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The Role of Strategic Planning and Continuous Improvement in Building Sustainable Hospital Performance

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Abstract: Objective: This study aims to determine the best practices related to strategic planning, continuous improvement, and quality process in building sustainable hospital performance of the internal administrative interaction and to reach employee satisfaction at Dr. Abdullah al Rassi Governmental Hospital in Halba, Akkar, Lebanon. **Methodology:** this paper is defined by applying descriptive and quantitative techniques. Five variables were analyzed using a deductive style to explore the outcomes. Data are collected from 490 respondents, including doctors, technicians, nurses, and administrators, in January and February of the year 2025. Data were analyzed by using SPSS, SPSS Andre Hayes model 3, model 4, and AMOS software. **Results:** the results provided that KMO is equal to 0.867, providing an acceptable result. The confirmatory factor analysis test provides that the P value of all the relationships between the quality process and the elements of the quality process is equal to 0.000 and acceptable. **Conclusion:** The hospital performance has a direct role in the quality process. Continuous improvement has a moderating role on the connection between hospital performance and quality process, depending on the level of the second moderator, employee satisfaction. Hospital performance has a direct role in quality process partially mediated by strategic planning. **Recommendation:** it is recommended to share decision-making with patients, employees, and shareholders for more engagement techniques. Analyze patient feedback for continuous improvement and solve problems. Get international accreditation of quality management. Set suitable technological system for quality management. Apply KPI techniques for patients and performance achievements. Provide training for employees and a good job environment to achieve more service performance outcomes. Setting advanced technological tools for enhancing quality processes and hospital performance.

Keywords: Strategic planning (SP), Continuous improvement (CI), Quality process (QP), Employee Satisfaction (ES), Sustainable Hospital Performance (HP).

دور التخطيط الاستراتيجي والتحسين المستمر في بناء أداء مستدام للمستشفيات

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ملخص: الهدف: تهدف هذه الدراسة إلى تحديد أفضل الممارسات المتعلقة بالتخطيط الاستراتيجي والتحسين المستمر وعمليات الجودة في بناء أداء مستدام للتفاعل الإداري الداخلي وتحقيق رضا الموظفين في مستشفى الدكتور عبد الله الراسي الحكومي في حلبا، عكار، لبنان. **المنهجية:** اعتمدت هذه الدراسة على المنهج الوصفي والكمي. حُللت خمسة متغيرات بأسلوب استنتاجي لاستكشاف النتائج. جُمعت البيانات من 490 مشاركًا، من أطباء وفنيين وممرضين وإداريين، خلال شهري يناير وفبراير من عام 2025. حُللت البيانات باستخدام برنامج SPSS، ونموذجي3و4 SPSS Andre Hayes، وبرنامج AMOS. **النتائج:** أشارت النتائج إلى أن KMO يساوي 0.867، مما يُمثل نتيجة مقبولة. يُشير اختبار تحليل العوامل التوكيدي إلى أن قيمة P لجميع العلاقات بين عملية الجودة وعناصرها تساوي 0.000، وهي قيمة مقبولة. **استنتاج:** إن أداء المستشفى له دورٌ مباشرٌ في عملية الجودة. التحسين المستمر له دورٌ مُعَدِّلٌ في العلاقة بين أداء المستشفى وعملية الجودة، وذلك تبعًا لمستوى المُعَدِّل الثاني، وهو رضا الموظفين. كما أن أداء المستشفى له دورٌ مباشرٌ في عملية الجودة، ويعتمد ذلك جزئيًا على التخطيط الاستراتيجي. **التوصية:** يُنصح بمشاركة المرضى والموظفين والمساهمين في عملية اتخاذ القرارات لتعزيز آليات المشاركة. تحليل ملاحظات المرضى للتحسين المستمر وحل المشكلات. الحصول على اعتماد دولي لإدارة الجودة. يجب وضع نظام تكنولوجي مناسب لإدارة الجودة. تطبيق تقنيات مؤشرات الأداء الرئيسية على المرضى وإنجازات الأداء. توفير التدريب للموظفين وتوفير بيئة عمل جيدة لتحقيق نتائج أفضل في أداء الخدمات. استخدام أدوات تكنولوجية متطورة لتحسين عمليات الجودة وأداء المستشفى.

الكلمات المفتاحية: التخطيط الاستراتيجي (SP)، التحسين المستمر (CI)، عملية الجودة (QP)، رضا الموظفين (ES)، الأداء المستدام للمستشفى (HP).

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Introduction

Lebanon's medical system faced different obstacles during the civil war (1975-1992) combined with financial distress. Government was challenging weak quality surveillance, low strategic planning and quality process that push them to enhance performance (Shallal, Lahoud, Zervos, & Matar, 2021), (Fleifel & Abi Farraj, 2022). During 2021, the medical system failed, and public hospitals became overcrowded, Rural regions were pressured due to the lengthy distance between hospitals and the lack of skilled medical staff. There are no accessible rooms at government hospitals, private medical facilities are expensive, and all hospitals are located far away. People have trouble transporting patients with prepared ambulances (Al-Mulki, Hassoun, & Adib, 2022). In light of the difficult economic conditions and rising prices of consumer goods, medical supplies and diesel, Dr Abdullah al Rassi governmental hospital continued to serve patients and provided them with health care (argh2030, 2022). Lebanese hospitals applied strategic plan for hedging future distress that are related to administration and health problems (Melhem & Hamdan, 2025).

This study solves the **problems** related to low employees' satisfaction and poor hospital performance with high cost and financial payments in Lebanese hospitals (Fleifel & Abi Farraj, 2022). Hospitals face poor system governance, lack of strategic planning policy and low decision-making in the quality process (Moussallem, et al., 2022). Lebanese hospitals face troubles in applying quality process of the medical healthcare (Bou Sanayeh & El Chamieh, 2023). Lebanese hospitals risk is highly enhanced about the quality process and services performance. Political corruption, economic crisis and employee satisfaction negatively affect the country (Hatem & Goossens, 2022). North Lebanese governmental hospitals employees are faced with lack of management practices, poor quality process and low in performance (Halwani & Mouawad, 2021).

This study answers the **question**:

Q1: What is the role of Strategic planning, Sustainable Hospital Performance, Continuous improvement and Employee Satisfaction in providing good level of Quality process at Dr Abdullah al Rassi governmental hospital?

The research **objective** is to identify the factors that influence the strategic processes and practices applied by employees to reach hospital performance. This study aims to determine the role of Strategic planning, Sustainable Hospital Performance, Continuous improvement, Quality process and Employee Satisfaction at Dr Abdullah al Rassi governmental hospital.

The **importance** of this research is to understand employees' strategic activities and quality process for better hospital performance. Investigating employees' different applications, new process and discovering analysis about Strategic planning, Sustainable Hospital Performance, Continuous improvement, Quality process and Employee Satisfaction Dr Abdullah al Rassi governmental hospital.

The **originality** of this article is shown on first selecting five variables through the collection of five variables investigated related to Strategic planning, Sustainable Hospital Performance, Continuous improvement, Quality process and Employee Satisfaction in investigating a governmental hospital in Akkar, Lebanon.

The hypotheses of this article are defined as follows:

H1: Hospital performance has a direct role on Quality Process.

H2: Continuous improvement has a moderating role on the connection between Hospital performance and Quality Process depends on the level of the second moderator Employee satisfaction.

H3: Hospital performance has a direct role on Quality Process partially mediated by strategic planning.

The research **gap** defines that researchers should more investigate on collecting data related to the health care system related to Quality process and Sustainable Lebanese Hospital Performance (Aoun & Koubar, 2023). It is advised to do more research about the role of the Lebanese ministry of public health on quality process, employees experience boosting and the continuous improvement including training and work environment (Iskandar, Rahbany, & Shokor, 2022). More improvement from the Lebanese health care system about the amelioration of the quality system, strategic planning and technical tools for more accurate output (Moussallem, et al., 2022). It is expected for the employees to work in suitable environment, good communication between the employees and the departments to reach adequate satisfaction due to their role in offering treatments to the patients in Lebanese hospitals (Abou-Abbas, Nasrallah, Yaacoub, Yohana Ramirez Mendoza, & Al Wais, 2023). More researches should be investigated about the medical services applied in Lebanese hospitals and setting more corrections for error job process (Kobeissi, Abdul-Sater, Farhat, & Abu-Sittah, 2022).

The research **model** in figure 1 describes the role of Strategic planning on Sustainable Hospital Performance with Continuous improvement, Quality process, Employee Satisfaction.

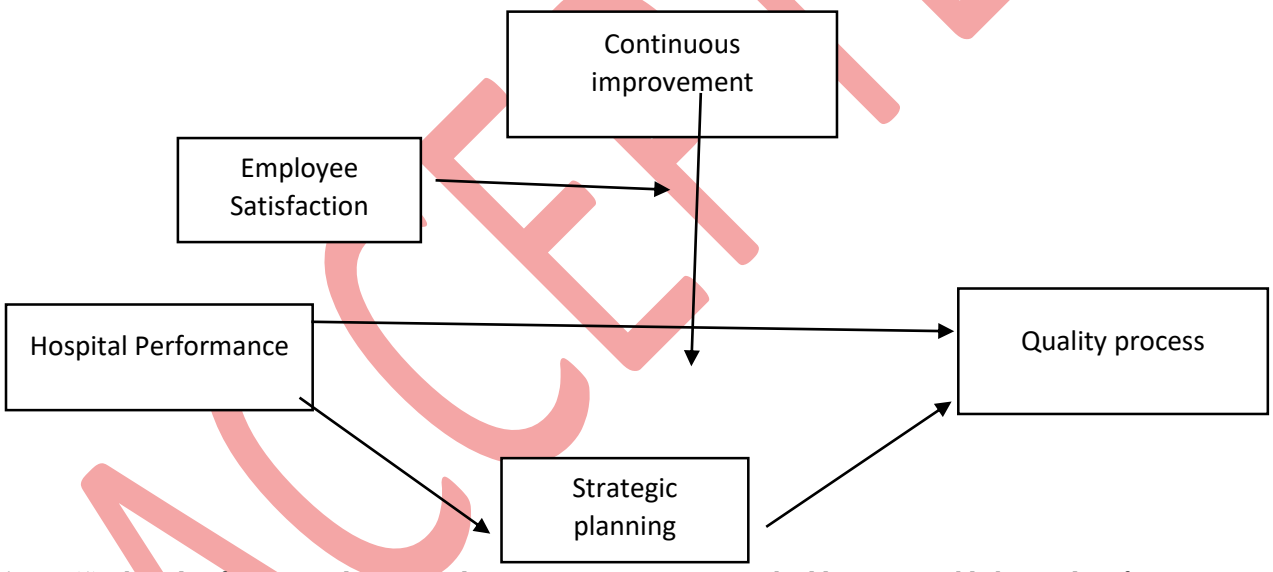

Figure (1): the role of strategic planning and continuous improvement in building sustainable hospital performance.
Source: Author Illustration.

The structure of this paper is defined as follows: first, the literature review of the paper. Second, the materials and methodology of the paper. Third, Empirical results and discussion. Finally, the conclusion, recommendations, study limitations, and future studies.

Literature Review

Strategic planning

Strategic planning and goals include all the dimensions of the organization with the relationship of the external factors like customer connection and the performance of the company (Rasouli, Khoonsari, ardalan, Saraee, & Ahmadi, 2020). Strategic planning is essential is reaching health care organization goals through high planning process and suitable decision-making application. Therefore, strategic planning is vital for the reaching growth and development after COVID-19 (Andrieieva, Trehubb, Khatskoc, & Sokolovskad, 2024). Effective strategic management has an important role in

the process of applying the projects related to quality practices in the healthcare organization. The human capital development in the healthcare practices is directly related to the good selection of the strategic decisions elements (Ravaghi, Alidoost, Mannion, & Bélorgeot, 2020). In Lebanese hospitals, weak strategic planning will raise different problems and certainly related to quality results and applying the rule and the regulations within the hospitals (Hamandi, 2022). The strategic plan for the health care organizations in Lebanon should include rules and procedures, assuring employee continuous education and training, increasing health care quality, applying suitable medical instruments, stressing on safety for patients and employees, keeping good environment (Hassan, Jamal, & El-Jardali, 2024).

Continuous improvement

The organization continuous improvement process of the team needs more innovation, learning and development (Endalamaw, et al., 2024). The healthcare sector continuous improvement stresses on services practices offered to patients that suit the rules and procedures. Continuous improvement needs include some elements to reach needed results such as benchmarking, objective determinants and the team association (O'Donnell & Gupta, 2023). Healthcare industry is facing pressure due to lean management in hospitals. The good process of continuous improvement in health care will lead to elevate the satisfaction of the patients and employees (Kleeff, Harten, Knies, & Boselie, 2023). Applying more sustainable development need to educate the healthcare employees and patients in order to provide the managerial expert feedback to improve the process and to reach the goals of the hospitals (Kumah, Ankomah, Agyei, & Otchere, 2020). The Lebanese healthcare faced different problems related to corona virus and the high number of foreign refugees, economic troubles that directly impact the hospitals services (Aoun & Tajvar, 2024). The Lebanese hospitals applies suitable policies for the continuous improvement that are well structured to be suitable for the employees for attending trainings to enrich safety and quality. The Lebanese government should apply a balance between public and private healthcare hospitals in order to assure the continuous improvement and the assure the high level of services offered to the patients (El-Jardali, Masri, & Sleem, 2023). The human capital has an important role on continuous improvement (Nour & Momani, , The influence of human capital on return of equity among banks listed in the Amman stock exchange, 2021). The continuous improvements are directly impacted to the services and quality processes of the hospital (Murad & Abdulnaser , 2014).

Quality process

Quality management is the center of the sustainable improvement of the companies that lead them to the luxurious level between the organizations (Ali, Addeeb, Al-Serouri, & Ghaleb, 2022). Quality management purposes is to reach patients expectations that is sticked with suitable treatment services. Hospitals meeting high healthcare quality level and considering good patient safety are applying efficiency and effectiveness quality techniques (Hidayah & Arbianingsih, 2022). In Lebanon applying high quality healthcare services standards and high monitoring tools increase the employees' techniques and experience in facing corona virus (AbouNader, et al., 2024). Lebanese hospitals try to enhance the quality process by applying procedures, taking care of patients, boosting safety and reaching patient satisfaction (El Jardali, Abou Samra, Nassour, & Jamal, 2024)**.** Improving the health care quality process is defined by enhancing service delivery and assuring the safety environment in the Lebanese hospitals (Mansour , Boyd, & Walshe, 2021). The e-learning has a vital role in

simplifying the process of the hospital to offer suitable treatment for patients (Mahamid, Bdier, & Nour, 2022).

Employee satisfaction

Measuring employee's satisfaction is vital for the performance of the healthcare organizations. Therefore, employees will feel more belonged, will work hard and practice their services efficiently in their healthcare organization when they are asked about their satisfaction opinion (Cantarelli, Vainieri, & Seghieri, 2023). Hospitals stress on employee's satisfaction and mentioned it more vital certainly after the coronavirus because the government budgets diminish however the healthcare public services increase. The coordination of the managerial levels and in the employees inside every unit in the hospital should provide flexibility in fulfilling tasks encouraging higher levels of satisfaction (Battaglio, Belle, & Cantarelli, 2021). In the Lebanese healthcare sector, employees should be highly satisfied. Hospitals should increase training and all educational tools. Providing high opportunities encouraged the employees to increase their performance and enhancing their satisfaction in order to minimize turnover rates (Said & Wahidi, 2024). In addition, the pandemic and the challenges faced in the Lebanese territory, the satisfaction levels of the healthcare team used to be impacted by their respond on applying services and provide care to patients (Chaanine & Seilati, 2024).

Sustainable Hospital Performance

Health care performance is characterized by different elements such as decreasing cost, high competition, good services offered to patients and easy managerial health process (Hadian, Rezayatmand, Shaarbafchizadeh, & Ketabi, 2024). Measuring performance in hospitals could be efficient by providing patients highest quality of healthcare services with minimum cost (Pestana, Pereira, & Moro, 2020). In the Lebanese situation from the policy procedures issued by the ministry of health regarding performance-payment, it is clear that by adopting systems, the ability to examine the effects of cases, ownership and duration of stay will increase (Khalife, Ammar, Emmelin, El-Jardali, & Ekman, 2020). The importance of the accreditation for the Lebanese hospitals is to create standardization of the practices and processes, boosting quality and enhancing performance (El Jardali, Abou Samra, Nassour, & Jamal, 2024). Applying balanced scorecard will improve the financial situation and quality process of the hospital (Kharoub & Nour, 2024). The managers can evaluate the performance measurement of the hospital through applying balanced scorecard (Amer , et al., 2022). The balanced scorecard enables the managers to analyze the strategic planning and to reach suitable performance evaluation of the hospital (Amer, et al., 2022). The good connection between the department may lead to good performance in the hospital (Nour, Bouqalieh, & Okour, The impact of institutional governance mechanisms on the dimensions of the efficiency of intellectual capital and the role of the size of the company in the Jordanian Shareholding industrial companies, 2022).

METHODOLOGY

This paper explores the role of strategic planning and continuous improvement in building sustainable hospital performance at Dr Abdullah al Rassi governmental hospital in Halba, Akkar, Lebanon. Population is designed from 510 respondents from at Dr Abdullah al Rassi governmental hospital in Halba, Akkar, Lebanon. Data are collected during January and February 2025. The technique applied in this paper is the descriptive method with the quantitative approach. Researchers select all the population of 510 respondents but 20 respondents refuse to respond and the sample will become 490 respondents. Researchers took all the population in order to generalize the findings because most of the social, cultural and regulatory settings are almost the same in other hospitals.

Researchers will select SPSS software, SPSS Andre Hayes model 3, model 4 and AMOS Software for studying the sample study of 490 respondents and defining the appropriate results and recommendations. The researchers collected the data through providing the respondents questionnaire to fill. The respondents are targeted as follows the Technician and X-ray Imaging, Doctor, Nurse and Laboratory, Administrative and Security and, Doctors visitors. The designed of the questionnaire is a total of 18 questions. The researcher informed the respondents about the study and accept to fill the questionnaire. The researcher received an approval to distribute the questionnaire from the Dr Abdullah al Rassi governmental hospital in Halba, Akkar, Lebanon. The questionnaire is divided into 6 parts: the demographic part is the first one, including 3 questions about the respondent experience, position and education; part two is "Strategic planning" variable developed of 3 questions, part three is "Continuous improvement" variable developed of 3 questions, part four is "Quality process" variable developed of 3 questions, part five is "Employee satisfaction" variable developed of 3 questions, part six is "Hospital performance" variable developed of 3 questions. A Likert scale of 5 elements is exploratory the data collected from the respondents' (Sara, SAPUTRA, & Utama, 2021), (van Assen, 2021), (Chau, et al., 2021), (Sari, 2022). The questionnaire of 5 Likert scale was necessary because it was the most evaluation tools that is relevant to the population of this study.

EMPIRICAL RESULTS

Means interpretation

Table (1): means of the elements

Elements	Mean	Std. Deviation	N
Strategic plan elements are timely applied.	3.95	0.88	490
The strategic plan is directly related to goals.	3.86	0.95	490
The strategic plan might be cross-functional internally.	3.87	0.86	490
Continuous improvement of opportunities.	3.96	0.89	490
Continuous learning for the employee.	3.88	0.91	490
Applying measurable criteria for better analysis.	3.72	0.99	490
Increased health services efficiency is applied.	3.74	0.96	490
Evidence is based on decision-making on quality processes.	3.60	0.98	490
Patient focus is applied in the quality process.	3.63	0.92	490
Employees are satisfied with their work.	**3.52**	0.94	490
Employees can benefit from promotion opportunities.	3.59	0.91	490
Employees are exchanging information within their work.	3.67	0.86	490
Quality of health services is applied	3.78	0.81	490
Total cost reduction is applied.	3.61	0.90	490
Patients are always satisfied.	**3.49**	0.92	490

Source: SPSS software output

In table 1 the researchers examined the variables elements of the planning, quality and performance practices through defining the sample size, standard deviation and mean. The standard deviation margin is between 0.81 and 0.98 lower than 1, defining that the respondents' answers are close to mean and providing low variance. The observation of the variables is as follows: regarding the strategic planning are viewed favorable, Strategic plan elements are timely applied (mean=3.95), The strategic plan is directly related to goals (mean= 3.86) and, the strategic plan might be cross-functional internally (mean= 3.87). In the continuous improvement elements are shown acceptable, Continuous improvement of opportunities (mean = 3.96), Continuous learning for the employee (mean = 3.88) and, applying measurable criteria for better analysis mean (3.72). The means for quality process are medium comparable to first two variables, Increased health services efficiency is applied (mean = 3.74), Evidence is based on decision-making on quality processes (mean = 3.60) defining different problems related to quality process practices and, Patient focus is applied in the quality process (mean

= 3.63) shining on low quality process related to patient should be adjusted. In the employee's satisfaction the means of the elements are definitely low, Employees are satisfied with their work (mean = 3.52) providing evidence that employees are slightly satisfied with their work and the administration to solve this issue directly, Employees can benefit from promotion opportunities (mean = 3.59) employees suffer from low advancement in their work and hospital need to boost the promotion chances and, Employees are exchanging information within their work (mean = 3.67). For the hospital performance variable, the elements are low, Quality of health services is applied (mean = 3.78), Total cost reduction is applied (mean = 3.61) defining that cost are somehow high and need to be diminished and, Patients are always satisfied (mean = 3.49) it is clear that there is a problem about the patients' satisfaction and the hospital need to enhance the overall process in order to reach patient satisfaction.

Factor analysis

Table (2): KMO and Bartlett's Test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.867
Bartlett's Test of Sphericity	**Approx. Chi-Square**	3241.941
	df	105
	Sig.	0.000

Source: SPSS software output

In table 2 the factor analysis is examined by discovering the distribution to determine the element that had effect on every feature. The component analysis described the elements of the variables in order to be interpreted. A Correlation Matrix Determinant was examined providing a result equal to 0.001 that is greater than 0.0001 showing aa acceptable correlation between elements. The result of KMO is equal 0.867 that is greater than 0.5 providing an acceptable result and defining that the number of elements applied are suitable. Sig is equal to 0.000 that is below to 0.05 ad defining acceptable output.

Communalities test

The communality results are defined as the percentage of the questions explained by the model factor as follows:

- 63% of "Strategic plan elements are timely applied" is explained by the factor model.
- 64% of "The strategic plan is directly related to goals" is explained by the factor model.
- 45% of "The strategic plan might be cross-functional internally" is explained by the factor model.
- 56% of "Continuous improvement of opportunities" is explained by the factor model.
- 63% of "Continuous learning for the employee" is explained by the factor model.
- 60% of "Applying measurable criteria for better analysis" is explained by the factor model.
- 32% of "Increased health services efficiency is applied" is explained by the factor model.
- 34% of "Evidence is based on decision-making on quality processes" is explained by the factor model.
- 40% of "Patient focus is applied in the quality process" is explained by the factor model.
- 43% of "Employees are satisfied with their work" is explained by the factor model.
- 45% of "Employees can benefit from promotion opportunities" is explained by the factor model.
- 40% of "Employees are exchanging information within their work" is explained by the factor model.
- 39% of "Quality of health services is applied" is explained by the factor model.
- 45% of "Total cost reduction is applied" is explained by the factor model.

– 44% of “Patients are always satisfied” is explained by the factor model.

The results of the communalities are above 32% defining that all elements are acceptable and the percentage of the elements are explained by the model factor.

Reliability analysis

– The Cronbach's Alpha of the overall questionnaire is equal to 0.83 for the 15 elements defining an acceptable output and providing a satisfactory level of the internal consistency for the sample size interpreted in this research paper.
– The Cronbach's Alpha of the SP is equal to 0.83 for the 3 elements providing acceptable result.
– The Cronbach's Alpha of the CI is equal to 0.86 for the 3 elements providing acceptable result.
– The Cronbach's Alpha of the QP is equal to 0.73 for the 3 elements providing acceptable result.
– The Cronbach's Alpha of the ES is equal to 0.75 for the 3 elements providing acceptable result.
– The Cronbach's Alpha of the HP is equal to 0.74 for the 3 elements providing acceptable result.
– All the results of Cronbach alpha showed a satisfactory level of internal consistency for the variables.

Rotated Component Matrix

Table (3): rotated component matrix interpretation.

Elements	Component			
	1	**2**	**3**	**4**
Increased health services efficiency is applied.			.726	
Evidence is based on decision-making on quality processes.			.817	
Patient focus is applied in the quality process.			.821	
Quality of health services is applied.	.738			
Total cost reduction is applied.				.752
Patients are always satisfied.				.744
Continuous improvement of opportunities.		.861		
Continuous learning for the employee.		.901		
Applying measurable criteria for better analysis.		.865		
Employees are satisfied with their work.	.735			
Employees can benefit from promotion opportunities.	.681			
Employees are exchanging information within their work.	.830			

Source: SPSS software output.

This table 3 shows that the variables are divided in four components. The elements of the variables are as follows quality process included three elements, Hospital Performance included three elements and, Continuous improvement included three elements, Employee satisfaction included three elements. The results define the relationship between the elements providing correlations above 0.7 that are highly correlated and acceptable. Each variable has three elements that interact and are separated from other variables. The element “Quality of health services is applied” is moved to the hospital performance variable in order to complete three elements. The rotated component matrix defined that the four components are appropriately selected and separated.

Table (4): rotated component matrix interpretation.

Elements	Component		
	1	2	3
Strategic plan elements are timely applied.	.890		
The strategic plan is directly related to goals.	.901		
The strategic plan might be cross-functional internally.	.740		
Increased health services efficiency is applied.			.769
Evidence is based on decision-making on quality processes.			.783
Patient focus is applied in the quality process.			.808
Quality of health services is applied.		.772	

Total cost reduction is applied.		.831	
Patients are always satisfied.		.834	

Source: SPSS software output

The table 4 shows that the variables are divided into three components. The elements of the variables are as follows Strategic plan included three elements, quality process included three elements and hospital performance included three elements. The results define the relationship between the elements providing correlations above 0.7 that are highly correlated and acceptable. Each variable has three elements that interact between the same variable and are separated from other variables. The rotated component matrix defined that the three components are appropriately selected and separated.

Correlation between variables

Table (5): Pearson Correlation.

	Quality process	**Total of the variables**
Strategic planning	0.395	0.735
Continuous improvement	0.333	0.700
Employee Satisfaction	0.169	0.628
Hospital Performance	0.154	0.590
Quality process		0.630

Source: SPSS software output

The resulting analysis understanding that Sig of all variables including Strategic planning on Sustainable Hospital Performance with Continuous improvement, Quality process and, Employee Satisfaction are equal to 0.000 providing an acceptable result.

The Pearson value is equal to 0.735 suggesting a strong relationship between "Total of the variables" with "Strategic planning".

The Pearson value is equal to 0.700 suggesting a strong relationship between "Total of the variables" with "Continuous improvement".

The Pearson value is equal to 0.628 suggesting a strong relationship between "Total of the variables" with "Employee Satisfaction".

The Pearson value is equal to 0.590 suggesting a strong relationship between "Total of the variables" with "Hospital Performance".

The Pearson value is equal to 0.630 suggesting a strong relationship between "Total of the variables" with "Quality process".

The Pearson value of the "Strategic planning" with "Quality process" is equal to 0.395, reflecting a medium effect and a covary linear output.

The Pearson value of the "Continuous improvement" with "Quality process" is equal to 0.333, reflecting a medium effect and a covary linear output.

The Pearson value of the "Employee Satisfaction" with "Quality process" is equal to 0.169, reflecting a small effect and a covary linear output.

The Pearson value of the "Hospital Performance" with "Quality process" is equal to 0.154, reflecting a small effect and a covary linear output.

Andrew Hayes Model 3 for moderators

After applying Andrew Hayes model 3 the results are defined that the total model is acceptable because p-value equal to 0.000< 0.05, and R2 is equal to 15.85% of the total variance in the "Hospital performance" is explained by the "Quality process". "Constant" had a coefficient equal to -7.60, a p-

value equal to 0.0123 < 0.05, the 95% CI equal to [-13.55, -1.66] providing a significant result. “Hospital performance” the “Independent variable” HP had a coefficient equal to 2.87, a p-value equal to 0.0014 < 0.05, the 95% CI equal to [1.12, 4.61] zero is not included, providing a positive significant result. “Continuous improvement” the “First Moderator” CI had a coefficient equal to 2.76, a p-value equal to 0.0002< 0.05, the 95% CI equal to [1.30, 4.23] zero is not included, providing a positive significant result. “Employee satisfaction” the “Second Moderator” ES had a coefficient equal to 3.28, a p-value equal to 0.0007< 0.05, the 95% CI equal to [1.39, 5.16] zero is not included, providing a positive significant result. Int_1 = HP × CI had a coefficient equal to -0.72, a p-value equal to 0.0011< 0.05, the 95% CI equal to [-1.15, -0.29] zero is not included, providing a negative significant result. This output defined that each unit increases in “Hospital performance” will lead to a decrease in “Continuous improvement”. Hospital performance has an indirect relationship on Continuous improvement. Int_2 = HP × ES had a coefficient equal to -0.90, a p-value equal to 0.0005< 0.05, the 95% CI equal to [-1.40, -0.39] zero is not included, providing a negative significant result. This output defined that each unit increases in “Hospital performance” will lead to a decrease in “Employee satisfaction”. Hospital performance has an indirect relationship on Employee satisfaction. Int_3 = CI × ES had a coefficient equal to -0.82, a p-value equal to 0.0005< 0.05, the 95% CI equal to [-1.28, -0.36] zero is not included, providing a negative significant result. This output defined that each unit increases in “Continuous improvement” will lead to a decrease in “Employee satisfaction”. Continuous improvement has an indirect relationship on Employee satisfaction. Int_4 = HP × CI × ES had a coefficient equal to 0.23, a p-value equal to 0.0002< 0.05, the 95% CI equal to [0.11, 0.35] zero is not included, providing a positive significant result of three-way interaction. This output defined that “Continuous improvement” has a moderating role on the connection between “Hospital performance” and “Quality Process” depends on the level of the second moderator “Employee satisfaction”, hypothesis 2 is accepted. The moderating role of HP by CI is acceptable when ES is high and equal to 4.3333, the effect is equal to 0.2791 and P is equal to 0.0058 below 0.05 providing acceptable result. There is a significant and strong positive role of the Hospital performance and Quality Process because, Continuous improvement is equal to 5.0 high level and Employee satisfaction is equal to 4.33 high level, the effect is equal to 0.3703 and P value is equal to 0.0050 below 0.05 providing acceptable result.

Andrew Hayes Model 4 for mediator

After applying Andrew Hayes model 4 the results are defined that HP → SP: coefficient equal to 0.105, p-value equal to 0.0306 < 0.05, CI equal to [0.009,0.201] zero is not included. There is a direct relationship between HP on SP, defining that every unit that increase HP will directly enhance SP. SP → QP: coefficient equal to 0.380, p-value equal to 0.0000 < 0.05, CI equal to [0.29,0.46] zero is not included. There is a direct relationship between SP on QP, defining that every unit that increase SP will directly enhance QP. Total Effect of HP → QP: coefficient equal to 0.165, p-value equal to 0.0006 < 0.05, CI equal to [0.07, 0.25] zero not included. There is a direct relationship between HP on QP, defining that every unit that increase HP will directly enhance QP, hypothesis 1 is accepted. Direct Effect of HP → QP: 0.125, p-value equal to 0.005 < 0.05, CI equal to [0.03,0.21] zero not included. There is a direct relationship between HP on QP, defining that every unit that increase HP will directly enhance QP, even after Controlling for SP. Indirect Effect of the Mediation Path: HP → SP → QP: coefficient equal to 0.040, p-value equal to 0.0203, CI equal to [0.001,0.082] zero not included. There is a direct role between HP on QP partially mediated by SP Hypothesis 3 is accepted. Every unit that

increases HP will directly enhance SP that will rise QP. The mediation is partial because HP has a direct role on QP.

AMOS results CFA interpretations

An investigation in figure 2 about the confirmatory factor analysis test after testing the factor analysis and Andrew Hayes Model 4 for mediator for investigation of the results through AMOS software.

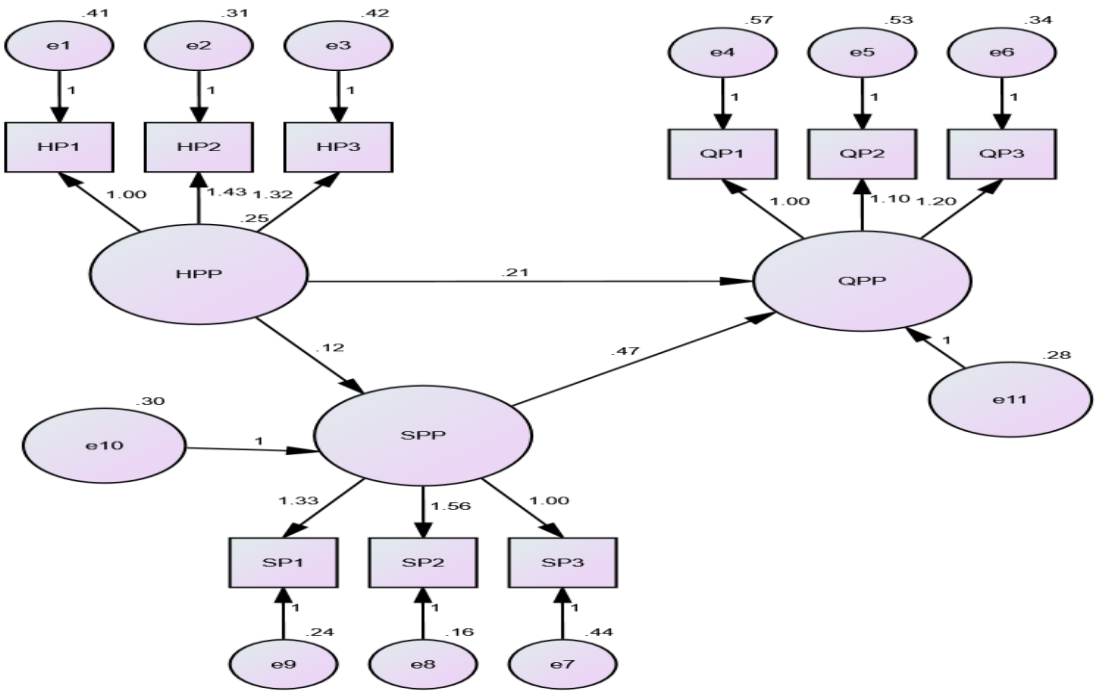

Figure (2): After Modification indices.
Source: AMOS software output

The model fit results from AMOS software are as follows the Chi-Square is equal to 37.59, the degree of freedom is equal to 24 higher than 0 providing acceptable result, Probability level is equal to 0.38 higher than 0 providing acceptable result. RMR (Root Mean Square Residual) is equal to 0.031 lower than 0.08 providing acceptable result. GFI (Goodness of Fit Index) is equal to 0.983 higher than 0.90 indicating good fit. AGFI (Adjusted Goodness of fit index) is equal to 0.969 providing good result. NFI (Normed fit index) is equal to 0.973 higher than 0.85 defining a satisfactory result. CFI (Comparative fit index) value is over 0.990 higher than 0.9 defining excellent fits. RMSEA (Root Mean Square Error of Approximation) is equal to 0.034 considering good fit.

Table (6): regression weights analysis AMOS.

Regression analysis			Estimate	S.E.	C.R.	P	Label
SP	<---	HP	0.124	0.062	1.991	0.046	par_8
QP	<---	HP	0.210	0.069	3.048	0.002	par_7
QP	<---	SP	0.471	0.069	6.794	***	par_9
HP1	<---	HP	1.000				
HP2	<---	HP	1.431	0.137	10.459	***	par_1
HP3	<---	HP	1.320	0.120	11.020	***	par_2
QP1	<---	QP	1.000				
QP2	<---	QP	1.103	0.104	10.596	***	par_3
QP3	<---	QP	1.201	0.110	10.873	***	par_4
SP3	<---	SP	1.000				

Regression analysis			Estimate	S.E.	C.R.	P	Label
SP2	<---	SP	1.561	0.106	14.743	***	par_5
SP1	<---	SP	1.333	0.091	14.708	***	par_6

Source: Amos Software

Table 6 examined the regression analysis test for the purpose of providing the hypothesis results. The P value is equal to 0.046 below 0.05 providing accepted result, hospital performance has a direct role on strategic planning. The P value is equal to 0.002 below 0.05 providing accepted result, hospital performance has a direct role on quality process, hypothesis 1 is accepted. The P value is equal to 0.000 below 0.05 providing accepted result, strategic planning has a direct role on quality process. It is concluded that Hospital performance has a direct role on quality process mediated by strategic planning, Hypothesis 3 is accepted. The P value of all the relationships between hospital performance and the elements of hospital performance are equal to 0.000 below 0.05 providing accepted result. The P value of all the relationships between quality process and the elements of quality process are equal to 0.000 below 0.05 providing accepted result. The P value of all the relationships between hospital performance and the elements of strategic planning are equal to 0.000 below 0.05 providing accepted result. These results come with the following comparison if previous results defining that continuous improvement leads to enhance quality processes (O'Donnell & Gupta, 2023). Strategic performance has direct role quality process of the organization (Ali, Addeeb, Al-Serouri, & Ghaleb, 2022). Healthcare Performance is impacted by the employees satisfied (Cantarelli, Vainieri, & Seghieri, 2023).

DISCUSSION

The results come with the lack of strategic planning will hurt the quality process of the hospitals, therefore enhancing strategic planning will lead to an increase in the overall quality process (Hamandi, 2022). The strategic plan for the health care organizations in Lebanon has a direct role on boosting health care quality and raising KPI evaluations (Hassan, Jamal, & El-Jardali, 2024). Continuous improvement made by employees will lead to an increase in the quality of service delivered to clients (Endalamaw, et al., 2024). Keeping improvement continuous in the service practices will lead to enhancing work and boost processes (O'Donnell & Gupta, 2023). Quality management plays an important role in increasing governance and sustainability of the organization (Ali, Addeeb, Al-Serouri, & Ghaleb, 2022). Patients are seeking quality management by stressing on healthcare services (Hidayah & Arbianingsih, 2022). Performance of healthcare professionals is directly measured by the employees satisfied (Cantarelli, Vainieri, & Seghieri, 2023). The coordination of the managerial level makes members feel highly reaching employees satisfaction and hospital performance (Battaglio, Belle, & Cantarelli, 2021). Applying suitable rules and procedures will lead to high hospital performance (Khalife, Ammar, Emmelin, El-Jardali, & Ekman, 2020). The accreditation for the Lebanese hospitals will lead to high quality and suitable level of performance (El Jardali, Abou Samra, Nassour, & Jamal, 2024). Balanced scorecard features will provide more clear vision about the performance measurement and quality process of the hospital (Kharoub & Nour, 2024). The continuous improvement and employee's satisfaction in highly appreciated by suitable relationship between the department of the hospital (Nour, Bouqalieh, & Okour, 2022). Employees satisfaction has a direct effect on the improvement practices and quality processes of the hospital (Murad & Abdulnaser , 2014).

Conclusion and recommendations

The purpose of this paper is to investigate the role of strategic planning, continuous improvement and quality process at Dr Abdullah al Rassi governmental hospital in Halba, Akkar, Lebanon. The confirmatory factor analysis test provides that P value of all the relationships between quality process and the elements of quality process are equal to 0.000 below 0.05 providing accepted result. The hypotheses accepted of this article are as follows: H1: Hospital performance has a direct role on Quality Process. H2: Continuous improvement has a moderating role on the connection between Hospital performance and Quality Process depends on the level of the second moderator Employee satisfaction. H3: Hospital performance has a direct role on Quality Process partially mediated by strategic planning. It has been concluded that applying strategic planning elements will lead to good quality process in the services offered to patients. Analyzing decision making of the hospital performance including goals and forecasting results will enhance the strategic planning application fulfilled by the employees and augment the quality of actions done to reach best results. Applying training and offering good workplace environment and stressing on continuous improvement through patient feedback will push to better hospital achievement and more services applied in a professional strategy.

It is **recommended** for strategic planning setting five years strategic plan that meet with the Lebanese health standards program. Sharing decision making with patients, employees and shareholders for more engagement techniques. Collecting data and analyzing results for more accurate future expectations. Reviewing achievements for making the appropriate adjustments needed. Increasing the local interactions and communications between employees. For continuous improvement it is suggested applying Kaizen method for the all working process levels in the hospital to decrease management errors and boost productivity. Applying continuous improvement of the managerial levels in the hospital. Analyzing patient feedback for continuous improvement and solving problems directly from the employees. For quality process it is advised applying standards rules and regulations to decrease the variations in management process. Getting international accreditation of quality management. Setting suitable technological system for quality management. Reviewing the services applied for all quality levels. Setting a quality group to check about quality practices results. For employee satisfaction it is recommended getting feedback data from employees to adjust plans. Providing training programs for jobs practices. Enhancing workplace environment for better job atmosphere. Increasing the local interactions and communications between employees. Setting a reward system for employees' achievement. For sustainable hospital performance it is advised to apply KPI techniques for patients and performance achievements. Applying correction for error practical job process. Applying digital management system. Reducing cost for patients and increasing quality services. Applying accountability in management process.

Study limitations and future research

The limitations of this paper are classified through the investigation of five variables in a governmental hospital. The time limitation during January and February of the year 2025. The respondent's limitation type Technician and X-ray Imaging, Doctor, Nurse and Laboratory, Administrative and Security and, Doctors visitors reaching a total of 490 respondents. The selection limitation of Dr Abdullah al Rassi governmental hospital in Halba, Akkar, Lebanon. It is advised for future studies to explore the quality process and performance and continuous improvement in the hospital in Lebanon. It is suggested to investigate on the role of AI and digital transformation on the quality process, strategic planning and performance of the governmental hospitals. It is recommended

to explore more future research on hospital performance in different countries through studying the effect of leadership and financial distress.

Disclosure statement

- **Ethical Approval**: All ethical guidelines were strictly followed in conducting this research. Ethical approval was obtained where required.
- **Conflict of interest**: No conflict of interest.
- **Availability of data and materials**: Available
- **Author Contributions**: Maher El Cheikh contributed to the research process, including literature review, methodology, data analysis, results and recommendations. Dr Maher Ghazal have contributed to the research questions, hypotheses, methodology. All authors have reviewed and approved the final version of this paper.
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