

UMA NOVA TEORIA CONTÁBIL BASEADA EM BIG DATA E INTELIGÊNCIA ARTIFICIAL

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RESUMO

Objetivo: Este artigo apresenta uma nova teoria contábil baseada na integração de Big Data (BD) e Inteligência Artificial (IA). O objetivo é preencher a lacuna entre a teoria contábil tradicional e os avanços tecnológicos modernos, analisando o impacto do BD e da IA nas práticas contábeis e propondo uma nova estrutura para enfrentar os desafios contemporâneos da contabilidade.

Métodos: O estudo utiliza uma abordagem metodológica multifacetada que inclui revisão de literatura, análise qualitativa e análise comparativa. Examina criticamente os pressupostos contábeis tradicionais—como a entidade contábil, continuidade e período contábil—e avalia como BD e IA afetam esses pressupostos. A nova teoria contábil é desenvolvida por meio da análise da informatização contábil e da crescente importância da contabilidade gerencial.

Resultados: Os resultados mostram que BD e IA alteraram significativamente o ambiente contábil, levando a teoria contábil tradicional aos seus limites. Ao integrar BD e IA, a nova teoria contábil pode atender à demanda crescente por dados dinâmicos e em tempo real, permitindo relatórios financeiros mais precisos. O estudo destaca o papel da contabilidade gerencial e da informatização contábil como ferramentas essenciais para as empresas modernas.

Contribuição: Esta pesquisa oferece uma abordagem prospectiva para a contabilidade, propondo uma nova teoria que se adapta às mudanças tecnológicas e à economia digital. Destaca a importância de dados em tempo real e da flexibilidade dos sistemas contábeis para atender às necessidades dos usuários de informação. A nova teoria visa orientar o desenvolvimento futuro de práticas de contabilidade inteligente e contabilidade gerencial.

Conclusão: A nova teoria contábil fornece uma estrutura abrangente que incorpora os avanços em BD e IA, abordando as limitações da contabilidade tradicional. Ela é projetada para atender às necessidades em evolução das empresas em um ambiente digital em rápida mudança, garantindo práticas contábeis mais precisas e eficientes.

Palavras-chave: Big Data. Inteligência Artificial. Informatização Contábil. Contabilidade Gerencial. Nova Teoria Contábil.

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A NEW ACCOUNTING THEORY BASED ON BIG DATA AND ARTIFICIAL INTELLIGENCE

ABSTRACT

Objective: This article introduces a new accounting theory based on the integration of Big Data (BD) and Artificial Intelligence (AI). It aims to bridge the gap between traditional accounting theory and modern technological advancements, analyzing the impact of BD and AI on accounting practices and proposing a new framework to address contemporary challenges in accounting.

Methods: The study employs a multifaceted methodological approach that includes a literature review, qualitative analysis, and comparative analysis. It critically examines traditional accounting assumptions—such as the accounting entity, going concern, and accounting period—and evaluates how BD and AI affect these assumptions. The new accounting theory is developed through the analysis of accounting informatization and the growing importance of management accounting.

Results: The findings reveal that BD and AI have significantly altered the accounting environment, pushing traditional accounting theory to its limits. By integrating BD and AI, the new accounting theory can address the increasing demand for real-time, dynamic data and enable more accurate financial reporting. The study emphasizes the role of management accounting and accounting informatization as essential tools for modern businesses.

Contribution: This research offers a forward-looking approach to accounting, proposing a new theory that adapts to technological changes and the digital economy. It highlights the importance of real-time data and the flexibility of accounting systems to meet the needs of information users. The new theory aims to guide the future development of intelligent accounting and management accounting practices.

Conclusion: The new accounting theory provides a comprehensive framework that incorporates the advancements in BD and AI, addressing the limitations of traditional accounting. It is designed to meet the evolving needs of businesses in a fast-changing digital environment, ensuring more accurate and efficient accounting practices.

Keywords: Big data. Artificial intelligence. Accounting informatization. Management accounting. New accounting theory.

1. INTRODUCTION

The relatively perfect accounting theory currently formed in China is the accounting theory in textbooks, which I have been studying, taking exams, and applying in practice because it is a financial accounting theory regulated by the Chinese government and widely adopted by practitioners. In the big data (BD) and artificial intelligence (AI) eras, the application of financial sharing, robots, and cloud accounting is surging (Liu, 2018). Because accounting informatization and management accounting's roles in accounting practice are becoming increasingly prominent, the traditional accounting theory itself has certain idealizations and limitations (Liu, 2016), so it cannot fully meet the current accounting needs; hence, reforming the accounting theory is necessary. Although many experts and researchers have pointed out the limitations and shortcomings of accounting theory, especially the basic assumptions of accounting, no one has yet proposed a new theory to supplement and improve it. Accounting is a discipline that combines theory and practice and keeps up with the times (Gao, 2021). Therefore, combining traditional accounting theory and practice, this article adopts methods such as literature survey, induction, historical research, comparative analysis, thinking, and qualitative analysis to propose a new accounting theory, aiming to use theory to guide practice to promote the integration, spiral, and progressive development of accounting theory and practice.

2. TRADITIONAL ACCOUNTING THEORY

2.1 Connotation of basic accounting assumptions

The basic accounting assumptions are reasonable assumptions about the time, space, and environment in which accounting is conducted and are prerequisites for accounting recognition, measurement, and reporting. They include the accounting entity, going concern, accounting period, and monetary measurement and are interdependent and complementary. The accounting entity establishes the scope of accounting, the going concern and accounting period determine the accounting period length, and monetary measurement provides the necessary means for accounting. Without an accounting entity, there would be neither a going concern nor an accounting period. Additionally, accounting cannot be conducted without monetary measures.

2.1.1 Accounting entity

An accounting entity is a specific unit or organization for accounting and supervision, which forms the spatial scope for accounting recognition, measurement, and reporting. Clarifying the accounting entity is an important prerequisite for the aforementioned work and can determine the scope of various transactions or events that accounting needs to handle. Generally, any enterprise or unit with independent funds, operations, accounting of income and expenditure, profit and loss, and preparation of financial reports constitutes an accounting entity. It does not specifically have to be a company with a legal personality but can also be a branch, business unit, or office without a legal personality. An accounting entity is different from a legal entity. A legal entity (which can be a legal person) can be considered an accounting entity, but an accounting entity may not be a legal entity.

2.1.2 Going concern

Going concern means that in the foreseeable future, the accounting entity will continue to operate according to the current scale and status and will not stop or reduce business on a large scale.

2.1.3 Accounting period

The accounting period refers to the division of the production and operation activities of a going concern into successive periods of the same length to settle accounts and prepare financial reports in stages. Accounting periods are usually divided into interim and annual periods. Mid-term periods can be divided into quarters, months, or half a year.

2.1.4 Monetary measurement

Monetary measurement implies that an accounting entity uses currency as a unified unit of measurement to reflect its production and operational activities when accounting for recognition, measurement, and reporting (The Chinese Institute of Certified Public Accountants (CICPA), 2023).

Chinese enterprises usually choose renminbi (RMB)—the main currency in the economic environment in which they operate—as the base currency for their accounting. Enterprises whose business income and expenditure are mainly in currencies other than RMB can choose a certain foreign currency as the base currency. However, when preparing financial

statements, the foreign currency should be converted into RMB (The Ministry of Finance of the People's Republic of China, 2006).

2.2 Connotation of accounting basis

The accounting basis refers to the basis for accounting recognition, measurement, and reporting, which is the recognition criteria for unit income and expenses. It determines the accounting period of income and expenses and the amounts of some accounting items. Accrual basis and cash basis are the two types of accounting basis. The type of accounting basis determines the proportion of income and expenditure in the accounting period, directly affecting the current performance and financial results of the unit.

2.2.1 Accrual basis system

The accrual basis system refers to the accounting basis that determines current income and expenses based on the right to receive or obligation to make payments. It deals with relevant economic businesses based on whether the expenses and income incurred in the current accounting period should be included in the current profit and loss. In practice, the occurrence time of enterprise transactions or events may not match the receipt and payment times of related funds. Therefore, to truly and fairly reflect the financial situation and operating results, enterprises should recognize, measure, and report using the accrual basis of accounting.

2.2.2 Cash basis system

The cash basis system is the accounting basis for determining current income and expenses based on the actual receipt and payment of funds, including cash and bank deposits. In China, governmental accounting comprises budget and financial accounting; the former adopts the cash basis system, and the latter adopts the accrual basis system. If other state council regulations exist, they shall prevail (CICPA, 2023).

3. METHODS

In this study, a multifaceted methodological approach was adopted to develop a new accounting theory that effectively integrates BD and AI with traditional accounting theory and practice.

Initially, an extensive literature review was conducted to understand the existing theoretical frameworks and identify the gaps between traditional accounting theory and practice when faced with the challenges and opportunities presented by BD and AI.

Subsequently, through qualitative analysis, the potential impact of BD and AI on revolutionizing accounting theory was explored, focusing on their implications for accounting informatization and the development of intelligent accounting systems, as well as accounting informatization and management accounting's important role.

Furthermore, on the basis of traditional accounting theory and the above actual, a new accounting theory was elucidated, and inductive reasoning to analyze historical accounting practice development was utilized, aiming to understand how accounting theory has evolved and how it can be further developed to accommodate the needs of accounting practice and promote modern management technological advancements. A significant part of the methodology involved a comparative analysis that critically examined assumptions, accounting foundations, and the applicability of traditional accounting theory in the era of BD and AI, with developmental insights.

The methodological approach was designed to ensure a comprehensive understanding of new accounting theory based on BD and AI and the relationship between it and traditional accounting theory, ultimately proving its rationality and progressiveness that address the needs of the digital age and practice.

4. BIG DATA AND ARTIFICIAL INTELLIGENCE'S IMPACT ON THE ACCOUNTING INDUSTRY

4.1 Big data's impact

BD is a collection of excessive data that takes plenty of time for people to collect, process, and organize. BD technology refers to the technology of quickly obtaining valuable information from various types of data, including data collection, access, processing, and mining (Liu, 2022). It is applied in various fields, including energy, transportation, logistics, communication, finance, education, and medical care, profoundly impacting various industries in society (Zhu, 2020). It is also being applied to the accounting field; therefore, a correct understanding of BD and the role of its technology is conducive to better applying it in the accounting industry (Xiao, 2021). With the continuous development and application of new technologies, such as the mobile Internet, the Internet of Things, and sensor technology, BD's era has arrived. The use of convenient and efficient data processing methods or technologies to

mine useful information from excessive data needs urgent attention and resolution by enterprises in the BD era. This is because it significantly affects the effectiveness and efficiency of enterprise management and analysis decision-making, which is related to an enterprise's core competitiveness and survival.

In this era, the data source of enterprises is mainly accounting information, which still comprises the core information of enterprises (Dong, 2021). In recent years, with the digital economy's rapid development, data—a type of resource existing in the form of data relative to physical assets—has become an important asset for enterprises. In the BD era, data can originate from various types of information. The extensive application of information technologies has fundamentally changed the entire economic environment. Ever-changing markets and diversified customer demands have led enterprises to pay more attention to data value. Unstructured data, which is useful for enterprise analysis and decision-making, is becoming an increasingly abundant source of higher value but is not reflected in financial reports in many cases. Therefore, it is extremely important to process financial and non-financial, as well as structured and unstructured data, which also faces challenges (Wang, 2023), considering that data processing must be accurate and timely to enable the availability of timely and useful information. Using BD technology to transform scattered information into standardized and structured data to form data assets to mine and use can solve the aforementioned problem, help enterprises adapt to the current environment, and achieve digital transformation (Shen, 2023).

4.2 Artificial intelligence's impact

AI is a new technological science that systematically studies theories, methods, techniques, and applications of computers, simulating certain human thinking processes and intelligent behaviors. With the development of related technologies such as computers, chips, and life sciences, AI has increasingly entered the accounting field. The four major international accounting firms—Deloitte, Price Waterhouse Cooper, Ernst and Young, and Klynveld Peat Marwick Goerdeler—have successively launched financial robots (Yu & Zhang, 2018). Further, major accounting firms and enterprise resource planning software manufacturers in China have launched their financial robots or related tools. Thus, the previously time-consuming, repetitive, and standardized general accounting processes of enterprises, such as voucher and account processing, report generation, and tax declaration, can be completed through automated robotic processes (Wang et al., 2021). Moreover, some financial intelligent robots have advanced functions such as automatic identification, analysis, and machine

learning, which can generate visual reports according to real-time needs, provide enterprises with analytical decision-making suggestions, and answer related questions. Financial robots' emergence has fundamentally changed the objective environment of accounting.

The application of AI in the accounting industry improves the efficiency and accuracy of accounting work, reduces human resource costs and business risks, and enhances enterprises' core competitiveness. It not only solves accounting information quality-related problems, such as users' timely access to information in the context of the BD era, but also changes how accounting works. First, AI reduces manual involvement in accounting information processing, saving data processing time, freeing accounting personnel from tedious and dull work, and improving the quality of accounting information obtained. For example, a financial system developed using AI can automatically identify, analyze, and review suspicious data, which significantly reduces the probability of accounting information distortion caused by human error and the possibility of fraud caused by human tampering or falsification, considerably improving the quality of accounting information. Second, by establishing a basic database and combining high-performance computing power, data storage capacity, and other advantages with the accounting information system, AI can quickly process data, achieve accurate data mining, and continuously track, analyze, and predict data models to provide accurate and reliable data for business management and decision-making promptly. Third, using AI to compare and analyze all historical data in the database based on different accounting models and methods can help develop an intelligent financial decision support system. It can help conduct programmatic analysis of excessive data according to the scope and methods given by information demanders, performing systematic machine learning, so as to enable qualitative and quantitative analysis of various influencing factors and predict future trends. Finally, AI can be combined with the decision-making systems of financial experts to prevent and control operational risks in enterprises. The likelihood of risk occurrence can be reduced by establishing risk warning models, long-term monitoring of enterprise data, timely identification of operational risks, and the implementation of certain measures (Li, 2020). Overall, the positive effects of applying AI are conducive to the accounting industry's development.

5. ACCOUNTING INFORMATIZATION AND MANAGEMENT ACCOUNTING'S IMPORTANT ROLE

5.1 Accounting informatization's important role

Accounting informatization refers to the comprehensive use of computer- and network communication-based information technology (IT) to obtain, process, transmit, and apply accounting information, providing sufficient, real-time, and comprehensive information for enterprise management, analysis, decision-making, and economic operations. It involves both theory and practice, introduces advanced computer-, network-, and communication-related technologies into the accounting discipline, and integrates with traditional accounting using IT and technological means in business processing, accounting, financial management, internal control, and other aspects. Accounting informatization is a basic accounting requirement in the information age and an inevitable choice to comply with it by combining accounting and IT in the context of the BD era, with AI's development and application accelerating its development.

Accounting informatization, which helps promote the development and progress of the accounting industry, is the future of accounting. It is the main medium for enterprise managers to obtain information and control enterprises in the network environment. Moreover, it can promote enterprise information sharing within the scope of authority and solve the "information silo" problem in accounting computerization (Feng, 2022), improving the level of accounting management, analysis, and decision-making as well as enterprises' core competitiveness. Specifically, accounting informatization can optimize accounting institutions' organizational structure and the work content of accounting personnel, enhance the convenience and efficiency of the entire process, accelerate data collection and processing, and promote paperless accounting and the use of electronic accounting archives. Additionally, it can save human resource costs, help information demanders grasp the dynamics of enterprises promptly, reduce the cost of obtaining, transmitting, and storing data, and advance accounting information's in-depth application and integration of finance and business. Furthermore, it can strengthen accounting supervision and process management, prevent and reduce business risks by embedding internal controls into the accounting information system, and effectively improve the service management efficiency and business decision-making level of enterprises.

5.2 Management accounting's important role

Management accounting is a tool that uses accounting for the operation and management of enterprises, providing data for optimal decision-making, improving management performance, and enhancing enterprises' economic benefits. Its role is to analyze the past, control the present, and plan for the future, organically combining these three functions (Gao, 2022). Management accounting can improve enterprises' management efficiency and production service levels, enhance their core competitiveness, improve economic benefits, and create value for them. Thus, management accounting's promotion and application can promote economic development. In BD's context, Chinese enterprises must transform from financial to management accounting to obtain greater economic benefits (Chen, 2023). Furthermore, to achieve economic growth transformation from previously extensive to intensive growth (Ren, 2023), they must seek performance from management and rely on management accounting.

In the BD and AI eras, IT applications provide technical support for management accounting's development and application. The role of management accounting is increasingly prominent and plays an important role in budget management, cost control, performance management, internal control, risk management, decision analysis, and so on (Zhang, 2021). Using management accounting and IT to mine and utilize data can create enterprise value. Currently, the digital economy is booming with explosive and complex information growth, and the economic and technological environments surrounding enterprises have undergone tremendous changes. In network connectivity, information transparency, and economic globalization markets, the convenience of online consumption and logistics has significantly reduced enterprises' transaction costs. In addition to high cost-effective products, consumers have started paying more attention to the consumer experience, and enterprise business models have also been constantly adjusted from large-scale manufacturing to mass production and personalized customization. Simultaneously, imitations of products or business models by enterprises have become extremely easy, intensifying competition and increasing uncertainty risks faced by enterprises. In the face of an ever-changing market, traditional management thinking based on internal processes and personnel management, as well as relying on experience to manage and make decisions, no longer meets the needs of enterprise survival and development. To quickly adapt to changes in the market environment, enterprises must vigorously promote and apply management accounting, transforming from experience to data management. Management accounting essentially supports business management and analytical decision-making by collecting real-time information and forming a shared basic

database using accounting informatization to obtain accurate information promptly. Some conditional enterprises can customize information and create visual reports based on business management and analytical decision-making needs by using AI to make accurate decisions through data analysis and simulation (Kang, 2021).

6. NEW ACCOUNTING THEORY

The new accounting theory also has four basic accounting assumptions and accounting foundations.

6.1 Four new basic accounting assumptions

The four new basic accounting assumptions are the new accounting entity, going concern, accounting period, and new unit of measurement assumptions.

6.1.1 New accounting entity

The new accounting entity is a specific unit assumed for the convenience of accounting, which is the spatial range of accounting recognition and measurement. The basic accounting unit can only be determined by clarifying the accounting entity, which is an important prerequisite for conducting accounting treatments. The new accounting entity is the object of accounting and not necessarily the reporting entity. A reporting entity's financial statements can be a combination of financial statements from multiple new accounting entities, and those of the new accounting entity can also be a combination of financial statements from multiple reporting entities. The new accounting entity does not necessarily have to meet the conditions of independent funds, operations, accounting of income and expenses, profit and loss, and preparation of accounting statements. The reporting entity may be a new accounting entity, but a new accounting entity may not necessarily be the reporting entity.

6.1.2 New going concern

The new going concern assumption is that accounting can be conducted as long as the company exists without dissolution and business is progressing. It is not necessary to continue the going concern according to the current scale and status, which may not always be unchanged.

6.1.3 New accounting period

In traditional accounting theory, the accounting period is assumed to be divided into annual and interim periods, and the mid-term into months, quarters, and six months. However, in the new accounting period assumption, in addition to the mid-term, there are reporting periods shorter than a month, such as half a month, a week, a day, or even shorter periods, depending on the needs of the information demanders.

6.1.4 New unit of measurement

The new unit of measurement assumption implies that the accounting entity mainly adopts the monetary unit of measurement, which is convenient for reflecting the accounting entity's production and operational activities in accounting recognition and measurement—the currency is not the only unit of measurement. Units of measurement, such as time, quantity, and unit price, can be added according to the needs of information users, but only to supplement specific needs. In the context of economic globalization, multinational enterprises should be able to choose the currency unit of the accounting entity as required, but the reporting entity must comply with national requirements.

6.2 New accounting basis

The definition of the new accounting basis is almost the same as that of traditional accounting theory and includes the accrual basis and cash basis systems. However, electronic invoices will become popular in the future, and enterprise transactions or events' occurrence time may completely correspond with the receipt and payment time of related funds. The accounting basis of enterprises may shift from the accrual basis to a new one, based mainly on the cash basis system and supplemented by the accrual basis system, because the cash basis system is more objective and truer, reducing artificial estimation and judgment. When the new accounting basis cannot meet the processing requirements of all businesses and faces certain problems, it may be necessary to combine the accrual basis system for accounting. Accounting recognition and measurement based on the new accounting basis can truly and fairly reflect the financial situation and operating results. In China, the government budget accounting adopts the cash basis system, the bookkeeping is based on actual and true vouchers, and the matching of income and expenditure in the accounting period is no longer done by human beings, which has not yet been fully realized for corporate accounting. Nevertheless, the new accounting

foundation will play an important role in the future with informatization and paperless office development.

The new accounting theory, including the four new basic assumptions or accounting foundations, must comply with national requirements when reporting financial statements to the public. This new accounting theory can meet the data needs of traditional accounting and those of management accounting under accounting informatization flexibly, depending on the needs of information demanders.

7. NEW ACCOUNTING THEORY'S PROPOSAL REASONS AND APPLICATION SCENARIOS

7.1 Proposal reasons

BD, AI, and others have accelerated accounting informatization's development, changed traditional accounting's working conditions, and promoted the development of accounting practice. Changes in its basic conditions have also impacted the theory, practice, functions, laws, and regulations of traditional accounting (Li, 2020). With its continuous application, management accounting has become increasingly prominent. The traditional accounting theory can no longer fully meet some practical accounting needs, mainly manifested in the basic assumptions and foundations of accounting, making it increasingly necessary to improve and innovate the traditional accounting theory to meet accounting informatization, management accounting, and other practical accounting needs. The increased demand for accounting data, changes in the accounting environment, and the traditional accounting theory's idealization and limitations make it necessary to propose a new accounting theory.

7.1.1 Increase in demand for accounting data

With the development of the market economy and the digital economy, information demanders increasingly require quality accounting information on time. Traditional financial analysis based on that of operating results (Pan, 2018) has certain lags and limitations; it only analyzes financial statement items after the event and lacks multidimensional real-time data analysis. In the BD and AI eras, with enterprise competition intensifying, there is an increasing demand for data centered on customers' needs and experiences. To respond quickly, enterprises must comprehensively improve their data analysis level, shifting from financial result-based to process-based analyses and focusing on data mining and the dynamic analysis of real-time data. Additionally, the data needs of economic stakeholders are also increasing, requiring enterprises

to use accounting informatization to transform accounting entities flexibly and use the constructed basic database to generate real-time data that information demanders want. Some conditional enterprises can even use AI to mine data quickly and accurately.

7.1.2 Changes in the accounting environment

In the BD era, the popularity of mobile devices and the application of sensor, AI, and BD technologies have significantly improved enterprises' accounting informatization levels, enabling faster data collection and processing and replacing the original manual method. The objective environment of accounting has fundamentally changed, inevitably leading to changes in the basic assumptions and foundations of accounting. With the introduction and implementation of China's new company law and the industrial and commercial administrative system reforms, registering a company no longer requires payment for capital and capital verification, making it relatively easier to establish or deregister a company as it is just a shell for business operations. In recent years, digital and platform economies have grown. Some platforms or enterprise groups may operate through multiple shell companies, making the relationships between enterprises relatively close and complex. In practice, some companies immediately clear taxes and write them off after completing relevant transactions, while others immediately combine to form new economic interest consortium. In such cases, it is difficult to determine an accounting entity that can no longer be identified through the physical space assumption. Repeated changes in the accounting entity and the shell company's temporary operations also break the assumption of a going concern. In the digital economy, real-time data and dynamic analysis needs have broken the accounting period assumption. Therefore, one can see that changes in the accounting environment have caused accounting practices to break several assumptions in traditional accounting theory.

7.1.3 Idealization and limitations of traditional accounting theory

The four basic assumptions and accounting foundations of traditional accounting theory have certain limitations and idealizations.

Limitations of the accounting entity assumption. The traditional accounting entity assumption theory states that any enterprise or unit with independent funds, autonomous operation, independent income and expense accounting, profits and losses, and the preparation of accounting reports constitutes an accounting entity that targets enterprises or units that exist in reality (Liang, 2019). However, some economic entities have complex relationships, making

it difficult to conduct accounting treatment clearly and accurately if the entities are considered accounting entities based on only the real physical space. For convenient accounting, the accounting entity may not necessarily meet the above standards; it may be an imaginary accounting entity conducive to simple accounting so that the accounting can be more accurate (Gao, 2021). This type of accounting entity breaks down through the original accounting entity assumption theory.

Idealization of the going concern assumption. The traditional going-concern assumption theory states that in the foreseeable future, the accounting entity will continue to operate according to its current scale and status. However, there are many uncertainties in the future because of fierce market competition, technological upgrading, changes in consumer demand and preferences, and so on. Many enterprises cannot always maintain their current scale and state of going concern, and there may be possibilities of closure, bankruptcy, or withdrawal from the market. According to the available statistics, the average lifespan of Chinese enterprises is only two years; therefore, this assumption has a certain degree of idealization.

Limitations of the accounting period assumption. The traditional accounting period assumption theory assumes that, to facilitate account settlement by installment and prepare financial accounting reports, an enterprise's production and operational activities can be divided into successive periods of the same length. However, in the BD era, management accounting focuses more on the process and real-time dynamic analyses of data. Financial reports under the aforementioned theory are divided into monthly, quarterly, semi-annual, and annual reports. Based on this logic, data from the previous month can be calculated and reported only at the beginning of the next month, resulting in a lag in accounting. This hampers the quick generation of real-time financial statements for real-time queries and analyses of information demanders and makes it impossible to meet the needs of management accounting and the digital economy era.

Limitations of the monetary measurement assumption. The traditional monetary measurement assumption assumes that an accounting entity adopts currency as a unified unit of measurement for recognition, measurement, and reporting, reflecting its production and operational activities. However, there are certain drawbacks. Elements valuable to the enterprise, such as customer and employee loyalty, human resources, corporate credit, and brand, can neither be measured in monetary terms nor reflected in financial reports. Additionally, multidimensional units of measurement such as time, quantity, and unit price can be used in management accounting but not in traditional accounting; this is a difference between the two.

Moreover, monetary measurement alone is relatively single and insufficient to meet the needs of financial robots, who use multiple measures, including currency, in the era of AI.

Limitations of the accounting foundations. The accounting foundation theory posits two types of accounting foundations: accrual basis and cash basis systems. Occasionally, the occurrence time of enterprise transactions or events does not correspond with the receipt and payment times of related funds. Therefore, to reflect the financial situation and operating results truly and fairly, enterprises should use the accrual basis system for accounting recognition, measurement, and reporting. However, this system has some artificial estimates and judgments, which may lead to a mismatch between income and expenditure in the accounting period, directly affecting the current performance and financial results of the unit. Some enterprises even use this defect to deliberately delay tax payments.

7.2 Application scenarios

Considering BD and AI's impact on the accounting industry and the important role of accounting informatization and management accounting, the new accounting theory can meet the high-quality requirements of information demanders for data in the aforementioned era. Further, it can support and guide accounting informatization and management accounting development and compensate for certain shortcomings of traditional accounting theory. By applying the new accounting theory to the accounting of assumed accounting entities, process analysis, and real-time dynamic analysis of the data, the accounting results will be more accurate, enabling information demanders to have a detailed and clear understanding of the true financial situation, operating conditions, and real-time dynamics of the enterprise. This will make it possible to see the enterprise's data at a glance, making the role of accounting informatization and management accounting more prominent. The new accounting theory will also support tax inspection under BD, tax risk assessment, and so on. Through the new accounting theory, information demanders will clearly understand the true situation of economic interest consortia or enterprise groups and will neither be bound by traditional accounting theory nor remain at the traditional individual company financial statement level. China is currently promoting the use of electronic invoices, which is expected to become popular soon. In the future, the time difference between invoices and bank statements may be eliminated, and the cash basis accounting system may be used as the main accounting basis, withdrawing or reducing the use of an accrual basis system. This new accounting theory has a

certain degree of flexibility, comprehensiveness, and foresight and will further apply and guide practice, driving the continuous development of the entire accounting industry.

8. COMPARATIVE ANALYSIS

There are certain differences, similarities, and relationships between the two accounting theories.

8.1 Differences and similarities between the two theories

There are certain differences and similarities between the new and traditional accounting theories. A comparative analysis was conducted on eight aspects, including the four basic accounting assumptions, accounting basis, data requirements, accounting environments, and application scenarios. The findings are as follows:

1) The new theory assumes a specific object convenient for accounting as the accounting entity, which can be a non-physical space and no longer requires a series of specific conditions, while the traditional theory targets enterprises or units that exist in reality and must meet certain conditions. Both focus on accountant accounting objectives; however, the former separates the accounting entity from the reporting entity, whereas, for the latter, it is the same entity.

2) Both require that the accounting entity has an operating business and does not close down, but the former does not require the accounting entity to continue the going concern according to its current scale and status, while the latter has such a requirement.

3) Both divide the accounting period, but according to the new theory, the accounting period can even be less than a month, which can better meet information seekers' real-time data needs compared to the traditional theory.

4) Both use currency as the unit of measurement, but the new theory uses time, quantity, price, and other units of measurement according to the information users' needs, which can not only meet the traditional financial accounting requirements but also those of management accounting.

5) Both have almost the same accounting basis—the accrual and cash basis systems—with the definitions also being the same. However, the new theory emphasizes that with the popularization of electronic invoices, the enterprise's transactions or events' occurrence time may completely correspond with the receipt and payment time of relevant funds, and the frequency of using the cash basis system will significantly increase, while the accrual basis system will only have a supplementary use.

6) Regarding accounting data demand, in addition to the financial reporting requirements of the traditional theory, the new theory meets the increasing data needs of real-time, dynamic, and multidimensional reporting for related stakeholders, such as customers.

7) Both must collect and process data, but the new theory involves BD, AI, accounting informatization, and management accounting and has more scientific and technological attributes, making most of accounting in this environment easy, fast, and flexible. The traditional theory uses manual or computerized accounting software, which is still part of the working environment of traditional financial accounting.

8) As for the application scenarios, in addition to the financial accounting and auditing involved in the traditional theory, the new theory involves, but is not limited to, management accounting, real-time accounting, accountant accounting, big data tax inspection, and tax risk assessment.

8.2 Relationships between the two theories

The relationship between the new and traditional accounting theories is dialectical, as they are both different and interconnected. Marxist philosophy states that problems should be viewed from the perspectives of connection and development. The new accounting theory is an improvement and innovation based on the traditional accounting theory, enabling enterprises to meet the needs of accounting informatization and management accounting in the BD and AI contexts. It contains the main ideas of traditional accounting theory and does not completely deny it. The new accounting theory - an improvement of the traditional one—focuses on the real-time needs of information demanders, with accountant accounting as its main goal. The accounting ideas are clearer, the results are more accurate, and it can meet the accounting needs in complex and ever-changing economic environments and management accounting under accounting informatization. It can also be applied to additional scenarios. It is an innovation and a supplement to traditional accounting theory.

9. CONCLUSION

BD and AI's development and application have significantly changed the objective economic and accounting environments. Information users in the BD era have put forward higher requirements for accounting data quality. BD technology and AI's applications are beneficial for the accounting industry's development. Owing to IT development and applications, such as BD and AI, which provide the necessary technical support for accounting

informatization and management accounting, their roles have become increasingly prominent. With fundamental changes in accounting environments, traditional accounting theory can no longer fully meet the needs of practical accounting. The increase in demand for accounting data, changes in the accounting environment, and the idealization and limitations of the traditional accounting theory have prompted the proposal of a new accounting theory. The new accounting theory focuses on the real-time needs of information demanders with accountant accounting being its main goal. It is an improvement and innovation of traditional accounting theory, with clearer accounting thoughts and more accurate results. It can meet the needs of accounting in complex and ever-changing economic environments and management accounting under accounting informatization, in addition to being applied to more scenarios. It is the inheritance, enrichment, development, and improvement of the traditional accounting theory. In the BD and AI eras, the new accounting theory will promote and guide the application and development of accounting informatization, management accounting, and intelligent accounting.

REFERENCES

- Chen, X. (2023). A research on the strategies of transformation from financial accounting to management accounting in the context of big data. *China Management Informatization*, 7, 80-82. [in Chinese]
- The Chinese Institute of Certified Public Accountants (CICPA). (2023). The national unified examination tutorial textbook for certified public accountants in 2023 - Accounting. Beijing: China financial and economic publishing house, pp. 5-10. [in Chinese]
- Dong, T. (2021). A research on the impact of big data on traditional accounting and its countermeasures. *Quality and Market*, 1, 43-44. [in Chinese]
- Feng, Q. (2022). The current situation, problems and improving countermeasures of enterprise accounting informatization. *Small and Medium-sized Enterprise Management and Technology*, 24, 190-192. [in Chinese]
- Gao, Y. (2021). A research on a new accounting method. *International Journal of Science and Research*, 10(7), 1260-1263.
- Gao, Y. (2022). A research on the problems and countermeasures of enterprise financial management. *China Circulation Economy*, 24, 79-82. <https://doi.org/10.16834/j.cnki.issn1009-5292.2022.24.012> [in Chinese]
- Kang, P. (2021). Management accounting in China: Opportunities, challenges, and countermeasures. *Business Accounting*, 4, 23-27. [in Chinese]
- Li, R. (2020). The challenge and response of the rise of artificial intelligence to the future accounting industry. *Economics*, 2, 37-38. <https://doi.org/10.32629/ej.v3i2.400> [in Chinese]
- Liang, J. (2019). Rethinking the basic assumptions of financial accounting. *Finance Economy*, 14, 201-202. <https://doi.org/10.14057/j.cnki.cn43-1156/f.2019.14.089> [in Chinese]

- Liu, D. (2022). Application practice of big data technology in artificial intelligence. *Digital Technology and Application*, 12, 62-64. <https://doi.org/10.19695/j.cnki.cn12-1369.2022.12.20> [in Chinese]
- Liu, W. (2018). The summary of accounting research status and the reference for accounting informatization research. *Friends of Accounting*, 10, 110-114. [in Chinese]
- Liu, X. (2016). Exploring the limitations of basic accounting assumptions based on the network economy environment. *Business Economy*, 8, 129-131. [in Chinese]
- The Ministry of Finance of the People's Republic of China - Accounting Department. (2006). Accounting standard for business enterprises No. 19 - Foreign currency translation. http://kjs.mof.gov.cn/zt/kjzzss/kuaijizhunzeshishi/200806/t20080618_46229.htm (accessed on July 31, 2023). [in Chinese]
- Pan, H. (2018). The impact of big data on traditional accounting and countermeasures. *Modern Business*, 20, 121-122. <https://doi.org/10.14097/j.cnki.5392/2018.20.060> [in Chinese]
- Ren, B. (2023). The expansion of growth factors drives the transformation of China's economic growth model in the context of the digital economy. *Economic and Management Review*, 39(1), 5-13. <https://doi.org/10.13962/j.cnki.37-1486/f.2023.01.001> [in Chinese]
- Shen, T. (2023). A research on digital transformation of small and medium-sized manufacturing enterprises in Hebei province. *Journal of Shijiazhuang University*, 4, 27-31. [in Chinese]
- Wang, J., Xu, Y., & Chen, J. (2021). Reflections and related suggestions on financial robots. *Finance and Accounting*, 5, 58-60. [in Chinese]
- Wang, X. (2023). Analysis of challenges and countermeasures faced by accounting in the context of big data. *China Market*, 7, 134-136. [in Chinese]
- Xiao, Y. (2021). Analysis on the application of big data in accounting. *Business News*, 25, 38-40. [in Chinese]
- Yu, Y., & Zhang, N. (2018). The “new colleague” has arrived, accounting personnel still dominate. *Finance and Accounting*, 5, 81-82. [in Chinese]
- Zhang, X. (2021). Reflections on the role and practical application issues of management accounting function in enterprises. *Modernization of Shopping Mall*, 6, 125-127. <https://doi.org/10.14013/j.cnki.scxdh.2021.06.045> [in Chinese]
- Zhu, J. (2020). The impact of artificial intelligence and big data on the development of accounting discipline. *Time-honored Brand Marketing*, 12, 127-128. [in Chinese]