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Retraction

Retracted: Research on University Financial Accounting Management System Based on Big Data and Blockchain Data Fusion

Wireless Communications and Mobile Computing

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] Q. Wang, "Research on University Financial Accounting Management System Based on Big Data and Blockchain Data Fusion," *Wireless Communications and Mobile Computing*, vol. 2022, Article ID 4118075, 10 pages, 2022.

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Research Article

Research on University Financial Accounting Management System Based on Big Data and Blockchain Data Fusion

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The majority of traditional finance management in colleges and universities is manual. This backward management mode brings a lot of inconvenience to financial processing. An essential concern in the daily financial administration of colleges and universities is how to efficiently gather, handle, and evaluate this important financial information and apply this beneficial knowledge to the daily management of colleges and universities. College and university finance administration has become increasingly complex due to the rapid growth of these institutions. The standard financial accounting management system is far from adequate for the daily needs of colleges and universities as their size grows. As a result, a new financial accounting management system for universities is being developed based on the combination of big data and blockchain data. The embedded processor, DDR2 memory chip, network interface, and USB interface are all designed by the hardware section. The software element examines the needs of university financial accounting management before designing a model based on big data and blockchain integration for university financial accounting management. Finally, the financial accounting management function module and database are designed and tested. The experimental results show that the designed financial accounting management system can effectively carry out financial management, has good performance, and has certain application value.

1. Introduction

With the rapid growth of computer and information industry technology, as well as the widespread use of network technology, humanity has effectively transitioned from the industrial to the Internet era [1]. At this time, information technology has played a significant role in supporting societal and educational growth. Simultaneously, in the information era, colleges and universities face the need for constant transformation. In the current high-speed development environment of network informatization, the inevitable trend of the development of colleges and universities is to realize the informatization of colleges and universities [2–4], that is, to build a modern, informatization, and digital college education and management system.

The enrollment of junior college, undergraduate, and graduate students is increasing every year; for the expansion of school running scale, the enhancement of teachers' strength [5–7], and the improvement of school running level, all colleges and universities must update and improve their hardware and software facilities accordingly, but these need financial support. It is more important for the school's financial management department to deploy funds wisely [8, 9]. The conventional financial management model does not match the needs of current university management since information cannot be communicated in real time, and departments are independent of one another. Furthermore, the diversification of management forms and capital revenue in colleges and universities [10] complicates budget allocation and management, and the financial management department is inextricably linked to all aspects of university management. There are issues with college and university finance administration; a lack of transparency reasonable allocation of funds will not only hinder the development of the school and make the school lose its ability to run a school but also will lead to the corresponding financial risks of the country's public finance.

All aspects of production and life are closely related to informatization [11–13]. It cannot be ruled out simply by continuously improving the degree of computerization. For

universities, the importance of achieving university management of information technology and platforms is self-evident. As an important part of university management, university financial management is primarily responsible for collecting, using, and distributing university funds, and managing various financial expenditures and activities. In addition, they are closely linked to education, scientific research, administrative management, and the significant interests of teachers and workers. The application of information technology to university financial management is an important issue in university financial management. By combining the actual financial situation of the university [14, 15], deepening the computerization of the university's financial management, improving management efficiency and efficient operability, and meaningfully combining the university's financial operations and information technology, only can we go on to college and provide better service to the college? Through real-time information exchange and analysis, it provides scientific decision support and the foundation for school planning and budget spending by heads of various departments [16]. For the Internet of Things, intelligent computing offers effective, real-time, and secure data analysis services. IoT creates large, varied, and multisource information as the number of connected devices rises, which may be leveraged to further enhance IoT services. Since transmitting all data to the computing platform directly consumes network capacity, it may result in network congestion and possibly privacy leaks, and models created by intelligent computing from a single system or sensor are often not global. We provide a framework that combines edge computing with blockchain to deliver lightweight data fusion and safe data analysis for IoT in order to guarantee the quality of service and privacy of IoT applications. Internet finance has developed quickly as a consequence of the state's "Internet +" policy being put into practice. The functioning and expansion of conventional commercial banks face significant problems as a result of this contemporary approach to financial growth. Customers and commercial banks compete. Based on the campus network platform, the information systems among multiple departments of the university are integrated in all aspects, the existing resources are integrated and configured, the management and processing capacity of the university's finance are improved, and the sharing of resources is realized. As a result, based on the integration of big data and blockchain data, this article proposes a new university financial accounting management system.

2. Hardware Design

2.1. Embedded Processor. In order to ensure the efficiency of instruction processing in the financial management system, an embedded processor is designed. The embedded processor is the hardware core of the embedded system. It mainly completes the processing of various instructions, data transmission, and control of peripheral components and consumes a lot of power. For portable devices, it accounts for almost half of the power consumption of the whole system except LCD. Therefore, the selection of a low-power processor is the key to reducing the energy consumption of the whole system [17, 18]. RMI alchemy processor series is composed of high-performance and low-power processors. Its architecture integrates most peripheral devices, greatly reducing the cost of the whole scheme. Au1250 processor is a high-performance and low-power embedded processor launched by RMI in 2007. The main frequency is 500 Mhz. When running a variety of different applications at the same time, the battery life is longer than before. Au1250 processor is a high-bandwidth DDR1/DDR2 SDRAM memory controller, supporting DDR400 and ddr2-533. The static bus controller provides SRAM, flash, ROM, and other memory interfaces and has an integrated media acceleration engine [19, 20]. It does not need external DSP, which can simplify the programming environment and reduce components. The A97 controller supports the A97V2.0 specification and supports multiple video formats. It supports 24bitlcdtt, $4 \sim 24$bitstn or TFT screen [21], and the resolution is up to 2048×2048. Two SD controllers are integrated internally, which comply with SD Card 1.1 standard and support MMC/SD interface; USB2.0 host/device port, supporting OTG; two UART interfaces, etc., support 10/100 Ethernet controller, also support real-time clock function, and support a variety of power-saving modes: idle, sleep, and hibernate. It has lower cost and lower power consumption, integrates hardware decoder, unifies standard memory, and simplifies programming model. High-performance application processor, MIPs core, short scheme design cycle, and low overall scheme cost are needed. The functional module diagram of the embedded processor is shown in Figure 1 below.

As shown in Figure 1, while developing a portable product, we must consider not only the cost and function of the product but also the product's power consumption and the difficulties of hardware system development. Through the analysis of the three mainstream embedded processors of au1250, PXA270, and S3C6410, the au1250 processor not only has richer functions of the other two processors but also has certain advantages in stability, cost and power consumption [22, 23]. Firstly, the integrated audio and video processing capability of the au1250 processor and storage interfaces such as SD and network card controller meets the expanded functions of portable information interaction terminal. Secondly, the au1250 processor runs at a frequency of 500 MHz. Combined with its performance of reducing power consumption, it has greater advantages than the other two processors. These provide a simple and easy-to-use solution for designers to create full-functional portable solutions, greatly shorten the design cycle, greatly reduce the whole material cost, simplify the peripheral expansion circuit of hardware, reduce the volume of motherboard, and enhance the portability in portable information exchange. In view of the above analysis, it is determined that au1250 is the processor of the portable information interaction terminal.

2.2. DDR2 Memory Chip. The memory controller of the au1250 processor eliminates the low-speed SDRAM and supports DDR/DDR2 SDRAM, which greatly improves the bandwidth between the processor and memory, and shows

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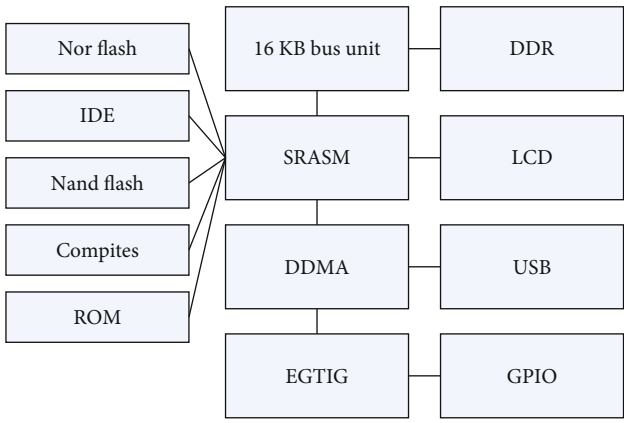

Figure 1: Processor function module.

great advantages in performance, power consumption, and signal integrity. DDR2/JEDEC developed DDRII SDRAM, a new generation of memory technology standard. Although the basic mechanism of simultaneous data transmission on the rising/falling edge of the clock is adopted, each clock of DDR2 Memory may read/write data at 4 times the external bus speed and run at 4 times the internal control bus speed, breaking beyond the 400 Mhz restriction of ordinary DDR. DDR memory is also commonly packaged in a TSOP chip, which can operate at 200 Mhz. When the frequency is increased, the lengthy DDR pin produces high impedance and parasitic capacitance, affecting frequency stability and making frequency improvement more difficult. This is why breaking past the 275 MHz core frequency of DDR is difficult. The DDR2 memory uses an FBGA packaging, which provides greater electrical performance and heat dissipation, as well as a good assurance for the DDR2 memory's stable operation and future frequency development. DDR2 memory operates at a voltage of 1.8 V, which is substantially lower than the 2.5 V required by the DDR standard, resulting in significantly lower power usage and calorific value. With the advancement of Intel's latest processor technology, the front-end bus' memory bandwidth requirements are becoming increasingly stringent. The overall tendency will be DDR2 memory with a higher and more stable operating frequency. The connection diagram between the DDR2 memory and processor is shown in Figure 2.

It can be seen from Figure 2 that the interface between ddr2sdram and au1250 mainly includes 32-bit data bus d [31 : 0], data strobe pulse DQS [3 : 0], and data mask signal DM [3 : 0]. These data lines and control lines are, respectively, hung on two DDR2 chips. 16 address lines were at [15 : 0] and Ba [1 : 0], differential clock CLK0/clk0#, chip selection signal cs0#, etc. The size of the termination resistance shared by the two memories determines the signal ratio and reflectivity of the data line. The signal reflection of the data line is low, and the signal-to-noise ratio is low if the termination resistance is small; if the termination resistance is large, the signal-to-noise ratio of the data line is high, and the signal reflection will grow. To ensure the optimal signal waveform, DDR2 can generate an appropriate termination resistance based on its unique features. The purpose of post CAS is to increase the efficiency of DDR2 memory consumption. DDR2 incorporates a number of new technologies to address several of DDR's flaws. While increasing the speed, DDR2 reduces the working voltage, reduces the operating power consumption, and has better electrical performance and stability.

2.3. Network Interface. It is possible for Ethernet to be fully applied to the field of industrial control. With the development of switched network and broadband network, the Internet access application of embedded equipment based on Ethernet has practical significance. Most of the existing embedded systems use 10 MB/s Ethernet card, which has a slow transmission rate and cannot meet people's requirements. The system adopts DM9000A Fast Ethernet controller of Davicom company. The DM9000A is a low-cost, low-power, high-processing-performance fully integrated Ethernet control chip. The DM9000A Ethernet controller works well with the aul250 CPU. DM9000A complies with 802.3 Ethernet transmission protocol issued by IEEE. Equipped with standard 10/l00 mbps adaptive Ethernet interface; support 8/16 bit two host working modes; autofunction certified by HP; and 10 nsi/O read and write time. It supports TCP/IP hard acceleration, reduces CPU burden, and improves network upload and download speed. Its connection diagram is shown in Figure 3 below.

As can be seen from Figure 3, the DM9000A controller has the functions of power down and full-duplex operation. Because data is occasionally received in bursts, the DM9000A includes a 16 K byte SRAM FIFO buffer for receiving and transferring data. When data is received, it is placed in the buffer, and the data link layer can then extract the data directly from the buffer. The device driver in the operating system and the appropriate network interface card in the computer usually make up the link layer. They work together to process physical interface data, and the buffer can be utilized to temporarily store frames to be delivered or received. By 16-bit data bus data, the Au1250 processor is connected to the DM9000A data bus SD [15 : 0] and supports 16 bit bus width; CS # is the chip selection signal of the input pin, and the low level is valid; IOR # and IOW # pins are, respectively, connected with OE # and WE # of au1250 to read and write DM9000A.

2.4. USB Interface. The universal serial bus (USB) is a computer interface technology. The USB version has become the standard expansion interface in PCs after years of development. It has progressed to become the USB3.0 specification. The typical USB plug is a 4-pin plug that can connect all peripherals in a daisy chain and can connect up to 127 external devices without sacrificing bandwidth. The USB interface connection diagram designed by the system is shown in Figure 4 below.

As shown in Figure 4, USB has the advantage of fast transmission speeds: USB1.1 has a transmission speed of 12 megabits per second, USB2.0 has a transmission speed of 480 megabits per second, and USB3.0 has a transmission speed of 5 gigabits per second. It is simple to operate; allows hot plug, flexible connection, and independent power

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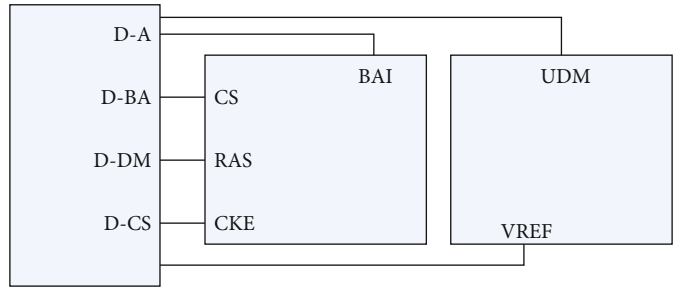

Figure 2: Connection diagram.

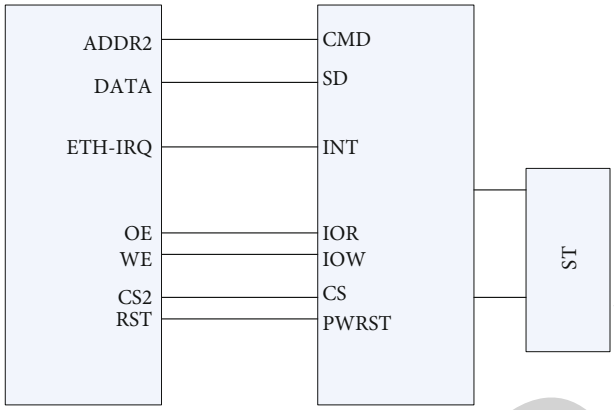

Figure 3: Network interface connection diagram.

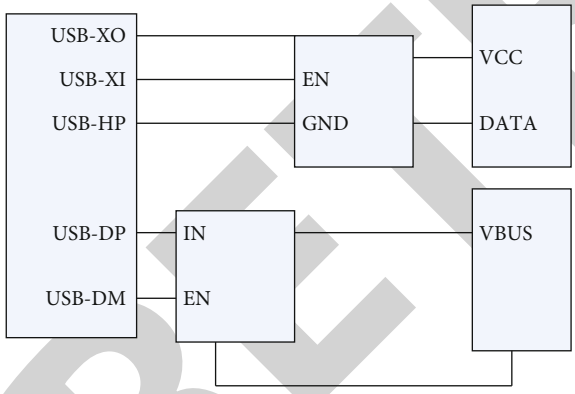

Figure 4: Connection diagram.

supply; and can be used with a mouse, keyboard, printer, scanner, camera, flash drive, MP3 player, mobile phone, and digital camera, mobile hard disk, USB network card, almost all external devices. The au1250 processor has built-in USB host port controller and device port controller. The portable information interaction terminal is designed with two USB2.0 interfaces, one is USB2.0 host port and the other is OTG interface.

3. Software Design

3.1. Analyze the Needs of Financial Accounting Management in Colleges and Universities. The system administrator of a college or university's management information system modifies system information and employee information according to authorization in order to improve the university's financial information query technique, as well as supervise and preserve the information. According to the basis of various standards of the system, the computer network technology can be connected to achieve seamless combination. It can also provide a variety of connection methods according to the current situation, strengthen the resource sharing of the system, and realize effective supervision and management, so as to save material and financial resources and analyze the type and content of data. Refer to the standards of relevant information, simplify the computer management mode, determine the data acquisition mode and strategy, and ensure the financial safety and maintenance of colleges and universities [24]. Senior managers judge the economic effect and operation efficiency through system operation, and directly or indirectly reflect its operation. Use the detailed analysis of various businesses to improve the management and leadership decision-making of colleges and universities.

The target system is based on the actual financial management demands of universities. It is built on the campus network, with the university financial management process at its center, and it is linked with other management needs on campus to achieve comprehensive university finance and everyday business management. The system fully integrates the requirements of numerous systems, such as financial accounting, student charging, and wage management, to unify and standardize all types of management in colleges and universities. We may update the old management idea of colleges and universities and make it more adaptable to the evolution of the times and the demands of educational reform by using a goal system. Financial management is extremely important in colleges and universities, and it encompasses a wide range of content, including teaching, scientific research, administration, and later stages, among other things, all of which have a direct impact on the overall management level of colleges and universities. As a result, the development of a financial management information system is critical for colleges and universities. The use of computer-related equipment can not only lower the workload of financial staff, but also increase their efficiency, standardize the financial management workflow, and ultimately help colleges and universities achieve long-term success. The unique nature of university

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financial management, as well as the universality of its content, make the development of a financial management system extremely difficult.

According to the actual situation of a university, the target system mainly includes the following functional requirements.

The first is voucher management. A voucher is a written certificate prepared in a specific format, which is mainly used to record the economic business between colleges and universities and other social enterprises and departments. Vouchers are utilized in colleges and universities to give a bookkeeping foundation for financial management. It is the target system's primary data source. In the target system, the correctness of voucher information will directly affect the accuracy of other data. As a result, the system enables voucher generating and verification functionalities in the voucher administration module. Users can quickly generate various vouchers and verify the correctness of vouchers by clicking.

The second is cashier management. Each school has its own accounting cashier system. In conjunction with the school system, financial managers oversee all types of cash business, banking business, bill management, and associated statements in colleges and universities. The cashier will input various collection and payment accounts in the school economic business into the system, then generate corresponding accounting vouchers through the cashier management module, and transfer the vouchers to the general ledger management module to realize the financial management of colleges and universities.

The third is transaction management: transaction account is an important aspect of reflecting the assets and liabilities of the school. Through the transaction management function, it can calculate and manage the funds for various economic business transactions with the school, including user-defined condition viewing, aging analysis, business write off, and other functions. According to the user-defined condition viewing function, managers can quickly browse the bill information they want to know. According to the aging analysis function, you can analyze the aging structure of various current accounts and understand the detailed accounts payable and accounts receivable information, so as to facilitate the control of school funds. According to the business write off function, the paid accounts payable and received accounts receivable are accounted and destroyed in time.

The fourth is salary management. It is usually operated manually. Managers need to fill in a large number of forms every month and carry out a large number of calculations and statistics, which consumes a lot of time and energy, which not only increases the work pressure but also reduces the work efficiency. In the salary management module, only the original salary data needs to be entered, and the system can automatically calculate and count and formulate corresponding reports as needed. It can also automatically carry forward salary expenses and generate transfer vouchers based on teaching staff positions, which relieves finance managers of a lot of labor and increases salary payment accuracy and efficiency.

The charge management is the fifth step. The charge management of colleges and universities is a very significant part of the financial management of colleges and universities, but extremely cumbersome work, and according to the different payment conditions of students, this work often lasts the whole semester, which brings a huge workload to the financial managers. The use of information technology for charge management not only simplifies the huge workload generated by the traditional manual method but also helps managers manage student charges more comprehensively. The most important point is that the charging management module can standardize the student charging process and make the charging process standardized and scientific management, so as to improve the work efficiency of student charging management.

The sixth is fixed asset management: fixed assets are one of the most essential components of asset management for colleges and universities. Colleges and universities, without fixed assets, are unable to carry out all functions such as teaching, scientific research, administrative management, and logistics services. Fixed assets have high value and long service life. In the fixed assets management module, it includes the functions of asset category setting, increase/decrease method setting, and service status setting. To maintain the safety and integrity of fixed assets and to prevent them from damage and then to maximize the utilization rate of fixed assets and to maximize the use and economic advantages may provide effective services for the advancement of higher education.

3.2. Design of University Financial Accounting Management Model Based on the Integration of Big Data and Blockchain. It is necessary to design the university financial accounting management model based on the integration of big data and blockchain. First, it is necessary to generate the association rules of financial management according to the data mining algorithm in big data. The first step is conceptual statistics, as shown in

$$\text{Support}(A) = \frac{N(A)}{N}, \tag{1}$$

$$\text{Support}\left(\frac{A}{B}\right) = \frac{N(AB)}{N}, \tag{2}$$

$$\text{Lift}\left(\frac{A}{B}\right) = \frac{\text{Support}(A/B)}{\text{Support}(A) \cdot \text{Support}(B)} = \frac{N(AB) \cdot N}{N(A) \cdot N(B)}. \tag{3}$$

In formulas (1)–(3), A and B represent the positive correlation, N represents the correlation coefficient, $\text{Lift}(A/B)$ represents the similarity, $\text{Support}(A/B)$ represents the statistical ratio, $\text{Support}(A)$ represents the statistical value of A, and $\text{Support}(B)$ represents the statistical value of B. because the algorithm is affected by more external factors, only one user's different choices are considered, which is easy to produce errors in financial management. Therefore, it is necessary to eliminate the possible financial management errors,

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as shown in

$$S = \frac{|\sum_{i\in I} r_u \cdot r_i|}{\sqrt{h}}, \tag{4}$$

$$d = 1 - \frac{|\sum_{i\in I} r_u \cdot r_i|}{\sqrt{h}}. \tag{5}$$

In formulas (4) and (5), $\sum_{i\in I} r_u \cdot r_i$ represents the financial management range index, h represents the management area parameter, and d represents the management error. In truth, the intended financial management system is not a clearly defined hybrid system that operates without the use of big data or blockchain algorithms. Therefore, it is necessary to integrate the two algorithms at a lower level, as shown in

$$E = \sum_{i=1}^{k} \sum_{x\in n} |x - u_i|^2. \tag{6}$$

In formula (6), k and i represent the average coefficient, x represents the blockchain formula, and u_i represents the data fusion formula. The integrated algorithm can have the excellent characteristics of the two algorithms at the same time. At this time, the parameters (7) of the designed management model can be calculated according to the characteristics of the algorithm to obtain the university financial accounting management model (8) based on the integration of big data and blockchain.

$$o = \frac{1}{\sum_{i=1}^{k} \sum_{x\in n} |x - u_i|^2}, \tag{7}$$

$$y = \frac{N(AB) \cdot N}{N(A) \cdot N(B)} \cdot \frac{1}{\sum_{i=1}^{k} \sum_{x\in n} |x - u_i|^2}. \tag{8}$$

Using the above designed financial management model, we can integrate the data mining characteristics of big data, carry out fusion statistics, and obtain the grouping that best meets the requirements of functional modules, so as to provide a basis for the classification of functional modules.

3.3. Design Financial Accounting Management Function Module. The login module is an important guarantee of system security. Any user using the system must be authenticated. During authentication, users need to provide their own user name and password information, and the program performs verification of user name and password. The specific implementation process can be described as follows: the program obtains the user and password and judges the validity of the user input. If there is a null value, it returns to the page and prompts the user to reenter. Otherwise, the database table is retrieved with the user name and password as the query criteria. If there are corresponding records, the login is successful, and the program jumps to the management background. Otherwise, it prompts the user to enter the information incorrectly, and the certificate of identity verification failure is a written certificate prepared in a specific format. It is mainly used to record the economic business between colleges and universities and other social enterprises and departments. Through the certificate, you can understand the occurrence of economic business and clarify the economic responsibilities between two or more parties.

Vouchers are mainly used to provide bookkeeping basis for financial management. They can be divided into two types: original vouchers and bookkeeping vouchers. The written certificate filled in at the beginning of economic business is called the original voucher. The written certificate recorded in the financial account book based on the original voucher is the bookkeeping voucher. The voucher management module of the target system realizes the basic operation functions of voucher management, including voucher entry, voucher revision, and voucher query. The implementation of these basic functions can facilitate the subsequent expansion of voucher business. After entering the voucher entry page, enter the basic information and entry information of the voucher and then click submit. The system will obtain the input information on the page. At this time, the page information will be nonempty verified. If it fails, the user will be prompted to reenter the voucher information. After nonempty verification, the system will fill the basic information in the initial voucher into the entity class, then create a new voucher entry entity class set, fill the entry information in the page list into the entity class set, save the voucher information, and return the voucher PK number. By traversing the entry information entity class set, associate the voucher number with each voucher entry information summary and finally save each entry information to the database, completing voucher entry.

For the asset management of colleges and universities, fixed assets are one of the most important components. Colleges and universities, without fixed assets, are unable to carry out all functions such as teaching, scientific research, administrative management, and logistics services. To maintain the safety and integrity of fixed assets and to prevent them from damage and then to maximize the utilization rate of fixed assets and to maximize the use and economic advantages may provide effective services for the advancement of higher education. Furthermore, fixed assets have a financial cost that is associated with college and university financial management. As a result, fixed asset management is extremely critical and vital.

The fixed asset management module in the system mainly includes asset information registration, asset declaration, and asset use status query. Relevant leaders of the school can master the status information of fixed assets of the school from time to time through these functions. After entering the asset category information maintenance interface, the user enters the category code, and the system will verify the category code to see whether it is duplicate with the existing code in the database. If it is duplicate, the user will be prompted to reenter it. If it is not duplicate, the user will continue to enter the name and other information of the asset category and then select the depreciation method of the asset, Click Submit after input. After submitting the information, the system will obtain the type information entered

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by the user in the page, fill these information into the category entity class, and call the method of the business logic layer to save the category information to the background database. This is the end of the operation. In order to ensure the normal operation of daily work, colleges and universities must have economic business transactions with some enterprises and departments in the society. In this process, some accounts receivable or payable will be generated, which is the current account management. The current account is an important aspect to reflect the assets and liabilities of the school. In the financial management of colleges and universities, the liquidity of current accounts is very strong, and there are many business items involved, and the error rate is very high. Therefore, we must pay attention to the management of current accounts. The transaction account management module of the target system mainly includes transaction reconciliation, fund management, query and analysis, and other functions.

After entering the transaction account query interface, the user enters the transaction account query parameters according to the information to be queried and clicks submit. After submitting the query parameters, the system will obtain the parameter information entered by the user in the page, splice the conditions according to the parameters, and then create a transaction account data set. The system organizes the query conditions with SQL query statements, find the qualified data from the database through SQL statement, then fill the qualified data information into the new transaction account data set, and finally initialize the list control in the page to bind all the data in the set to the control. The system displays the information in the control, and users can see the transaction account information they want to know from the transaction account query page. The cashier is mainly responsible for the management of the most active funds in colleges and universities, and its importance is self-evident. Fund management is actually the supervision and control of all cash income, payment and inventory involved in economic business work by the financial department of colleges and universities according to the relevant national laws and regulations, which is an important work for cashier accounting to manage.

In the target system, the cashier management module mainly includes initial setting, cashier accounting, and daily processing, and the most important function is cashier accounting. Cashier's account is a kind of account book, which clearly reflects the income, position, and balance of cash on hand in colleges and universities. By consulting the cashier's account, we can strictly supervise and calculate the custody and use of cash and the implementation of the cash management system. The basic data management module is the support of other businesses of the system. It is an extension to provide attribute values for some multichoice field attributes in other business modules. The content is user-defined maintenance, including adding, deleting, and modifying. Basic data management contains a summary information. This summary information mainly introduces the payment content of vouchers. Each voucher needs to include summary information. The maintenance of summary information is to create, delete, and modify the summary of vouchers. It is an important content in the system. In the basic information maintenance interface, the user first selects the classification of the basic data. The system will judge whether the classification exists. If it does not exist, the classification entered by the user will be added to the basic data classification to form a new classification. If the category exists, the user will continue to enter the name and specific description of the basic information. After submitting, the system will obtain the basic information entered on the page and judge the page information. If it is empty, the user will be prompted to reenter. If the information is not empty, the system fills the obtained basic information into the entity class and calls the method of the business logic layer to save the basic data information. After the information is saved to the database, the operation is completed.

3.4. Design Database. In the process of database design, if we judge whether the design of a database is the scope from a macro perspective, we can start from two aspects: first, reasonably judge the number of narrow tables by viewing the database table structure and second, judge whether the number of wide tables is small enough by viewing the table structure in the database. When designing database tables, we usually encounter some fields that can be empty. When the field is set to be empty, its default value is null. Null is a special data type. For these special data types, different databases will design different processing methods, but the processing complexity is usually higher than that of nonempty fields. However, when the database system encounters this null data field, the performance of other processing will certainly consume more; this will also reduce the performance of the whole data interaction process. Although nullable fields are allowed in every database system, they should be used as little as possible in terms of performance. Some compromise methods can be designed to avoid this situation.

Second, records in the table should have a unique identifier. In the database table design, a unique primary key identifier should be designed for each database table. When the business layer needs a record, it only needs to use this unique identifier to extract data. This identification must be unique in the database table, and it cannot be the same as the identification in the data table during data insertion; otherwise, all records in the data table will be confused. In addition, database objects should have a uniform prefix name. For a more complex management system, it involves many business categories. In order to enable developers or later maintenance personnel to carry out data development efficiently, it is necessary to classify it as far as possible when designing database tables, and use some simplified English as the prefix of table names. This can not only greatly provide the work efficiency of developers but also make the database more standardized. The design based on data table has a direct relationship with the development of system business logic, so we should be more strict and cautious in the design of data table structure.

The design of the table structure does not need to be considered from the design level of the whole database, because the business has been divided before the database

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table structure. Therefore, only the current business category and the relationship with other data tables of the business category need to be considered; in the design process of table structure, the relationship cohesion between business categories should be considered to avoid high consistency with other business categories as far as possible. In this way, we can ensure that the relationship between each business category is clear and clear, so as to realize the business more quickly. The database table structure of the system is designed in a top-down way by using the domain model-driven method. First, divide the database groups according to the business categories in the data requirements. Ensure the association relationship between attributes and objects in each encapsulated object and have a certain descriptive text description for the attributes of each data item. The mapping of data table structure design with top-down idea in a domain model-driven way should generally meet the requirements of the second paradigm in database design, that is, other attribute fields in each database table should depend on the keywords in the table. A keyword in a table can be an attribute in the table or a collection of multiple attribute fields in the table. When the keyword is a collection of multiple attributes, it should be ensured that the combination of these three attribute values is unique. Usually, when designing a data table primary key, you can also use the system's own function to automatically increase the value of this field. It is that users insert a self-increasing value when inserting data information, which can completely ensure its uniqueness.

4. System Test

In order to test the performance of the university financial accounting management system based on big data and blockchain data fusion designed in this paper, a test environment meeting the financial management test requirements is built and the system test is carried out, as shown below.

4.1. Test Preparation. When the function of the system is completed, the system function is operated for many times to detect whether there is any problem in the system through this repetitive operation. For the design of test cases, we need to master the test objectives well. Only in this way can we design test cases and schemes suitable for the system. If the test function is incorrect, the test scheme that can make the system function error or unreasonable should be designed when designing the use case. If the test function is correct, the scheme that conforms to the normal functional logic should be designed when designing the use case. However, regardless of the test purpose, it should be regarded as thorough as possible in the test to guarantee that the test results are effective. The system test environment is shown in Table 1.

Table 1 shows that the system's testing techniques mostly consist of black box and white box tests. To determine if the target system fits the financial needs of colleges and universities, the target system uses the black box test approach. The system test content is generally composed of performance test, safety test, reliability test, recovery test,

Table 1: System test environment.

Category	Purpose	Quantity
Load runner	Performance testing	1
Windows XP	Test OS	1
Page components	Testing client applications	1
Office	Test information record	1
Web	Test application server	1

etc. During the system test, the situation or existing test problems that do not meet the needs of users shall be carefully analyzed, modified in time, and debugged repeatedly until the system reaches a stable state. Function test is a very important test content, which mainly uses black box test technology to test software functions. First, input some values to observe whether the output results are consistent with the expected results. At the same time, some special values should be used to detect whether the output function can operate normally. The black box test method used in performance test includes equivalence class division and boundary value analysis.

The content of security test includes whether the test system contains virus programs, whether the test system can be encrypted correctly, and whether the test system can produce errors when it is deliberately damaged. Reliability test is a test on the reliability of system software and hardware, which shows the probability that the system does not fail under certain conditions. Since hardware reliability mainly depends on component performance, it is not described in detail in this paper. The test contents of software reliability include whether the specific information of system log recording operation is complete, whether the restrictions on database access authorization are strict, whether the system can accurately record the added user information and data, and automatically change with the corresponding changes, whether the system has the function of database backup and restore, and read and write important data, and modify and other operations to detect whether there are loopholes in the system and whether the system meets the needs of actual financial processing. Recovery test refers to whether the system can recover the damaged data and recover its performance in case of system failure. General emergencies include virus intrusion, system error, and hardware failure. At the same time, it also detects whether the system can be repaired automatically in case of failure during operation. At this time, the system use cases are shown in Table 2.

According to the system use cases in Table 2, the load runner tool is used to simulate the concurrent operation of 30 users logging in to the system. Repeat every 15 s for more than 5 minutes. At the same time, the response time, CPU utilization, memory usage, and other information of the operation shall be recorded in detail. If the system can operate normally, gradually increase the number of concurrent users based on the concurrent operation of 30 users logging in the system. When the number of concurrent users reaches 40, repeat the above test. If the rising trend of TPS slows down significantly and the CPU and memory utilization rate

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Table 2: System use cases.

Modular	Administration	Tester
Case number	GXCWGLXT2014	Case name
Condition	Administrator login	Ensure user permission
Testing procedure	Test process	Expected results
1	Select user rights management	Transfer to user list
2	Click set user permissions	Transfer to user list
3	Click save	Settings panel
Test conclusion	Test passed	Test passed

Table 3: Script parameters.

Number of users	Ramp up	Duration	Delay time	Load generation quantity
10	1/sec	300 s	0	2
20	1/sec	300 s	0	2
30	1/sec	300 s	0	2
40	1/sec	300 s	0	2
50	1/sec	300 s	0	2
60	1/sec	300 s	0	2
70	1/sec	300 s	0	2
80	1/sec	300 s	0	2
90	1/sec	300 s	0	2
100	1/sec	300 s	0	2

Table 4: Test results.

Number of people	Financial management function (normal/abnormal)
10	Normal
20	Normal
30	Normal
40	Normal
50	Normal
60	Normal
70	Normal
80	Normal
90	Normal
100	Normal

is 100%, stop increasing the number of concurrent users immediately and end this test. At this time, set the parameters of the script, as shown in Table 3.

It can be seen from Table 3 that the parameters and system use cases at this time meet the above system test requirements, and subsequent system performance tests can be carried out.

4.2. Test Results and Discussion. When numerous users utilize the university financial accounting management system designed in this paper at the same time, the status of the financial management system designed in this paper is randomly tested. Table 4 shows the outcomes of the tests.

Table 4 shows that the university financial accounting management system established in this research can maintain normal operation when the number of users grows, demonstrating that the designed financial accounting management system has good performance and application value.

5. Conclusion

Financial relationships are frequent in colleges and universities as a system. Colleges and universities have a tight link with the financial system in every aspect. Colleges and universities' financial management information systems cover every facet of financial management, administration, and general affairs. At the same time, it is inextricably linked to the interests of college and university faculty and students. Furthermore, the financial management information system has been applied in the management of colleges and universities. Colleges and universities employ modern technology, scientific planning, and financial management system references to seriously examine and address each college's and university's difficulties. With the popularization of information technology, particularly Internet technology, and the integration of higher education and information technology is becoming closer and closer in the new century; information technology, knowledge economy, network economy, and e-commerce economy are rapidly emerging. It has entirely altered people's economic and life modes, and the rate of economic globalization has accelerated even more. Finally, the report provides a summary of my study findings, as well as an appraisal of flaws and future opportunities. This paper primarily discusses significant financial management theories in colleges and universities, as well as key technologies employed in the system development process, which serve as a solid basis for the system's development. This article examines the feasibility of the financial management information system's overview and target design in colleges and universities, as well as the functional and nonfunctional analysis, business demand analysis, and system security measures. The demand analysis of the financial management information system in colleges and universities receives a more extensive examination. User management module, financial processing module, salary management processing module, tuition management module, and personnel

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information management module are all part of the financial management information system for colleges and universities, through the design and diagram of the user login module page and better explanation the design and implementation, the application and details of student tuition management module, and the design details of salary management information module.

Data Availability

The data used to support the findings of this study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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