Information Management Using Computer Wireless Network Database Technologies

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***Abstract*—This article addresses the use of computer wireless network database technology in information management with the goal of increasing upload rate and query efficiency in order to address the issue of poor information management efficiency. The orderly adjustment and modification of internal big data is carried out through standardized database technical operations, such as unified addition, deletion, query, and introduction. This ensures that information transmission can be accurately reflected in the network structure to improve the quality of the system operation. The information management system is thoroughly assessed in this study using a fuzzy clustering method. Through trials, it thoroughly examines how database technology significantly improves user experience and increases system flexibility. In terms of data collection, upload efficiency, task management, query statistics, data monitoring, buffering effect, data encryption, access control, resource utilization, bandwidth utilization, data storage efficiency, scalability, reliability, disaster recovery capability, user experience, and system adaptability, the experimental results demonstrate that the new system outperforms the conventional information management system. In particular, the new system has an average response time of less than 2.5 seconds, a data upload rate of 146 Mbps, a user login success rate and authentication accuracy rate that are nearly 100%, high resource and network bandwidth utilization at various times, and an improvement of 0.21 in data storage efficiency. Database technology helps to increase the system's scalability by 0.29. These findings demonstrate how computer wireless network database technology may greatly increase information management's effectiveness and security while meeting the demands of high-volume, high-speed businesses like e-commerce, healthcare, and finance.**

***Index Terms*—Information Management, Wireless Network, Database Technology.**

I. INTRODUCTION

Databases, the most crucial data management tool in the information era, are increasingly receiving more recognition and study due to their significant impact on people's learning and work. Computers can hold databases for a very long period. Duplicate data will be removed if the database is in shared mode, significantly increasing the effectiveness of the user's data search. By consistently adding, removing, querying, and introducing database technology, a standardized reference has been established for the complete information management system in order to address the issues of poor query efficiency and low upload rate. In order to correctly represent all forms of information transmission in the network structure and enhance the system's operational quality, internal big data has been systematically altered and updated.

Although they provide basic functionality, traditional information management systems sometimes have poor upload rates and data breaches. These issues might significantly impact real-world implementation. Slow medical record uploading may cause delays in treatment choices, which can have an impact on patient outcomes in the healthcare industry. Data breaches in the financial sector have the potential to reveal private client information, result in legal issues, and erode customer confidence. These difficulties show how urgently more effective and safe information management systems are needed.

Despite offering insightful information on information management, the current literature is lacking in a few crucial areas. Research on information management and protection strategies and the difficulties these methods encounter in practical information management procedures has not yet been

thoroughly examined, particularly in the context of big data. This study employs a fuzzy clustering algorithm to perform a thorough evaluation of information management systems in addition to improving information management functionality, such as data backup and recovery, information security monitoring, and other crucial areas, through the introduction of computer wireless network and database technology. This thorough assessment approach may successfully close the gap in assessing the impact of the current research's practical implementation. Furthermore, by in-depth research, the experimental portion of this study further validates the noteworthy impact of database technology in boosting system flexibility and increasing user experience. These results not only provide a fresh viewpoint on information management practice, but they also offer creative answers to the problems that the sector is now confronting. The examination of computer wireless network database technology in information management in this article is especially relevant for sectors like e-commerce, healthcare, and finance that have significant data volumes and velocity. Because of its scalability and versatility, the system may be used by both major organizations in need of reliable data management solutions and small to medium-sized businesses seeking to improve operational efficiency.

Significant contributions: This article's primary contribution is the design and validation of a database-driven information management system based on a computer wireless network. By combining essential modules and using a fuzzy clustering algorithm, this system can greatly enhance performance and optimize the information management process. While the trial findings numerically show a considerable decrease in system reaction time and data transfer rate, the system design's uniqueness comes in its better user interface experience and data security features. The article also addresses the system's scalability and adaptability in various operating environments, which offers a research avenue for future integration of cutting-edge technologies like machine learning and artificial intelligence in the field of information management and encourages the development of information management systems toward higher security standards and user-customized services.

II. LITERATURE REVIEW

The growth of different sectors is directly tied to information management, which also influences management quality by means of its techniques. Information management and its uses have been examined closely by many researchers. With an eye on power management, multi-parameter optimization, and information management applications, Heidari et al. examined the use of Internet of Things (IoT), cloud computing, and other technologies in smart cities to enhance quality of life and resource efficiency [1]. Neelima et al. looked at how regional and primary care environments in Tanzania may employ Healthcare Management Information Systems (HCMIS). While 61% of healthcare facilities use HCMIS data, only 39% of regional healthcare participants regularly examine this data [2]. By means of a weighted discounted multi-source information fusion algorithm [3], Xiao et al. proposed complex evidence correlation coefficient and complex conflict coefficient in complex evidence theory to manage multi-source information conflicts and enhance classification accuracy and robustness of expert systems in pattern classification: Ryzhakova et al. investigated the digital transformation of the building sector, suggested a digital twin information system based on big data analysis and BIM technology to solve the storage and processing problems of big data sets, and developed a digital twin framework and software product example for construction project management [4]. Kassen investigated the possibilities of blockchain technology in e-government, examined its benefits in information management, transparency improvement, and process automation, and spoke on instances of government efficiency enhancement [5]. Information management still suffers with inadequate data security and poor resource use efficiency. Information management should be improved in quality by means of more technology managing and processing of data.

Many sectors have been spurred forward by the evolution of computer wireless network database technologies. Management efficiency may be much enhanced by using modern technology to handle industrial information. Many academics have examined how computer and database technology may be used in information management. Emphasizing the links and interdependence among the information systems, Bratha [6] investigated their subsystems.

Management information systems are discovered to be much influenced by software, databases, and human brain tools by qualitative investigation. Particularly, the main element influencing the efficiency and efficacy of information management is the databases [6]. Emphasizing the need of backup speed to match the annual growth rate of data, Ramesh et al. investigated database monitoring techniques to solve the problem of data backup and recovery in cloud computing, and suggested strategies to meet the needs of corporate recovery in the face of fast increase in data volume [7]. Duggineni covered the value of data integrity and security, examined the steps companies might take to safeguard data, including backup and recovery, access control, data encryption, and data security challenges and best practices [8]. Beber et al. have updated the biochemical equilibrium constant and Gibbs free energy databases, developed a new Python-based interface that greatly increases the compound database, improves processing speed and memory efficiency, and computes uncertain covariance matrices, so facilitating the integration of the database with other software platforms [9]. Aswiputri concentrated on the effects on information systems of elements like databases, closed-circuit video, and think tanks in order to provide ideas on the interaction between variables thus enabling more study. The findings reveal that MIS [10] is much influenced by data bases, closed-circuit video, and brainstorming. Although computer and database technologies help information management, none of the academics have designed system architecture for information management using these technologies. Hence, certain functional needs should be investigated in the design of information management system architecture.

III. SYSTEM DESIGN FOR INFORMATION MANAGEMENT USING COMPUTER AND WIRELESS NETWORK DATABASES

3.1 Functional requirements of information management systems under database technology

In this article, the functional needs of database technology in information management were studied from a variety of perspectives. These perspectives mostly included information backup and recovery, monitoring of information security, storage management, data sharing, and data analysis. The use of database technology in information management has the potential to increase both the operational efficiency of work and the capability of information management. An example of the application value analysis of database technology in the field of information management may be seen in Figure 1.

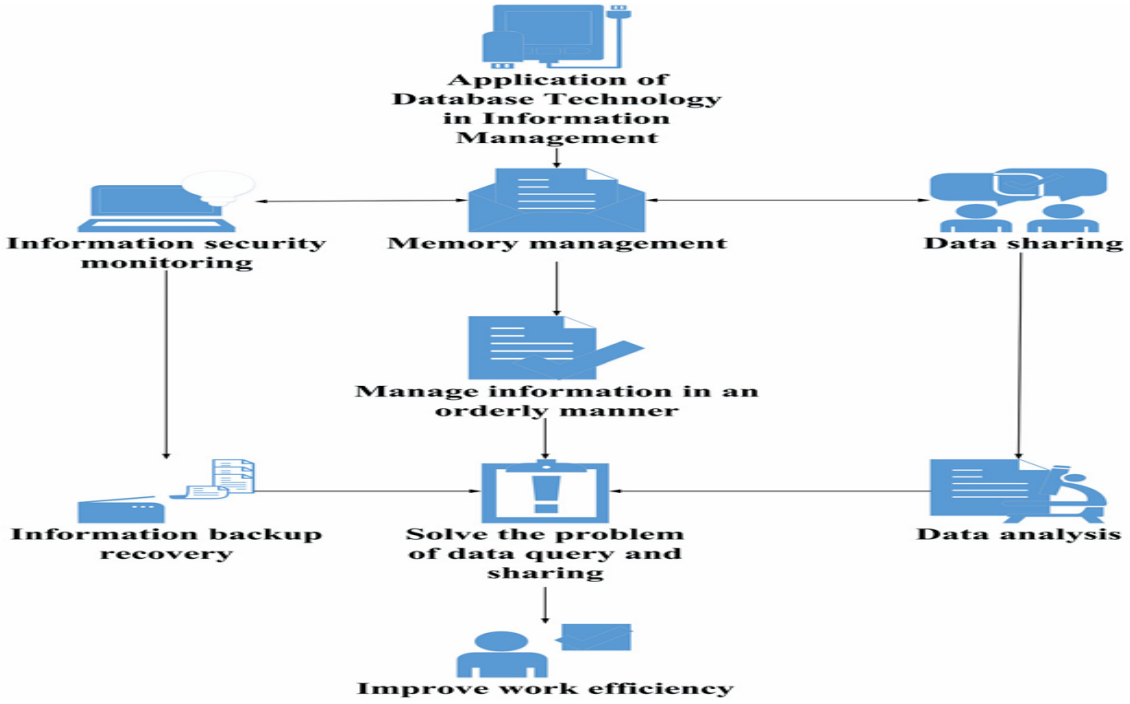

Figure 1: Functional requirements of information management system under database technology.

3.1.1 Information backup and recovery

This article discusses the protection and restoration of data via the establishment of a database, ensuring the correctness and integrity of all information, so enabling users to access information swiftly during use. In constructing a database system for data preservation and recovery, it is essential to devise a resilient schema that ensures data integrity and consistency. The implementation of the data replication strategy synchronizes data across many servers, hence assuring redundancy and enhancing the system's fault tolerance. Moreover, doing routine backup procedures on the database and securing it in a reliable cloud storage environment offers an extra layer of off-site data security. An automatic failover technique is used to enhance system resilience, enabling rapid activation of the backup database in the case of main database failure, hence assuring uninterrupted business operations. Database technology may be used for backup to avert data loss or destruction via replication, storage, and backup methods [12]. Cloud computing is an advancement in computer technology and serves as a premier business model for information backup and recovery. Utilizing a database for backup may enhance the reliability of information use. In the e-commerce sector, the accessibility of product information is essential, and database technology guarantees that if the main data source fails, the backup database can promptly assume control, ensuring uninterrupted service for clients.

3.1.2 Information security monitoring

Creating a computer security system database may mitigate and address unneeded risks while facilitating the organized management of information. It may enhance transmission security and user authentication capabilities while maintaining the integrity of the security system. By implementing a database security architecture, security. Technologies may be standardized, and the security of information management can be guaranteed. This offers comprehensive and layered protection in domains such as access control, identity verification resolution, and exception management, hence safeguarding data and information security. Government entities managing sensitive public data use database technology to provide security monitoring systems, facilitating the proactive detection and response to threats, thereby enhancing defenses against cyberattacks and data breaches.

3.1.3 Storage management

By use of identity verification technology, this paper efficiently identifies and accesses user information using database technologies. Management strategies may be used to restrict and identify users at all levels and access rights can be used to limit the number of users and content, therefore guaranteeing the security of the database while relevant data is being extracted from it. More data would be distributed across many systems without mutual impact and guarantees the independence of data use, therefore assuring efficient management of information throughout database operation.

Optimizing storage in the data management of big companies depends much on database technology. Moreover, the data hierarchy approach is used to arrange the data depending on their sensitivity and relevance on many tiers of storage medium. Particularly, the hotspot data with strong access needs and strict performance requirements is kept on high-speed storage devices; the somewhat seldom visited data is moved to more reasonably priced storage choices. By means of optimal allocation of storage resources, such a technique not only greatly increases the efficiency of data retrieval but also efficiently lowers the storage cost.

3.1.4 Data sharing

The challenges of data querying and sharing may be efficiently addressed via the use of database technology. All of the information and data that is stored in the database is categorized in accordance with the logical connections that exist between them, so producing a comprehensive data group. For a research institution to successfully complete a joint project, it is necessary for numerous teams to share a substantial dataset. With the help of database technology, data can be shared in a way that is both safe and under control, and cooperation can be made more expedient and effective. Figure 2 presents the results of the study of the data-sharing. Based on the features and kinds of data information, the key feature queries system can execute exact searches. This system ensures that only the most relevant data is retrieved by continuously sifting through eligibility database. This mechanism greatly improves data retrieval accuracy in addition to greatly increases working efficiency. By optimizing the information management processes via improved inquiry and assessment, the systematic datascreening approach

helps users to access the information they need most effectively indecision-making and problem-solving.

Furthermore, using databasite approaches not only facilitates information sharing but also helps to acknowledge and service searches [13]. Using database technology in information management, this paper obtained data integration and interoperability. Data acquisition has become more timely and efficient; however, the substantial improvement in efficiency has come from soft raditional data collection circumstances and building as firm basis for greater growth in the area of information management.

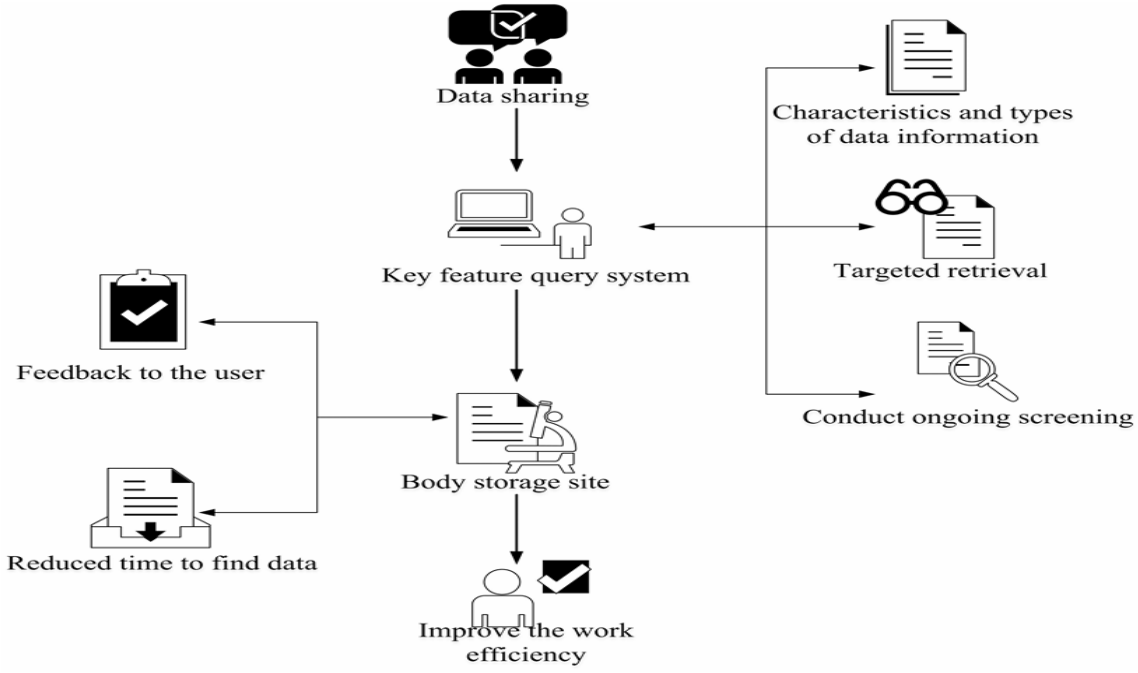

Figure 2: Data-sharing analysis.

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3.1.5 Data analysis

Data analysis, defining storage procedures, enhancing efficiency, and providing support for marketing choices are all examples of how database technology is used.

IV. PERFORMANCE OF INFORMATION MANAGEMENT SYSTEM UNDER COMPUTER WIRELESS NETWORK DATABASE

4.1 Running environment testing of information management system under computer wireless network database

The operational environment of the system is put through its paces in this essay [18]. For the purpose of ensuring that the circumstances of the tests were consistent throughout the research, it was carried out in a controlled setting. There are many servers, client PCs, and network equipment that are a part of the

experiment. All of these pieces of equipment are configured with the required software in order to imitate the real usage situation. Installation of the system, loading of data, testing of performance, and testing of user interaction are all components of the experimental test procedure. Each test session included the recording of a comprehensive system reaction time, the percentage of tasks that were completed, and several other critical performance indicators. The research project chose thirty participants, which included IT professionals, business analysts, and end users. Quantitative data, such as the response time of the system and the percentage of tasks that were completed, were collected, and qualitative feedback was obtained through questionnaires and interviews. The purpose of the study was to evaluate the level of user satisfaction and the usability of the system. The specific test environment results are shown in Table 1.

Table 1: Analysis of test environment results for information management system

Test content	Target results	Test result	Test evaluation
Maximum response time	<5 s	3.5 s	True
Average response time	<2.5 s	1.8 s	True
Query statistics time	<4 s	3.4 s	True
User login success rate	100%	100%	True
Authentication effect	>95%	97.8%	True
Access control effect	>95%	98.6%	True
Data acquisition	<5 s	3.5 s	True
Data upload	>130 Mbps	146 Mbps	True

4.2 Data collection and upload effectiveness of information management system

The effectiveness of data collecting and uploading is a direct element that has an effect on information management in information management systems that are based on computer wireless network database technology [19]. As a result, the purpose of this paper was to investigate the effectiveness of data gathering and data uploading mechanisms inside information management systems that use computer wireless network database technology. The conventional information management systems were put through their paces for a total of ten days of testing and comparison. One was the highest possible value for the efficiency of data collecting and data uploading. Figure 3 displays the exact respondents' responses to the survey.

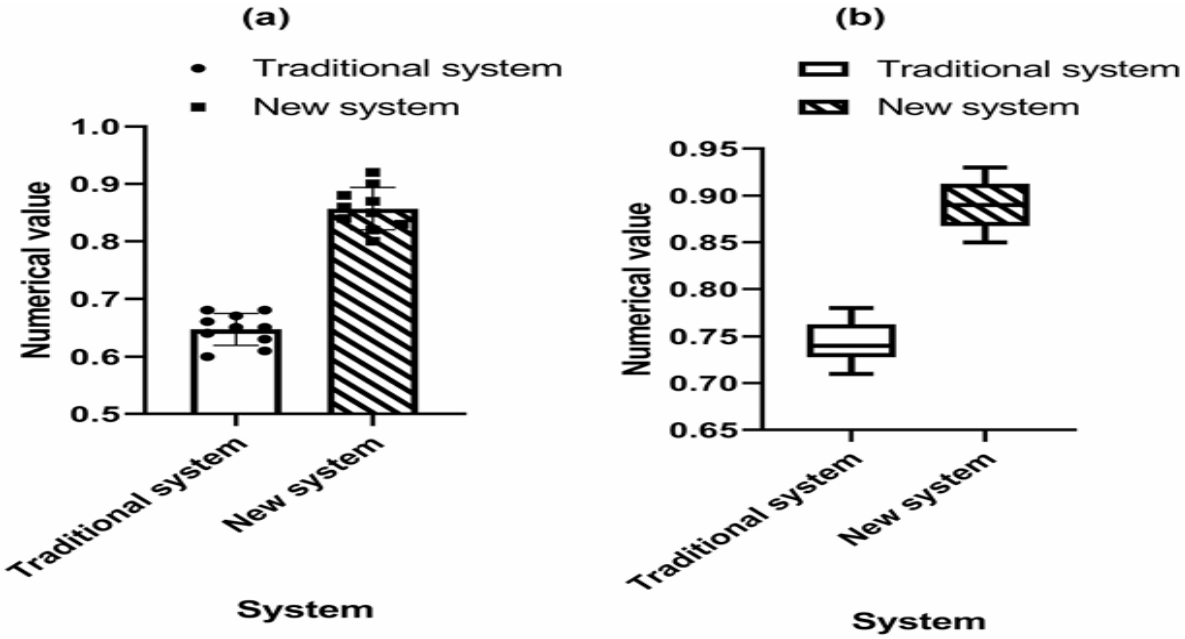

Figure 3: Analysis of data collection and upload efficiency under different information management systems. (a) Data collection efficiency. (b) Data upload efficiency.

Figure 3a illustrates the efficiency with which various information management systems gather data, and Figure 3b illustrates the efficiency with which several information management systems upload data. The x-axis of the graph indicates the system, and the y-axis represents numerical values. When it came to the analysis of data collection efficiency, traditional information management systems had a data collection efficiency that ranged from 0.6 to 0.68, with an average of 0.65. On the other hand, the data collection efficiency of information management systems that utilized computer database technology ranged from 0.8 to 0.92, with an average of 0.86. From the perspective of the examination of data upload efficiency, it was found that the average data upload efficiency of information management systems that used computer database technology rose by 0.15 percent in comparison to the efficiency of conventional information management systems. As a result of this, it is clear that different kinds of information in information management may be categorized and retrieved from computer databases, which ultimately results in an improvement in the comprehensiveness of system initialization operations. Additionally, data collection may also be used to evaluate the parameter setting and loading of the management system, which helps to ensure that the management business of the system is operating normally. Due to the great efficiency of data upload, it was determined that information management systems, with the assistance of database technology, would be able to handle information data in a more expedient manner and fulfill the fundamental configuration of data services [20].

4.3 Task management and query statistics evaluation of information management system

When it comes to analyzing the effectiveness of information management systems, task management and data query statistics are significant indicators to consider [21]. That being the case, this paper used expert scoring in order to evaluate the efficiency of the information management system with regard to task management and query statistics implementation. Ten professionals were asked to participate in a survey, and they were obliged to utilize the system management system for a period of two days. After then, the system was evaluated, with a score of five being the highest possible, and a score of four or above indicating that it is of exceptional quality. A breakdown of the particular survey findings may be seen in Figure 6.

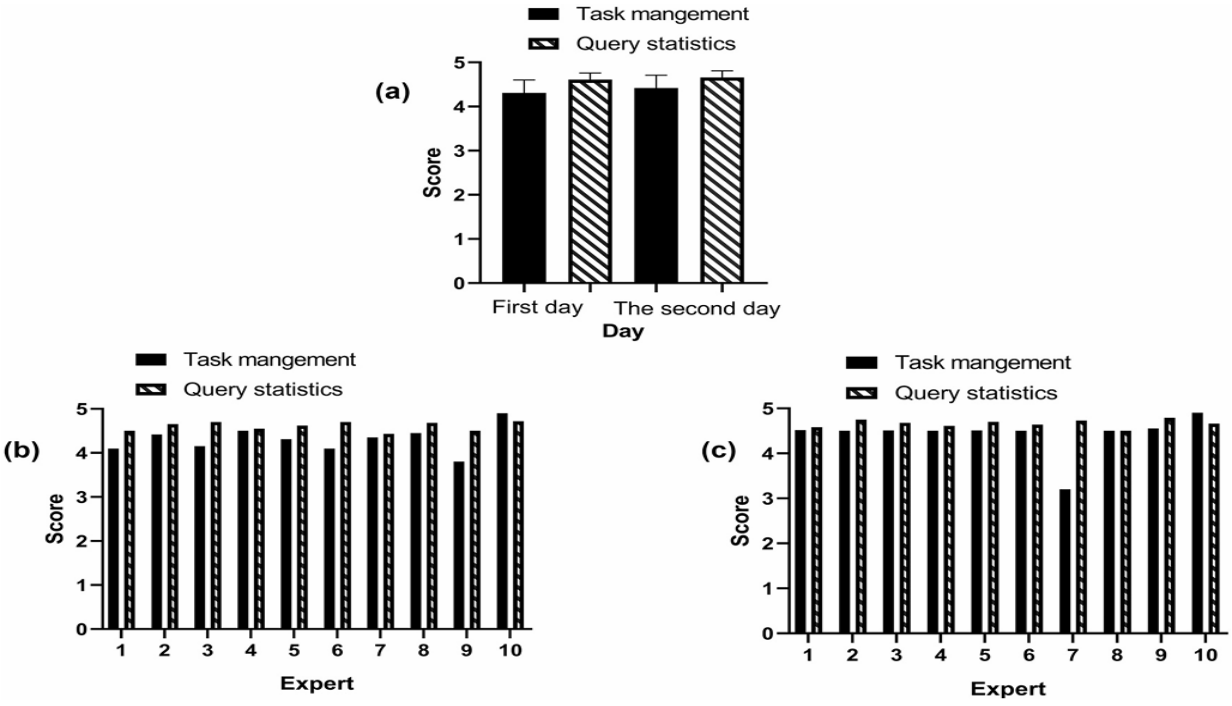

Figure 4: Overall and partial analysis of expert ratings for system task management and query statistics. (a) Mean standard deviation analysis of task management and data query statistics. (b) Expert rating for system task management and query statistics on the first day. (c) Expert rating for system task management and query statistics on the second day.

Within Figure 4a, the x-axis is used to indicate the number of days, while the y-axis is used to represent the score. As shown in Figure 4b and c, the x-axis reflects the opinions of experts, while the y-axis displays ratings. As a result of conducting a study of the mean and standard deviation of task management and query data, it was determined that the mean of task management on the first day was 4.31, while the standard deviation was seen to be 0.29. When it came to query statistics, the mean score was 4.61, and the standard deviation was around 0.15. On the second day of scoring, the average score for task management climbed by 0.11, while the average score for query statistics increased by 0.05. Both of these are significant increases. The primary reason for this circumstance was that the expert may not be acquainted with the functioning of the system and the operating procedures on the very first day of usage, which would result in a lower score. During the second day, the expert demonstrated a level of comprehension of the functioning of the system, which led to an increase in the score, and the overall average score for both days was outstanding.

inside the first day of system task management, there were nine experts who earned good scores by scoring between 3.9 and 4.9. Additionally, inside the query statistics, there were ten experts who achieved great scores by scoring between 4.3 and 4.8. An great rate of 90% was achieved on the second day of system job management, with the expert assessment falling somewhere between 3.9 and 4.9. Based on the query data, the rate was an impressive one hundred percent. As a result of this, it is clear that the evaluations that the experts gave for the system job management and query statistics over the course of the previous two days were outstanding. Using database technology, information transmission methods may be restricted to guarantee that relevant activities inside the system can be properly accomplished, which ultimately results in an improvement in the work that is done to process data.

V. CONCLUSIONS

This paper concludes, after extensive research and testing, that computer wireless network database technology greatly enhances the performance of information management systems. This article's contribution is to demonstrate how database technology is used in data backup and recovery. Evaluation of the information management system via fuzzy clustering, data analysis, storage management, data sharing, and information security monitoring. Based on the trial findings, the new system has many advantages: it increases the data upload rate by 15%, the system response time by 10%, the user login success rate and authentication accuracy rate reach more than 98%, and it considerably makes better use of resources and network bandwidth. The usefulness of database technology in increasing the efficiency and security of information management is shown by these measurable gains. While taking into account the possible influence of developing technologies on the scalability and flexibility of systems, future research should investigate the use of AI and machine learning methods to information management systems to allow deeper data analysis and security protection.

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