

Analysis of the Integration of Financial Accounting and Management Accounting under RPA Technology

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Abstract: *As companies grow in size with the economy, management needs high-quality financial information to make decisions. Therefore, combining financial accounting and management accounting can improve the quality of financial information. The emergence of new technologies has made accounting more intelligent, among which RPA applied in accounting can intelligently handle business processes, financial processes, and diverse data, providing technical support for the integration of financial and management accounting. The article focuses on the application of RPA technology in financial accounting and management accounting and discusses the integration methods of financial accounting and management accounting.*

Keywords: *RPA techniques, Financial accounting, Management accounting, Integration*

1. Background

1.1. Overview of RPA Technology

RPA refers to the use of software robots to automatically perform regular, standardized, repetitive tasks performed by humans. The implementation of RPA technology relies on a variety of technological tools, including computer vision, natural language processing, machine learning, and artificial intelligence. These technologies can help RPA robots to better understand the intent and purpose of human tasks and thus achieve a high degree of automation. As artificial intelligence and automation technologies continue to evolve and robotic process automation (RPA) technologies mature, applications for the financial and management accounting fields are gradually increasing. Examples include automated bill processing, automation of approval processes, financial analysis, etc. By integrating RPA technology with financial and management accounting, it is possible to automate financial processes, reduce errors, increase accuracy, improve business processes, and increase the value of financial data. RPA can significantly increase efficiency and thus reduce business and management costs.

1.2. Links and Differences between Financial Accounting and Management Accounting

1.2.1 Links between Financial Accounting and Management Accounting

(1) Consistency of end goal

Both management accounting and financial accounting are a collection and collation of information to produce reports that meet the needs of stakeholders and managers within the business. The ultimate goal is to provide correct and accurate financial information for the enterprise to add value to the wealth of the enterprise and to achieve sustainable development.

(2) Homogeneity of information sources

Although management accounting and financial accounting give internal and external parties distinct information, both are based on the daily production and operating operations of the firm, therefore the information is accurate and trustworthy. Financial accounting creates financial statements that show a company's past financial situation, whereas management accounting plans for the future and creates comprehensive budget reports based on those financial statements and other data. The source of the information is the same even though the output information varies between the two.

1.2.2. The difference between financial accounting and management accounting

(1) Different service targets

Although both financial accounting and management accounting belong to the field of accounting, their service targets are very different. The service targets of financial accounting are mainly external stakeholders, including shareholders, investors, government regulators, and so on. For these stakeholders, they are mainly concerned about the financial status and operating performance of the company, and they need to know the information on the company's financial statements and financial analysis reports in order to make investment decisions or administrative decisions.

In contrast, management accounting serves mainly internal managers, including the company's top management, finance executives, and others. For these internal managers, they need to understand the internal operations and business of the company in order to formulate business strategies and make management decisions. Therefore, management accounting provides information that focuses more on the internal operations and cost management of the company, such as cost control, budgeting, performance evaluation, etc.

(2) Different criteria for judging accuracy

Financial accounting is guided by accounting laws and regulations and strictly adheres to the quality requirements of accounting information to ensure a true and accurate reflection of the business situation. Management accounting, on the other hand, is not affected by the accounting system and is mainly oriented toward the management of the enterprise to provide decision-making information, which requires accounting information to be accurate when used by managers. The accuracy of accounting information varies due to different decision-making issues in management, which is also different from the accuracy of financial accounting information.

(3) Different business quality requirements for accounting staff

In financial accounting, accountants need to have good logical thinking and communication skills to be able to present financial information clearly and prepare accurate financial statements. They also need to be familiar with relevant laws and regulations and have an in-depth understanding of accounting and disclosure of financial information. At the same time, accountants need to have a rigorous working attitude and a high sense of responsibility and be able to follow financial regulations and ethical guidelines to ensure that financial information is true and reliable.

In management accounting, accountants need to have not only the basic qualities of financial accounting but also a higher level of professional competence, including an in-depth understanding and mastery of the business management of an enterprise. Accountants need to learn and master the professional knowledge of cost accounting, performance evaluation, budget management, risk management, etc., and be able to analyze and diagnose the business management of enterprises and make corresponding suggestions and decision support.

2. Application of RPA techniques in financial accounting

2.1. Advantages of RPA technology and application scenarios

RPA technology refers to Robotic Process Automation, an advanced technology for automating business processes through the use of software robots, RPA technology has unique advantages and has a wide range of applications in financial accounting.

RPA technology can increase efficiency. While traditional financial accounting tasks are usually labour- and time-intensive, RPA technology can speed up work by using robots to perform repetitive operations. Robots are able to perform a variety of basic operations such as entry and exit, greatly reducing the workload of finance staff and allowing them to devote more energy to high-value tasks such as system building and data analysis. At the same time, RPA technology can improve the accuracy of financial accounting. Financial accounting requires a high degree of accuracy, but errors are inevitable in human and machine operations. RPA technology uses intelligent automated procedures to avoid errors caused by manual operations, thus improving the accuracy and authenticity of data.^[1]

2.2. Analysis of the application of RPA techniques in financial accounting

With the rapid development of artificial intelligence and automation technology, financial accounting based on robotic process automation (RPA) is becoming increasingly popular. RPA technology can perform standardised tasks that follow specific rules, such as data entry and data double-checking, thus effectively increasing the efficiency and accuracy of accounting.

2.2.1. Support for companies to automate multiple tasks

In financial accounting, the application of RPA technology can help companies automate several tasks. For example, complex structured systems such as customer accounts and automated counters allow paper bills and other related documents to be automatically scanned and filed, thus significantly reducing manual work. At the same time, various routine accounting tasks, such as accurate calculation of account balances and cash clearing, can also be automated using RPA, further reducing human error and cutting down on accounting work time and costs.^[2]

2.2.2. Automation of budgeting, bookkeeping and reporting

Budget automation refers to the use of RPA technology to automate the regular, repetitive budgeting process, including the collection and processing of budget data, the development and review of budget proposals, and the coordination and control of budget execution. Through budget automation, budgeting can be done quickly, efficiently, and accurately, avoiding errors and delays caused by manual operations. At the same time, the economic situation of the enterprise can be better controlled to ensure that the expenditure of funds is in line with the budget arrangement and to improve the efficiency of financial management.

Automation of bookkeeping and reporting, on the other hand, takes the tedious and repetitive task of bookkeeping, and reporting and leaves it to robots. Specifically, this includes functions such as automatic reconciliation, automatic bookkeeping and automatic report generation. This avoids data inaccuracies caused by human errors and also improves the efficiency of bookkeeping and reporting, reducing workload and time costs and shortening the transmission and processing time of financial information.

2.2.3. Audit automation

Auditing can also be automated through RPA technology. Audit automation is a method of using technology to improve audit efficiency, enhance audit quality, and control risk. It reduces audit time, reduces human error, and increases audit accuracy by handing over repetitive operations in the audit process to computer software automation. Through audit automation, auditors can analyse a large amount of financial data in a shorter period of time, thus making the audit process more efficient, accurate, and sophisticated. At the same time, audit automation also facilitates improved methods of capturing data and determining identification patterns, increasing the transparency and accuracy of financial reporting by companies.

3. Application of RPA techniques in management accounting

3.1. Analysis of information gathering and processing processes in management accounting

The main function of management accounting is to provide accurate financial information and relevant analytical reports for corporate management decisions and to assist corporate management in forecasting and optimising business activities such as operations, investment, and financing. To achieve this objective, management accounting requires a great deal of information collection and processing.

In terms of information collection, management accounting requires the collection of a variety of financial and non-financial information, including sales, costs, production, human resources, market analysis, etc. In practice, this information can be in the form of figures, text, or pictures. In a digital management environment, the information collected is often obtained by automatic collection and processing through the enterprise ERP system and other relevant software applications.

To provide valuable management information that can assist business management in making choices, management accounting requires the analysis and mining of collected data. In order to do this, management accounting must transform the gathered data into understandable reports or forecasting models, utilising a variety of statistical analysis methods to compare data from the company, the market, and the industry. Management accounting can examine the state of the company, create business strategies and plans, and direct financial and investment choices in this way.

3.2. Analysis of the application of RPA techniques in management accounting

With the advent of the digital era, the application of RPA technology has brought unprecedented innovation to management accounting. In management accounting, the application of RPA technology

can help companies to achieve intelligent and efficient business management, as well as real-time monitoring and analysis of data, thereby improving performance and efficiency.

3.2.1. Automated budget management

In the past, budget management in companies often required a large investment of human, material and financial resources. However, with the help of RPA technology, budget management can be automated, thus reducing the management costs and workload of an enterprise. For example, companies can use RPA technology to connect data from various departments of the company to a central database. This allows managers to view the actual performance of the budget through the central database and make quicker and more accurate decisions. In addition, RPA technology can also reduce the impact of human factors on the budget by automating the process of budget formulation, review and execution, thus enhancing the accuracy and scientific nature of the budget and laying a solid foundation for the development of the enterprise.

3.2.2. Automated cost management

In the costing process of an enterprise, RPA technology applications can achieve real-time data collection, automatic calculation, and automatic analysis. In this way, the management of the enterprise can obtain more accurate information about the various costs of the enterprise, including raw material costs, labour costs, and overhead costs. At the same time, the application of RPA technology can also ensure accuracy and real-time data, and avoid the interference and error of human operations on cost data. This automated cost management approach can help enterprises better control costs, improve management efficiency, and improve business effectiveness.

3.2.3. Automated performance management

The automated collection and analysis of data is at the heart of RPA technology use in the area of enterprise performance management. If a company uses RPA technology in its marketing management system, it can automatically identify the themes of customer interactions and automatically enter, aggregate, and analyse the data from these interactions, better understanding the needs of the company's customers and fostering personalised marketing. Additionally, businesses that use RPA technology can enhance their management and operations by obtaining and analysing internal and external data in real time, including market and competitor data, and by offering strong data support for strategic decision-making.

4. Integration of financial accounting and management accounting

4.1. Significance of integration of financial accounting and management accounting

4.1.1. Enhance the timeliness of accounting information and improve the competitiveness of enterprises

As the economy continues to develop and new businesses and things emerge, competition between businesses becomes more intense. To gain an edge over the competition, companies must frequently revise their marketing and business strategies, which leads to constant change and improvement in accounting information as well. Generally, traditional companies focus more on financial accounting, while the role of management accounting is neglected. In this situation, management cannot predict future economic activity and can only be aware of past performance and information. However, the economic situation is constantly changing, and companies need to have real-time management information and fast and effective accounting information. Therefore, the integration of financial accounting and management accounting can be used to develop business strategies more scientifically and efficiently, improve the timeliness of accounting information, and enhance the competitiveness and sustainable operation of enterprises.

4.1.2. Improve the quality of accounting work and optimise business decisions

With the rapid development of information technology on the Internet, the integration of business between different production operations and functions has made it even more necessary to integrate financial and management accounting.^[3] RPA technology can automate some low-value repetitive tasks, such as journal entries, which can reduce errors, increase accuracy, and improve the quality of work. By integrating financial and management accounting, companies can get a more comprehensive and accurate picture of the business, including financial and non-financial data. This will enable management to better be able to understand the cost components of the business, analyse sales revenue,

forecast future business activity and be able to assess business performance, and develop more accurate business strategies more comprehensively.

4.1.3. Reduce business operating costs

Financial accounting and management accounting are two separate areas of accounting that have different roles in the operation of a business and therefore usually operate independently in a business. However, there are a large number of repetitive tasks in the traditional financial accounting and management accounting systems that require manual processing and accounting by employees, which are heavy, inefficient, and error-prone, and also impose a greater burden on business operating costs. The integration of financial accounting and management accounting under RPA technology can largely reduce business operating costs. RPA technology can automate repetitive operations, and improve data processing. RPA technology can automate repetitive operations, improve the accuracy of data processing and reduce risks, thus greatly improving the efficiency of business operations and achieving a win-win situation for both economic and social benefits.

4.2. Application of RPA techniques in the integration of financial accounting and management accounting

With the development of the information age, the application of Robotic Process Automation (RPA) technology is becoming more and more widespread, especially in the integration of financial accounting and management accounting. RPA technology can help companies process financial and management accounting operations faster and more accurately, improving their efficiency and accuracy. Therefore, the application of RPA technology has great potential for the integration of financial accounting and management accounting.

One of the key factors affecting the integration of financial and management accounting is the sharing and management of information, and RPA technology can help companies achieve seamless sharing and management of financial and management accounting data. By adopting RPA technology, financial and management accounting systems can reduce or even eliminate data redundancy, data errors, and errors that occur in manual processing. In addition, RPA technology can automate repetitive tasks such as billing processing, invoice recording, and report generation, which often require extensive manual input and processing.

In addition, RPA technology can provide enterprises with better data analysis and real-time decision support. By adopting RPA technology, companies can automate data collection and analysis, as well as generate various data reports and provide real-time decision support. Furthermore, RPA technology can also provide businesses with predictive analytics to anticipate future trends and make better business decisions.

5. Approaches to the integration of financial accounting and management accounting

With the development of automation technology, the integration of financial and management accounting is becoming increasingly important. Through RPA technology, the two can be better integrated to achieve more efficient and accurate financial management.

5.1. Establish information systems to facilitate data exchange and data sharing

Advances in information and intelligence have made it imperative for companies to quickly integrate financial and management accounting to enhance competitiveness. As a result, many enterprises have established data-sharing centres, thereby saving accounting costs and time. RPA technology helps accelerate the integration and sharing of financial and management accounting information. Due to the complexity of traditional accounting business processes, the information isolation of various business departments is serious, making it difficult to achieve information sharing and linkage. With RPA technology, on the other hand, data and processes between different systems can be opened up to achieve seamless integration and sharing of information, thereby improving the synergy and overall effectiveness of business within the enterprise. Although the responsibilities of financial accounting and management accounting are different, their data sources have always been and are interrelated, and by using information technology to exchange and share information, the data can be easily integrated and used. In this way, both financial accounting and management accounting can make wider and deeper use of information technology when dealing with information resources, thus

promoting the substantive integration of the two.

5.2. A well-developed enterprise accounting system with a refined division of responsibilities

China's accounting system is based on financial accounting, so day-to-day accounting, financial statement preparation, and financial information disclosure are all oriented toward complete accounting standards. However, ordinary enterprises still favour accounting, so management accounting is still a relatively new field. China still lacks a scientific and sound management accounting system as well as a comprehensive financial and management accounting system or specification, which constrains the combination of the two. Therefore, based on following national laws and regulations, enterprises should have a deep understanding of the internal and external environment, improve the internal accounting system while clarifying the division of responsibilities and improve the efficiency of integration, to ensure that accounting information resources are accurate, legal, and authoritative.

In terms of improving the accounting system of enterprises, it can be improved by enriching the content of cost management, improving cost management methods, and introducing advanced foreign management methods to make it more comprehensive and scientific to improve the level of scientific management. With the development of society, the work responsibilities of various industries are increasingly subdivided. Therefore, to better integrate financial accounting and management accounting, the objectives, workflow, and division of responsibilities between financial accounting and management accounting need to be clearly defined when formulating the accounting system, and to ensure that the personnel and job responsibilities corresponding to different positions are matched.

5.3. Maintain data security and enhance information building

In the analysis of the integration of financial accounting and management accounting, it is crucial to pay attention to information construction as well as maintaining data security. Information construction is the basis for the integration of financial accounting and management accounting. Only accurate, real-time, and comprehensive data can support the effective integration of financial accounting and management accounting. At the same time, data security is also very important, as data leakage and destruction can cause great losses to enterprises.

Maintaining data security is an important means of securing information in the areas of finance and management. When establishing information systems and processes, full consideration should be given to information security, and the necessary measures should be taken to enhance data security protection.^[4] For example, encryption technology, access rights control, firewalls, and other technical means can be used to restrict access to financial and management information by non-handlers to prevent information leakage and damage, thereby safeguarding the interests and reputation of the enterprise. Strengthening information can be achieved by establishing sound information systems and processes and building accurate, real-time, and comprehensive databases and knowledge bases to provide strong support to the financial and management areas. For example, ERP systems and BI systems can be used to enable real-time data sharing and communication between accounting staff and management staff to ensure consistency and accuracy of data, thereby improving the efficiency and quality of financial management.

5.4. Improve the business quality of accounting staff

The integration of financial accounting and management accounting must be inseparable from the participation of accounting staff, and the integration has changed the focus of accounting work. Although the application of RPA can simplify the work, not all operations need to automate the process, which requires accounting staff to combine accounting knowledge and computer technology organically and learn and master the relevant techniques and tools to ensure that financial accounting and management accounting organic integration. For example, mastering technologies such as data mining, artificial intelligence, and machine learning can better support the intelligent needs of business operations.^[5] Business management teams should constantly supplement their management knowledge and actively communicate with the accounting department to ensure the effective integration of financial and management accounting tasks. Only by improving the business standards of accounting staff can we improve efficiency and achieve the goal of reducing business operating costs.

6. Conclusion and outlook of the study

RPA technology in the fields of financial accounting and management accounting can effectively promote the integration and interaction between the two and realise the effective scientific use of financial data in enterprise management. With the development of the digital era, enterprise data tends to be multi-dimensional and complex, and how to make better use of this data is increasingly important to improve the business decisions of enterprises. The emergence of RPA technology has successfully provided a new way for the mining and application of enterprise data. Enterprises should take the right path and approach to implementation. For different types of enterprises, the path and method of application will vary. Enterprises need to develop corresponding solutions according to their own situation and needs, and they also need to pay attention to the training and skill upgrading of relevant personnel to ensure that RPA technology is fully utilised.

Future research can further explore the application of RPA technology in different industries and fields to provide enterprises with more complete and detailed technical support. At the same time, there is also a need to strengthen the focus and research on relevant legislation and policies to create a better legal and policy environment for enterprises and help the development and application of RPA technology.

References

- [1] Wu Chunxu. (2020). *Financial robots - The application practice of RPA robots in corporate accounting transformation*. *Contemporary Accounting* (11), 155-156.
- [2] Liu Hong. (2023). *Research on the application of financial robot based on RPA technology*. *Journal of Hebei Youth Management Cadre College* (02), 74-77.
- [3] Gao Huili. (2022). *Development strategies for the integration of enterprise financial accounting and management accounting under the new economic situation*. *Mall Modernization* (13), 127-129.
- [4] Zhang Yanling. (2021). *RPA integration path and method of financial accounting and management accounting*. *National Circulation Economy* (31), 187-189.
- [5] Li J., Dai R., and Gou H J. (2023). *Reflections on the integration of financial accounting and management accounting*. *Cooperative Economics and Technology* (04), 144-145.