round of financial technology innovation is reflected in universality and low-level technologies. Applications are accelerating. They cause global and universal impacts on financial industry, such as improving availability of financial services, reducing cost of financial services, and optimizing financial service process. This clearly varies from previous emerging technologies whose applications are at local and product levels in financial industry. In general, financial technology reshapes operating mechanism of financial industry mainly through following three ways (As shown in figure1).[1]
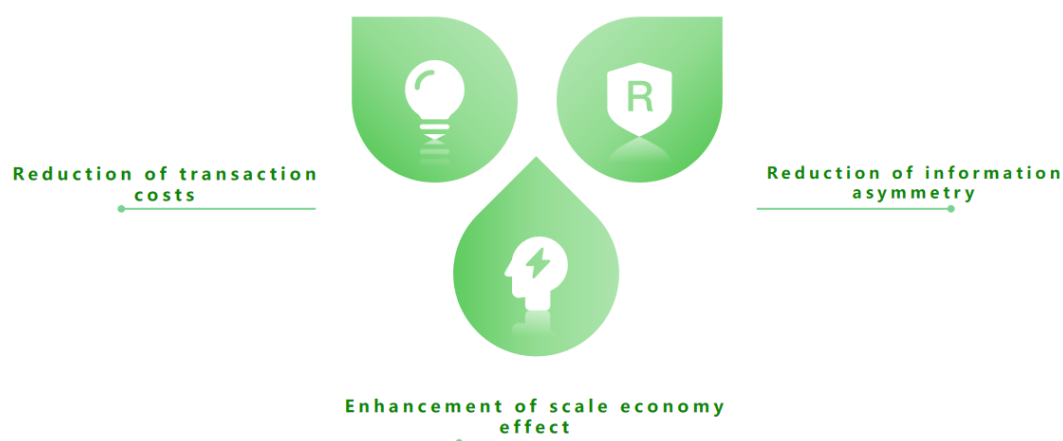
Figure 1: Financial technology reshapes operating mechanism of financial industry

First, reduction of transaction costs. Specifically, development of artificial intelligence shall reduce demands for labor, especially simple and repetitive labor, so labor-intensive feature of financial industry may gradually weaken. When labor is replaced with artificial intelligence, transaction costs, management costs, etc. shall decline in the long run.

Second, reduction of information asymmetry. With the aid of development of financial technology, financial institutions will master more user information so that credit is easily quantified. In addition, they improve risk pricing ability continuously to adopt differentiated lending rates for different credit users. Popularization of financial technology helps lower threshold of financial services and better serve people who cannot enjoy traditional banking services. Mobile phone is extensively used in many underdeveloped countries or regions, but financial services lag far behind. In this way, financial technology can effectively improve availability of financial services.

Third, enhancement of scale economy effect. Financial technology has changed infrastructure conditions on which financial industry depends. FinTech companies can achieve scale economy from partners and consumers. Scales of platform partners and consumer end users rely on and promote each other. Technical solutions of FinTech companies can be set as a standard. When solutions are provided to more customers, it is more likely to trigger scale effect in the general sense, and shared cost of platform will be lower.[2]

3. Analysis of impact of cloud computing and big data on financial industry

3.1 Impact of cloud computing on financial industry

3.1.1 Enhancing data storage capacity and reliability

Cloud computing is reliable. The cloud has numerous servers that offer powerful storage capacity, to satisfy growing data storage needs of financial industry. At the same time, data reliability is raised. Even if there is a server with malfunctions, the server in cloud can transfer data promptly to a new server, so as to continuously provide services in the shortest time. Through this way, disaster preparedness of financial industry will be solved to take preventive measures.

3.1.2 Solving performance quantification issue in financial industry

Cloud computing further divides resources smaller via virtualization forms, which can better mobilize resources, make full use of hardware resources, and achieve data more secure, reliable, and quickly shared. Meanwhile, service quality is enhanced and operating costs decline. The

continuous generation of large-scale data provides a good opportunity for the application of artificial intelligence to play an effective role. The deep integration of big data, cloud computing and financial institutions' operation and management business scenarios, and their application to financial institutions' region-wide business processes and comprehensive risk management, can realize full-scene intelligent financial services and promote more accurate allocation of financial resources to key areas of economy and society.[3]

3.1.3 Boosting data processing capability

In the long-term development of financial institutions, they have formed complicated financial businesses and injected digital elements into the operation and management process, generating a large amount of customer, account and transaction data. The scale and value of the data formed by the continuous generation, storage and flow of financial business data have unique advantages and become an important basis for promoting the comprehensive digital transformation of financial institutions.

Cloud computing raises data processing and analysis capability. However, most financial institutions fail to skillfully apply customer data for analysis, and face problems in information resource sharing, storage, and data processing. Cloud computing is able to analyze, process and dig out data within the shortest time, or extract valuable information from massive information, in order to better serve relevant decisions.[4]

3.2 Impact of big data on financial industry

3.2.1 Real time processing of structured and unstructured data

Big data can analyze and process structured and unstructured data simultaneously, which is difficult to be realized by traditional statistical software. Furthermore, it integrates massive information to form a powerful database, allowing financial industry to extract useful information. Due to introduction of big data, it is easier to predict development trend and direction of financial industry. Also, accuracy of data analysis and prediction is boosted. Big data provides data analysis, data management and data processing technologies that contribute data support to develop financial industry. Therefore, scientific decisions will be made on business improvement, risk control and accurate marketing.[5]

3.2.2 Risk management

What big data technology collects is comprehensive, real and effective data. It also finds out relationship between variables; mines potential risks behind data; helps financial industry promptly identify risks, and improves risk decision-making methods, improving risk management efficiency thereby

3.2.3 Customer management

There is a huge customer base for financial industry. As business expands, difficulty and focus for financial institutions are about how to deal with customer relationships, rank customers, identify customers, explore customer needs, and maintain customers. Fortunately, these issues can be solved effectively by big data.

3.2.4 Marketing

In this day, consumer information is shielded and client information is constantly changing. In

financial industry, the top priority is to know customer needs and accurately push marketing information to them. Financial institutions can analyze customer demands via big data, and change marketing mode from product orientation to customer orientation, to increase marketing income.

3.3 Common impacts of cloud computing and big data on financial industry

Cloud finance shall develop towards integration of cloud computing and big data. Cloud financial service platform organically integrates products, information, services, institutions and users, to create a convenient cloud service platform. Internet serves as foundation of cloud finance operation; big data is main content of development; cloud computing is method of operation. To be specific, Internet is established based on multiple forms. Simple networks, complex networks, internal networks, external networks, wired networks, wireless networks, transmission networks, and social networks coexist. Interconnected giant network with multi content, multi technology, and multi forms provide solid underlying technologies for development of modern financial industry (As shown in figure 2).[6]
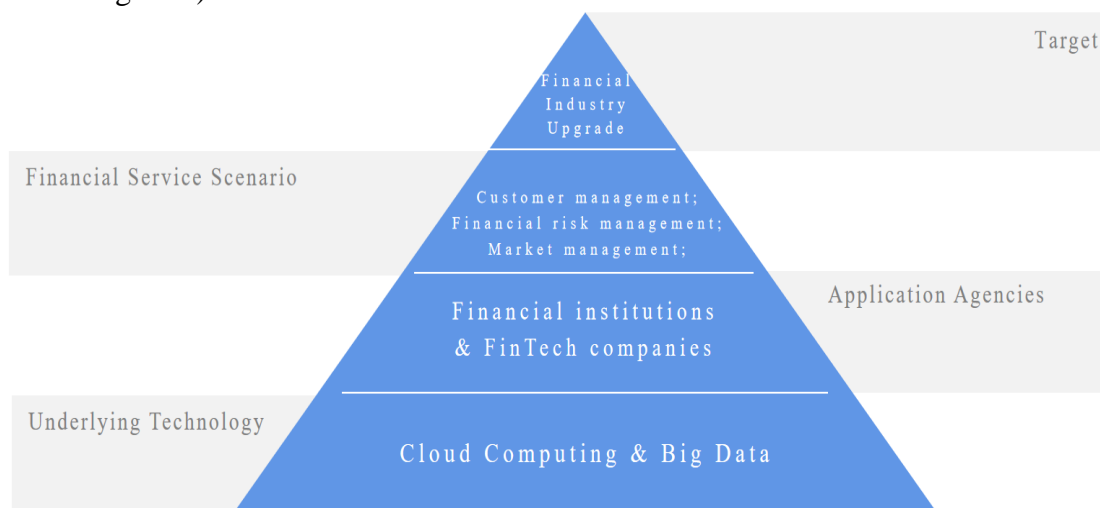

Figure 2: The upgrade path of the financial industry

In cloud era, financial business will communicate fast in network, operate in data, and be properly stored in cloud. Cloud computing model creates composition principle for financial industry in the new era; data centers of financial institutions are highly interconnected. Cloud network provided by cloud computing service providers lays a convenient basis for integration of financial data, financial information and financial services in cloud network. Scattered information will be valuable, scattered data shall be logical, and low-end services will be transferred to be high-value creation. At the same time, significant improvement will be made in service quality and competitiveness of financial service institutions. In other words, affected by cloud computing and big data, financial institutions and financial industry will enhance efficiency as a whole, as well as win opportunities of process reengineering. Furthermore, they may boost risk prevention ability while reducing costs, to provide customers with targeted and effective experience.

4. Innovation of financial industry caused by cloud computing and big data

4.1 Innovation in service mode deployment

With application of cloud computing and big data, financial institutions are able to ponder over problems and further deploy resources from perspectives of business needs and customers.

Meanwhile, cloud computing service providers are committed to integrating unique advantages into cloud platform. Here is a case. PayPal provides a cloud computing method to improve liquidity efficiency. Amazon Web contributes powerful information conformity and integration services, which greatly hoists capital efficiency and sales efficiency of financial industry. Customers obtain services with higher added value. Microsoft Azure opens a cloud computing platform. Also, it integrates capital chain and lifts capital usage efficiency. Through cooperating with cloud computing service providers, financial institutions afford financial services without setting up outlets. Big data and cloud computing create a new service model for financial institutions- providing a full range of financial services without establishing regional branches.

4.2 Customer service innovation

Features of cloud computing and big data determine they can easily provide customers with constant financial services. Across the world, financial institutions supply customers with convenient financial platforms and all-round services. Widely applied IT technology aids financial institutions offering satisfactory services to customers in branches. On the basis of cloud computing and big data, customer service experience can be improved, in order to significantly strengthen customer stickiness and attract new customers.

Cloud computing and big data help the financial industry integrate internal and external data, collect various types of customer information, effectively extract the characteristics of relevant entities, carve a multidimensional picture of customers, and build an accurate holographic portrait of customers. Financial institutions adopt knowledge mapping technology to establish a customer tagging system, identify customer relationships based on the association between customer tags, draw an association relationship map, and use clustering, classification and other algorithms to segment customer groups, thus forming an accurate marketing strategy.

4.3 Accelerating product innovation

Innovation velocity of financial products rests with risk control degree of financial institutions on financial products. Big data and cloud computing realize real-time risk control. Financial institutions can drive product innovation through convenient and real-time cloud computing platform. This is reflected in advantages of cloud computing platform Azure.

5. Conclusion

Internet finance brings about financial industry reform. This is inevitable development stage of cloud computing and big data, and indicates irresistible development trend of information technology. Currently, cloud computing dramatically promotes change of service structure and service objects of financial industry, offering a benign cost control scheme for sound financial industry. It is a critical measure to integrate cloud computing into financial industry, in order to enhance marketization of financial industry, and facilitate improvement of financial service system. Undoubtedly, it plays a significant role in critical period of China's economic restructuring. As a result, financial practitioners should be resolved to push reform and development of financial industry, and dedicate to China's economic construction and financial development. More importantly, they need to actively learn cloud computing and big data technology.

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