Analysis and Research on Non-Technological Factors with Hospital Informationization Construction

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Abstract

This thesis begins with the complexity of hospital informationization construction, and then makes analysis on non-technological factors with hospital informationization construction, after which solutions concerned with corresponding measures and suggestions are given.

Keywords: Hospital informationization construction, Connotation, Denotation, Analysis, Research

1. Introduction

To promote informationization with national economy and society has been set up as a significant strategy of development for China, also as an indispensable road to realize sustainable development with social productive forces. Similarly, medical informationization construction will do good to the improvement of the integral management efficiency and competitiveness of the hospital.

In the past few years, quite a number of hospitals in China has carried out informationization construction on different scales and to different extents and has made substantial progress with improved situation regarding application of medical information system. For many hospitals, informationization construction has played a positive role in promoting management and operation efficiency but there're also some hospitals dropped out during informationization construction due to problems concerned with technical management and realization, or mainly non-technical issues.

2. Hospital Informationization Construction as a Complex Systemic Project

In a connotative sense, hospital informationization means to find advanced managerial conceptions, apply sophisticated information technology and computer network technology in order to innovate traditional managing model of the hospital as to standardize the flow of hospital management and to provide accurate and valid data information for tactical, strategic and decision-making levels of the hospital for quick response against demands. The nature of hospital informationization is to improve the quality of medical service, lower the medical cost, and increase managerial efficiency as to advance competitiveness and service capability of the hospital.

In a denotative sense, hospital informatization possesses several characteristics as follows: (1) The basis of hospital informatization indicates of management and operation patterns of the hospital rather than information or computer network technologies themselves, which are merely approaches to the accomplishment of hospital informatization. (2) Hospital informatization is an integrated technology with information integration and sharing as its focus, i.e., it focuses on transmitting accurate data in time to relative decision makers for data analysis in order to make decisions for hospital's operation. (3) Hospital informatization is a systemic project with man-machine combination, including four categories of informatization regarding specifically the conceptions of leaders and employees, decision-making and organizational management, operational means and hospital culture. (4) Hospital informatization is based on an ever-developing notion: firstly, with emergence of new technologies and constant development of economy, the theories and content of hospital informatization will be constantly renewed and improved. Secondly, hospital informatization is a process which needs gradual development and improvement. Therefore, it will develop along with the development of factors such as realization methods, managing notions and the hospital itself etc.. (5) Hospital informatization involves a complicated process which includes specialist training, consultation service, scheme planning, equipment purchase, network building, software selection, application training, further development and so on.

As a result, it's understandable either from connotative or denotative sense that, hospital informationization is not an independent technical or managing system, or a simple problem that could be handled only with some amount of money. It indeed is a fairly complicated systemic project, and non-technical factors play a more important role in hospital informationization construction.

3. Analysis on Non-Technical Factors with Hospital Informationization

3.1 High-level leaders' attitude towards informationization—recognition equals not awareness

Whether high-level leaders of the hospital understand hospital informationization from a strategic perspective makes a decisive influence on hospital development in the information age. Many hospital leaders have had some awareness about hospital informationization and showed very positive attitude. However, in the course of actual implementation, they take recognition of hospital informationization for awareness, not putting enough attention on informationization. They lack sense of urgency and show near-sight on informationization. Specifically, they are not well prepared for management conceptions and renovations in accordance with hospital informationization, thinking that hospital informationization is a technical project which should be take responsibility for by technical departments such as Information Center or Department of Scientific Technology. Otherwise, they regard that hospital informationization will bring evident economic benefits just as purchasing large-scale medical equipment such as CT or MRI. As a result, leaders cannot stand as a "locomotive" in the course of hospital informationization and thus lead to substantial lacking of force during the implementation of "leader-oriented" principle.

3.2 Capital input—severe imbalance with proportion

Most hospitals do put a large amount of capital in the course of hospital informatization, but the capital input proportion between hardwares and softwares (including maintenance, consultation and development fees etc.) turn out fairly unreasonable, and featured with a phenomenon of highlight hardware over software and construction over maintenance or renewal. This phenomenon brings difficulty in ensuring a coordinated development between three respects of hospital informatization such as its establishment, maintenance and renewal as well as development and utilization of information sources; and thus does harm to healthy development of hospital informatization and prevents the hospital from using informatization to improve operational efficiency, management and core competitiveness. Moreover, stress should be put on the utilization of hardware infrastructure as well instead of highlighting on its ownership, that is to say the hospital should be able to maximize the exploration of potential value of information technology. Currently, only a small part of hospitals in China manage to not only have the information technology infrastructure, but also make the IT infrastructure to play a positive role   in operation management as to achieve its value. Most hospitals are restricted to using only the basic functions while lack of application of information technology to operating activities in all directions.

3.3 Human resources—severe shortage with difficult introduction and easy brain drain of talents

Hospital information construction needs, in the first place, the personal promotion from leadership, but informationization can hardly make success without close cooperation from qualified personnel from management, technical and executive levels who have gained systemic understanding and grasped informationization knowledge and skills. Most of the administrators and staffs of a hospital have basic knowledge and skills about communication technology and computers and after certain training, they can learn to use softwares skillfully, but the hospital is still incompetent in terms of enough expertise of informationization and the capacity of tracking the development of information technology. Hospitals generally lack of informationization professionals, especially short of inter-disciplinary talents that can handle hospital operations, management and information technology as well. Meanwhile, there's a widespread bias held by some senior IT talents in entering the medical industry and managers and practitioners of the medical industry have biased understanding towards informationization, which leads to many difficulties in introducing talents of hospital informationization construction. In addition, some hospitals in recent years provide very low salaries to informationization talents (Wages in hospital have been known much lower than in IT industry, incomes of IT personnel in hospitals rank in the middle or lower scales). Besides unreasonable incentive policy on talents together with unqualified title appraisal system (hospitals do not have a title appraisal system suitable to inter-disciplinary talents) have resulted in severe brain drain of informationization backbones especially inter-disciplinary talents. These conditions have made great adverse effects on hospital informationization construction.

3.4 Hospital culture—innovation without fundamental change

Hospital informationization has promoted compactness of the organizational structure (structural changes of the organization), simplification of business processes (changes on business processes and management process), and the spirit of life-long learning and teamwork, and thus formed a new hospital culture.

The new hospital culture has influenced the organizational structure of the hospital mainly about the sharing of information, including whether staffs participate in decision-making or hospital management (such as hospital resource planning, decision-making of allocation). Although some hospitals recognize the importance of

information sharing, but the actual level of sharing with them is fairly low. This suggests that after employing information technology, hospitals have not made relative adjustment to its organization as to adapt to the new internal working environment.

The influence a new hospital culture has on business processes mainly lies in that with informationization as an overall environment, hospitals should focus more on customer relationship management (CRM). But most hospitals haven't made success in the following situations about how to integrate information technology into the combination of internal and external business activities of the hospital, about the business process reengineering(BPR), and about how to accomplish the conversion from "treatment-centered" system to "patient-centered" system in order to improve the overall benefits of the hospital.

On the whole, no fundamental changes occurred in the innovation of hospital culture and a new hospital culture has not yet come into being.

3.5 Planning on informationization development—lack of overall conception

Development plan of hospital informationization has not yet been incorporated into the overall development planning in many hospitals. Meanwhile, hospital informationization is short of content and procedures for development such as principle of overall planning, overall planning methodology, methods regarding balancing, overall solution framework and information sources planning etc.. The said limitations has lead to a discrete state of hospital informationization application, specifically such as complicated software, disorderly technical standards and regulations for internal information coding and coding management etc., together with chaotic system have resulted in a "information islands" phenomenon inside hospitals. In this situation, the system can not be integrated and resources can not be shared. This has seriously hampered the construction of hospital informationization and the improvement of its application.

3.6 Informationization application level—generally low

Many hospitals have put a great amount either in terms of input quality or quantity on informationization hardware or basic software, but the proportion of fully realizing clinical management informationization as well as local health service informationization is relatively low, and most hospitals still stay in the of hospital management informationization. Informationization construction still has many limitations such as not yet extended to a patient-centered clinical information system, not yet achieved complete interaction with medical insurance system, not yet provided patients with various forms of medical services with telemedicine technology and not yet changed passive consultation patients to those who consult for health-care services and other information services through the use of electronic commerce. To sum up, informationization application is generally low, yet the comprehensive advantages of informationization can not really play.

3.7 Hospital system renovation and managerial creation——insufficient promotion and coordination

Informatization construction of most hospitals is carried out under its original system and management mode, and too much emphasis has been put on its original business processes, and to a large extent the result of informatization ends up as a computerized version of the original manually-operated business. However, system reform and management innovations are not implemented in parallel or not thoroughly implemented. Also, insufficient optimization of business processes leads to the fact that no advanced managerial ideas and models can be introduced. All the above-mentioned factors provide reasons for why information system can not work or work well after the establishment of information system and why informatization construction turns out nominal and not able to increase the core competitiveness of the hospital. Someone has compared this situation to another one as "driving tractor on the highway", which is still true of many hospitals.

3.8 Inter-hospital informationization construction——lack of communication

Currently, most large and medium-sized hospitals have already begun to carry out informationization construction. Some hospitals have been conducting it for several years and reached a certain scale with quite a lot of experience accumulated in establishing hospital informationization. But most hospitals conduct informationization only for their own development needs, and thus very little communication has been done among hospitals. In this way, some successful experience for building hospital informationization fail to spread while difficulties encountered or lessons drawn cannot gain attention from other hospitals, which has cost many hospitals for much repetition, even repetition of making detours, which is quite wasteful.

4. Strategies and Suggestions

4.1 Strengthen organization and leadership on hospital informationization

With directions from supervising departments, administrative departments of hospitals at all levels should highlight hospital informationization, implement organization and leadership about hospital informationization and make clarification of specific responsible departments and staffs. The state and level of health informationization construction should be incorporated to the evaluation criteria of hospital construction at all levels. A specialist group of hospital informationization shall be formed by appointing experienced experts, scholars and hospital administrators on hospital informationization as to provide technical consultation and decision-making support on hospital informationization. In this way, the administrative departments can fulfill the function of plan-making, directing, policy-supporting, and environment-creating.

Hospital informationization is a systemic project and informationization construction of all hospitals shall carry out a head-oriented project, that is to say, let the main leader of the hospital take full responsibilities to improve the awareness of importance and urgency of hospital informationization in practice. The leader should put the improvement work of hospital informationization on his or her major agenda of work, make unified deployment and advance the procedure for himself or herself. For those hospitals with reasonable conditions, a position as chief information officer (CIO) should be set up.

4.2 Carefully draw up and organize as well as implement hospital informationization planning

Hospitals should comply with the gist of Program Outline for National Development of Health Informatization, take consideration of actual situation of the locality and the hospital as to carefully draw up a plan for hospital informationization. Meanwhile, hospitals should include informationization into the overall development planning as an important part, taking gradual and careful measures in the course of implementation. Aiming at the weak points of their own management, hospitals should pinpoint the sally port of hospital informationization in order to make clear the phasic goal of hospital informationization and to ensure it plays a positive and effective role with scientific managing mechanism, improved and practical regulations as well as fluent and stable operational order.

4.3 Strengthen key project construction of informationization and cultivate "informationization demonstration hospital"

Hospital informationization should be regarded as the key task of innovation for relevant departments at all levels. And they should set up a special project as to promote hospital informationization; be supportive and actually assist a number of hospital informationization projects; set up special funds to support key informationization projects.

In the process of promoting hospital informationization, we need to pinpoint, support and foster a number of model hospitals which have made great progression during the development and implementation of hospital informationization. It's necessary to track the trend of hospital informationization around the world and draw timely conclusions of advanced experience in hospital informationization from hospitals that have achieved great success during the promotion and implementation of hospital informationization. In order to popularize advanced experience of hospital informationization, there are many forms to choose from such as on-site meetings, spreading through press, on-line experience sharing, on-site training, exchange seminars etc.. At the same time in accordance with the regional development imbalances and the different scales among hospitals, recommended are typical experiences and solutions for specific types of hospitals and classified guidance to hospitals from different regions and with different scales, so that typical models can play the role of providing impetus and experience to the whole area around them and thus realize a steady promotion of hospital informationization around the country.

4.4 Resort to social institutions with informationization service and third party superintendence service

Aiming at solving problems from hospital informationization process, especially the problem of talents shortage in the process of informationization in small and medium-sized informationization, hospitals can gain professional and versatile services from social intermediary organizations and service consultative bodies. The entire process of hospital informationization project will get effective monitoring and improvement of the project by introducing, establishing as well as improving the hospital information management and evaluation mechanism with "third-party supervision" as a not bad choice.

4.5 Quicken the pace of building a specialist team for hospital informationization

Development and implementation of Hospital informationization is a huge and systemic project, in which problems concerned with talents and education appear to be particularly prominent. In order to quickly resolve the

personnel problem for hospital informationization, the method to combine talent introduction and on-the-job training should be adopted.

Hospital should take positive measures and put it as a strategic decision for hospital development as to actively bring in talents, especially high-level talents. Simultaneously, the distribution system and incentive mechanism should be improved as to stop brain drain of professionals in the hospital.

At the same time, continued education projects for personnel at all levels should be emphasized in accordance with the urgent need of talents specialized in hospital informationization. In the first place, when keeping pace with the fast-developing IT knowledge, IT staffs should learn administrative knowledge and medical knowledge such as medical fundamentals, medical procedures and medical theories etc.. Secondly, administrators of hospitals should be given training stressed on information technology and universal access to informationization aimed at mastering operational skills of information technology. Last but not least, leaders of the hospital should be given training in order to raise their awareness of the importance of informationization.

There is no other way but only through the introduction of talents from multiple channels and a multi-level training mode in order to resolve personnel shortage problem during hospital informationization, and build a sound personnel system with due levels and rational structures to ensure stability in the development of hospital informationization.

5. Conclusion

Hospital informationization construction is a complicated social and technical system. Apart from technical factors, non-technical factors should be given more attention to by relative departments and hospitals. During the process of hospital informationization, importance should be attached to the organization and leading work about informationization construction with clear recognition that hospital informationization construction is "leader-oriented". The relationship between technology, management and data is that data always comes first and 100 percent important while management and technology correspondingly account for 70% and 30% respectively during hospital informationization. Holding on to the principle of integrated planning and gradual execution, after relative specialists are introduced and trained, hospital informationization construction will for sure gain new development with joint efforts from government departments, medical management institutions, the hospital and their staffs. And in this way, hospitals will be capable of improve their comprehensive competitiveness as to provide better and comprehensive as well as human-oriented serviced.

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