

Probe Into The Construction Of Hospital Information Management System Based On Hospital Information System

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Abstract: In China, there is a saying called "food is the most important thing for the people". It means that people will eat very important. Indeed, eating is very important. With the continuous progress of the society, the status of hospitals in the society is becoming more and more important, and hospitals with advanced information management system are more important, because this can benefit hospitals and patients. Based on the hospital information system, this paper studies and designs the hospital information management system. Firstly, this paper proposes two analysis methods, big data analysis method and SOA technology analysis method. Big data analysis method is now applied in all aspects, and SOA technology analysis method is a relatively mature technology, which is widely used in the hospital information management system. Secondly, this paper analyzes the design of hospital information management system, mainly the overall framework design and functional design, and analyzes and studies each subsystem of functional design. Finally, the paper analyzes the impact of the construction of hospital information management system on the income level of the hospital. It can be found that after the construction of the information management system in 2015-2019, the income level of the hospital increased by 1.77%, 2.31%, 2.89%, 3.09%, 3.95% respectively.

1. Introduction

Nowadays, not only the economy is developing, but also the technology is improving. As we all know, science and technology are used in all aspects of life. Biology, chemistry, physics and other places all need science and technology. Medical treatment also needs science and technology. With the progress of science and technology, medical equipment and medical system are also improving.

At present, many scholars have studied the medical system, especially the hospital information management system. In [1], the author describes the current IM process (activity objectives, secondary activities, required information, information sources / objectives and communication methods) from the perspective of family health care providers. The results show that the health transition from hospital to family is complex, but it is also the key to patient safety. It needs to organize infrastructure to support IM. In [2], the purpose of the author's study is to determine the factors influencing the adoption of his by Turkish public hospital staff according to the unified theory of acceptance and use of Technology (UTAUT) in the literature of technology adoption. The results show that gender can regulate the relationship among performance expectation, effort expectation and behavior intention. In [3], the author puts forward the past, present and future meta-analysis of the research on health information system of information system journals from 2000 to 2015. The results of the study compared the applied research methods, the investigation and research trends in the subject areas of health information system. In [4], the author improves the absorption of the two classification systems by clarifying the purpose of the two classification systems, coordinating the ICD-10-AM code set used in HACs and the Victorian revision of CHADX+. The results show that the ICD-10-AM code used in HACs also appears in CHADX+, and because of the wider range of CHADX+, it accounts for a higher proportion of all COF 1 diagnoses than HACs (82% to 10%). In [5], the author aims to describe the current health information infrastructure (i.e. how to collect, store, exchange and use data and information) for I /

DD patients living in supportive housing in Australia. In [6], the main purpose of this study is to establish a conceptual model of implementing the Internet of things in the hospital supply chain. The results show that the model has 7 main categories, 19 subclasses and 86 coding types. Results the concept model of implementing Internet of things in hospital supply chain was put forward, including the main research categories, driving factors, preconditions and contributing factors, environment and background conditions, challenges, technology implementation strategies, and the interpretation of results and results. In [7], the purpose of this study is to introduce and empirically test a new theoretical model in which hospitals are believed to influence the level of equal opportunity in providing adequate medical services (medical facilities, support facilities, human resources). The results support the theoretical model. In [8], the author discusses how the logistics process of the hospital can improve the process performance through benchmarking. The results of the study determine the decision criteria for designing efficient and effective medical logistics processes. The most important decision criteria are related to quality, supply safety and employee engagement. In [9], this paper discusses the role of redundancy in hospital work, especially in promoting the cognition and coordination tasks of health practitioners in the clinical environment. In this study, the previous research was reevaluated and shaped into a unified and consistent design-oriented framework. In [10], the purpose of the authors' study was to assess the organizational and environmental characteristics associated with hospital participation in MSSP and pioneer ACO. The results show that good hospital characteristics are more important than favorable environmental factors for MSSP participation.

Based on the hospital information system, this paper studies and designs the hospital business information management system. Firstly, this paper proposes two analysis methods, big data analysis method and SOA technology analysis method. The specific analysis is as follows.

2. Method

2.1 big data analysis

Big data analysis is now widely used in a field. The so-called big data refers to a new data developed on the basis of computer, Internet of things, cloud computing and other technologies. At present, big data is widely used in business, medical, education and other fields. Every object has its essence, big data is no exception, and the essence of big data is complete data information. Many scholars use the information of various dimensions and angles to record the behavior track of some things and judge their original characteristics. Therefore, it can be understood that although the definition of big data has not yet formed a unified conclusion in the current academic circles, the research on big data by scholars provides an important theoretical basis for the further application of big data technology. Big data analysis mainly has four characteristics: large amount of data, special types of data, special speed of data processing and low value density of data. This paper uses big data analysis method to analyze the changes of information management system of major hospitals in China in 2009-2019. The detailed analysis process is shown in Figure 1.

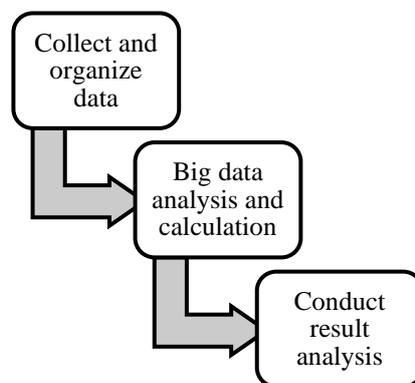


Figure 1. big data analysis process

2.2 SOA technology analysis

At present, SOA technology is a relatively mature technology, which is widely used in hospital information management system. Specific SOA technology refers to the architecture for public service, and also the standardized mode components, which are connected through the standard interface protocol agreed between services. SOA technology has five characteristics: reusability, loose coupling, clearly defined interface characteristics, stateless service design, and open standard based functions. There are many integration modes of SOA technology, but due to the huge hospital information data, the main integration modes are:

- (1) WS: transfer business information through web service to support synchronous transmission.
- (2) MQ: transmit business information through queues and support asynchronous transmission.
- (3) Flat Files: accessing the local file system requires the strong support of the flat file resource adapter.
- (4) FTP: this adapter is not easy to apply to data integration communication. It gets and uses FTP commands and applications that exchange business objects.
- (5) DB connection: this connection method has been used for many years, because it can directly operate the database, you can batch process structured data, with the characteristics of high efficiency and low cost.

3. Overall design of information management system

3.1 overall framework design

This paper studies and designs the hospital information management system based on the hospital information system. Firstly, we need to design the overall framework of the information management system. We know that the overall framework of a system is very important for the operation of the whole system. Therefore, the overall framework design of the system has very strict requirements. In the process of design, it is necessary to know the needs of system users in advance and the actual operation status of the system in the hospital. Based on the above points, the overall framework design of the system is divided into the following principles: First of all, we should adopt the latest science and technology for the overall design of the framework. Science and technology is the strongest support and the most powerful supplement. Only when science and technology are adopted, the system can be half successful. Secondly, we should constantly improve our own functions. We should have the spirit of "three self-examination in our day", constantly remind ourselves to check their own shortcomings, treat the system as well, and constantly improve it. Finally, we should standardize the interface, standardize the requirements, as the saying goes, "No rules, No circles", so it is very important to standardize the system.

3.2 functional design

Hospital information management system is divided into many subsystems, each subsystem has different functions, which can be divided into drug management subsystem, charge management subsystem, inpatient management subsystem, etc. As the name implies, the drug management subsystem is a subsystem for managing drugs. Because drug information management is one of the most important contents of the drug management module, the drug management subsystem is the top priority in the hospital information management system. The specific functional modules are shown in Figure 2. Charge management subsystem is responsible for a lot of places, because the content of hospital cost management is very complex, the daily capital flow is very huge. Therefore, under the expense management module, each revenue and expenditure record of the hospital is uniformly handed over to the expense management personnel for special management, so as to ensure that the hospital can proceed in an orderly manner. The specific function module is shown in Figure 3. From the concept of inpatient management, inpatient management subsystem refers to the general term of inpatient and discharge. Hospitalization not only refers to the simple behavior of patients entering the hospital, but also means that when patients enter the hospital, their basic information has been divided into the scope of hospital information management. And in the future

treatment, the hospital will always track the confusion, and record their situation and condition in detail. The specific function module is shown in Figure 4.

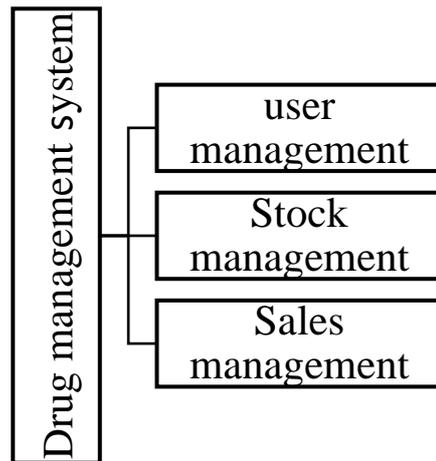


Figure 2. functional module diagram of drug management subsystem

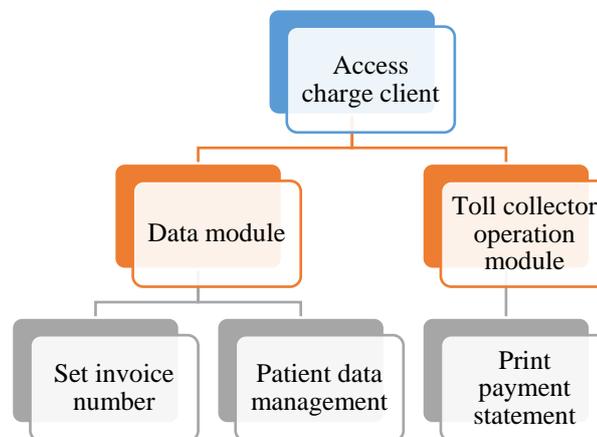


Figure 3. function module diagram of charge management subsystem

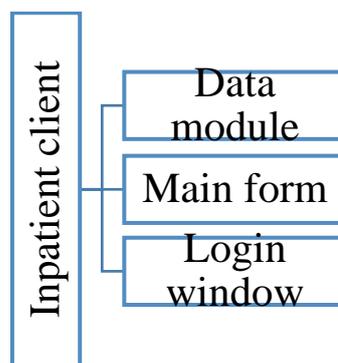


Figure 4. function module diagram of inpatient management subsystem

4. Results

Based on the research and design of hospital information management system based on hospital information system, this paper selects a hospital for this study, and analyzes the differences between the hospital information management system not constructed and the hospital information management constructed in the five years of 2015-2019. The research results can be clearly seen that the hospital information management system was constructed in the five years of 2015-2019. After the information management system, the income level of the hospital increased by 1.77%,

2.31%, 2.89%, 3.09% and 3.95% respectively. The specific analysis results are shown in Figure 5.

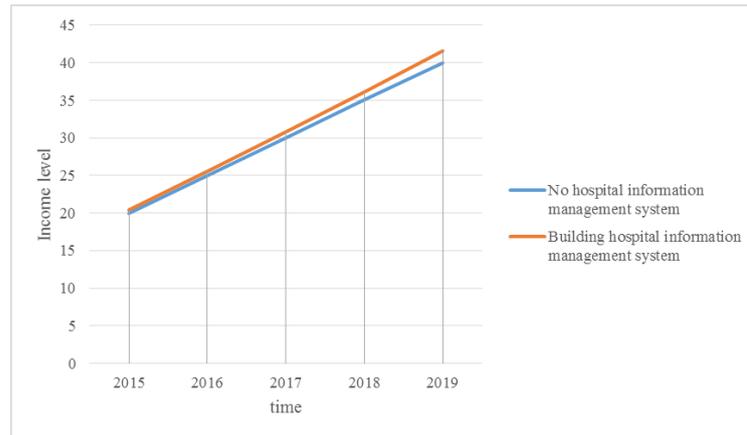


Figure 5. Change of hospital income level

Conclusion

Based on the hospital information system, this paper studies and designs the hospital information management system. Firstly, this paper proposes two analysis methods, big data analysis method and SOA technology analysis method. SOA technology analysis method is a relatively mature technology at present, which is widely used in the hospital information management system. Secondly, this paper analyzes how to design the hospital information management system, mainly for the overall framework design and functional design. Finally, it analyzes the impact of building hospital information management system on hospital income level. In addition, there are many deficiencies in this study, such as no analysis and understanding of other hospitals, and no analysis and comparison of income level differences between hospitals, these deficiencies will be solved in the future research one by one.

References

- [1] ARBAJE, A. I., Hughes, A., Werner, N., Carl, K., HOHL, D., Jones, K., ... & GURSES, A. P. (2019). Information management goals and process failures during home visits for middle-aged and older adults receiving skilled home healthcare services after hospital discharge: a multisite, qualitative study. *BMJ QUAL SAF*, 28(2), 111-120.
- [2] ENGIN, M., & GURSES, F. (2019). Adoption of Hospital Information Systems in Public Hospitals in Turkey: An Analysis With the Unified Theory of Acceptance and Use of Technology Model. *International Journal of Innovation and Technology Management (IJITM)*, 16(06), 1-19.
- [3] HARIED, P., CLAYBAUGH, C., & Dai, H. (2019). Evaluation of health information systems research in information systems research: A meta-analysis. *Health informatics journal*, 25(1), 186-202.
- [4] SHEPHEARD, J., LAPIZ, E., Read, C., & Jackson, T. J. (2019). Reconciling hospital-acquired complications and CHADX+ in Victorian coded hospital data. *Health Information Management Journal*, 48(2), 76-86.
- [5] DAHM, M. R., Georgiou, A., BALANDIN, S., Hill, S., & HEMSEY, B. (2019). Health information infrastructure for people with intellectual and developmental disabilities (I/DD) living in supported accommodation: communication, co-ordination and integration of health information. *Health communication*, 34(1), 91-99.
- [6] MOHAGHAR, A., TAGHIZADEH YAZDI, M. R., JOLAI, F., MOHAMMADI, M., & ATASHIN PANJEH, S. (2019). Conceptual Modeling of the Internet of Things Implementation in

Hospitals Supply Chain. *Journal of Information Technology Management*, 11(1), 1-23.

[7] Baird, K. M., Tung, A., & Yu, Y. (2019). Employee organizational commitment and hospital performance. *Health care management review*, 44(3), 206-215.

[8] FEIBERT, D. C., Andersen, B., & Jacobsen, P. (2019). Benchmarking healthcare logistics processes—a comparative case study of Danish and US hospitals. *Total Quality Management & Business Excellence*, 30(1-2), 108-134.

[9] CABITZA, F., ELLINGSEN, G., LOCORO, A., & Simone, C. (2019). REPETITA IUUVANT: exploring and supporting redundancy in hospital practices. *Computer Supported Cooperative Work (CSCW)*, 28(1-2), 61-94.

[10] CHUKMAITOV, A. S., HARLESS, D. W., BAZZOLI, G. J., & Deng, Y. (2019). Factors associated with hospital participation in Centers for Medicare and Medicaid Services' Accountable Care Organization programs. *Health care management review*, 44(2), 104-114.