Original Article

DOI: 10.14235/bas.galenos.2024.76259
Bezmialem Science

Evaluation of the Factors Preventing the Opening of Health Facilities by SWARA Method

Sağlık Tesislerinin Açılışını Engelleyen Faktörlerin SWARA Yöntemi ile Değerlendirilmesi

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ABSTRACT

Objective: This study aims to prioritize the critical factors preventing the operation of healthcare facilities in Türkiye using the Step-Wise Weight Assessment Ratio Analysis (SWARA) method. Issues such as infrastructure, supply, geographical location, procurement processes, medical equipment supply, licensing and legal procedures, financial and human resource challenges encountered from the construction phase to service delivery are examined.

Methods: The SWARA method was used to identify and prioritize the factors hindering healthcare facilities' service delivery based on expert opinions, ranking these factors according to their importance. A total of eight criteria, derived from a comprehensive literature review, were assessed by five experts with relevant experience. The experts evaluated and ranked these factors, and the final prioritization was determined by calculating the geometric mean of their assessments.

Results: According to the analysis, financial issues were found to be the most significant factor affecting the service delivery process, with a weight of 29%. This was followed by licensing and legal procedures at 19%, material supply issues at 14%, and infrastructure problems at 12%. Human resource issues were identified as the least important factor, with a weight of 3%.

Conclusion: In line with the results obtained, stakeholders involved in the opening process have the opportunity to focus on and eliminate the problems related to them. At the same time, it also provides critical information about where those who plan the process should concentrate on inspections. In this way, health facilities will be able to start service provision at any time within the plan.

Keywords: Healthcare facilities, service delivery, SWARA method

ÖZ

Amaç: Bu çalışma, Türkiye'deki sağlık tesislerinin hizmet sunumuna geçişini engelleyen kritik faktörleri Aşamalı Ağırlık Değerlendirme Oran Analizi (SWARA) yöntemi ile önceliklendirmeyi amaçlamaktadır. Sağlık tesislerinin inşaat aşamasından hizmet sunumuna geçene kadar karşılaştığı altyapı, tedarik, coğrafi konum, ihale süreçleri, tıbbi malzeme tedariği, ruhsatlandırma ve yasal süreçler, finansal ve insan kaynağı sorunları incelenmiştir.

Yöntemler: SWARA yöntemi, sağlık tesislerinin hizmet sunumunu engelleyen faktörleri belirlemek ve önem sırasına göre ağırlıklandırmak amacıyla kullanılmıştır. Literatür taraması sonucunda belirlenen toplam sekiz kriter, ilgili alanda tecrübeli beş uzman tarafından değerlendirilmiştir. Uzmanlar, bu kriterleri önem derecelerine göre sıralamış ve nihai önceliklendirme, değerlendirmelerin geometrik ortalaması alınarak yapılmıştır.

Bulgular: Analiz sonuçlarına göre, sağlık tesislerinin hizmet sunum sürecini en fazla etkileyen faktör %29 ağırlıkla finansal sorunlar olmuştur. Bunu %19 ile ruhsatlandırma ve yasal süreçler, %14 ile yapı malzemeleri tedariği, %12 ile altyapı sorunları takip etmiştir. İnsan kaynağı sorunları ise %3 ağırlıkla en düşük öneme sahip faktör olarak belirlenmiştir.

Sonuç: Elde edilen sonuçlar doğrultusunda, açılış sürecinde görev alan paydaşların kendisi ile ilgili sorunlara odaklanması ve ortadan kaldırması imkanı doğmaktadır. Aynı zamanda süreci planlayanların ise hangi noktalardaki denetimlere yoğunlaşması gerektiği hakkında da kritik bilgiler sunmaktadır. Bu sayede sağlık tesisleri plan dahilinde istenildiği zamanda hizmet sunumuna başlayabilecektir.

Anahtar Kelimeler: Sağlık tesisleri, hizmet sunumu, SWARA yöntemi

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Received: 23.09.2024
Accepted: 08.04.2025
Epub: 10.07.2025

Cite this article as: Şahin K, Sevim B, Demir Uslu Y, Koç S, Aygün S. Evaluation of the factors preventing the opening of health facilities by swara method barriers to opening health facilities: SWARA. Bezmialem Science 2025.

Introduction

Health facilities are critical structures for the protection and improvement of public health. This ensures that health facilities are indispensable elements of the modern society structure. The main purpose of health facilities is to provide all kinds of health services. Since people's health has a significant impact on their lives, the value of modern health facilities is increasing at both public and state level. For this reason, many new health facilities have been planned and constructed in Türkiye in recent years (1). However, many mishaps may occur in the process from the stage when a health facility is planned to the moment when it will actively provide service provision. Such situations prolong the time for the health facility to enter the service provision phase (2). Health facilities projects often require significant investment. Lack of financial resources can be a significant obstacle to their construction and implementation. The complexity and size of the structure to be built may cause the planned construction time to be extended. Such situations usually occur after disruptions in the procurement processes of the required building materials. Health facilities in the relevant area are expected to serve thousands of people a day. For this reason, the relevant facility should be built in the most suitable geographical area in terms of infrastructure. After the completion of the construction phase of the mentioned health facilities, there are some factors that prevent the transition to service provision. In particular, problems in the procurement and tendering of medical equipment required for service provision prolong the process. Moreover, the opening of new modern health facilities further increases the need for professional human resources. Finally, deficiencies in the legal procedures of a completed health facility also constitute an obstacle in the transition to service provision.

The failure of a health facility to start service delivery on schedule has serious negative impacts on community health and the economy. From a public health perspective, a delayed facility can prevent individuals in the area from accessing timely and adequate health care, triggering the spread of diseases and the progression of health problems. On the financial side, delays lead to budget losses at the government level, while for investors they mean additional costs and wasted resources. Moreover, the burden of out-of-service facilities is transferred to other health facilities in the surrounding area, leading to overcrowding in existing facilities, increased workload on staff and a decline in the quality of health services. These critical impacts underscore the importance of ensuring timely and effective transition of health facilities to service delivery.

In order for the planned health facilities to be able to provide services on time, it is necessary to take measures to minimize this obstacle. In this context, correct planning of legal procedures should be made. At the same time, necessary improvements should be made during the construction phase or the subsequent material procurement phase. All these planning and improvements increase the cost. Therefore, it is not financially reasonable for those who plan, build and implement health facilities to take too many measures together. Therefore, it is necessary to transfer the budget to more important factors when making an investment plan. For this reason, a priority analysis should be conducted to determine the order of importance of the factors that hinder the service delivery of a health facility. However, it is seen that there are not enough studies focusing on this issue in the literature. Accordingly, this study aims to identify and prioritise the critical obstacles in front of the health facilities that are in the construction phase or even if the construction has been completed but cannot start the service delivery process due to various reasons by using Step-Wise Weight Assessment Ratio Analysis (SWARA) method. In this way, it fills the gap in the literature in the relevant field. The research offers not only theoretical contributions but also practical guidance for policy makers and practitioners.

In the first part of this study, there is an introductory section in which the subject is generally stated. It is followed by the title of literature review in which current sources related to the subject are reviewed. In the third section, the SWARA method used in the study is explained. The analysis results and findings obtained from the study are presented in the fourth section. Finally, there is a discussion section where the findings of the study are evaluated and a conclusion section where a general evaluation is made.

Literature Review

Infrastructure problems are one of the critical factors that prevent health facilities from providing services effectively. The infrastructure of health facilities covers a wide range from the basic structural elements of the building to technological investments, from the number of beds and medical devices to electricity resources (3). Infrastructure deficiencies can directly affect the functioning of health facilities and the quality of health services. According to Altsoy and Taştan Boz (4), infrastructure problem is an important factor in the effective operation of hospitals and should be supported. Infrastructure deficiencies may delay the opening of health facilities on planned dates and cause disruptions in the provision of health services. Buzcu and Birdir (5) in their study examining the problems of medical tourism in Türkiye, stated that the lack of physical and technological infrastructure in hospitals had a negative impact on health service delivery. In the study conducted by Küçük (6) it was seen that health facilities should be strengthened and supported in terms of personnel, physical infrastructure and medical equipment in order to secure long-term health services. According to the study conducted by Kurt (7), infrastructure improvements are crucial for enhancing both safety standars and service quality; therefore, it is important to address infrastructure problems during the opening process of the facility.

Supply and construction maintenance issues in facility building materials can significantly impact the timely completion of healthcare facility construction projects. Building materials are critical to ensure the durability and safety of healthcare facilities. Olanrewaju et al. (8) stated that poor quality or inadequate materials could shorten the life of facilities, increase maintenance costs, and even pose a risk to patient safety. Therefore, necessary precautions and planning should be made facility-oriented. In this context, maintenance management of hospital buildings

presents different challenges compared to other building types. The analysis of defective components of buildings to be used for healthcare facilities, maintenance plans and the supply of necessary building materials should be provided as soon as possible (9). Furthermore, Halıcıoğlu and Kuntay's (10) research shows that material shortages and price fluctuations can lead to serious disruptions in the construction process. Therefore, solving maintenance and supply problems in building materials plays a major role in the completion and opening of facilities on planned dates.

The geographical location and transportation of the facility play an important role in the opening of health facilities and providing accessible services. Location and ease of transportation is one of the criteria that patients consider when choosing a health institution (11). While this situation provides many advantages for hospitals with easy access, it may cause disruptions in opening processes and patient flow for health facilities in remote areas where transportation is difficult. Karaman (12), in his study on city hospitals, stated that hospitals had negative evaluations due to the fact that they were located in remote areas of the city. In their study, Chen et al. (13) stated that the geographical distribution of the population and the location of health resources directly affected the accessibility of health services and emphasized that these factors should be considered in local health planning. Additionally, it was contended in their work that improving transportation infrastructure could enhance access to healthcare by making it easier for residents of remote areas to reach healthcare services. In another study, Weiss et al. (14) examined the travel time of patients to health facilities and stated that geographical factors were a measure of welfare in accessing services. In a study conducted by Cheng et al. (15) in China, it was emphasised that the spatial distribution of healthcare facilities in the region was critical for patients' access to services and the economic sustainability of facilities. Such geographical challenges can make it difficult for facilities to provide services effectively and open on time.

Tender processes play an important role in the construction and operational processes of healthcare facilities. The complexity of tender processes prolongs the completion time of projects (16). Legal disputes at the tender stage and delays in the evaluation of bids can lead to disruptions in the process. There are various models such as public-private partnership in the health sector in Türkiye. Various uncertainties and incompatibilities that may occur in these tender implementation regulations may increase the costs and extend the duration of the project (17). According to Adebayo et al. (18), tender procedures have a big impact on the acquisition of necessary medical equipment and supplies, which in turn affects how efficiently healthcare facilities operate. Effective tendering can lower costs and improve supply chain management, but complicated processes can cause delays and increase administrative workloads. Kulaksız and Küçükkocaoğlu's (19) research shows that in order to minimise possible problems that may be experienced in healthcare institutions, tender processes should be managed effectively, the appropriate model should be selected and projects should be completed on time.

Problems in the supply of medical supplies are critical for healthcare facilities to provide effective services. Medical supplies directly affect the quality of patient care; therefore, it is necessary to supply these supplies on time and in sufficient quantity (20). The entire process from the production of a medical equipment in healthcare organisations to its delivery to patients is considered within the scope of the supply chain process (21). Since the consumer group is the patient, planning and implementation of the supply of medical equipment is extremely important. According to a study conducted by Modutlwa (22), issues in the supply of medical supplies lead to shortages of essential equipment, compromising patient care and increasing health risks. These supply chain problems also result in ineffective treatment, limited therapy options, higher costs, and ultimately, worsened patient outcomes, contributing to increased morbidity and mortality rates. Göncü's (23) study on supplier relationship management shows that disruptions in material supply can cause major problems both in emergencies and in daily operations. In this context, regular and reliable procurement of medical supplies is of great importance to improve the quality of patient care and the operational efficiency of the facility.

Licensing and legal processes required for the opening of health facilities are a critical step for the facilities to operate in accordance with legal and regulatory standards. Licensing in healthcare facilities is also associated with minimum standards for physical and structural requirements such as physical structure, number of personnel, medical equipment and devices (24). Delays in licensing processes can significantly disrupt the provision of health services. The reasons for licensing delays include the complexity of bureaucratic processes, lack of communication between regulatory bodies, and problems in legal compliance processes (25). The complexity of these processes may prolong the opening time of the facility, delaying the service provided to the community and increasing operating costs. In order to meet sustainable public health and public health requirements, zoning and legal processes must be handled in a timely manner (26). Therefore, accelerating and making legal and licensing processes more efficient is critical to ensure that facilities are opened on time.

Financial management and planning is a critical factor affecting the opening process and operational efficiency of facilities. In this context, efficient financing mechanisms are required for health institutions in order to avoid disruptions in the services provided (27). As a matter of fact, studies on unmet needs have revealed that economic inadequacies in health services are not only individual but also health facility-related (28). The study by Calabrese et al. (29) discusses constraints such as resource limitations, demand, efficiency, capacity, distance and cost that prevent the optimal location of health facilities. These factors, which are influenced by economic management and planning, hinder sustainability and the establishment of new health services in various regions. Insufficient financial resources may cause the facility to have difficulty in meeting equipment and personnel needs. In their literature review, Cansever and Gökkaya (30) stated that hospital construction required a good economic analysis and cost plan. In

another study, Yousefli et al. (31) emphasised the importance of budget planning for healthcare facilities due to the criticality of the service they provide.

Human resource issues are a critical element for healthcare facilities to provide effective services. Difficulties in recruiting healthcare professionals can directly affect the quality of patient care and service efficiency (32). In addition, administrative staff shortages may cause disruptions in operational processes, which may delay the opening of facilities. Armağan Kaygusuz (33) stated in his study that the most important factor for an organisation aiming to provide sustainable and efficient service delivery was human resources. Sünter (34) emphasised that health facilities in developed societies should provide a safe working environment by taking the necessary precautions for their employees. In this context, human resource management and planning should be carried out for the aims and objectives of the organisation. A study by Hassan et al. (35) concluded that all stakeholders in the healthcare sector should prioritize retention factors when designing or reviewing strategies and policies, including management initiatives, innovation-driven soft human resource management, and job satisfaction, to address the significant losses caused by high employee turnover rates. In another study, Üner (36) stated that the process of recruitment and selection of qualified personnel was important to increase the operational efficiency and service quality of healthcare facilities.

Methods

In this study, it is aimed to determine the critical obstacles in front of the health facilities that are in the construction phase or cannot start the service delivery process for various reasons even if the construction is completed and to prioritise them by SWARA method. At this stage, the obstacles in front of the service delivery process were determined as a result of the literature review. These criteria are infrastructure problems, problems in the building materials of the facility, geographical location of the facility, tender processes, procurement of medical supplies in the facility, licensing and legal processes, financial problems, human resource problems. The determined criteria and criteria descriptions are given in Table 1.

The criteria determined within the scope of this study were prioritised using the SWARA method. At this stage, the opinions of 5 experts who have in-depth knowledge on the subject were consulted. In similar studies in the literature, it is stated that the experts who will make the evaluation should have at least 5 years of experience and the opinions of at least 3-6 experts are needed. The professional and occupational distribution of the experts was also carefully considered during the selection process. Two of the experts included in the study were professors and three were assistant professors. All experts had academic and professional experience in the field of health management, and each of them had at least 5 years of sectoral knowledge. These characteristics ensured that the experts had in-depth knowledge on the subject and were able to make reliable assessments (37-39).

The data obtained from the expert opinions guided the process of weighting and prioritisation of the criteria.

Since the article did not use data, scales or subjects, ethics committee permission and patient consent were not required.

Statistical Analysis

In this study, SWARA method, which is one of the multi-criteria decision-making techniques, was used in the data analysis phase. SWARA, which is one of the criterion weighting methods, has been frequently used in recent years. The main reason for choosing the SWARA method in our study is that this method provides a structured and systematic process for determining the importance of criteria. The SWARA method determines the criteria weights by progressively processing the evaluations obtained from the experts and thus provides a more understandable approach to the decision-making process (40). SWARA method consists of 5 steps. These steps are:

Step 1: Ranking the criteria from most important to least important according to the level of importance:

In the first step of SWARA method, experts rank the criteria from most important to least important. When more than one expert evaluates, each expert ranks the criteria according to their own importance and at the end of this process, as many rankings are

Table 1. Problems that prevent health facilities from providing health services

Categories	Explanations	Sources
Infrastructure problems	Deficiencies in basic infrastructure needs of the facility such as electricity, water and roads	(3-7)
Procurement and other problems in the building materials of the facility	Problems in the quality or suitability of materials used in construction	(8-10)
Geographical location of the facility	Distance of the facility to settlements, transport networks and emergency services	(11-15)
Tender processes	Bureaucratic problems or delays at the tender stage	(16-19)
Medical equipment supply problems in the facility	Difficulties in procurement of medical devices and materials needed by the facility	(20-23)
Licensing and legal processes	Problems encountered in the official permits and legal processes required for the facility to start operation	(24-26)
Financial challenges	Inadequate financial resources required for the construction or operation of the facility	(27-31)
Human resource problems	Deficiencies in the provision of health and support staff of the facility	(32-36)

obtained as the number of experts. By taking the geometric mean of these rankings, an overall ranking is obtained for the criteria.

Step 2: Determining the relative importance levels of the criteria:

In the second step of the SWARA method, the criteria are compared among themselves in order to determine the relative importance levels of the criteria. At this stage, it is determined how important criterion j is compared to criterion (j+1). Keršuliene et al. (40) named this ratio as "comparative importance of the average value" and expressed it with the symbol s_j.

Step 3: Calculation of k_j Coefficient:

In the third step of SWARA method, k_j coefficient is calculated for each criterion. At this stage, the following equation (1) is utilised. The k_j coefficient of the criterion with the highest importance in the ranking of the criteria is assigned as 1.

$$k_j = \begin{cases} 1, & j = 1 \\ s_{j+1}, & j > 1 \end{cases} \quad (1)$$

Step 4: Calculation of q_j values of the criteria:

The q_j values showing the weights of the criteria are calculated by utilising equation (2).

$$q_j = \begin{cases} 1, & j = 1 \\ \frac{q_{j-1}}{k_j}, & j > 1 \end{cases} \quad (2)$$

Step 5: Determining the relative weight values of the criteria:

In the last stage of SWARA method, the relative weight values (w_j) of each criterion are calculated. W_j value indicates the relative importance of criterion j. It is calculated with the help of equation (3) below.

$$\frac{q_j}{\sum_{k=1}^{n} q_k} \quad (3)$$

Results

In this study, the critical obstacles in front of the health facilities which were under construction or even if the construction was completed but service delivery process could not start due to various reasons were identified and prioritised by SWARA method. Within the scope of SWARA method, firstly, 5 expert opinions were obtained for the evaluation of the criteria obtained as a result of the literature review. Each expert was asked to rank the 8 criteria in descending order of importance. Since there was more than one decision maker, in order to obtain a general ranking, the geometric mean of these procedures was taken and the final ranking result was obtained as shown in Table 2.

In the next stage of SWARA method, the relative importance level of each criterion is determined. In order to determine the relative importance levels of the criteria, experts are expected to make comparisons between the criteria. Each criterion is compared with the criterion above it and their importance levels are determined. For example, in this study, the financial problems criterion ranked first in the ranking made by the experts. Experts were asked how important the financial problems criterion was compared to the licensing and legal processes criterion. Table 3 shows the evaluations of the experts.

After the s_j values are obtained in the SWARA method, the stage of calculating the k_j coefficient comes. At this stage, the k_j value of the financial problems criterion, which has the highest importance in the criterion ranking, is taken as 1 according to the method. The k_j values of the other criteria are obtained by adding 1 to the s_j values as in Equation (1). The k_j values are followed by the calculation of q_j values. At this stage, the q_j value of the financial problems criterion, which ranks first, is assigned as 1 according to the method. The q_j values of the following criteria are calculated by utilising equation (2). The final weight values of the criteria are also calculated using equation (3). The q_j value of each criterion is divided by the sum of q_j values. Below is the table showing the steps of SWARA method as a result of the evaluations made by the experts.

Table 2. Expert evaluations

Criteria	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Geometric mean	Final ranking
Infrastructure problems	4	8	5	2	2	4.2	4
Procurement and other problems in the building materials of the facility	5	1	3	5	5	3.8	3
Geographical location of the facility	8	3	7	6	7	6.2	7
Tender processes	3	6	6	8	4	5.4	5
Medical equipment supply problems in the facility	6	7	4	4	6	5.4	6
Licensing and legal processes	2	2	2	3	3	2.4	2
Financial challenges	1	4	1	1	1	1.6	1
Human resource problems	7	5	8	7	8	7	8

As a result of the analyses, it was determined that the most important obstacle for health facilities to transition to the service delivery process is financial problems with a criterion weight of 0.28. This was followed by the criterion of licensing and legal processes with a criterion weight of 0.19. The least important criterion was found to be human resource problems with a criterion weight of 0.04. The final criteria weights in Table 4 show the prioritization of the obstacles encountered in the establishment process of health facilities. According to the results of the analysis, financial problems were identified as the most critical barrier with a weight of 0.28. This situation points to factors such as high capital requirements, investment costs and limited financing resources in the establishment process of health facilities. Establishing the infrastructure of health services, technology and equipment purchases, maintenance and operating expenses constitute a significant financial burden. In addition, limited access to financial resources in this process stands out as an important factor that slows down or stops the establishment processes.

Discussion

In this study, it was aimed to identify and prioritize the critical obstacles in front of the health facilities were under construction or even if the construction was completed but service delivery process could not start due to various reasons were identified and prioritised by SWARA method. It was concluded that the criterion with the highest degree of importance among the criteria was "financial difficulties" and the criterion with the lowest importance was "human resource problems", "licensing and legal processes" and "supply problems in building materials" were found to be the second and third most important criteria. According to the results of the analysis, financial difficulties were found to be the criterion with the highest degree of importance faced by health facilities that were under construction or even if the construction was completed but service delivery process could not start due to various reasons. In order to overcome the difficulties related to this criterion, effective financial planning is required. In the study conducted by Emek (41), it was stated that only 12 of the 20 public-private partnership contracts in 2017 were able to obtain the necessary financing, and that the investments proposed in line with the contracts and the budget planning envisaged could not be realized. Yeşiltaş (42) examined the financial, legal and economic criticisms of public private partnerships and city hospitals. As a result of this examination, it was revealed that financial institutions were reluctant to fund these partnerships. Emin Kurt and Demirhan (43) conducted a strengths, weaknesses, opportunities, threats analysis for the planned city hospital in Diyarbakır. As a result of the analysis, it is emphasized that the high-cost city hospital will create an economic burden and may cause problems in terms of financial sustainability as it requires a certain occupancy rate. Aliefendioğlu and Bostancı (44) examined the formation process of city hospitals in Türkiye and found that the most important problem encountered in the construction of hospitals was the problem of finding financial resources. When the results of the studies in the literature are analyzed, they are similar to the results of this study.

Table 3. S_j values

s_j	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5
Financial challenges					
Licensing and legal processes	0.80	0.80	0.70	0.20	0.25
Procurement and other problems in the building materials of the facility	0.70	0.30	0.50	0.25	0.30
Infrastructure problems	0.45	0.10	0.50	0.05	0.05
Tender processes	0.35	0.70	0.60	0.10	0.25
Medical equipment supply problems in the facility	0.55	0.55	0.55	0.30	0.30
Geographical location of the facility	0.50	0.55	0.05	0.40	0.30
Human resource problems	0.30	0.10	0.40	0.05	0.05

Table 4. Final criteria weights

	s_j	k_j	q_j	w_j
Financial challenges		1	1	0.28
Licensing and legal processes	0.46	1.45	0.68	0.19
Procurement and other Problems in the building materials of the facility	0.34	1.34	0.51	0.14
Infrastructure problems	0.19	1.19	0.42	0.12
Tender processes	0.33	1.33	0.32	0.09
Medical equipment supply problems in the facility	0.38	1.37	0.23	0.06
Geographical location of the facility	0.30	1.3	0.17	0.05
Human Resource Problems	0.15	1.15	0.15	0.04

Within the framework of the findings, policy makers can develop sustainable financing models in public-private cooperation. In addition to these models to be developed, policy makers can develop risk-sharing and incentive policies to gain the trust of investors or institutions. Feasibility studies can be conducted for the estimated budget plans. Alternative income channels can be created to reduce the financial pressure on health facilities.

According to the results of the study, licensing and legal processes were the second most important criteria for health facilities that were under construction or even if the construction was completed but service delivery process could not start due to various reason. Legal processes are critical for the functionality of health facilities. The licensing processes required for a health facility to become operational involve long and complex procedures. This situation also makes it difficult to transition to service delivery of health facilities whose construction is completed. Sonğur and Top (45) revealed the opinions of stakeholders on public-private partnership and integrated health campus practices. According to the results of the study, failure to ensure transparency in contracts is predicted to lead to failures related to the process. In addition, long tender processes are among the problems related to public-private partnership in the health sector. In the study conducted by Sungur (46), it was stated that the complexity of public-private partnership contracts and the long joint operation period pave the way for many risks in health facilities. Kaya (47) aimed to present an analysis of strengths/weaknesses and opportunities/threats for city hospitals built through public private partnership. According to the results of the analysis of that study, long contract periods, uncertainties at the end of the contract, disorganized legal infrastructure and lack of transparency of the contracts were stated as weaknesses. The results of the study are in line with the results of the analyzed studies. For licensing and legal processes, policy makers can reduce the impact of bureaucracy by relaxing the procedures applied. In addition, flexibilities should be created for long tender processes. Managing complex processes in an open and transparent manner and strengthening coordination and communication between institutions will facilitate the process. Carrying out all processes within the framework of determined standards and ensuring the participation of all stakeholders in the changes to be made in legislation and legal regulations can minimise the problems that may be experienced.

According to the results obtained from the analyses, it has been determined that the third most important criterion faced by health facilities in the service delivery process or opening to service is the supply problems in the building materials of the facility. The inability to purchase materials for the construction of health facilities on time, fluctuations in prices and disruptions in the supply chain process cause the facilities to experience some difficulties in the opening or service process. In the study conducted by Bilen and Solmaz (48), supply and distribution problems are among the problems experienced by small and medium-sized enterprises Yılmaz et al. (49) found that the lack of a comprehensive evaluation model that should be used in the construction process of buildings caused some problems. Olanrewaju et al. (50) stated that poor quality materials used in the study could create problems for the facility and even increase maintenance costs. Accordingly, maintenance organizations and procurement procedures should be redesigned to meet the needs. Integration of digital technologies in building material procurement processes can prevent operational disruptions. Agreements can be made with alternative companies against unpredictable delays. An accurate and effective supply management model should be established. Managers can minimise possible risks by making agreements with suppliers by considering price, delivery time and quality factors. In addition, tender processes with suppliers should be open and transparent.

Study Limitations

Health facilities are classified according to many factors such as size, ownership and scope. However, within the scope of applicability in the study, all health facilities were examined in a single study without a separate evaluation. These situations constitute an important limitation of the study. Another limitation of the study is the evaluation of 5 experts' opinions as decision makers.

Conclusion

According to the findings of the study, there are some fundamental problems in both the construction phase and the transition to operationalization of health facilities. These problems delay the opening process of health facilities, leading to loss of time and exceeding existing budgets. As a matter of fact, the increase in costs directly affects the sustainability of the facility. Effective management of financial resources is an important issue for successful and timely service delivery. Financing sources can be diversified through the use of digital financial instruments, cooperation with international institutions and organisations, and green financing models. A performance-based incentive system can be created for contractors or intermediary companies. Common funds or state-backed loans can be offered to reduce risks for sector investors. Making strategic decisions by conducting a feasibility study for the region where a health facility will be planned can eliminate unnecessary financial burden. In order to reduce the problems experienced in legal processes, there is a need for flexible and ambiguity-free legislative arrangements. In order to improve supply processes for the facility, a good planning system, predictable demand forecasting and the use of alternative supply channels come to the fore. These measures will minimize the problems encountered in procurement processes and facilitate the timely delivery of the project. As a result, the elimination of these barriers will ensure the desired efficiency of health facilities and the effective delivery of services. Considering these critical factors in the strategic planning process plays a critical role in increasing the sustainability of the facility and achieving the desired performance. For future studies, other multi-criteria decision-making techniques such as decision making trial and evaluation laboratory, analytic hierarchy process (AHP) or Fuzzy AHP can be used to compare the research results. In the literature, it is criticised that expert opinions are taken equally. The level of knowledge of experts varies according to qualifications such as

experience, education and title. For this reason, it is suggested that artificial intelligence-based models that also weight expert opinions should be used in future studies. In addition, this study was evaluated within the scope of the health sector and sectoral differences can be revealed by conducting studies on other sectors.

Ethics

Ethics Committee Approval: Ethics committee permission was not required since the article did not use elements such as data, scales or subjects.

Informed Consent: Since the article did not use data, scales or subjects, informed consent of patients was not required.

Footnotes

Authorship Contributions

Concept: K.Ş., B.S., Y.D.U., S.K., Design: K.Ş., B.S., Y.D.U., S.K., Data Collection or Processing: S.K., Analysis or Interpretation: K.Ş., B.S., S.A., Writing: K.Ş., Y.D.U., S.A.

Conflict of Interest: No conflict of interest was declared by theauthors.

Financial Disclosure: The authors declared that this study received no financial support.

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