Exploring the Practical Application of Financial Sharing Models in Petroleum Enterprises: A Case Study of China National Petroleum Corporation (CNPC)

Tianqi Li [1], Yixian Lyu [2, *] and Rujia Zhang [3]

[1] Accounting (ACCA), Tianjin University of Finance and Economics, 300000 Tianjin, China

[2] Financial Management, Tianjin University of Technology, 300000 Tianjin, China

[3] International Education College, Guangxi University for Nationalities, 530000 Guangxi, China

* Corresponding author: lvyixian123@stud.tjut.edu.cn

Abstract. With the advent of the big data era and the trend of artificial intelligence, contradictions have gradually arisen between the accounting and financial management of enterprises and the needs of the new era. To save development costs, enterprises need to transform and upgrade in this regard. The new model of financial sharing is one of the important upgrades of CNPC's financial management models. It can not only integrate resources, increase efficiency, and reduce costs, but also promote the optimization of enterprise operation and management. The paper investigates how CNPC achieves cost reduction and operational efficiency improvement through the transformation and upgrading of financial management mode, as well as the practical application of big data artificial intelligence in enterprise management and financial management during the transformation and upgrading of CNPC's financial management model. Additionally, it discusses the positive impact of popularizing and applying financial sharing mode and What is the guiding significance for the transformation and upgrading of financial management on other Chinese enterprises.

Keywords: CNPC, financial management, financial sharing, artificial intelligence, data management.

1. Introduction

In this rapidly advancing era of informatization, technology is experiencing exponential growth, leading to enterprises facing vast and challenging accounting information and financial data. At this juncture, sticking to traditional financial management models significantly lags, resulting in drastically reduced efficiency. As the largest developing country, China's state-owned giant, China National Petroleum Corporation (CNPC), plays a leading role among numerous enterprises in the country. The reform of China Petroleum's financial management model aligns with the market demands and the era's requirements for Chinese enterprise development, setting a trend for the upgrade of financial management models among Chinese enterprises.

Currently, the Financial Shared Services Center has become a mature model for financial management. Many enterprises have flexibly utilized it to allocate more resources to enhance their production efficiency, greatly reducing the need for labor.

2. New Model of Financial Sharing Service

2.1. Financial Sharing Service Introduction

Financial shared services refer to consolidating the diverse and complex financial business information of enterprises into a common financial center, and then centrally processing the gathered financial information through standardized processes and new information technologies. It is a new model of enterprise financial management that emerges based on modern digital technology and big data processing and analysis. This new model of financial shared services differs from traditional computerized accounting. It efficiently handles enterprise accounting information, enhances financial management efficiency, improves financial management levels, and promotes sustainable enterprise development.

2.2. The Role of Financial Sharing Model

Enhancing Efficiency in Enterprise Financial Management:

The financial shared services center consolidates financial information from various subsidiaries and branches of the enterprise, and processes it using standardized methods, thereby avoiding complexities and discrepancies often encountered in traditional accounting models. This allows enterprises to efficiently access high-quality accounting information from different branches, subsidiaries, and departments, empowering management to make effective business decisions based on this accounting information.

Facilitating Cost Reduction and Efficiency Improvement for Enterprises:

By enhancing financial management efficiency, the financial shared services center simplifies financial management processes, reducing the complexity associated with enterprise financial management. Consequently, it lowers the financial management costs for enterprises. Additionally, through the financial shared services center, enterprises can effectively reduce operational costs and enhance their ability to prevent and control operational risks

Facilitating Enterprise Transformation and Upgrading:

With the financial shared services center at its core, enterprises can accelerate the establishment of financial management models aligned with those of world-class enterprises, thereby driving transformation and upgrading in various aspects such as decision-making, management, power allocation, audit supervision, and personnel deployment.

3. Implementation of CNPC Financial Sharing Center

3.1. An Overview of CNPC

China Petroleum, fully known as China National Petroleum Corporation (CNPC), was established in 1999 and went public in 2007. It operates in ten major business sectors and its operations span over 80 countries and regions worldwide. As a crucial state-owned enterprise, CNPC holds a dominant position in the Chinese oil and gas industry, being the largest producer and seller of oil and gas [1]. Managed directly by the Central Committee of the Communist Party of China, CNPC Group is the largest supplier of oil and gas domestically and holds a dominant position in the entire Chinese market, with significant influence in international spheres [2]. The company has diverse business operations and is a relatively large comprehensive corporation. Currently, it is exploring an innovative development strategy to enhance its core competitiveness internationally and consolidate its corporate position.

With many employees and a highly complex business structure, the group's main businesses include exploration, development, production, and sales of oil and gas domestically and internationally, with oil and gas investment operations spanning across 32 countries and regions globally. On July 11, 2023, CNPC ranked second in the Fortune China 500 list of listed companies. According to financial reports, as of September 2023, CNPC ‘s total operating income amounted to 2,281.35 billion yuan, a decrease of 7.06% compared to the same period last year. The total profit was 189 billion yuan, an increase of 9.01% compared to the same period last year, achieving a net profit attributable to shareholders of 1316.51 billion yuan, a year-on-year increase of 9.78%; the net cash generated from operating activities increased by 8.76% year-on-year (See Table 1) [3]. This indicates that although the company's revenue declined in this period, its profitability showed a significant improvement, possibly due to effective measures in cost control, efficiency improvement, or structural optimization (See Figure 1).

Table 1. CNPC's Financial summary

Project	2022	2023	Year_on_year grouth
Operating revenue (million)	24554	22821.3	-7.06%
Net profit attributable to Mother (million)	1199.26	1316.51	9.78%
Net Profit (million)	1292.67	1345.62	4．10%
Gross profit rate	21.12%	21.70%	2.74%
Net profit rate	5.43%	6.41%	1.14%
Three fees accounted for revenue	4.17%	4.60%	10.37%
Net asset value per share	7.34	7.75	5.63%
Earnings per share	0.66	0.72	9.09%
Operating cash flow per share	1.71	1.86	8.76%

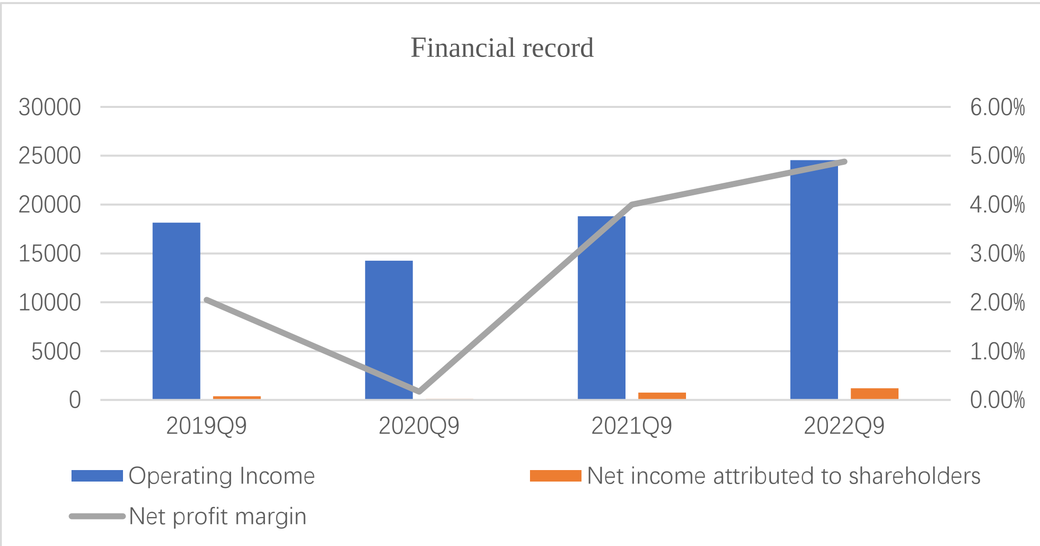

Figure 1. Financial record

3.2. Financial Sharing Service Implementation Measures and Status Quo of CNPC

CNPC has a complex business structure and many employees, so the financial management is also facing a huge challenge. To improve the operation efficiency and reduce costs, CNPC actively promotes the construction and application of financial sharing services. In February 2017, the plan of CNPC for financial sharing was formed, and the construction of the financial sharing center was officially launched. In November 2017, CNPC started financial sharing pilot operation in Xi 'an. In 2018, two financial sharing service regional centers in Chengdu and Daqing were successively prepared. CNPC financial sharing adopts the mode of "one center, three roles and five unification" [4]. Follow the principle of first easy and then difficult, step by step and pilot first and carried out the overall policy of "1+3+n", namely 1 management center (Beijing), 3 regional centers (Xi 'an, Daqing, Chengdu), and n service departments [5]. By the end of 2020, all 138 domestic companies in nine major sectors of CNPC have launched financial sharing service business, announcing the formal establishment of the financial sharing center.

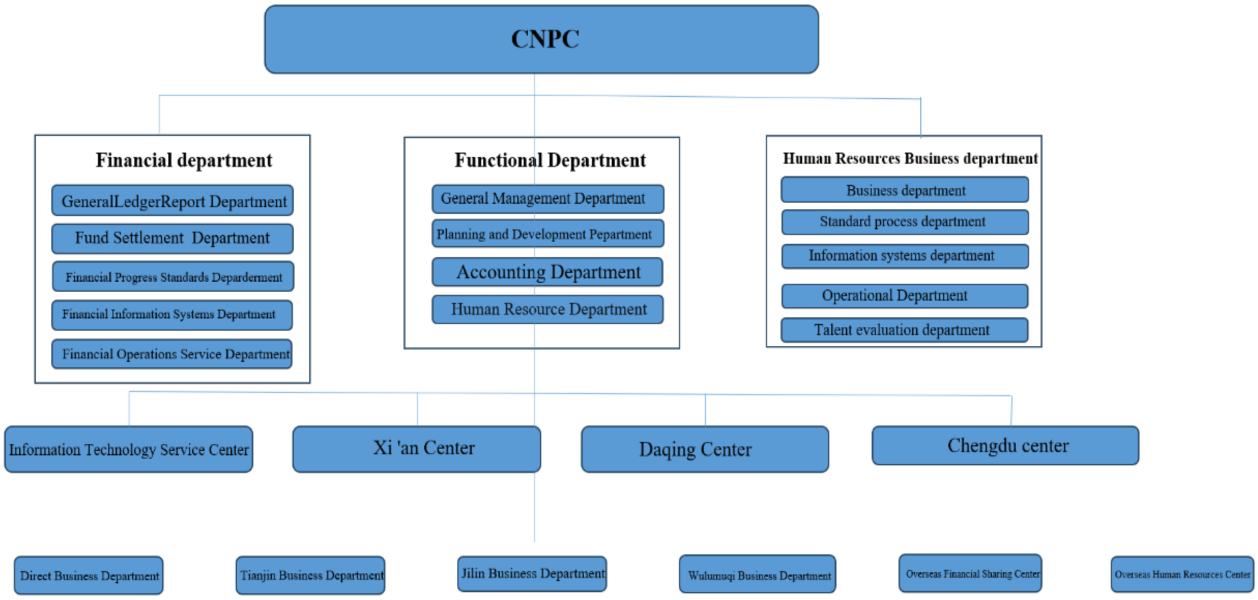

Figure 2. Corporate structure

The financial sharing center of CNPC is under the control of the financial Department of CNPC, which can conduct centralized accounting of the financial business of the enterprise to implement control (See Figure 2). The shared finance function is positioned as record and control, mainly responsible for accounting, fund settlement, financial statements, expense reimbursement, travel management, invoice management, tax declaration, financial information construction, financial data management and other work. Ordinary business will need to apply first, and then submit the relevant process to the financial sharing pool after approval. The Financial sharing center system will automatically assign tasks to various departments, and finally complete compliance audits, accounting and fund settlement.

After the application of financial sharing service, CNPC has greatly improved the efficiency of handling business. Through this, the standardization of business processes is enhanced, and the organizational structure is adjusted to be more reasonable and standardized. The shared service center divides the business according to the different functions of each department, which saves the time of direct contact between different departments. For example, employees of the company need to apply for travel expenses on business trips before, and they need to submit the application to the financial department for approval, which will take about one week. After financial sharing, employees directly submit the application to the financial sharing center, and it usually takes only three days from submission to payment. Employees can improve their own production capacity, and the financial department can also avoid cumbersome processes, and the efficiency of the company can be greatly improved.

CNPC adheres to the development path of automation and intelligence. In terms of robotic process automation, in December 2017, the first RPA "Little Iron Man" was born, further improving service efficiency using RPA technology. By 2020, there have been 180 "little iron men" in six categories on the line. CNPC has gradually expanded the application scale of robots, and these "little iron men" are respectively serving the work scenarios related to financial voucher system, voucher review, electronic files, fund payment, bank receipt sorting and invoice certification. And expand the input tax platform, knowledge map, intelligent recognition, voice reimbursement and other related application scenarios. After the large-scale application of "Little Iron Man", a total of 230 million job tasks have been completed, and the average business processing has achieved more than 50% of the total business volume, saving the raw materials of more than 660 people's labor volume, and saving the annual cost of about 100 million yuan (See Figure 3) [6].

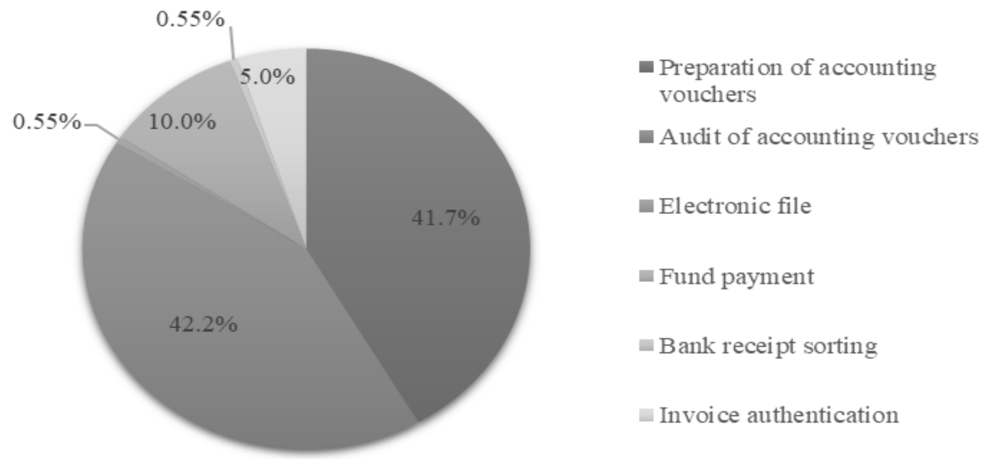

Figure 3. Application distribution of “litter iron men”

In terms of voice interaction applications, intelligent voice introduces voice service capabilities and gives birth to the first intelligent voice secretary - "Oil treasure". After the launch, the front-end user's business submission is realized through dialogue and interaction, and the function navigation is realized on the APP side, making the submission more convenient and efficient.

In terms of intelligent filling application, the application of front-end intelligent identification enables CNPC to automatically identify and process various bills and information. By introducing intelligent identification technology and self-developed knowledge graph technology, CNPC can automatically deduce the business scenario and the detailed information under the scenario, and build the data model of expense reimbursement. The automatic identification of information of eight types of bills and intelligent filling of inter-city transportation fees, transportation costs within the city, road tolls, accommodation fees and training fees are realized, which means that employees can complete the entire reimbursement process only by confirming the information through the guiding operation guide. In addition, the intelligent filling application also has the real-time monitoring function of the platform. In the filling process, if an abnormal situation is found, the system will automatically transfer to manual processing, which effectively avoids the risk caused by abnormal situations.

In terms of exploration and application in the field of input tax invoice pool, since 2018, CNPC has established a unified input tax invoice pool through the channel docking with the State Bureau of Taxation, and collected a total of more than 8 million invoice data in the past three years, enabling CNPC to fully grasp the invoice situation of enterprises. The automated and intelligent processing of invoice data realizes the automatic collection, automatic inspection, automatic authentication of invoice data and intelligent interception of invoice data. Up to now, more than 40,000 non-compliant invoices have been intercepted [6]. The application of these technologies has greatly improved the efficiency and accuracy of invoice processing, avoided the errors and loopholes that may be caused by manual operation, effectively standardized the invoice behavior, reduced the tax risk, and improved the management level.

3.3. Analysis of Internal Financial Management Structure of Enterprises

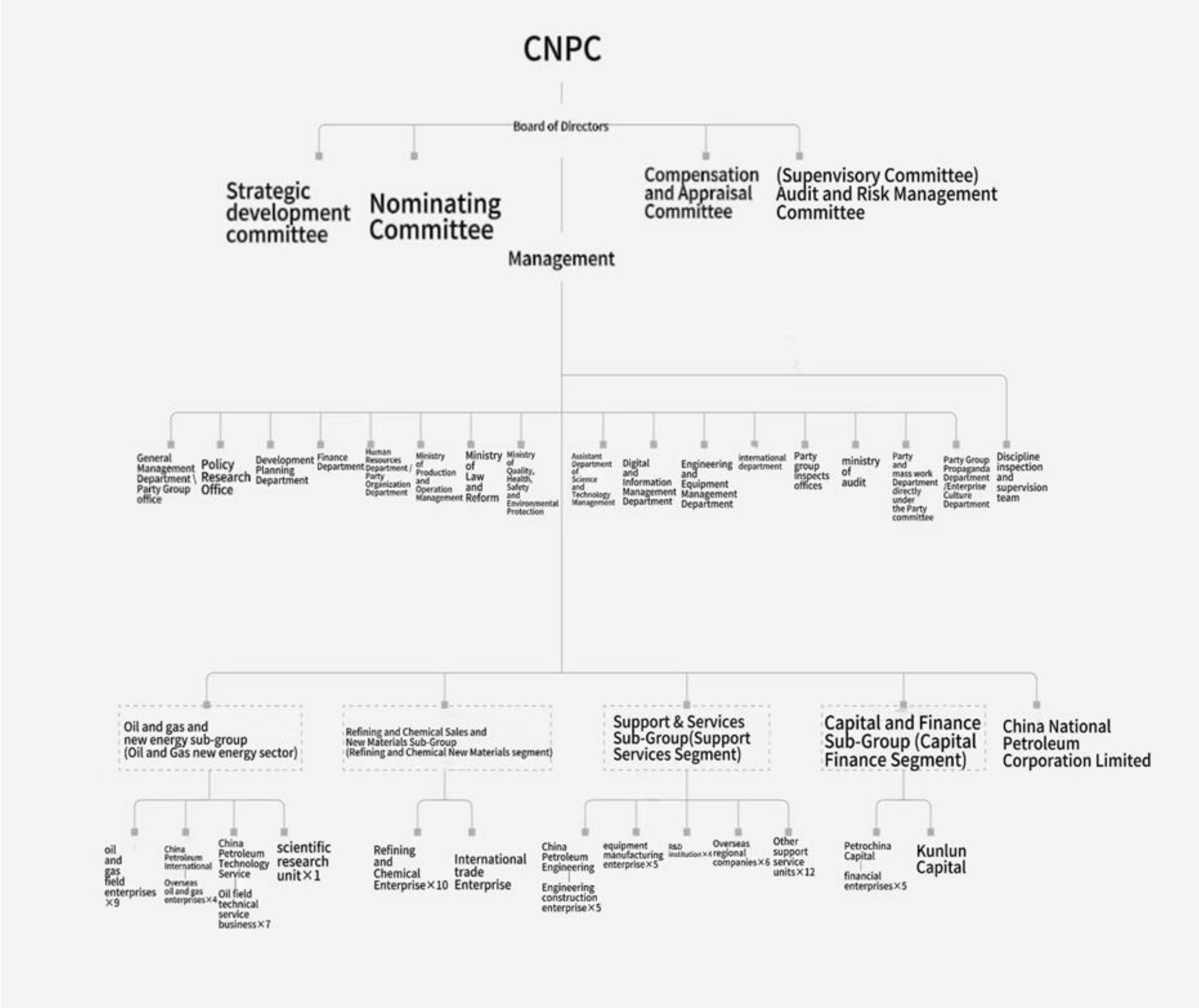

Figure 4. Financial management structure

By observing the organization and management structure in the annual report of CNPC (See Figure 4), people can see the reasonable and detailed division of labor and departments within CNPC. At present, the business expansion of CNPC is very extensive, and the innovation department and technology department different from traditional enterprises have been created. The company has many sub-groups under which there are also many subsidiaries, so the financial department will have a lot of very complicated business to deal with. The traditional financial management mode can no longer support such a large business volume, so CNPC adopts the financial sharing mode for business processing.

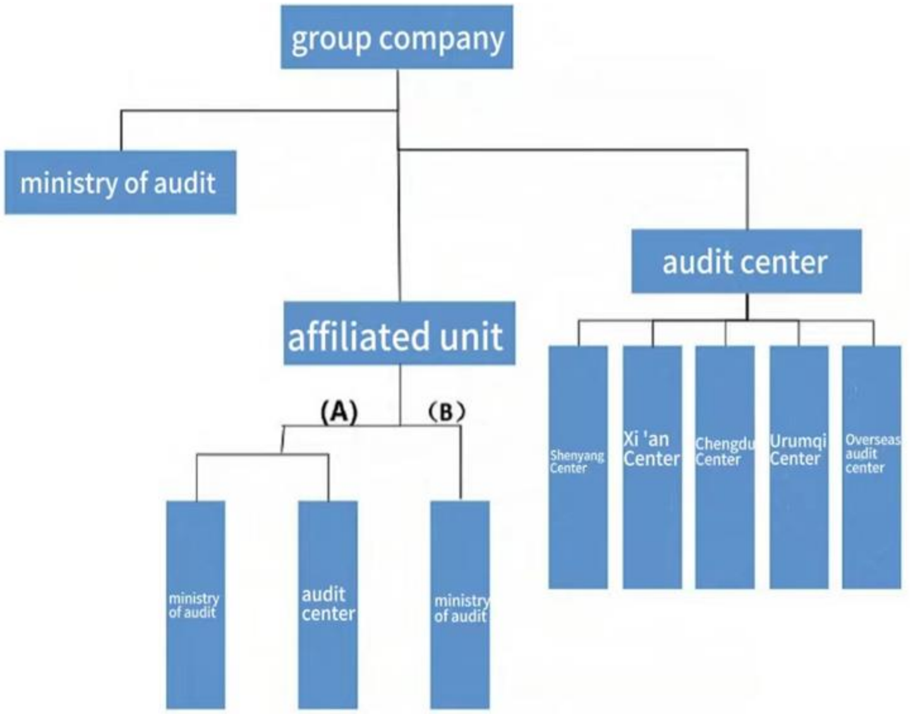

Figure 5. Construction of financial sharing model structure

Financial sharing is an important measure for CNPC, as a large state-owned enterprise, to transform its financial management from traditional mode to digital mode, which lays a foundation for CNPC to achieve rapid and high-quality development (See Figure 5). Through the establishment of financial sharing center, enterprises can classify all businesses and centralize management operations, which complies with the development trend of the era of big data and can collect financial information more conveniently and quickly without the need to set up a variety of financial departments for decentralized processing [7]. The combination of financial sharing and audit can share data resources, integrate audit supervision and financial processing, and facilitate internal audit. Audit centers are now set up in many cities and do not have to be reported separately. It improves the convenience of internal audit processing and alleviates the contradictions between audit department and financial department.

4. Analysis of Operating Capital Internal Structure

The operating capital of an enterprise narrowly refers to the total of current assets minus the total of current liabilities. The current ratio is calculated by dividing the total of current assets by the total of current liabilities, and it is often used as an indicator to measure the company's liquidity and its ability to meet short-term debt obligations. Therefore, the analysis of the overall size of current assets and current liabilities is carried out first to evaluate the company.

Table 2. Current assets and current liabilities

	2015	2016	2017	2018	2019	2020	2021	2022	TTM (twelvemonth)
Total current assets (100 million yuan)	3493.44	3816.65	4251.62	4331.28	4669.13	4867.67	4808.38	6138.67	7248.01
Total current liability (100 million yuan)	4714.07	4992.63	5766.67	5863.86	6614.19	6054.18	5181.58	6242.63	7539.26
Net working capital (100 million yuan)	-1217.63	-1175.98	-1515.05	-1532.58	-1945.06	-1186.51	-373.20	-103.96	-291.25
Current ratio	74.1%	76.4%	73.7%	73.9%	70.6%	80.4%	92.8%	98.3%	96.1%

(See Table 2) Since the establishment of the financial shared service center in 2017 CNPC 's current assets have shown a gradually increasing trend, while current liabilities increased slowly from 2017 to 2019 and showed a downward trend from 2019 to 2021. Since the implementation of financial sharing in 2017, the net operating capital has been negative, with CNPC's current assets being less than current liabilities. This indicates that CNPC's daily operating capital circulation mainly relies on current liabilities to achieve. However, the current ratio has generally shown an upward trend, indicating that the company's short-term debt repayment ability is gradually strengthening, and the operating situation is improving. The growth rate of current liabilities is lower than the growth rate of total assets, indicating that the company's debt repayment ability is strong and financial risk is low [4].

5. Conclusion

With the advent of the big data era, financial sharing, as a new technological management tool driven by information technology, can efficiently integrate business and finance, greatly addressing the shortcomings of traditional financial management methods. It has shown significant results in reducing operating expenses and optimizing financial and personnel management. With the popularity of digital finance, the application of financial sharing in large, medium, and small enterprises in China is becoming increasingly widespread. Taking CNPC as an example, through a case analysis of the construction and achievements of the financial sharing model in the enterprise, the establishment of the financial sharing model has greatly optimized CNPC's financial workflow, improved operational efficiency, and made a significant contribution to the company's development. The experience of CNPC can provide valuable references for other petroleum enterprises in China to establish financial sharing service centers. However, specific situations should be analyzed specifically, and other enterprises should formulate financial sharing model processes that are in line with their own conditions to maximize their benefits. With the continuous development of the economy, it is believed that financial sharing models have great development prospects in Chinese petroleum enterprises.

Authors Contribution

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

References

[1] China National Petroleum Company Limited. Company profile. Retrieved on March 14, 2024. Retrieved from: http: //www.petrochina.com.cn/petrochina/gsjj/gsjs_common.shtml.

[2] Li Yikan, Chen Liqin. SWOT Analysis of International competitiveness of Chinese petroleum enterprises: A case study of China National Petroleum Corporation. Journal of Economic Research, 2014, (28): 261 - 263.

[3] China National Petroleum Company Limited. PetroChina (601857) Third Quarterly Report 2023, 2023.

[4] Wang Jinlan. Discussion on the construction of financial sharing service of PetroChina. Financial Practice, 2019, (8): 86 - 88.

[5] Wang Xiaohua, A Juan, Guo Xiaoxin. Research on working capital Performance of China Petroleum under financial sharing model. Shanghai Commerce, 2023, (11): 132 - 134.

[6] Tan Jin. PetroChina Financial Sharing Intelligent Application Practice. December 11, 2020. Retrieved on March 14, 2024. Retrieved from: https://mp.weixin.qq.com/s?__biz=MjM5OTYwMTc0MQ==&mid=2650585728&idx=1&sn=3d9de1880eb2821f020237d3425e9b96&chksm=bf30e9a2884760b462ab2c0974b5a45259552d0f30629c7977e5c65cbbcf6e2e1eff17477133&scene=27.

[7] Yang Tao, Wang Fang, Zhao Youqin et al. Reflections on Internal Auditof Enterprises under Financial sharing model - Taking financial sharing of petro china as an example. China Chief Accountant, 2024, (01): 48 - 52.