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Research on the Application of Smart Auditing in Hospital Internal Audit Work

Minqi Lin

Guangdong Provincial People's Hospital (Guangdong Academy of Medical Sciences), Southern Medical University, Guangdong Guangzhou 510000, China

Abstract: With the rapid development of China's economy and society, new problems have emerged in the development of China's medical and health industry. To meet the needs of informationization construction and development in public hospitals in China, it is necessary to strengthen the integration with information technology, transform traditional internal audit models, and improve the efficiency of internal audits. Smart auditing is an advanced technology that transitions from traditional auditing to information-based auditing. With the rise of new technologies such as big data, artificial intelligence, and cloud computing, it is of great significance to reconstruct the auditing operation mode and value output mode, and promote smart auditing to address internal audit challenges.

Keywords: Smart Auditing, Internal Audit Work, Hospitals, Application

Introduction

With the rapid development of the medical industry and the deepening of informatization, the operation and management of hospitals are facing new challenges. As an important means of hospital self-regulation, internal audit's efficiency and accuracy directly affect hospital decision-making and risk prevention and control. In recent years, the introduction of the concept of smart auditing has brought revolutionary changes to the internal audit work of hospitals. This article aims to explore the application of smart auditing in hospital internal audit work, in order to improve auditing efficiency and optimize hospital management.

1. Overview of smart audit

Smart audit is the deep application of information and intelligent technology in the field of auditing, originating from the higher requirements for auditing efficiency and accuracy in the era of big data. In the current society, with the explosive growth of data in the medical industry, internal audit in hospitals is facing challenges in massive information processing, risk identification, and analysis capabilities. Through the use of advanced technologies such as big data analysis and artificial intelligence, smart audit can achieve efficient mining and deep insight into complex data, thereby improving audit quality, reducing audit costs, and providing strong support for the refined management of hospitals. For example, IBM's "Intelligent Audit" solution has successfully helped medical institutions improve audit efficiency and achieve intelligent transformation of audit work.

2. The current situation and challenges of internal audit in hospitals

With the rapid development of the medical industry, internal auditing in hospitals is facing increasingly complicated challenges. Traditional audit methods often struggle to cope with massive amounts of financial data, medical records, and operational information, resulting in low audit efficiency and untimely risk identification. In addition, the evaluation standards for medical service quality are diversified, and manual auditing is difficult to comprehensively and objectively evaluate, which may affect the continuous improvement of hospitals and patient satisfaction. Furthermore, the professional skills and knowledge updating speed of internal auditors cannot keep up with the pace of technological progress, which limits the depth and breadth of auditing. Meanwhile, due to the lack of effective data analysis tools, potential risks discovered during the audit process often lag behind, affecting the decision-making efficiency of hospitals. On the other hand, due to limited understanding of emerging technologies such as artificial intelligence and big data by auditors, they are unable to fully utilize these tools during the audit process, resulting in audit work remaining superficial and unable to delve deeper into the essence of the problem. Therefore, it is urgent to introduce the concept and technology of smart audit into hospital internal auditing works, improve the accuracy and timeliness

of auditing through intelligent data analysis, risk prediction, and decision support, in order to address current challenges. At the same time, it is also necessary to strengthen the technical training of auditors, establish a sound data security and privacy protection mechanism, to ensure the smooth implementation of smart auditing and the stable development of hospitals.

3. The specific application of smart audit in hospital internal auditing

3.1 Application in financial management

3.1.1 Intelligence of budget auditing

In the context of smart auditing, the intelligence of budget auditing is an important innovative direction for hospital internal auditing work. Traditional budget audits often rely on manual review of a large amount of financial data, which is inefficient and prone to errors. By introducing big data analysis and artificial intelligence technology, budget auditing can achieve automation and intelligence, improving the accuracy and efficiency of auditing. For example, using machine learning algorithms, the system can automatically identify and learn budgeting patterns, provide early warning for abnormal data, help auditors quickly locate potential problems, and reduce human oversights. In addition, big data technology can integrate multiple sources of internal and external data, such as historical budgets, actual revenue and expenditure, industry standards, etc., to build a comprehensive budget performance evaluation model, providing a more scientific basis for hospital budget decision-making. Such intelligent applications not only improve audit quality, but also help hospitals achieve more refined and dynamic budget management.

3.1.2 Intelligent analysis of financial statements

In the context of smart auditing, intelligent analysis of financial statements has become an important means to improve the efficiency and accuracy of hospital internal auditing. By utilizing big data analysis techniques, real-time mining and in-depth analysis of massive financial data can be achieved, thereby revealing potential financial risks and management issues. For example, using intelligent machine learning algorithms, normal financial patterns can be automatically recognized and learned. When abnormal transactions or abnormal cost increases occur, the system can issue timely warnings to help auditors quickly locate problems and improve the timeliness of audits. In addition, the intelligent analysis model can also compare and analyze the cost-effectiveness of different departments and projects, providing data support for the refined management of hospitals.

For example, after the introduction of a smart audit system in hospitals, a series of hidden financial issues were successfully identified through intelligent analysis of financial statements, such as price anomalies in the procurement process and resource waste in some departments. These issues may require longer and more manpower to be discovered under traditional audit models. Through intelligent auditing, the resolution time of these issues has been shortened compared to traditional auditing, significantly improving auditing efficiency, while also saving hospitals a lot of costs and enhancing the transparency and efficiency of financial management. However, intelligent analysis of financial statements also faces challenges such as data quality and model adaptability. Hospitals need to ensure the accuracy of input data and regularly update and optimize analytical models to adapt to the constantly changing business environment. In addition, for the analysis results, auditors also need to make decision combining with professional judgment, in order to avoid excessive reliance on technology, thus ensuring the rationality and fairness of audit conclusions.

3.2 Application in medical service quality audit

3.2.1 Intelligent evaluation of patient satisfaction

Under the framework of smart auditing, intelligent evaluation of patient satisfaction has become an important means to improve the quality of hospital services. Through big data analysis, hospitals can collect and process patient feedback from multiple channels, including online evaluations, satisfaction surveys, complaint records, etc., to build a comprehensive patient satisfaction model. For example, natural language processing techniques can be used to conduct sentiment analysis on unstructured comments from patients, in order to quantitatively understand their satisfaction with medical services.

In addition, the smart audit system can also combine multidimensional data such as medical records, waiting time, and treatment

outcomes for deep learning analysis to identify key factors that affect patient satisfaction. Refined evaluation method helps hospital management identify service shortcomings and make timely improvements. For example, hospitals have found through smart auditing systems that patients are generally dissatisfied with the waiting time for emergency rooms at night. Therefore, they have optimized night shift scheduling and resource allocation, significantly improving patient satisfaction.

It is worth noting that intelligent evaluation of patient satisfaction also puts higher demands on data privacy protection. While utilizing patient data, hospitals need to strictly comply with relevant regulations to ensure anonymity and secure storage of data, in order to win the trust of patients. This is also an important consideration factor in the implementation of smart auditing.

3.2.2 Intelligent warning of medical safety incidents

In the context of smart auditing, intelligent warning of medical safety incidents is a key link in improving the efficiency and quality of hospital internal auditing. By integrating big data analysis and artificial intelligence technology, the system can monitor and predict potential risks that may affect medical safety in real time. For example, using historical data, a predictive model can be established to analyze the probability of medical accidents occurring during specific time periods, departments, or medical staff. This warning mechanism can detect and intervene in potential problems in advance, significantly reducing the incidence of medical accidents and protecting the safety of patients. For example, in a large comprehensive hospital, after introducing an intelligent audit system, the hospital successfully alerted 15% of potential medical safety incidents through intelligent warning functions. These incidents may be overlooked in traditional modes, leading to adverse medical events. In addition, the system also helps hospitals identify high-risk time periods at night and on weekends, as well as high-risk operating modes of some medical staff, providing data support for the hospital's refined management and achieving a significant improvement in medical safety.

However, establishing an effective intelligent warning system is not an easy task, as it requires processing a large amount of sensitive medical data while ensuring its accuracy and privacy. Therefore, hospitals need to establish a strict data security system and provide in-depth training to relevant personnel to ensure that they can correctly understand and respond to the warning information issued by the system, take effective preventive measures in a timely manner, and prevent the occurrence of medical security incidents.

3.3 Application in operations management

3.3.1 Intelligent optimization of resource allocation

In hospital operation and management, intelligent optimization of resource allocation is an important application scenario for smart auditing. By utilizing big data analysis and artificial intelligence technology, hospitals can more accurately identify resource needs, optimize resource allocation, and thereby improving operational efficiency and patient satisfaction. For example, a predictive model can be established using historical data to predict the patient flow of each department in a certain period of time in the future, and adjust the allocation of human resources and medical equipment based on this to ensure the efficient utilization of medical resources. In addition, the smart auditing system can also monitor material consumption in real-time, automatically trigger the procurement process, avoid inventory backlog or shortage, and achieve dynamic balance of the supply chain. Within the hospital, it is through the analytical capabilities of intelligent auditing that data is transformed into insights into optimizing resource allocation, driving the intelligent upgrading of hospital operations.

3.3.2 Intelligent monitoring of operation efficiency

In hospital operation and management, intelligent monitoring of operation efficiency is an important application scenario for smart auditing. By integrating big data analysis and artificial intelligence technology, smart auditing can monitor the operation status of hospitals in real-time, such as key indicators such as bed turnover rate, medical equipment utilization efficiency, and human resource allocation. For example, predictive analysis models can be used to predict hospitalization demand for a period of time in the future based on historical data, dynamically adjust hospital bed configurations to reduce empty bed rates and improve resource utilization. In addition, the smart audit system can also identify inefficient workflows through intelligent algorithms, provide optimization suggestions for hospitals, such as improving scheduling strategies, reducing ineffective work time, and further improving operation efficiency. This intelligent monitoring not only improves the operation efficiency of hospitals, but also reduces operating costs, providing strong support for the sustainable development of

hospitals.

4. Conclusion

The application research of smart audit in hospital internal audit work is increasingly important. With the rapid development of informationization in the medical industry, traditional audit methods can no longer meet the needs of modern hospital management. Smart auditing, with its efficient, accurate, and comprehensive characteristics, has brought innovation to the internal audit work of hospitals. Firstly, smart auditing utilizes advanced technologies such as big data, cloud computing, and artificial intelligence to deeply explore and intelligently analyze massive amounts of hospital data, thereby identifying potential risks and issues, and improving the accuracy and efficiency of auditing. Secondly, smart auditing can achieve dynamic monitoring throughout the entire process and time period, evaluate the operational status of hospitals in real time, timely alert potential problems, and promote more proactive and flexible hospital operation management. In short, smart auditing has opened up a new path for internal audit work in hospitals, and its value and potential cannot be ignored. In the future, it's hopeful to see more hospitals successfully integrate smart auditing into their daily operations to achieve more efficient and intelligent internal auditing, and promote the healthy development of the medical industry.

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About the author

Minqi Lin (1989.05-), female, Han nationality, Guangdong Province, unit: Guangdong Provincial People's Hospital, master's degree, research directions: internal audit, internal control, hospital application management under the vision of internal audit.