Exploration of an "Internet+" Grounded Approach for Establishing a Model for Evaluating Financial Management Risks in Enterprises

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Abstract

With the rapid development and continuous updating of computing technology, computer software is increasingly used in various management of enterprises, which brings great aspects to enterprise management and also creates high benefits for enterprises. This article takes the hospital as an example, based on Internet technology, evaluates the risks of the hospital financial management system, and establishes the relevant risk evaluation model according to the relevant elements of the medical financial management system. In the normal use of the hospital financial management ERP business, the risk consequences are formed through probability calculations. The evaluation value, and finally the evaluation value of the risk of the ERP project of the hospital financial management is calculated. The experimental results show that the average error between the evaluation results of the model and the actual financial value is only 2.429%, indicating that this evaluation method is highly accurate and has strong applicability.

Keywords: Internet +, Financial Management System, Risk Evaluation

1. Introduction

In the continually evolving landscape of computer technology, the pervasive integration of computer software has undergone a remarkable proliferation, infiltrating diverse facets of enterprise operations. This pervasive trend not only imbues a heightened level of convenience across the spectrum of work processes and administrative functions but also confers a myriad of advantages upon these enterprises. As we delve deeper into this digital epoch, the very foundational tenets underpinning financial management and its concomitant technological frameworks within enterprises are undergoing perpetual refinement and elevation [1-3].

However, a notable dichotomy comes into stark relief when we pivot our focus towards large state-owned enterprises. These entities, characterized by their expansive investment portfolios and a distinct orientation towards market dynamics, manifest a glaring discrepancy when juxtaposed with their foreign counterparts excelling in advanced industries. This incongruity notably exposes a significant research gap, one that beckons the comprehensive and systematic harmonization of existing financial management principles and operational standards with the rigorously evolved paradigms of advanced international industry enterprises. The disparity in these paradigms poses a multifaceted challenge, chief among them being the inability to synergize the divergent facets cohesively. This predicament invariably impedes the full actualization of these enterprises' latent production potential and managerial acumen, thus engendering a palpable hindrance to the realization of their strategic ambitions for sustained, long-term growth and evolution [4-6].

In parallel, within the intricate fabric of my nation's healthcare service sector, the pivotal role played by hospitals cannot be overstated. These institutions constitute a cornerstone of individual well-being and public health at large [7, 8]. The imbued significance of enhancing the financial management systems of hospitals with an astute focus on risk prevention resonates profoundly. Not only does this endeavor confer tangible socio-economic benefits, but it also acts

as a catalyst for the organic expansion and maturation of the hospital's financial management framework. Amid the contemporary state of the art, it is evident that the vital importance of risk prevention is well-recognized within the discourse of hospital financial management. However, within this recognized landscape, there stands another significant research gap—an absence of comprehensive methodologies that seamlessly integrate the transformative potential of Internet technology to facilitate precise financial risk assessments. This is a void that the current discourse strives to fill, thereby propelling the state of the art in hospital financial risk assessment to new echelons [9, 10].

Within this context, the present exposition situates itself within the hospital ecosystem, with a particular focus on harnessing the transformative potential of Internet technology [11-13]. Its overarching ambition is to meticulously scrutinize and evaluate the underlying risks permeating the hospital's financial management system. By leveraging the power of technology, the objective is to engineer a streamlined mechanism for the assessment of financial risks, endowing the process with an unprecedented level of precision. In the process, this endeavor not only contributes to the enhanced accuracy of financial risk assessments within the specific hospital under examination but also yields insights of profound relevance for refining such assessments across the entire spectrum of the healthcare landscape. This ambitious journey, fueled by the fusion of technology and financial acumen, seeks not only to bridge existing gaps but also to pave the way for a more robust, informed, and adept healthcare financial management paradigm.

2. Principles for Constructing the Evaluation System of Corporate Financial Management Capabilities

The evaluation system of corporate financial management capabilities should meet the following evaluation characteristics:

1) Comprehensiveness means that the construction of an enterprise's financial management ability evaluation system should cover all aspects of enterprise development and management. All indicators can comprehensively evaluate the company's work deployment and operation management, and realize multi-level and multi-directional comprehensive evaluation. Meet the various needs of state-owned enterprises during the development planning period.
2) Standardization means that the selection of various indicators of the enterprise's financial management ability evaluation system should be standardized and standardized. Standardized evaluation indicators can promote the orderly development of the enterprise, improve the management level of the enterprise, and realize the scientific and sustainable development of the enterprise.
3) Comparability. The corporate financial management capability evaluation system should conduct a unified and quantitative assessment for every department and every person in the development of the enterprise. Departments and individuals in the enterprise can use this quantitative assessment mechanism to find out the internal departments and departments of the enterprise, and the relationship between people and people. The shortcomings in the working relationship between people urge enterprises to adjust and improve in a targeted manner.
4) Systematic means that the various assessment indicators of the corporate financial management ability evaluation system should be applied to every link of the company's development, and the indicators and indicators should be coordinated and mutually promoted to form a whole and jointly promote the financial management of the enterprise Coordinated development.
5) Feasibility. The construction of an enterprise financial management ability evaluation system is closely related to the selection of indicators. It is necessary to look at the problem in a comprehensive manner, starting from the whole, and plan the feasibility of financial management in a reasonable and orderly manner, so as to establish a more complete financial management ability evaluation system within the enterprise.
6) Developmental. Economic development drives the development of enterprises. State-owned enterprise financial management evaluation index system should also keep pace with the times, innovate continuously, and achieve more scientific and reasonable development.

3. ERP Hospital Financial Management System Risk Assessment Method

3.1. Risk Assessment Elements of Hospital Financial Management System

The risk assessment in the hospital financial management system mainly includes the following basic elements:

1) Preparation before installation of the hospital financial management system. Before the hospital has officially installed the financial management system, it is necessary to analyze the need to install the financial management system in the hospital. At the same time, the feasibility of the implementation of the financial management system after the installation should be demonstrated. If it is found that there will be potential risks in the implementation process. The hospital must make corrections, and will not start the installation until there is no problem at all in the argumentation.
2) Analysis of the existing risks in the formal use of the hospital's financial positive management system. The period of formal use of the financial management system is one of the most important links in the normal operation of the financial management system after the installation. The risk assessment during the operation period is to improve the operation level of each stage, so that the normal development of the overall financial management plan of the hospital is guaranteed. The characteristics of the risks that the hospital financial management system is running are as follows:
    a) The characteristics of diversified risk types: Compared with traditional hospital management thinking, the hospital financial management system is an innovation and upgrade. Therefore, financial risk control must consider both technical factors and personnel factors.
    b) Since there are internal and external factors in risk: the normal use of the hospital's financial management system requires not only the use of internal data resources in the hospital, but also the hiring and inquiring of relevant professionals from outside the hospital, as well as the need to buy some intrusion prevention software. Because the hospital financial management system has the above characteristics, it is decided that the financial management system risk has both internal and external reasons.
    c) More risk control points. The hospital financial management system will be in contact with multiple different departments of the hospital during normal use. Therefore, there is an urgent need to control multiple risk sources in order to prevent and control the risks of the entire financial management system.

3.2. Risk Identification Analysis of Hospital Financial Management System

At present, in enterprises, no matter what kind of ERP system software, it is integrated with financial management. The major management modules of the hospital financial management system deal with a certain business individually or jointly with other modules to carry out a certain business [14,15]. Processing will form the core control point. Corresponding to the parameter setting, in the process of having a strong and weak impact on the hospital's internal risk control degree, it will also cause other risks. For example, in the general ledger management of the hospital financial management system, in order to strengthen the management of the hospital's use of cash, bank deposits, and items equivalent to cash, whether the cashier's signature is required in the vouchers of the accounting subjects becomes the most important control one of the parameters. The parameters for the internal financial control of the hospital are mainly manifested in: if the cashier is required to sign all the businesses that use money, the cashier has the right to refuse to sign the payment slip for some items that can be bought or not. This is conducive to the mutual restriction and supervision of the use of funds between different departments and different positions in the hospital, so as to make the cash business have a certain degree of authenticity and integrity.

Based on the above discussion, according to the relevant hospital management and its financial management system risk research, the risk identification list is obtained: risk level→risk type→risk point. Through the above analysis, the risk assessment result of the hospital financial management system from the perspective of ERP can be made close to the actual risk value.

3.3. Establish a Risk Assessment Model for the Hospital Financial Management System

Through the above analysis results, a theoretical foundation is laid for the establishment of a risk assessment model for the hospital financial management system [16-18]. The relevant personnel or risk assessors of the system can follow the data collected by the hospital financial management system, and then follow the ERP operation process to determine the occurrence of system risks. Probability is estimated. In the risk assessment of the hospital financial management system based on the ERP system, the probability of the risk of the hospital financial management system is greatly affected by the normal operation process of the hospital's relevant business and the vulnerability of related information and data. Moreover, this kind of threat event will often undergo major changes along with the system operation process. Therefore, in order to meet the needs of the system assessment, all possible threat events are set as T, and then the probability of T occurrence is set as P(T). Suppose the dangerous events formed in the hospital financial management system are divided into four categories, namely A, B, C, and D.

The probabilities of formation corresponding to these four types of events are P(A), P(B), P(C), P(D). From this, the expression of the threat probability P(T) of the ERP module that is related to the four types of event factors analyzed in the previous section is obtained as the following (1):

$$PT = P(A) \cdot P(B) \cdot P(C) \cdot P(D) \tag{1}$$

Assuming that P(A), P(B), P(C), and P(D) are not related to the hospital's ERP, the above four types of assessment content are integrated:

$$P(T) = P(A) \cdot P(D) \tag{2}$$

In (2), P(A) represents a correction factor. Of course, this factor is mainly related to ERP business. Then P(D) represents a threat probability, which is related to the fragility of information in the hospital's financial management system. The points co-exist. Set a certain type of threat event Ti(i=1,2,...,n) in the hospital management system to form the corresponding threat vulnerability point as Di={Di1,Di2,...Dim}, set Each vulnerability in each of the vulnerable points is a probabilistic event generated independently, so at a certain point in time, the lowest point in the set of vulnerable points corresponding to each threat will also retain one point to be applied. The probability P(Di) can be expressed as (3) formula:

$$P(D_i) = \prod_{i=1}^{m} (1 - P(D_{ij})) \tag{3}$$

In formula (3), P(Dij) represents the probability of the vulnerability of the i-th type of threat event at j time points. According to formula (3), we can know that if the threat formed by the information in the normal use of financial management ERP related business is completely applied to the calculation process of the probability of danger, then the probability formed by the threat event: P(Ti) The representation formula is (4):

$$P(T_i) = P(A)_i (1 - \prod_{i=1}^{m} (1 - P(D_{ij}))) \tag{4}$$

From the analysis in the previous article, we can know that in the normal implementation of the ERP project in the hospital financial management system in the hospital financial management system, the threats encountered are diversified, and the quantitative standards for risk threats under different characteristics are different. System risk threats are scientifically evaluated through the use of uniform standards, and the practical applicability is not strong. If a variety of different standards are used to evaluate system risk threats, it will increase the evaluation of energy loss. Therefore, the risk consequence evaluation value Q* that can be obtained from this is defined as:

$$Q^* = P(T_i) \cdot d^* \tag{5}$$

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In equation (5), d* represents the relative impact value, which mainly refers to a certain threat event in the hospital management system, and its expression is equation (6):

$$d^* = \frac{d}{max\{d\}} \tag{6}$$

In formula (6), d represents a certain limited impact value, but it belongs to a certain threat event in the hospital financial management system; max{d} represents the maximum impact value of the table, which mainly refers to the hospital financial management system Of a threat event in. According to the calculation described above, and then based on the dimensional risk threat, combined with its weight value, the influence value expression (7) of the risk system can be obtained:

$$E\left(T_i\right) = P(T_i) \cdot \sum_{i=1}^{s} w \cdot d^* \tag{7}$$

Among them, E(Ti) is the risk impact value of the hospital financial management system, W is the weight value, and S is the multi-dimensional risk threat attribute value. Through the above analysis, combined with formula (4), it is possible to finally obtain the hospital financial management risk evaluation value from the ERP perspective:

$$E\left(T_i\right) = P(A_i)(1 - \prod_{i=1}^{m}(1 - P\left(D_{ij}\right))) \cdot \sum_{i=1}^{s}(w \cdot d^*) \cdot a \tag{8}$$

In the formula (8), a represents the adjustable coefficient, which refers to the coefficient in the evaluation process of the hospital financial management system. This coefficient is controlled between [0.3, 0.4], which can effectively improve the flexibility of the evaluation process, This is the adjustment of the evaluation process has been improved. The calculation conclusion in formula (8) is the risk assessment model of the hospital financial management system from the perspective of ERP.

4. Experimental Conclusions and Analysis

The subject of this experiment is the People's Hospital of a certain city, which is divided into two major medical areas, namely the local district and the eastern district. In this department, the main departments of orthopedics, dentistry, brain, and oncology have been set up, in addition to internal medicine and surgery, and rehabilitation centers. In the eastern district, there are department of gynecology, obstetrics and gynecology, and pediatrics, which can provide infectious disease departments. The hospital financial management system module is shown in Figure 1.

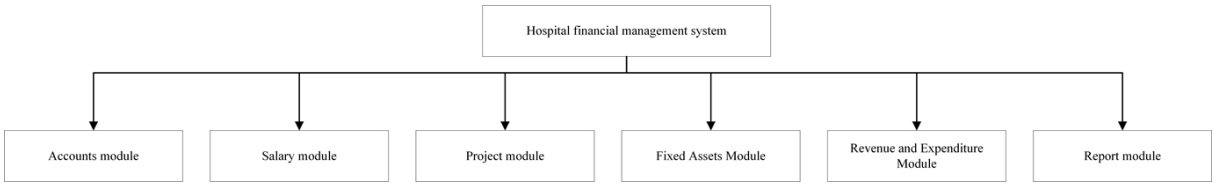

Figure 1. The main modules of the hospital financial management system

The main financial statements of the hospital are shown in Figure 2.

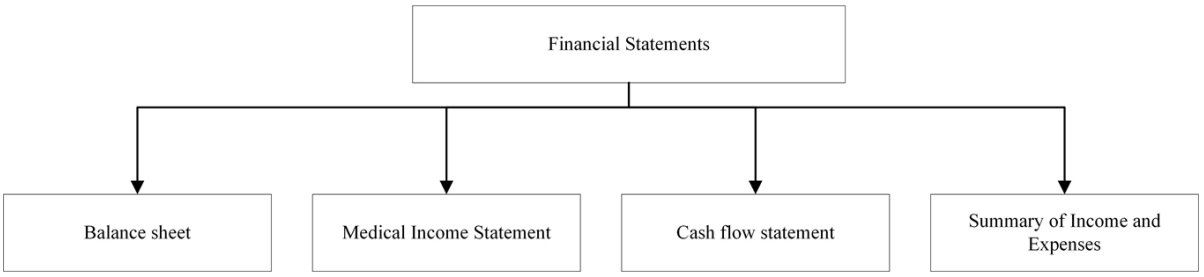

Figure 2. The main financial statements of the hospital

By analyzing the major modules and main financial statements of the hospital's financial management system, we can have a more in-depth understanding of financial risks and other risk issues such as the composition of the hospital's funds and whether it can produce economic benefits. An experimental platform is established on Matlab software to simulate the evaluation measures proposed in this article, and then use different indicators to verify the accuracy and reliability of the risk evaluation method based on the ERP hospital financial management system. The evaluation experiment indicators are mainly as follows: the size of the error value between the risk assessment result and the actual value; the energy consumption produced by the risk assessment; the adjustability produced during the risk assessment. The experimental results are shown in Figure 3.

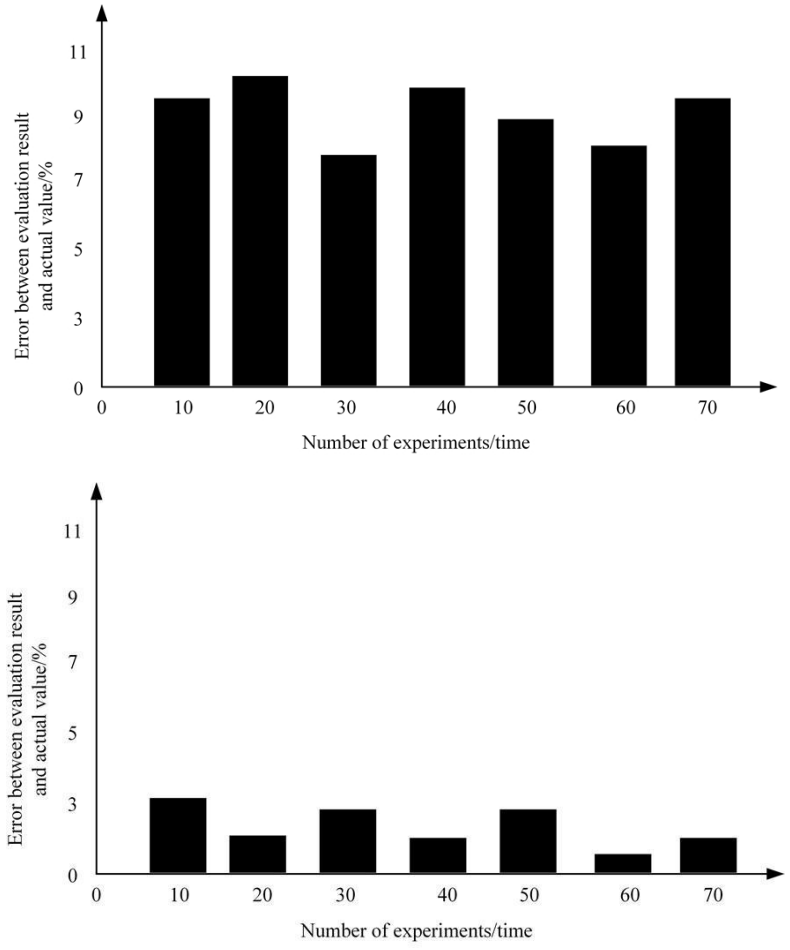

Figure 3. Comparison of the error rate between the evaluation results of the two water methods and the actual value

It can be known from Figure 3(A) that using the PCA-RBF PPP project risk assessment method, the average error rate between the results obtained and the actual value is 9%. From Figure 3(B), it can be known that the hospital financial management from the perspective of ERP System risk management assessment, the average error rate between the obtained result and the actual value is 2.429%. The main reason for this result is that the financial management system risk assessment method from the perspective of ERP proposed in this article is based on the financial management risk assessment elements and risk identification checklist, and the difference between the evaluation result and the actual risk value is getting more and more different. small. It can be seen that the risk of hospital financial management system from the perspective of ERP reduces the error rate, greatly improves the accuracy of risk assessment, and increases the reliability of the assessment method [19-24].

From the results, it can be seen that the IDGSO corporate credit risk assessment measures have relatively large fluctuations in the energy consumption assessment curve. When the assessment time is 2.5h, the curve fluctuates the most, indicating that the energy consumption value is the largest. ERP's hospital financial management system risk assessment energy consumption The curve is relatively stable with little fluctuation, indicating that the energy consumption of the evaluation measure will not fluctuate greatly with the change of the evaluation time, which reflects that the energy consumption of the evaluation method can be controlled within the range. This paper proposes that the risk assessment measures of the hospital financial management system based on the perspective of ERP are based on the quantitative standards of the risk threats under different characteristics, and different standards are used. By using different standards to consider the system risk threats to assess whether the energy consumption is too high, etc., the implementation of the dimensionless treatment of the risk assessment value proposed in this article will enable the possibility of implementing the risk assessment of the hospital financial management system to be enhanced, and to assess the energy consumption Get lowered.

The adjustability of the formal application process of the risk assessment measures of the hospital financial management system from the perspective of ERP is better than the adjustability under the measures of disturbing fuzzy comprehensive assessment, because the assessment measures set the corresponding adjustable coefficients, and also Controlling this coefficient within a certain range improves the flexibility of the evaluation process, which is the adjustability of the evaluation process.

5. Conclusion

The hospital financial management system is one of the most important tools for hospital financial management, and it plays a very important role in the normal operation of the hospital. Therefore, this article proposes a new type of evaluation measure, namely the risk evaluation measure of the hospital financial management system based on the ERP perspective. The evaluation measure is based on the evaluation elements of the hospital financial management system and the risk identification list, and then uses the ERP module to establish Hospital financial management risk assessment model. Finally, the relevant experimental research shows that the use of ERP hospital financial management system risk assessment measures has a smaller error rate between the assessment results and the actual values compared with other assessment measures; the estimated energy consumption change curve does not fluctuate much, indicating that Within the controllable range; the evaluation process is highly adjustable. So as to provide useful help for the research and development in this area.

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