Original Article

A model for measuring the activity of audit tools on improving the financial performance of hospitals

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Abstract

Background: Improving service delivery and performance quality is one of the most important issues for governments. The aim of this study was investigating the model of measuring the activity of audit tools on improving the financial performance of hospitals.

Methods: This research was a quantitative-qualitative, which was conducted based on the systematic method of Strauss & Corbin by snowball sampling technique. In order to formulate the optimal model, semi-structured interviews were conducted with experts until theoretical saturation. The information of 143 professors, hospital matrons, accountants and auditors active in the field of public and private hospitals in Tehran was used.

Results: Policy making need to review the information system, optimal allocation of funding and facilities, paying attention to the importance of financial reporting in the external space and improving the standard of preparing financial reports were among the effective factors for improving performance. In the quantitative evaluation of the model, structural equation modeling and Smart PLS software were used. All significant numbers and standardized coefficients were greater than 0.4 and the model was approved. Considering that the data fit criterion, the fit of the final model was confirmed. The main finding in the field of digitalization of the organization was to improve the level of education and electronic tools based on artificial intelligence.

Conclusion: Considering the sensitivity of the hospital's performance and the importance of health care and the need for a detailed audit system, paying attention to these factors will improve financial performance.

Keywords: Commission on Professional and Hospital Activities; Economics; Hospitals; Quality of Health Care.

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Introduction

Utilizing audit computer tools improves efficiency and reduces the cost of audit risks, improves response time, and reduces the level of technical information required for hospital data analysis. This allows less experienced employees to take on the duties and tasks currently performed by the more expensive senior employees. In other words, much time and money can be saved by using the previous year's information in a computer audit and transferring them through files instead of manual preparation (1). Leading countries in this area mostly utilize

software for planning, monitoring, and recording affairs, as well as pre-prepared public software programs such as electronic worksheets and word processors. They also use smaller software such as checklist software related to laws and drafting audit programs. However, serious steps have not been taken in Iran in this regard (2). Hence, even many senior managers working in this profession are not aware of the existence of audit computer tools and still plan traditionally to achieve their goals.

Accounting information provided by companies includes quantitative and qualitative information. Accordingly, based on the information needs of different people and groups, accounting information should interact with the environment. Optimum decision-making about investment in various business institutions requires transparent and comparable financial information. Thus, it is essential to use audit computer tools to check data and information (3). The goal of a healthcare audit system, including a hospital information system, is to manage the information that healthcare workers need for the efficiency of their tasks and activities and review data and information on the health status of patients.

As stated earlier, computer audit tools are vital to reduce hospital data gaps (4). They facilitate communication, integration, and coherence of information, coordination of operations, and activities of employees in the health area. Lack of attention to computer audit tools and continuing with the traditional process in hospitals, the audit of patients' data and information will cause many problems. It will finally lead to increased costs and reduced hospital performance. Due to the lack of studies on computer audit tools, especially in the health sector and hospitals, this study fills the gap of previous studies in this field, and its results will improve the performance of hospitals in the country and reduce costs.

Methods

Research environment and population

This study was conducted with a mixed quantitative-qualitative approach and grounded theory method by using semi-structured interviews. A list of experts in the field of auditing related to artificial intelligence and accounting (auditors) was prepared. Then, the study goals were explained to them via phone, face-to-face, and e-mail, and they were invited to conduct an interview. Fifteen people were selected as interviewees (from experts in the field of auditing). All interviews were conducted face-to-face and with prior coordination (except for one case that was conducted via phone). In addition, the importance of observing ethical principles was explained to the participants to gain their trust and confidence before the start of the interview. Face-to-face interviews were conducted in one session. Each interview was immediately implemented and underwent initial coding and analysis. The interview sessions lasted about 60 to 90 minutes. The interview questions were open-ended and were asked during the interview. To answer one question might raise another question. However, key questions were asked along with other questions that arose during the interview to control the interview process by the interviewer. Finally, a question was added to the interviewee asking if there were any other comments.

The method of data collection in the quantitative section

In the present study, in the quantitative section, information was first collected from the questionnaire, and the library studies method was used to review the research literature and background.

Content validity review (CVR)

To determine the content validity index, seven experts were asked to evaluate each structure concerning the content taken from

it in three ways: necessary, useful, or unnecessary.

$$CVR = \frac{n_e - \frac{n}{2}}{\frac{n}{2}} \quad (1\text{-}3)$$

Where n_e is the number of experts who identified the component as necessary and N is the total number of responsive experts. Based on Lawshe's table, the minimum CVR value for acceptance is higher than 0.49. The acceptance or rejection of the components was examined based on the following criteria. If the CVR value of the question is equal to or higher than 0.49, it will be accepted. If the CVR value of the question is between zero and 0.49 and the impact factor (numerical mean of judgments) is more than 1.5, it will be accepted. If the CVR value is less than 0.49 and the impact factor is less than 1.5, it will be rejected.

Data collection method

No hypothesis was proposed in this study since it was a qualitative research based on the exploratory research method. Accordingly, this study answers the following questions:

What are the strategies to improve the audit computer tools to reduce the hospital data gap?

What are the outcomes of using audit computer tools to reduce the hospital data gaps?

What is the appropriate model for evaluating computer audit tools to reduce the hospital data gaps?

Statistical analysis

In this study, the Strauss & Corbin (5) paradigm model was used for axial coding in the qualitative section. Data were analyzed based on grounded data theorizing method after interviewing in three stages open coding, axial coding, and selective coding. A structural equation modeling method with a partial least squares approach was used for data analysis. In this study, variance-based structural equation modeling and Smart-PLS software were used to test the research hypotheses. In the measurement model section, the relationship between each latent variable and its observed variables was analyzed.

Ethical considerations

In this article, the texts' authenticity, honesty, and trustworthiness were observed. This article was taken from a PhD thesis in the field of accounting of the Islamic Azad University of Babol branch with the title of "Presentation of the evaluation model of computer audit tools to reduce hospital data gaps". Its code of ethics IR.IAU.BABOL.REC.1402.127 dated 2024/01/24 was obtained from the ethics committee of the Islamic Azad University, Babol branch.

Results

The qualitative section of this study was conducted to determine the hospital data gap using experts' opinions using semi-structured interviews with 15 people. Table 1 presents its characteristics.

Reviewing the driving factors of computer audit tools revealed the primary categories as shown in Table 2.

Investigating the interfering conditions of audit computer tools revealed the following intervening factors in evaluating the hospital data gap: Internal policies, macroeconomic policies, sanctions, exchange rate fluctuations, inflation, high costs of constant updating of programs and software, high costs of compatibility and replacement of old systems with new systems, high support costs, high costs of adapting and maintaining equipment, the high cost of installing network security software, the uncertain rate of return on investment, unwillingness to accept new technology in human resources, the fear of using technology, experts in organizations in the field of information and

Table 1. Characteristics of experts participating in the qualitative section of the study

Row	Documents	Job status	Gender	Subject-related role
1	Healthcare service management	University lecturer and researcher in the related field	Male	Scientific
2	Healthcare service management	University lecturer and hospital manager	Male	Scientific-executive
3	Nursing	Researcher and hospital matron	Female	Scientific-executive
4	Specialist physician	University lecturer and researcher in the related field and the hospital head	Male	Scientific-executive
5	Health economics	University lecturer and researcher in the related field	Male	Scientific
6	Policymaking	University lecturer and researcher in the related field	Male	Scientific
7	Hospital Manager	University lecturer and researcher	Male	Scientific-executive
8	Hospital Manager	University lecturer and researcher	Male	Scientific-executive
9	Health policy-making	University lecturer and researcher	Male	Scientific-executive
10	Financial administrative assistant	University lecturer and researcher	Male	Scientific
11	Healthcare service management	University lecturer and researcher	Female	Scientific
12	auditor	University lecturer and researcher	Male	executive
13	Consultant in financial affairs in the field of health	University lecturer and researcher	Male	executive
14	Hospital head	University lecturer and researcher	Male	Scientific-executive
15	Hospital head	University lecturer and researcher	Male	Scientific-executive

communication technology, adequacy of hardware and software and related networks in hospitals, durability and stability of information in the system,

Table 2. The primary categories regarding the driving factors of audit computer tools

Axial code	Open codes
Need to reform financial statements	Policy-making and planning
Using an integrated policy-making model	
Adopting desirable policies	
Facilitating the implementation of policies	
Identifying the deviations from executive programs and policies	
Improving the systemic view in the field of financial reporting dynamics	The need to review the information system
Improving the comprehensive information system	
Improving the flexible information system	
Improving the implementation of information systems	
Improving accounting and auditing systems	
The difference of views on accounting information	
Funding for the provision of new equipment and technologies	Optimal allocation of funds and facilities
The contradiction between the amount of cost in the field of technology and the gain of benefit "Technology Paradox"	
Improving the development of the information system	Attention to the importance of financial reporting in an external space
Improving attention to accounting information in decisions	
Improving the understanding of the importance of accounting in economic development	
The existence of a chronicle view of accounting	
Improving coordination between information provided with economic conditions	
Improving the quality of financial information of companies	Improving the standard of preparation of financial reports
Access to complete and transparent information	
Improving the level of information symmetry	

Table 3. Axial and open codes of the intervention conditions for the evaluation of computer audit tools to reduce the hospital data gap

Axial code	Open codes
Micro factors	Policies within the organization
	Changing non-financial performance evaluation indices to non-financial ones and increasing responsiveness and compliance within the company
	Durability and stability of information in the system
	Tools support
Cost factors	High costs of constant updating of programs and software
	The high cost of adapting and replacing old systems with new systems
	High support costs
	The high costs of adapting and maintaining equipment
	The cost of installing network security software
	Uncertain rate of return on investment
Macro factors	Economic and macro policies
	Exchange rate fluctuations
	inflation
	Expansion of international and domestic stock exchanges
	Investing in global and national economic infrastructure
	The expansion of economic wars and internal and external risks
	The spread of epidemics such as Corona
	Economic policies such as resistance economy, privatization, 20-year visions, and five-year development plans in the health system.
	Changing the way money is exchanged
	An increase in aging
	Expansion, volume, and complexity of laws
Systemic factors	The expansion of economic wars and internal and external risks
	Sanctions
	The rate of transition to democracy
Technological factors	Internet speed
	Unwillingness to accept new technology in the human force
	Fear of using technology
	Experts and specialists in organizations in the field of information and communication technology
	Establishing electronic communication between the auditor and relevant organizations in some parts of the country
	Adequacy of related hardware and software and networks in hospitals
	Expansion of electronic health
Health factors	The instability of health programs such as the family physician plan, the transformation plan, etc.
	Health marketing
	Increasing the level of knowledge and responsiveness of patients
	Increasing the level of responsiveness of hospital managers
	Increasing the expectations and demands of patients from price and quality
Environmental factors	Lack of management stability
	Lack of will of the management in dynamizing the financial reporting environment
	Lack of acceptance of the dynamization process in the organization by employees
	Lack of technological infrastructure related to artificial intelligence-based dynamics
	Weak knowledge and managerial skills
	Lack of strict implementation of policies
	The structure of competitors

support of tools, internet speed, expansion of international and domestic stock exchanges, investment in global and national economic infrastructure, establishing electronic communication between the auditor and relevant organizations in some parts of country, the spread of economic wars and internal and external risks, the spread of epidemics such as Coronavirus, economic policies such as resistance economy, privatization, 20-year visions and five-year development plans in

the health system, increasing the level of knowledge and responsiveness of patients, increasing the level of responsiveness of managers, increasing expectations and demands of patients from price and quality, expansion, volume, and complexity of laws, rate of transition to democracy, changes in money exchanges, expansion of electronic health, an increase in aging, instability of health programs such as family physician plan, transformation plan, changing non-financial performance evaluation indices to non-financial ones, increasing responsiveness and compliance with laws within the company, and health marketing Table 3.

Investigating the proposed strategies for audit computer tools showed that digitization, training employees, training managers, disclosing audit information, modeling the audit experiences of successful countries, informing the public, training patients and their companions, allocating funds to digitization in the audit field, using experienced financial consultants are the strategies for evaluating hospital data gaps Table 4.

The results of two Delphi rounds are presented below. In the second round, no factor was removed, indicating the end of the Delphi rounds. Generally, one approach to the end of the Delphi is to compare the mean scores of the first and second-round questions. If the difference between the two stages is smaller than the low threshold (0.5), then the survey process is stopped. Two indices were used to complete the Delphi rounds. The first index is the Kendall coefficient and the second index is the difference between the mean opinions of the first and second rounds. Based on the rule of thumb, Heuel (2012) believes that there will be no agreement if the value of w is less than 0.5. If it is between 0.5 and 0.7, the agreement will be moderate, and if it is between 0.7 and 0.9, it will be desirable. If the value of w is above 0.9, it looks abnormal. According to the results Table 4, by removing the unrelated indices, the Kendall coefficient for the strategy index increased from 0.51 to 0.82, which is on the

Table 4. Axial and open codes of strategies

Open codes	Axial code
Digitization of processes	Organization digitalization
Digitization culture	
Training hospital staff	Improving the training level
Training hospital managers	
Training patients and their companions	
Informing people	
Six Sigma exercises	Electronic tools and artificial intelligence
Business process management model	
Data monitoring strategies include risk-based approaches, data source verification, central monitoring, and remote communication (e.g. phone calls).	
Triangulation of data often with statistical analysis	
Data mining techniques	
Using artificial intelligence, blockchain, and metaverse	
Deep learning and natural language processing	
Data set validation	
Clinical and administrative software, web portals, and electronic data collection platforms such as Research Electronic Data Capture [REDCap], CommonCarecom, MalariaCare, Assistance Publique–Hôpitaux de Paris–Clinical Data Repository [AP-HP-CDR]	
Care units like DaMa	
Clinical Information System [ICU-DaMa-CIS])	
Data monitoring plans	
Electronic measurements (e-measures)	

threshold of being desirable. According to the difference between the first and second rounds of Delphi analysis, the mean difference is less than 0.5 in all the selected indices. Thus, the Delphi rounds can be completed. After confirming the factors, the structural equation model should be confirmed.

Results of structural equations

The validity direction of the research data is displayed based on the factor load. Figure 1 shows the factor load of the latent variables Figure 1.

The validity direction of the research data is displayed based on the factor load. Variables x18, x21, x27, and x32 have a factor load of less than 0.3, so they were removed from the model and the model was re-estimated Figure 2.

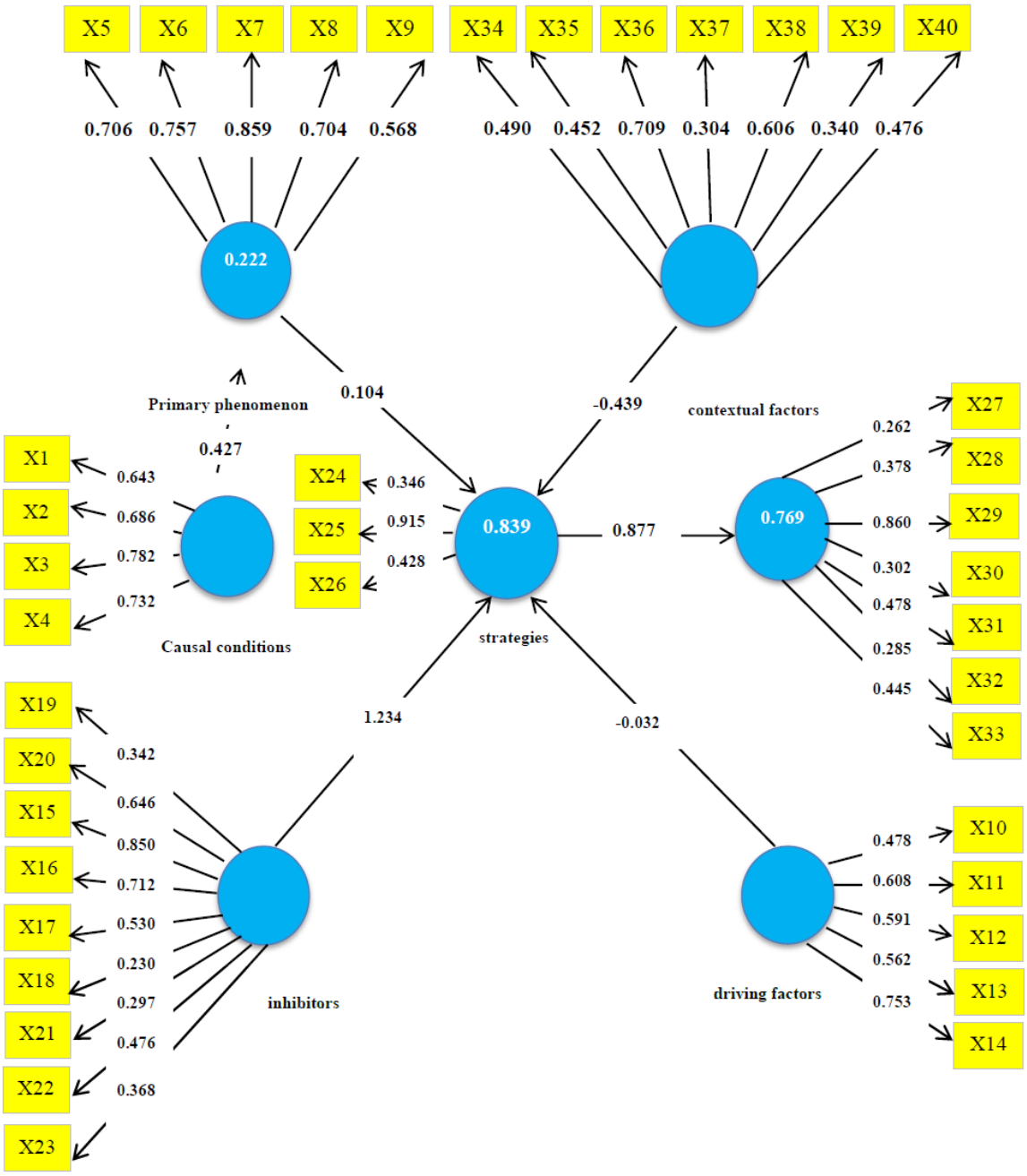

Figure 1. Initial factor load of the latent variables

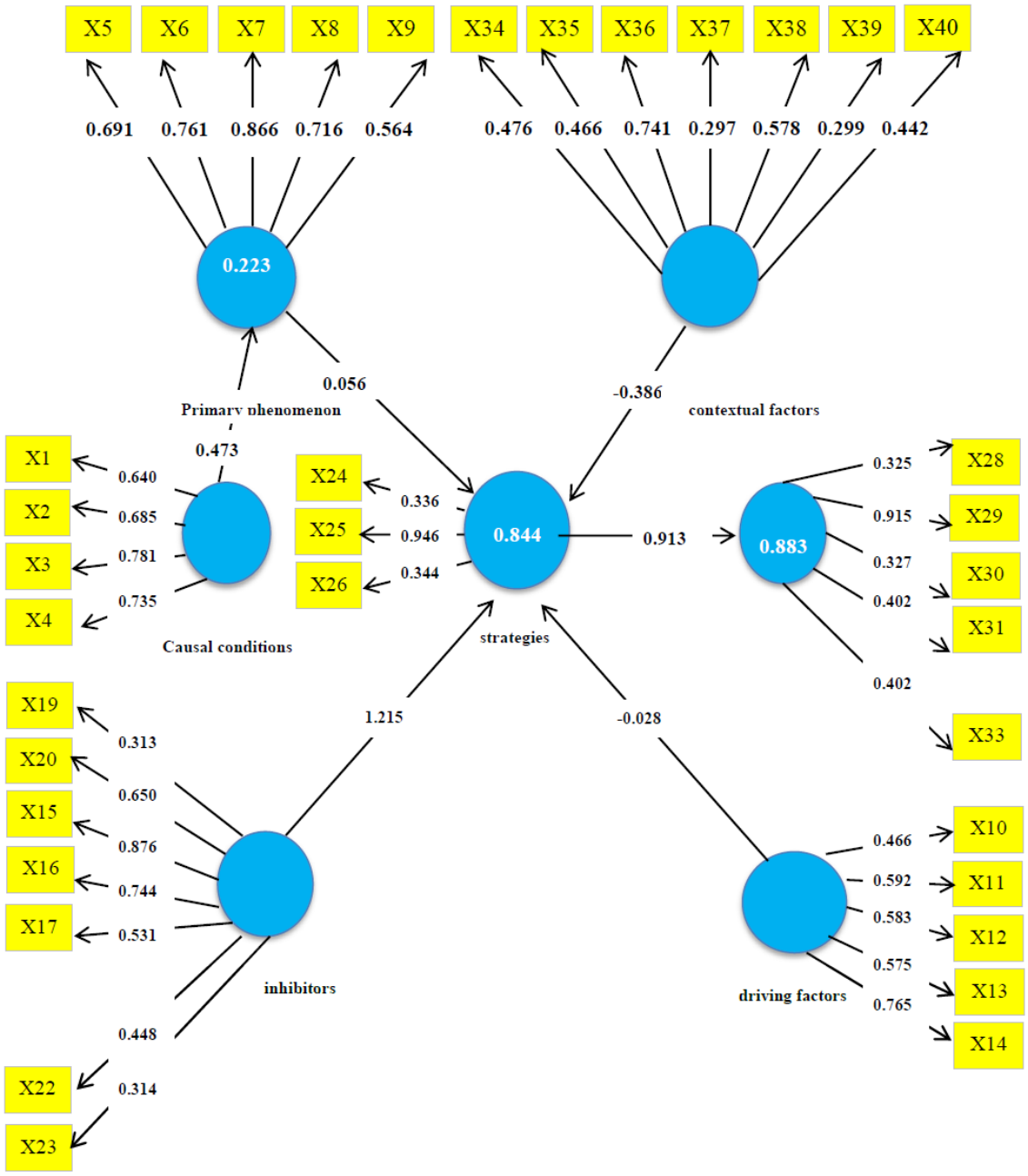

Figure 2. Secondary factor load of the latent variables

The validity direction of the research data is displayed based on the factor load. Variables x39 and x37 have a factor load of less than 0.3, so they were removed from the model and the model was re-estimated Figure 3.

Cronbach's alpha and composite reliability: this index is used to calculate the possibility of repeatability and the generalizability of the results to other samples.

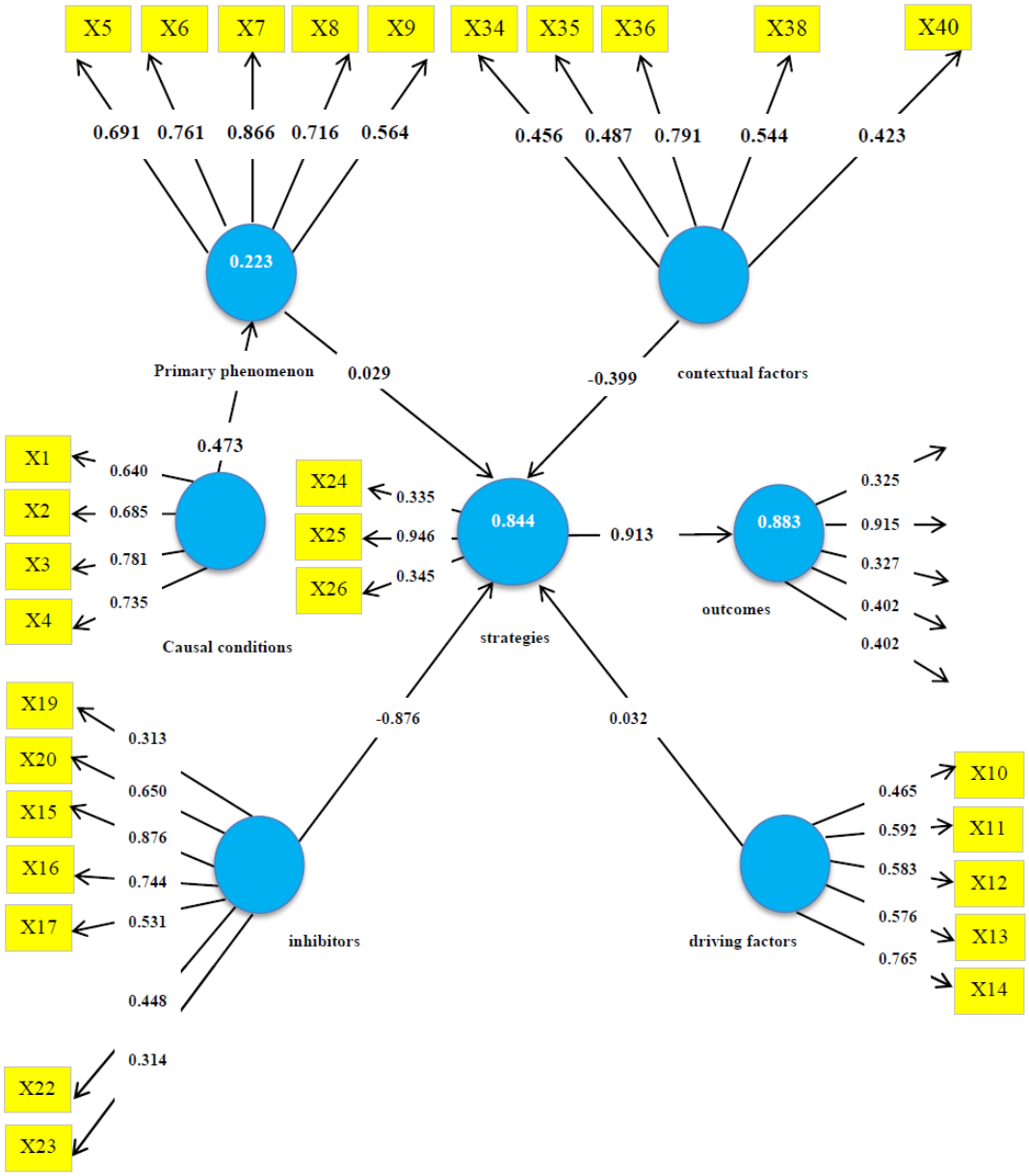

Figure 3. The final factor of latent variables

Table 5. Cronbach's alpha and composite reliability

Variables	Cronbach's alpha	composite reliability
Causal conditions	0.859	0.855
Primary phenomenon	0.850	0.863
Strategies	0.851	0.866
Outcomes	0.760	0.815
Inhibitors	0.872	0.877
Driving factors	0.898	0.874
Contextual factors	0.855	0.823

The results of examining Cronbach's alpha coefficients and composite reliability in Table 5 showed that the values of these indices for all latent variables are more than 0.7. Thus, the reliability of the measurement tools was confirmed using these two indices.

Validity of measurement tools

Table 6. Average variance extracted

Dimensions	AVE
Causal conditions	0.693
Primary phenomenon	0.691
Strategies	0.513
Outcomes	0.609
Inhibitors	0.653
Driving factors	0.579
Contextual factors	0.582

Table 6 presents the average variance extracted values of the variables. As all variables have values higher than 0.5, it can be stated that the convergent validity of the measurement tools is confirmed.

Discussion

Structural equation modeling and Smart PLS software were used in the quantitative evaluation of the model. All significant numbers were higher than 1.96 and standardized coefficients were higher than 0.4, so the model was confirmed. Since the data fit criterion was 0.711, the final model fit was confirmed. Based on the results, the most significant strategies in the field of organization digitization will be improving the level of education and electronic tools based on artificial intelligence. Based on the results of the analysis of the interviews, some factors were identified as the causal factors affecting the evaluation of the audit computer tools to reduce hospital data gaps. The results of the analysis of the interviews revealed that the effective interaction of managers, auditors, and internal auditors is one of the causal factors affecting the evaluation of audit computer tools to reduce the hospital data gap. In other words, the results revealed that proper and good communication between hospital managers and auditors is needed to use computer audit tools well. Financial information is vital in hospitals.

In recent years, managers of various departments, including the treatment department, have been looking for more information to evaluate and judge the quality of their performance and operational advances. The necessity of performance audits to evaluate economic efficiency and effectiveness has increased significantly. Thus, the importance of performance audits and improvement of operations is highlighted more than ever. Thus, the financial performance of the hospital can be improved and the gap in the hospital data can be reduced with correct and optimal sensitivity. As the results of this study indicated, good communication between the hospital manager and auditor managers is one of the effective factors for this transparency and optimization. These results are in line with those of studies conducted by Hut-Mossel et al. (6), Farham et al. (7), Talei et al. (8), Marfou et al. (9), Barkhordar et al. (10), Alsaad & Taamneh (11), Aly (12), Lee et al. (13), Sakhil et al. (14).

Marfou et al. stated that as machines replaced physical labor during the industrial revolution, the rapid progress of digitization and automation of work affected the entire audit industry, although it caused both threats and opportunities for this industry. The continuous digitalization of the economy creates challenges and opportunities for the audit profession that require auditors to adapt to their employers (9).

This study also revealed that change in accounting standards, processes, and procedures is one of the causal factors affecting the evaluation of computer audit tools in reducing the hospital data gap. These results are consistent with those of studies conducted by Alsaad & Taamneh (11), Lee et al. (13), Sakhil et al. (14), Laal et al. (15), Nouri (16), Shahi et al. (17).

Talei et al., stated that the primary goal of performance audit is to effectively evaluate operational methods and improve it, and its success criterion is to apply the suggestions. In other words, a performance audit is associated with improving future performance, policies, planning, control systems, and decision-making methods. The newer these trends and planning are based on new techniques and tools, the higher the quality of the implemented methods will be (8).

The results also revealed that corporate governance is one of the causal factors affecting the evaluation model of computer audit tools to reduce the hospital data gap. These results are in line with those of studies conducted by Gerami et al. (18). The results also revealed that opportunities

resulting from the adoption of global audit laws are causal factors affecting the evaluation model of computer audit tools to reduce the hospital data gap. These results are in line with those of studies conducted by Chouhan et al. (19), Nagy et al. (20), and Stank et al. (21). Rahnemaye Pezeshk & Rahnamai Rudpashti (22) stated that providing transparent and clear information is one of the basic components of responsiveness and informed economic decisions. The disclosed information of organizations is one of the vital sources of information for investors, creditors, and other stakeholders. The faster speed of information dissemination in the economy will increase the possibility of making informed guarantees and the responsiveness of the private and public sectors in gaining and consuming resources and reducing financial corruption. The auditing profession is trying not to be far from the globalization of the economy and the revolution of information and technologies and to move along with the technological changes in line with the needs of society.

Recommendations

A comparative study of the audit systems of successful countries

Determining the factors affecting the evaluation of computer tools in auditing using the DEMATEL technique

Prioritizing factors affecting the evaluation of computer tools in auditing using the AHP technique

Conclusion

Utilizing modern tools and computer tools in auditing improves the speed, transparency, and proper access to this information. The results of this study revealed that some factors play an intervening role in the use of computer tools in audit quality, some factors play a contextual role, and some factors are outcomes of using these computer tools. It is essential to pay attention to these factors due to the sensitivity of the hospital's performance and the high importance of health care and services and use these factors as accurately and better as possible.

Authors' contribution

Fatemeh Khodadad Hatkehposhti and Reza Fallah developed the study concept and design. Hamid Reza Gholam nia Roshan and Kaveh Azinfar acquired the data. Fatemeh Khodadad Hatkehposhti and Reza Fallah analyzed and interpreted the data, and wrote the first draft of the manuscript. All authors contributed to the intellectual content, manuscript editing and read and approved the final manuscript.

Informed consent

Questionnaires were filled with the participants' satisfaction and written consent was obtained from the participants in this study.

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Conflict of interest

The authors declare that they have no conflict of interests.

References

1. Yesmin T, Carter MW. Evaluation framework for automatic privacy auditing tools for hospital data breach detections: A case study. International journal of medical informatics. 2020;138(1):104123-33. https://doi.org/10.1016/j.ijmedinf.2020.104123
2. Adler-Milstein J, Holmgren AJ, Kralovec P, Worzala C, Searcy T, Patel V. Electronic health record adoption in US hospitals: the emergence of a digital "advanced use" divide. Journal of the American Medical Informatics Association. 2017;24(6):1142-1148. https://doi.org/10.1093/jamia/ocx080
3. Amini M, Rabiee A, Azarmehr N, Khorrami F. Evaluation of success rate hospital information system project, using gap analysis model in Shahid Mohammadi Hospital, Bandar Abbas, Iran. Hormozgan medical journal. 2013;17(5):431-440. https://hmj.hums.ac.ir/Article/88238
4. Choi SJ, Johnson ME. Do hospital data breaches reduce patient care quality?. In14th Workshop on the Economics of Information

Security (WEIS), San Diego, CA, USA;2019. https://doi.org/10.48550/arXiv.1904.02058
5. Strauss AL, Corbin J. Basics of qualitative research: Grounded theory: Procedures and Technique. (2nd Edition); Sage, Newbury Park, London;1998.
6. Hut-Mossel L, Ahaus K, Welker G, Gans R. Understanding how and why audits work in improving the quality of hospital care: A systematic realist review. PloS one. 2021;16(3):e0248677. https://doi.org/10.1371/journal.pone.0248677
7. Farham V, Shafiee H, Sheybani Tezerji A. Designing and explaining the model of predicting the failure of hospital industries based on audit variables and disclosures of audit reports in hospitals. Political Sociology of Iran. 2022;5(10):1746-1763. https://doi.org/10.30510/psi.2022.299757.2136
8. Talei H, Gord A, Khorashadizadeh, M. Provide a performance audit model for executive managers of public hospitals. Governmental Accounting. 2022;9(1):255-286. https://doi.org/10.30473/gaa.2022.64538.1588
9. Marfou M, Bayazidi P, salehpor A. Organizational and Environmental Influences on the Adoption of Computer-Assisted Audit Tools and Techniques (CAATTs). Professional Auditing Research. 2022;2(6):130-148. https://doi.org/10.22034/jpar.2022.553858.1089
10. Barkhordar K, Nazemi A, Namazi NR. Investigating Factors Influencing the Internal Audit Effectiveness and Evaluating Internal Audit Role in Risk Management and Internal Controls of Keshavarzi Bank. Professional Auditing Research. 2021;1(2):8-35. https://doi.org/10.22034/arj.2021.245328
11. Alsaad A, Taamneh A. The effect of international pressures on the cross-national diffusion of business-to-business e-commerce. Technology in Society. 2019;59(1):101158-73. https://doi.org/10.1016/j.techsoc.2019.101158
12. Aly H. Digital transformation, development and productivity in developing countries: is artificial intelligence a curse or a blessing?. Review of Economics and Political Science. 2020;7(4):238-256. https://www.emerald.com/insight/content/doi/10.1108/REPS-11-2019-0145/full/html
13. Lee J, Davari H, Singh J, Pandhare V. Industrial Artificial Intelligence for industry 4.0-based manufacturing systems. Manufacturing letters. 2018;18(1):20-23. https://doi.org/10.1016/j.mfglet.2018.09.002
14. Sakhil AM, Abbas YK, Sallal FF, Allawi KM. The role of internal auditing in improving performance of health institutions to achieve sustainable development. I st International Conference on Achieving the Sustainable Development Goals, Istanbul;2023. https://aip.scitation.org/doi/abs/10.1063/5.0136003
15. Laal Yar A, Zanjirdar M, Farahani F. Presenting a new hybrid model for audit quality and sensitivity analysis of the components affecting it, ethics, and behavior studies in accounting and auditing. 2022;1(4):140-150. https://sanad.iau.ir/journal/sebaa/Article/698307?jid=698307
16. Nouri H. Adoption of New Technology and Inevitable Transformations, Tadbir, Tehran: Industrial Management Organization;2024.
17. Shahi M, Sadoughi F, Ahmadi M, Davari dolatabadi N. The Current State of IT Governance in Education and Training Centers in Iran University of Medical Sciences: A Qualitative Study. Journal of Health & Biomedical Informatics. 2015;2(2):94-105. http://jhbmi.ir/article-1-94-fa.html
18. Gerami A, Mezarie A, Shahabinezhad Z, Hedari Z. The Impact of Audit Efforts on Audit Quality. Journal of Accounting and Management Vision. 2022;5(59):30-40. https://www.jamv.ir/article_149771.html?lang=en
19. Chouhan V, Sharma RB, Goswami S, Ali S. Factor affecting audit quality: A study of the companies listed in Bombay Stock Exchange (BSE). Academy of Accounting and Financial Studies Journal. 2021;25(1):1-9. https://www.abacademies.org/articles/factor-affecting-audit-quality-a-study-of-the-companies-listed-in-bombay-stock-exchange-bse-10111.html
20. Nagy A, Sherwood M, Zimmerman A. CPAs and Office Audit Quality. S&P Global Market Intelligence;2023. http://dx.doi.org/10.2139/ssrn.2965292
21. Stank T, Esper T, Goldsby TJ, Zinn W, Autry C. Toward a digitally dominant paradigm for twenty-first century supply chain scholarship. International Journal of Physical Distribution & Logistics Management. 2019;49(10):956-971. https://doi.org/10.1108/IJPDLM-03-2019-0076
22. Pezeshk Y, Rahnamai Rudpashti F. New Audit Paradigms. Professional Auditing Research, 2021;1(4):96-118. https://doi.org/10.22034/jpar.2022.545540.1071