

Obtaining a Model for Evaluating the Performance of the Health System in the Social Security Organization

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Abstract: *Evaluating the performance of the health care system may be used to generate a common knowledge of prioritizing to enhance health care systems, offer a platform for discussion across programs and departments, and develop a shared understanding of the activities that influence health outcomes. It is crucial to have a model for evaluating the functioning of the health system in multiple organizations, including social security. Therefore, the purpose of this research is to offer a model for evaluating the performance of the Social Security Organization's health system. In this context, essential indicators and components for assessing the performance of the health system using the balanced scorecard model were identified and axes were established by first reading the research literature. After defining the variables and components, the conceptual model of the study is developed and then validated using the statistical methods of structural equations. A questionnaire was used to gather and evaluate the necessary data. In other words, the discovered axes were statistically validated. Customers and procedures are the most essential factors in measuring the success of the health system.*

Keywords: *health system, performance evaluation, structural equations, social security.*

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Introduction

The health system consists of public and private sector organizations, institutions, groups, and people that work to policy, create resources, fund, and offer health services with the goal of restoring, promoting, and sustaining public health (Mossadeghrad, 2015). The World Health Organization outlines the health system's main functions, such as governance, financing, resource production, and health service delivery, as well as the system's three main goals, which include public health promotion and maintenance, meeting public expectations, and providing financial support for health costs. (Bikkhakhian and colleagues, 2015). Access, quality, efficiency, fairness, and resilience are also included as sub-goals of the health system (Fatemi et al., 2019).

Without a question, the primary purpose of any health-care system is to improve individual health and promote community health (Victor et al., 2021). The health system varies from other social institutions, such as education, and from most commodities and services markets in two ways; these variations underscore the significance of fair accountability and financial objectives. One of these distinctions is that health care may come at a high price (Davidi et al., 2021). The need for care is often unexpected.

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People must consequently be protected so that they do not have to choose between financial ruin and health loss. There are two more major aims in between: fair accountability and financing (Victor et al., 2021). Every organization and complex requires continual assessment in a comprehensive method that analyses the organization's internal and external surroundings to enhance its actions. The health system is one of the institutions that should be regularly reviewed, and in this respect, the Ministry of Health and Medical Education of Iran developed the hospital accreditation system (Victor and Farooq, 2021).

In Iran, the Social Security Organization is the biggest insurer and the major axis of private sector insurance. As a result, designing and implementing a performance assessment system is one of the needs for moving the Social Security Organization in the direction of desired services. Because the Social Security Organization is one of the major economic institutions and the strongest, and is the most undeniable support and provider for other economic, social, and household institutions, providing a comprehensive and transparent evaluation system with two approaches of controlling and monitoring the organization's performance and evaluating the performance of the Social Security Organization can have different economic and social effects for countries (Davidi et al., 2021).

A precise system for assessing performance in many areas is essential. The balanced scorecard model is one of the relevant methods for assessing the performance of organizations that is suited to the strategic structure and macro objectives of the enterprise. "Evaluating the performance of an insurance firm using the Balanced Scorecard (BSC) and the best-worst method (BWM)" by Davoodi et al. (2021). In an insurance company, the Balanced Scorecard (BSC) model is used for coordination. For the first time in the insurance market, a framework for merging the BSC model and the worst-case scenario (BWM) to assess its performance in two evaluation periods was provided. They felt that by combining the BSC and BWM models, managers and decision-makers would be able to better assess and comprehend the company's competitiveness, and hence make more efficient and compelling decisions. In their study "Sustainable Balanced Scorecard Architecture and Environmental Performance Results: A Systematic Review," Jasem et al. (2021) found that two architectures dominate the SBSC literature: one is the four dimensions of the Kaplan and Norton Balanced Scorecard model, and the other is the sustainability to the Kaplan and Norton Balanced Scorecard model. The title of an independent dimension under the label of the balanced scorecard's fifth dimension. They developed a conceptual model that links SBSC as a choice tool to environmental performance outcomes in the following section of the study. SBSC knowledge was also shown to be a mediator (mediator variable) in the aforementioned interactions. Furthermore, the presence of experts is anticipated to modify the link between SBSC architecture and environmental performance results, according to specialized competence theory.

Victor and Farooq (2021) developed a balanced scorecard method to managing health care performance in their research. Following its introduction, this approach has accelerated the rise in demand for hospitalization among those in financial distress, as well as efforts to improve health-care delivery networks. Financial indicators (return on assets, average daily collection, and working capital ratio), customer perspective (patient satisfaction, lost jobs - number of visits not attended, and percentage of patients leaving the medical consultation (LAMA)), internal processes (billing and delivery time, emergency patients within 15 minutes of patient arrival, and waiting time), and learning and growth (empowerment (decision making and participation), st According to Gush and Singh (2021), the Balanced Scorecard (BSC) is a strong idea for monitoring performance, but it has flaws in terms of BSC quality that system dynamics solve with Dynamic Balanced Scorecard (DBS). They argued in this article that in India's modified regulatory regime, especially after the passage of the Companies Act in 2013, and Section 135, how to use a dynamic balanced scorecard in the healthcare sector, including its relationship to corporate social responsibility, as a strategy in the healthcare sector. And Plan VII has pushed us not only to seek change in the stock market but also to enhance the core of organizations, particularly in the 2020 pandemic (Covid 19).

Fatemi et al. (2019) presented a model to evaluate the performance of Shahid Labbafinejad Hospital's outsourcing services using a balanced scorecard model, and then weighed the indicators using the fuzzy AHP approach, obtaining the weight of the main criteria in terms of internal processes (0.37), financial

dimension (0.293), customer dimension (0.229), and growth and learning dimension (0.108). In a research aiming at merging Kaizen management models with the Balanced Scorecard (BSC), Yahyaei et al. (2020) found that the Kaizen model's improvement dimension should be employed to meet the BSC model's development and learning objectives. Also, the integration dimension must be utilized to accomplish internal process objectives; the dimension must be reduced to achieve financial goals, and the improvement dimension must be used to achieve consumer goals. According to the materials provided and current developments in the area of health and treatment, the social security system in the health sector has to develop a model to assess its performance in order to obtain better results. As a result, the primary goal of this research is to develop a model for analyzing the Social Security Organization's health-care system.

Research literature

Organizations must devote substantial time, attention, organizational and financial resources to evaluating their success in accomplishing strategic objectives in today's highly competitive and dynamic environment (Nyon, 2007). In general, a performance appraisal system can be defined as a process of measuring and comparing the amount and manner of achieving a desired situation with certain criteria and attitudes in a specific scope and area with specific indicators over a specific time period with the goal of reviewing, improving, and continuous improvement. It outlined it (Jafari Eskandari, 1394). As a result, the Balanced Scorecard technique has developed as an effective and verified instrument for converting intangible assets into actual value for all stakeholders of an organization, helping businesses to effectively pursue differentiation initiatives (Neon, 1386). A balanced scorecard is a performance measuring methodology that uses a variety of financial and non-financial measures to assess an organization's overall performance (Ahmadi et al., 2012).

Kaplan & Norton (1999) Balanced Scorecard model has four perspectives: financial, customer, growth and learning, and internal processes:

- 1- Financial perspective: This perspective explains how the strategy's execution, which is described in depth in the chosen metrics in previous perspectives, would result in the targeted financial statistics. Customer happiness, quality, on-time delivery, and other metrics can be improved with all of an organization's energy and effort, but they will be of little use if their implications on financial returns are not determined. Traditional outcome indicators (functions) are frequently expressed in monetary terms. Profitability, revenue growth, and economic value added are common examples (Nyon, 2007).
- 2- Internal processes perspective: The aim under this perspective is to identify these processes and build the best feasible metrics to assess their implementation success. Rather than concentrating efforts on incrementally enhancing current operations, organizations may need to implement a whole new set of procedures to fulfill the expectations of their consumers and stakeholders. In this context, product development, production, manufacturing, shipping, and after-sales support may be discussed. To service their clients, many businesses depend substantially on relationships with suppliers and other third parties. In this situation, they should think about developing internal process metrics to capture the important aspects of these interactions (Nyon, 2007).
- 3- Customer perspective: Most businesses can identify a wide number of metrics from the customer's point of view without experiencing major issues. Consumers' requirements transcend beyond what a company can supply by selling items alone, according to companies that create connections with their customers. These businesses provide their consumers with a full solution that includes a unique set of services, ensuring that they get the most out of the items available (Nyon, 2007).
- 4- Development and learning perspective: In reality, the balanced assessment framework is founded on the foundation of growth and learning perspective. After identifying important measurements and plans in customer views and internal processes, gaps between the present level of organizational infrastructure (staff skills and information systems) and the planned degree of attainment may be discovered. The measurements developed from this viewpoint aid the firm in closing this gap and ensuring long-term success. Growth and learning landscape

indicators may be compared to tree roots that eventually produce customer result branches and, ultimately, financial returns via the trunk of internal processes (Nyong, 2007).

On the issue of research, several studies have been undertaken. In medical facilities, Ghahramanloo (2015) proposed a hybrid performance assessment methodology based on multi-criteria decision-making methods and data envelopment analysis. In order to analyze the performance of medical centers, multi-criteria decision making was used to prioritize indicators, and then the performance of medical centers was reviewed and compared using the data envelopment analysis technique. Before and after the execution of the Health Transformation Plan, Homayounfar et al. (2015) analyzed the performance of hospitals in Guilan University of Medical Sciences using the DEA technique and in the presence of unfavorable variables. Due to the production of undesirable factors, the purpose of this study was to evaluate the performance of 22 public hospitals at Guilan University of Medical Sciences before (February 1992 to April 1993) and after (May 1993 to May 1994) the implementation of the health system transformation plan, using data envelopment analysis. The findings revealed that 14 hospitals (63 percent) were efficient in 1392, before the health system transformation plan was implemented, and that this number grew to 16 hospitals (73 percent) in 1393, after the health system transformation plan was implemented. Technical efficiency was 0.954 and 0.958 on average, respectively. The impact of the health system reform plan on the performance metrics of hospitals at Lorestan University of Medical Sciences was researched by Dadgar et al. (2017). This research found that the Health System Transformation Plan induced a favorable shift in all hospital performance indicators from 1392 to 1394 (before and after the adoption of the Health Transformation Plan) using statistical tests. Bastani et al. (2016) compared the performance of 14 Shiraz University of Medical Sciences hospitals before and after the health system reform plan was implemented. According to their findings, two hospitals were located in the first area (undesirable efficiency), four hospitals were located in the third area (optimal efficiency), and three hospitals were located in the first area and three hospitals were located in the third area before the health system transformation plan was implemented. Overall, the performance metrics of Shiraz University of Medical Sciences hospitals did not match the norms. Boroumideh et al. (2016) performed research in Tehran on the impact of the health system reform plan on NGOs. The most significant effect of this initiative on these firms, according to data analysis, has been money savings. Furthermore, the health system transformation plan has benefited the growth of health services, infrastructure segmentation, preventative measures, and the spread of health literacy in non-governmental organizations.

Research has been done in this topic in Latin studies, for example, Silos et al. (2017) employed data envelopment analysis to analyze the performance of the Spanish health system. A model for measuring the performance of the Spanish health system was developed in this research, which used the DEA approach, and the results demonstrate the importance of transparency in hospital efficiency. Vermeziar et al. (2016) proposed a complete strategy to evaluating the performance of Research and Technology Organization research centers based on BSC and MCDM methodologies. In this study, markers of theoretical underpinnings and viewpoints of interviewed experts are discovered first, and then the performance of the technological organization's research centers is assessed using data envelopment analysis. Mohammadi et al. (2015) looked at the effectiveness of hospitals in Kermanshah. The data envelopment analysis technique was applied in this investigation. More than half of the hospitals in this province's health system are more efficient, according to the data.

Research method

In terms of purpose, the current research is both a descriptive-exploratory and an applied study. In terms of data gathering and analytic methodologies, it's likewise a quantitatively mixed research. As a result, library research and expert surveys were employed in the first stage to determine the model's components and dimensions. The structural equation technique was used to verify the study model, and the relevant data was acquired using a questionnaire. The CVR index, which was supplied to 21 experts and has a value of 0.61, was used to determine the validity of the questionnaire in this part. As a result, the data in this section has high validity. Cronbach's alpha is used to determine the questionnaire's reliability.

The study's statistical population consists of 300 health specialists and senior and intermediate managers, with a statistical sample of 169 persons produced using Cochran's technique. The number of people was chosen using a random sampling process. The study's statistical sample consists of 39 percent women and 61 percent males. In terms of ultimate education, 9 percent have a bachelor's degree, 58 percent have a master's degree, and 32 percent have a doctorate degree. The statistical sample's age range includes 17 percent under 30, 45 percent between 31 and 40 years old, 30 percent between 41 and 50 years old, and 8% beyond 51 percent. The structural equation technique is used for data analysis and model validation.

Findings

The structural equation technique was utilized to verify the given conceptual model. There are seven hidden variables and 46 explicit variables in the model. Two sections of fitting the measurement and structural models must be completed to assess the model's validity. The model created in the SmartPLS program is as follows.

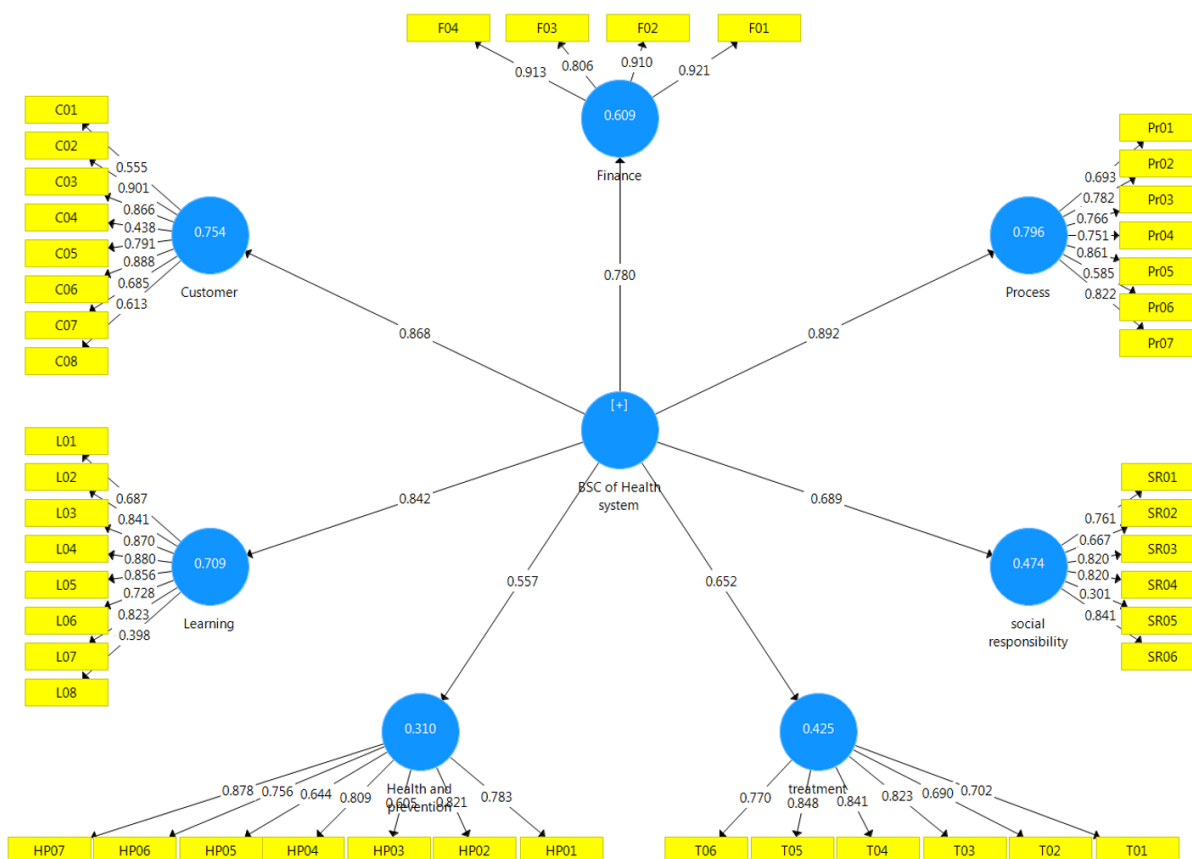


Figure (1): Study model in SmartPLS software

The factor load is one of the research indicators used to fit the measurement model. The factor load indicates the strength of the link between the factor (hidden variable) and the visible variable. A factor load is a number between 0 and 1. A weak association is examined and disregarded if the factor load is less than 0.3. A factor load of 0.3 to 0.6 is acceptable, while a factor load of more than 0.6 is extremely desired (Klein, 1994). As a result, associations with a factor load of less than 0.3 are omitted from the analysis. Figure 2 shows that all variables have a factor load greater than 0.3.

The combined reliability of the model is also measured using Cronbach's alpha rate and the hybrid reliability coefficient. The extracted mean variance (AVE) index is used to assess the model's convergent

validity. The questionnaire data's reliability is also tested in this part. These values, which are software outputs, are displayed in the table below.

Table (1): Cronbach's alpha coefficients, combined reliability and mean extraction variance

Mean extraction variance <i>AVE</i> ≥ 0.5	Combined reliability coefficient <i>α</i> ≥ 0.7	Cronbach's alpha coefficients <i>α</i> ≥ 0.7	Hidden variable
0.540	0.899	0.867	Customer
0.790	0.937	0.910	Financial
0.581	0.905	0.877	Health and prevention
0.601	0.897	0.849	Learning and growing
0.572	0.902	0.872	processes
0.528	0.862	0.804	Social responsibilities
0.611	0.903	0.871	treatment

As a result of the given numbers, it is clear that the measurement model's validity, reliability, and overall fit have been established.

The structural model's fit is evaluated using the T-test and the R2 criteria. The z significance test software results are shown in the table below.

It should be mentioned that the test in this research's model was conducted at a 95% confidence level. The t-values test must have values more than 1.96, else the test will be refused. The z statistic value for all variables is more than 1.96, as seen in the figure and table below.

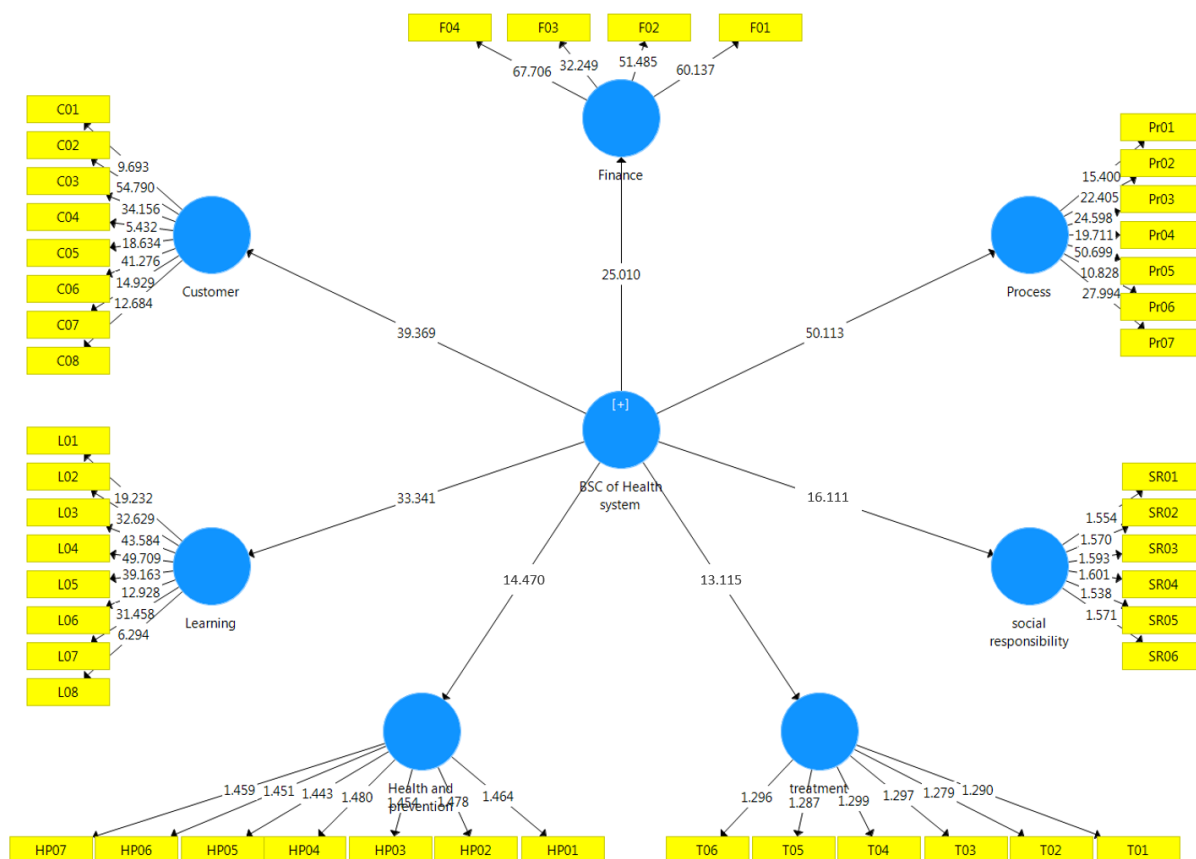


Figure (2): T-test statistics of model variables

The R2 criteria in structural equation modeling relates to the endogenous (dependent) latent variables in the model. R2 is a criteria that reflects the influence of an exogenous variable on an endogenous variable, and 0.19, 0.33, and 0.67 are the criterion values for weak, medium, and high R2 values,

respectively. The following table displays the R2 values for the model's dependent or intermediate variables.

Table (2): R² coefficient of model variables

R ²	Hidden variable
0.754	Customer
0.609	Financial
0.310	Health and prevention
0.709	Learning and growing
0.796	processes
0.474	Social responsibilities
0.425	treatment

In this part, it can be observed that the stated R² criterion has a standard limit and a suitable value, and consequently, it has validity.

Two fundamental hypothesis tests were employed to evaluate the model's overall suitability. Statistical hypothesis test and path coefficient test, which were analyzed independently throughout the measurement model and structural model's fitting, were used.

In this model, a number of statistical hypotheses about the influence of the specified dimensions on the performance assessment of the health system in social security have been tested. In the following table, the hypothesis tests are evaluated based on the Z test statistics and the path coefficient.

Table (3): Summary of the hypothesis test examined

Test result	Statistics t	Path coefficient	Hypothesis
Accepted	39/369	0.868	Customer criteria affect the evaluation of the performance of the social security health system.
Accepted	25/110	0.780	The financial criterion affects the evaluation of the performance of the social security health system.
Accepted	14/470	0.557	Health and prevention criteria affect the evaluation of the performance of the social security health system.
Accepted	33/341	0.842	Learning and growth criteria affect the evaluation of the performance of the social security health system.
Accepted	50/113	0.892	The process criterion affects the evaluation of the performance of the social security health system.
Accepted	16/111	0.689	The criterion of social responsibility affects the evaluation of the performance of the social security health system.
Accepted	13/115	0.652	The criterion of treatment affects the evaluation of the performance of the social security health system.

As can be observed, all the research hypotheses, i.e. the effect of the 7-topc model on the evaluation of the function of the social security health system, have been proven.

Discussion and conclusion

The purpose of this research was to develop a model for evaluating the functioning of the social security health system. In this regard, indicators and components affecting the evaluation of health system performance in accordance with the balanced scorecard model are identified by first reviewing the research literature, and then, utilizing indicators of hospital accreditation system and expert opinion, three other dimensions to evaluate the health system in the Social Security organization are identified. On the basis of the discovered dimensions, a conceptual model was given. The model was statistically examined and verified using the structural equation approach and a questionnaire developed by the researcher. All of the highlighted components have an influence on the assessment of the performance of the health system, which includes processes and customers as the most significant elements. Indicators for assessing and measuring the Social Security Organization's health system were identified in this research based on models of the health system in various nations of the globe with distinct cultures and traditions. The final model was given after these indicators were categorized into seven perspectives:

financial, customer, internal processes, development and learning, social responsibilities, health in terms of treatment and health in terms of preventive and health. The results of this research align with those of Fatemi et al. (2019), Victor and Farooq (2021), and Davaidi et al. (2019) in terms of health views and social duties, respectively (2021). It is proposed that, in the continuation of this research, systemic dynamics methodologies be utilized to evaluate the numerous components impacting the performance of the social security health system in order to directly and indirectly examine the effects of variables.

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