

Case study of digital financial transformation -- taking CATL as an example

Jialei Xu¹, and Haiyang Yu^{2,*}

¹ACCA, School of Accounting, Nanjing University of Finance & Economics, Nanjing, 210023, China

²Mathematics, Leicester International Institute, Dalian University of Technology, Panjin, 124221, China

Abstract: As the scale of China's digital economy continues to expand, some large manufacturing enterprises have embarked on digital transformation and achieved initial results. However, the costs and benefits of transformation still need to be explored. To address this issue, this paper first introduces the background of the study, the current status of the development of digital economy and the concept of digital financial transformation, then briefly analyzes the ERP technology, and takes Contemporary CATL Co. Limited as an example to analyze the transformation performance in terms of decision-making ability, risk management ability, etc., and analyzes the benefits of transformation in terms of profitability and capital turnover, etc. according to the transformation of the actual challenges faced by the company, and puts forward suggestions. Finally, we conclude that digital financial transformation plays a positive role in promoting CATL.

1 Introduction

1.1 Research Background

In October 2021, General Secretary Xi Jinping pointed out that the digital economy is highly innovative, strongly permeable, and widely covered, not only as a new point of economic growth, but also as a fulcrum for transforming and upgrading the traditional industries, and can become an important engine for building a modernized economic system. "Digital economy" has been written into the government work report four times in 2017, 2019, 2020, 2021: 2017 "to promote the accelerated growth of the digital economy" 2019 "to grow the digital economy" 2020 "to build a new advantage in the digital economy" 2021 "to accelerate the development of digitalization, building a digital China". Digital economy—in 2017, "accelerate the growth of the digital economy" in 2019, "grow the digital economy" in 2020, "create a new advantage in the digital economy" in 2021, "accelerate the development of digitization, building a digital China". The digital economy will become the core driving force for economic transformation and high-quality development.

* Corresponding author: yhy@mail.dlut.edu.cn

Under the dual push of policy support and technological development, the scale of China's digital economy has ranked second in the world for many consecutive years, and digital transformation has gradually become the trend of development for many enterprises, who use new digital financial means to optimize their own operating systems and achieve greater benefits. According to the report, since 2013, China's digital economy development index has been growing at a high speed. 2013-2021, China's digital economy development index rose from 1000 to 5610.60, an increase of 4.61 times in 8 years, with a compound annual growth rate of 24.06%, far exceeding the growth rate of the GDP index during the same period. Whether it is a large enterprise such as the Internet or manufacturing industry, or some small and medium-sized enterprises, digital financial technology is used to help enterprises achieve financial integration and financial sharing, optimize the system, reduce personnel expenses or improve the efficiency of the entire industrial chain. According to China's Ministry of Industry and Information Technology (MIIT), China's manufacturing industry will account for 26.2% of GDP in 2023, and about 30% globally, and will remain a very important industry in China **错误!未找到引用源。**. In order to comply with the requirements of today's times, and to remain competitive in the market, China's manufacturing industry needs to utilize OCR, financial cloud, blockchain, ERP and other technologies to achieve innovation and leap in manufacturing. In the midst of this, the new energy manufacturing industry is also constantly growing and developing. At present, China has constructed a relatively complete new energy automobile policy support system, covering the whole process from research and development to use, which can be said to have escorted the development of China's new energy automobile industry [2].

1.2 Purpose and Significance of the Study

This article focuses on the feasibility of digital transformation for the new energy industry, and analyzes whether digital technology can bring benefits for it. At the same time, it should also pay attention to the problems that digital transformation may face on its development, and it is also hoped that it can provide ideas for the future innovation and development of new energy-based manufacturing industry.

1.3 Research Methods

As a leading company in the new energy industry and a listed company, the relevant data is easy to obtain. Therefore, CATL as a company as a case, for its digital financial transformation motives, the corresponding technology and the effect of the elaboration, analysis of the technology of such emerging industries can have much room for play.

1.4 Literature Review

Some scholars have proposed to propose to explore the feasible solutions for the deep integration of industrialization and informatization, standardize digital governance and scenario application, accelerate the integration of industry and finance, and increase the scientific cultivation of composite digital talents in the four aspects of the financial digital transformation path for an in-depth exploration of the financial digital transformation. And all-around promotion of the manufacturing industry's financial management to achieve new results, and to serve the manufacturing industry's diversification in a high-quality and efficient way for its[3]. The four aspects mentioned in the article on the financial transformation of the manufacturing industry were integrated. Previously, most of the literature to mechanical manufacturing enterprises as the object of study, explored the

motivation of the enterprise digital financial transformation and the effect of its transformation, is for the relatively traditional manufacturing industry, such as Sany Heavy Industry and SG Group as the object of analysis. The authors are on the motivation of their transformation, and by collecting and comparing various financial data to determine the advantages and disadvantages of digital transformation for the manufacturing industry [4][5][6]. Or they analyze about this manufacturing industry in certain cities and provinces [7][8], such as the significance of digital economy for the development of cities and the initiatives that can be implemented. These articles basically take the introduction of the whole digital transformation general background to the introduction of the research enterprise, and study its transformation motivation and whether the transformation is necessary. However, based on the current manufacturing industry in the new energy enterprises continue to occupy the market, but also the future focus on the development and support of the enterprise. Therefore, the financial digital transformation for new energy enterprises seems to be imminent, this paper studies the achievements and dilemmas of CATL in financial digital transformation, and puts forward its own insights and opinions.

2 Related Concepts and Theoretical Foundations

1.3 Digital Financial Transformation

Financial services provided through cell phones, personal computers, the Internet or devices connected to a reliable digital payment system [9]. The history and development of digital transformation in China can be divided into three parts: the first part is the stage of accounting computerization from the 1870s, the second part is the stage of accounting information from the 1890s as well as the third part is the stage of accounting intelligence in the recent decades [10]. Financial digital transformation, the need is not only financial data, but also includes business data related to production and operation, the data center can provide data support and services for financial management 错误!未找到引用源。 . China's current stage of the intelligent financial management platform in the enterprises has formed a normative and scientific strong transactional procedures, and in the platform is fully integrated into the relevant policies and laws and regulations, prompting the enterprise's entire Financial supervision and management can be fully implemented and realized [20]. Many digital financial transformation technologies such as OCR, RPA, etc., or related digital platforms such as ERP, etc., have had a relatively long development time, but also has been relatively mature can be applied to the actual business activities, reducing the financial more simple but repetitive work, greatly saving the energy wasted by the financial staff, so that it can be put into a more advanced financial activities. The implementation of digital finance can not only improve the efficiency of enterprise financial data processing, but also for enterprise decision-making and strategic planning to provide more accurate data support[20].

2.2 Introduction to ERP Technology

2.2.1 Server

The server carries the operating system, and the application programs are installed in the operating system. The CPU, hard disk and other physical components in the server belong to hardware; the application programs belong to software; and the operating system (LINUX, WINDOWS) serves as a connecting bridge to provide a running environment for the software and resource allocation, interface and security for the hardware. Servers are

divided into WEB servers, database servers, file servers, and so on. A database server stores databases on its hard disk, and its application programs include database management systems (DBMS) and database applications. A web server communicates between the client browser and the back-end server.

2.2.2 ERP Concept

ERP system is an abbreviation for Enterprise Resource Planning, which is an integrated software system designed to help companies manage their resources. ERP consists of a database management system, open APIs (Application Programming Interfaces), a user interface, and a workflow engine, and so on.

A database management system is a software system used to store, retrieve, define, and manage large amounts of data. It allows users or applications to efficiently access and manage data stored in a database. DBMS provides structured data storage, data security, integrity, concurrency control, and data recovery. DBMS include MySQL, Oracle, SQL Server, etc.

Open API is a collection of commands, functions, protocols, and tools used to enable data calls and interactions between internal or external systems within an organization. Through APIs, ERP systems can be seamlessly integrated with other systems (e.g., customer relationship management, supply chain management, financial systems, etc.) to achieve data sharing and business process automation.

2.2.3 How Users Use the ERP System

Users send HTTP requests to the web server through the WEB browser, the web server calls the corresponding web application, and the web application constructs SQL statements through the database interface to communicate with the database management system (DBMS). The DBMS processes the data and returns it to the web server, which embeds the data in an HTML document and returns the HTML to the web browser as part of the HTTP.

Organizations can also purchase a cloud server and deploy the purchased ERP software in the cloud via a file transfer protocol, with the vendor responsible for maintenance and technical upgrades. Cloud servers offer a flexible billing model, but long-term use may result in increased costs. Especially when organizations require large amounts of storage space or bandwidth, they may have to pay high fees.

3 The Case of Digital Finance Transformation in CATL

3.1 Introduction to CATL

3.1.1 Industry Position

CATL is a leading global new energy innovation and technology company dedicated to providing world-class solutions and services for global new energy applications. It is one of the world's leading lithium battery R&D and manufacturing companies, with strong competitiveness and innovation capabilities in new energy vehicle power batteries, energy storage systems, power assemblies and battery materials.

3.1.2 Technological Innovation

CATL takes electrification and intelligence as its core and continuously promotes integrated innovation for market application. The Company owns a number of core technologies and patents, and has made significant contributions to the development of the new energy industry.

3.1.3 Business Scope

Development, production and sales of lithium-ion batteries, lithium-polymer batteries, fuel cells, power batteries, ultra-large capacity energy storage batteries, supercapacitors, battery management systems and rechargeable battery packs, wind and solar energy storage systems, related equipment and instruments, and after-sales services; investment in the new energy industry; and technical services, testing services and consulting services for lithium batteries and related products 错误!未找到引用源。 .

3.2 Empowerment and Performance Analysis of Digital Financial Transformation for CATL

The ERP system provides an integrated enterprise operation process for CATL, and the data support of digital financial transformation for the empowerment and performance analysis of CATL can be viewed from the following aspects:

3.2.1 Real-Time Access to Data to Accelerate Decision-Making

The ERP system provides a centralized view of all the data, which allows uploading data and shorter time gap for the finance department to obtain data, such as sales revenue, cost structure, cash flow, which are closely related to the business situation. These real-time data can help management to make decisions quickly and adjust the strategy in time, and the ERP system helps decision makers to make decisions with reliability [11].

3.2.2 Production Cost Management and Efficiency Improvement

The ERP system enables CATL to manage costs and resource utilization more finely, and its automation and convenience can cut down the expenses used for financial staff. At the same time, automatic report generation, reimbursement and other financial approvals can be optimized to optimize operational efficiency and reduce overall costs [16].

3.2.3 Improvement of Risk Management

Capability The technology brought about by digital transformation can enhance the ability of CATL to supervise, assess and predict risks, and realize the sustainable development of the enterprise.

3.2.3.1 Real-time Data Monitoring and Analysis Data Integration

The digital financial system can integrate data from different departments and business units onto a single platform, providing a comprehensive view of risk management. Real-time monitoring of financial indicators, such as cash flow, accounts receivable and inventory levels, can help management identify potential risks in a timely fashion.

Anomaly Detection: Through big data analysis and machine learning algorithms, CATL is able to identify abnormal patterns in financial data and provide timely warnings of

potential financial risks, such as unusual expenditure or revenue fluctuations. This real-time risk detection mechanism greatly improves the enterprise's response to potential problems.

3.2.3.2 Enhanced Forecasting Capability Forecasting Models

With the help of advanced data analysis tools, CATL is able to build more accurate financial forecasting models. Based on historical data and market trends, these models can predict future financial conditions and potential risks, thus helping the enterprise to develop more effective risk response strategies.

Regarding how the risk management ability is reflected in practical application, there are many relevant examples in the development process of CATL to prove that, in the process of digital transformation, CATL had faced the risk of fluctuation of raw material price. Through the implementation of digital financial solutions, the company utilized data analysis to monitor real-time changes in the raw material market, and combined with historical data to make price forecasts. Eventually, the company adopted appropriate procurement strategies, such as locking in prices in advance or adjusting the supply chain, in order to reduce the financial risks due to price fluctuations. Digital transformation can improve the efficient use of capital by reducing risks and unnecessary costs to make the company's development more sustainable.

3.2.4 Performance Analysis and Business Optimization

Data-driven performance analysis can help identify strengths and points of improvement in the business. By analyzing financial data, such as profit margins, return on capital, and other metrics, it is possible to identify room for optimization in business operations and improve overall performance and competitiveness. Since the start of digital transformation, CATL' financial data, including net profit, gross profit margin and capital turnover ratio, have all improved to different degrees, and a more detailed analysis of the relevant data will follow.

3.2.4.1 Gross Profit Margin and Net Profit Margin

According to the analysis of the data from 2018 to 2023, the operating income and net profit roughly showed an upward trend, and the data of gross profit from sales and net profit from sales in 2023 had a decrease in comparison with that of 2018, but it is still at a high level in the industry. Among them, the net profit has the largest proportion of increase, the net profit in 2023 is almost 13.8 times compared with 2018, and the increase in operating income is also more significant, from 296.11 to 4,009.17, obtaining an increase of approximately 13.5 times. The digital financial system can help CATL monitor the gross profit margin, which is the percentage of profit after sales revenue minus direct costs, in real time. Through real-time data analysis, it can identify which products or market segments have high gross profit margins, and which need to optimize costs to improve profitability. At the same time, the digital financial system can help management keep abreast of the company's net profit margin performance and make adjustments to its business strategy.

Table1. Financial data of CATL from 2018 to 2023

Year	Operation revenue(100 million yuan)	Net margin (100 million yuan)	Gross profit margin (%)	Net profit margin on sales (%)
2018	296.11	33.87	32.79	12.62

2019	457.88	45.6	29.06	10.95
2020	503.19	55.83	27.76	12.13
2021	1303.56	159.31	26.28	13.70
2022	3285.94	307.29	20.25	10.18
2023	4009.17	467.61	22.91	11.6

Data source: Eastern Financial Network Ningde Times Annual Report 2018-2023

3.2.4.2 Capital Turnover Ratio

This indicator reflects how effectively CATL Times utilizes capital, i.e., the sales generated per unit of capital. The digital financial system is capable of tracking changes in the capital turnover ratio to help management assess the effectiveness of capital investment and optimize the capital structure. The total asset turnover ratio was in a small fluctuating but largely upward trend during this five-year period, rising from 0.48 to 0.72. And the industry average was relatively stable, as CATL' capital turnover ratio continued to climb steadily and exceeded the industry average in 2020-2021, proving that the capital of the company was constantly operating and flowing and that the company had vitality.

Table 2. Turnover rate of CATL from 2018 to 2022

Year	turnover of total capital(times)	Industry average(times)
2018	0.48	0.66
2019	0.52	0.62
2020	0.39	0.53
2021	0.56	0.69
2022	0.72	0.70

Source: Chen Jing-jing." Performance Analysis of Ningde Era based on Balanced Scorecard." Market Modernization.07(2024):168-170.

3.3 Difficulties Faced by CATL after Transformation

CATL may face some challenges and problems after using the ERP system, although it has greatly improved the efficiency of enterprise management and operation level:

3.3.1 System Integration and Compatibility

CATL may have introduced a number of different information technology systems in the course of its digital transformation, and the integration and compatibility of these systems with the ERP system will require considerable resources.

3.3.2 Data Security and Privacy Protection

Data security: With the continuous accumulation and centralization of enterprise data, the ERP system has become an important target for data leakage and attack. CATL must take strict data security measures to ensure the confidentiality, integrity, and availability of data.

Comply with privacy regulations: Under the background of globalization, CATL needs to comply with the privacy regulations of different countries and regions to ensure that it meets the requirements of relevant laws and regulations when handling personal data and corporate information.

3.3.3 Business Process Optimization and Change

Business Process Optimization: Financial digitalization cannot be promoted without financial personnel with professional skills and knowledge. Financial personnel not only need to master traditional financial knowledge and skills, but also need to possess digital skills to adapt to the new working environment and needs **错误!未找到引用源。**. The implementation of an ERP system often requires the reorganization and optimization of an organization's business processes to meet the operational requirements of the system.

Employee Training: How well employees master the ERP system directly affects the operation of the system. CATL needs to strengthen the training and support for employees to help them quickly adapt to the new work style and process.

3.3.4 Cost Control and Benefit Assessment of the Digitization System

Initial input costs: The construction and implementation of the ERP system requires a large amount of capital and resources, including the purchase of hardware equipment, the purchase of software systems, system integration costs, and personnel training. This may put some pressure on the company's short-term financial position.

Long-term benefit assessment: The benefits of ERP system are often reflected in the long-term operation process. CATL needs to establish a scientific benefit assessment system to evaluate and adjust the operation effect of the system on a regular basis to ensure that the system can continue to create value for the enterprise.

3.3.5 Technical Support and Maintenance Technical support requirements:

The stable operation of the ERP system requires a professional technical support team for maintenance and management. CATL needs to ensure that there are enough technical support resources to cope with problems and failures that may occur during system operation.

System maintenance and upgrading: With the continuous development and changes of enterprise business, ERP system needs to be maintained and upgraded to meet new demands. CATL needs to formulate a reasonable maintenance and upgrade plan to ensure that the system can continue to meet the operational needs of the enterprise[18].

3.3.6 Insufficient initial data accuracy

Due to the lack of management of basic data at the initial stage of the enterprise, or the use of non-digital bookkeeping methods, the quantity and detailed amount in the inventory ledger are inaccurate, which may affect the accuracy of the ERP initial data. At the same time, when the initialization is carried out, the data is not checked and approved, and other circumstances may also affect the authenticity of the initialized data[19].

4 Recommendations

Digital CATL technology finance brings new development opportunities, promotes the transformation and upgrading of technology finance, and conforms to the development trend of finance. The integration of high-tech and financial management such as big data, cloud computing and artificial intelligence makes the account processing more accurate, the business process more efficient, and the organizational structure more clear. The process of financial digitization development also faces various dilemmas and challenges. Difficulties must be resolved through a series of measures such as building a team of professional talents, promoting the diversification of financial management, and strengthening data

security control[17].

5 Conclusion

In general, the digital financial transformation is a positive development for CATL, and the EPR technology can help the management of the finance of this kind of new energy manufacturing enterprises. However, there are some challenges and dilemmas, which can be continuously improved by importing a larger amount of data and upgrading the system, so that the ERP system can better match with the enterprise and promote the continuous development of the enterprise's main business. In the future digital transformation will become the trend of large manufacturing enterprises.

Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

References

- [1] Zhang Jiayi. China Academy of Information and Communications Technology releases China Digital Economy Development Report (2022) [J]. Science and Technology China, 2022, (08):104.
- [2] Mao Yuzhang. A study on the impact of industry chain Integration on financial Performance in Ningde Era.2023. Jiangxi Agricultural University, MA thesis.
- [3] Liang Hui." Research on the Digital Transformation of Manufacturing finance in the era of Digital Economy." Finance and Accounting Learning.18(2024):40-42.
- [4] Wang Chen. Research on Motivation and effect of financial Digital transformation of manufacturing enterprises.2024. MA thesis, Shandong University of Finance and Economics.
- [5] Lv Wen Xi, et al." Research on Intelligent financial transformation of Manufacturing enterprises under the background of Digital economy: A case study of SG Group." China Collective Economy.09(2024):137-140.
- [6] Sun Jianqiao, Li Jun, and Li Qiang." Exploration of digital economy Enabling the transformation and upgrading of traditional manufacturing industry in old industrial cities: A case study of Fushun, Liaoning Province." China Collective Economy.05(2024):29-32.]
- [7] Li Huawei." Research on transformation and upgrading of Manufacturing Industry in Henan Province driven by digital Economy." Investment and Entrepreneurship 35.01(2024):20-22.
- [8] Ma Yingli, and Zhang Aiguo." Research on the transformation and development of Nantong Manufacturing Industry enabled by digital economy. Jiangsu Science and Technology Information 41.01(2024):1-6.
- [9] Ozili, P.K. (2018). Impact of Digital Finance on Financial Inclusion and Stability. *Borsa Istanbul Review*, 18(4), 329-340.
- [10] Liu Qin, Yang Yin. Accounting informatization in China after 40 years of reform and opening up: Retrospect and prospect[J] *accounting research*, 2019(2):26-34.
- [11] Feng Xudong." Research on the method of financial digital transformation of group enterprises." *Chinese Agricultural Accounting* 34.09(2024):12-14.
- [12] Guo Ruixin." The role of intelligent finance in the digital transformation of Enterprises." *China Market*.18(2024):195-198
- [13] Xu Lifang." Research on the impact of Digital Finance on Enterprise Development

- under the background of Big Data." *China Collective Economy*.20(2024):145-148.
- [14] WANG Jiabao, Jiang Mingji, Sheng Jie. From Manufacturing to intelligent manufacturing: The road to digital transformation in the Ningde era [J]. *Tsinghua Management Review*, 2022, (09):122-129.
- [15] Sarkar, J. B., (2018). The Effects of Implementing Enterprise Resource Planning Systems on Accounting Information: Bangladesh Perspective. University of Dhaka.
- [16] Appelbaum, D., Kogan, A., Vasarhelyi, M. and Yan, Z., (2017). Impact of business analytics and enterprise systems on managerial accounting. *International Journal of Accounting Information Systems*, 25, 29-44.
- [17] Song Xiao-Yu." Financial Digitalization Influencing Factors and development Strategies in the era of Digital Economy." *Time-brand Marketing* 14(2024):36-38.
- [18] Zhang Liming. Research on enterprise financial management System based on ERP [J]. *Accounting of Township Enterprises in China*, 2024, (04):48-50.
- [19] Han Bing. Thinking on cost control based on ERP of Manufacturing Enterprises [J]. *Aviation Finance and Accounting*, 2019,6(02):36-39.
- [20] Zhang Xiaozhen. Discussion on Enterprise Finance Digital transformation strategy in Digital economy era [J]. *China Sanjing*, 2024, (04):74-76.