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THE IMPACT OF STATE-OWNED HOSPITAL CONSOLIDATION ON THE PERFORMANCE OF AFFILIATED HOSPITALS: A CASE STUDY OF KRAKATAU MEDIKA HOSPITAL

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Abstract

This study aims to investigate the effect of consolidation on the performance of Krakatau Medika Hospital below a group called Indonesia Healthcare Corporation (IHC). The concept of consolidation in the healthcare sector is the focus of the study due to the lack of research that examines this phenomenon in depth. The data used includes several hospital performance indicators, such as operational efficiency, service quality, finance, and other important aspects. By using the Balance Scorecard and paired Friedman test, the study reveals that even though the score of performance from the Balance Scorecard gradually improved after the consolidation, the significance of the analyzed data is below 0.05, indicating that there is no remarkable impact of consolidation towards the hospital's performance. It is advised to take more time to do in-depth research to see how the consolidation impacted the hospital.

Keywords: *consolidation, performance, Balance Scorecard, Friedman test*

Introduction

The healthcare landscape in Indonesia has witnessed significant transformation in recent years, primarily marked by the consolidation of state-owned hospitals under the umbrella of holding companies. This paradigm shift, initiated by the Ministry of State-Owned Enterprises (Badan Usaha Milik Negara/BUMN), happened in mid-2020, divided into two phases. The phase one consist of 15 hospitals (Pertamina Rantau Hospital, Pertamina Pangkal Brandan Hospital, Pertamina Dumai Hospital, Pertamina Prabumulih Hospital, Pertamina Plaju Hospital, Pertamina Balikpapan Hospital, Pertamina Tarakan Hospital, Pertamina Tanjung Hospital, Pertamina Cirebon Hospital, Pertamina Pusat Hospital, Pertamina Jaya Hospital, Pelni Hospital, Pertamina Cilacap Hospital, Pertamina Balongan Hospital, Pertamina Sorong Hospital), whereas phase two consist of 20

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hospitals (Bakti Timah Pangkal Pinang Hospital, Bakti Timah Muntok Hospital, Medika Stania Sungailiat Hospital, Bakti Timah Karimun Hospital, Pelabuhan Palembang Hospital, Krakatau Medika Hospital, Pelabuhan Cirebon Hospital, Pelabuhan Jakarta Hospital, Port Medical Center Hospital, Kaliwates Hospital, Bhakti Husada Hospital, Lavallete Hospital, Wonolangan Hospital, Djatiroto Hospital, Elizabeth Hospital, Perkebunan Hospital, Gatoet Mojokerto Hospital, Medika Utama Blitar Hospital, HVA Toelongredjo Hospital, and Pelindo Husada Citra Hospital). These hospitals are now below a group company called IHC (Indonesia Healthcare Corporation).

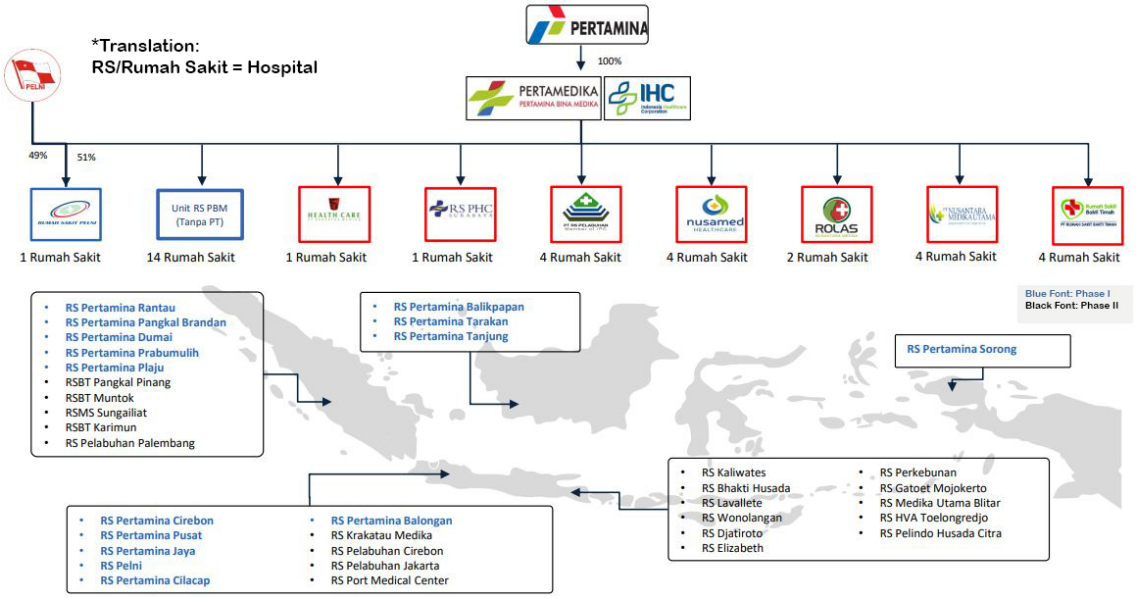

Figure 1 Phase I and Phase II of State-Owned Hospital Consolidation
Source: The author

The background behind the consolidation is: that the opportunities in Indonesia's healthcare sector are huge; the supply of doctors and hospital beds is very low when compared to some global countries and Southeast Asian countries, the position of state-owned hospitals in the health sector in Indonesia is still limited; where the market share is only 2% and the hospital business is not a major business in the BUMN business portfolio, the collective development of state-owned hospitals in the IHC group has the potential to enhance their role in national health security through 4 strategic objectives (providing high-quality healthcare, enhancing network and scale, improving capability and innovation, creating integration and synergy towards national healthcare sector ecosystem).

The research conducted in this paper will focus on the case study of Krakatau Medika Hospital, the hospital itself is owned by PT Krakatau Steel, and went through the process of consolidation at phase two. Phase two includes the acquisition of a majority stake in the hospital entity in the form of cash by Pertamina Bina Medika (PBM) as the head of IHC and the addition of share capital in PBM by 7 BUMN companies in the form of inbred shares of the hospital entity. The transaction process can be described into two steps; PBM acquires a 28.5% stake in hospital entities to be paid in cash to 7 BUMN

companies and PBM will issue new shares that will be subscribed by 7 state-owned companies using 38.5% of the hospital entity's shares (inbreng shares). The scheme can be seen in *Figure 2*.

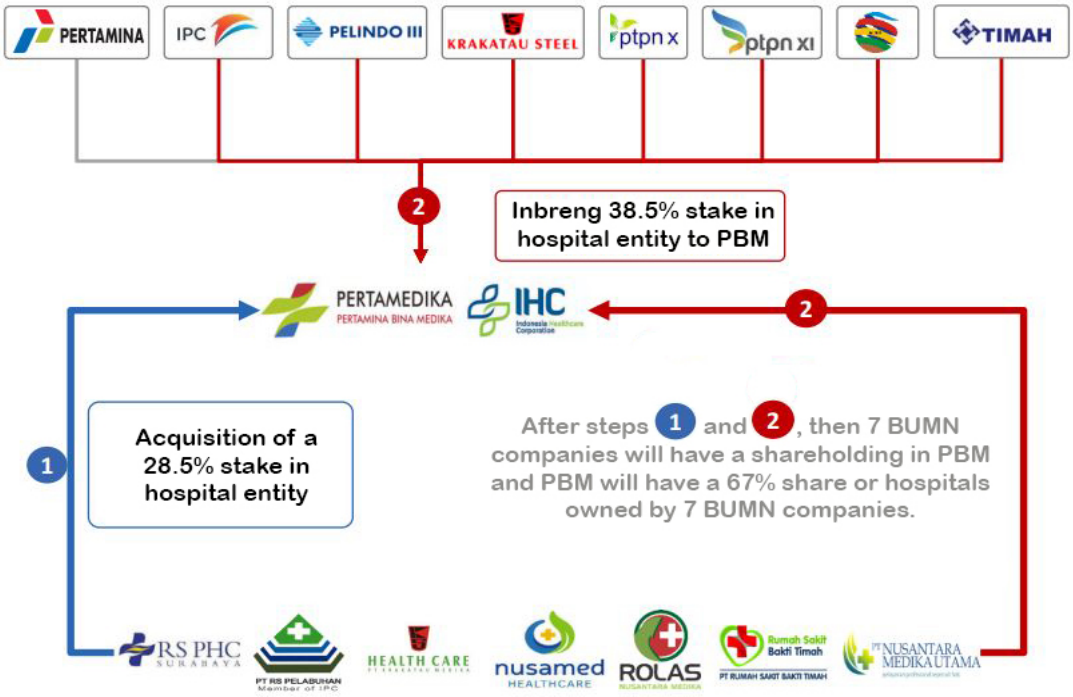

Figure 2 Transaction Scheme of Phase Two
Source: The author

Additionally, a systematic review on the impact of hospital mergers on healthcare quality measures found a lack of literature summarizing the impact of mergers on quality indicators (Mariani et al., 2022), thus becoming the gap of knowledge identified. Identified gaps in knowledge indicate that while the creation of holding companies for state-owned hospitals has gained approval and commendation, there is a dearth of in-depth research on how these consolidations influence the performance and operations of affiliated hospitals. Therefore, this research aims to bridge this gap by providing a detailed examination of the hospital's performance before and after the consolidation, with a specific focus on Krakatau Medika Hospital as a case study.

Several research indicates that the process of hospital consolidation may have adverse impacts on hospital performance. As an illustration, research conducted in Norway revealed that the consolidation of administrative functions inside a hospital might result in a noteworthy decline in cost-effectiveness (Kjekshus et al., 2014). Furthermore, it has been suggested by Kjekshus et al. (2014) that mergers resulting in a decrease in acute care services could potentially lead to improved cost-efficiency. Nevertheless, it is crucial to acknowledge that the process of combining might also result in concealed expenses (Kjekshus et al., 2014).

However, it is worth noting that the consolidation of hospitals has the potential to enhance the market strength of hospitals, which may result in anticompetitive

consequences (Lewis & Pflum, 2017). According to Kannarkat and Mostashari (2021), the consolidation of hospitals can lead to the ability to engage in price negotiations and establish contracts that hinder competition, ultimately leading to a rise in healthcare expenses. This has the potential to have negative consequences for patients and the general standard of healthcare.

The overall aim of this study is to shed light on the consequences of state-owned hospital consolidation, specifically addressing the impact on the performance, services, and operations of affiliated hospitals. By delving into the dynamics of the Krakatau Medika Hospital and its integration within the larger healthcare holding company, this research endeavors to provide valuable insights into the broader implications of hospital consolidation in the Indonesian healthcare sector.

A hospital is a healthcare establishment that administers treatment to patients through the utilization of specialized medical personnel, auxiliary healthcare staff, and medical apparatus. The general hospital, the most well-known variety, generally operates with an emergency department to attend to patients with life-threatening conditions such as those injured in accidents and fires or who have contracted a sudden illness (*Hospitals*, n.d.). Typically, the preeminent healthcare facility in its area, a district hospital possesses a substantial number of intensive care beds as well as supplementary beds designated for patients requiring long-term care. Specialized medical facilities encompass a range of settings, including rehabilitation hospitals, trauma centers, children's hospitals, geriatric hospitals, and institutions dedicated to specific medical requirements, such as psychiatric treatment or the management of particular disease categories.

Consolidation theory, as it pertains to business, denotes the strategic process of determining whether to merge or acquire companies to attain expansion, progress, and augmented profitability (Pantelidis et al., 2018). Diverse factors, including regulatory constraints, credit availability, and the effect on financial performance, influence the decision to consolidate (Hamarat & Broby, 2022). Furthermore, in the consolidation process, the financial performance of the target company and the timing of goodwill impairment provision are critical factors (Huo & Zhang, 2021). Accounting-wise, consolidation theory incorporates various schools of thought that have implications for international accounting practices, including the Parent Company Theory and Entity Theory (Celli, 2019).

The corporate parenting theory is a strategic management concept that focuses on the role of a parent company in managing and providing value to its portfolio of businesses or subsidiaries. It is also known as the parenting company theory. Another name for this idea is the parenting company theory. This theory emphasizes the significance of the involvement of the parent business in the provision of support, resources, and strategic direction to its subsidiaries to improve the overall performance of such subsidiaries and their advantage in the competitive market (Galpin, 2019).

In addition to this, the theory places a significant emphasis on the importance of the ties that exist between the main business and its subsidiaries. It emphasizes the influence that the involvement, control, and support of the parent company have on the

performance, innovation, and competitiveness of the subsidiaries of that company (Alawag, 2020). According to Alawag's (2020) research, which investigates the differences in real earnings management between parent businesses and non-parent firms within business groups, ultimate parent firms have lower abnormal production costs and discretionary expenses than non-parent firms do. This finding suggests that ultimate parent firms are better at managing their real earnings (Alawag, 2020).

Hospital consolidation is defined as the formal arrangement in which two or more hospitals consolidate or acquire one another (Cuellar & Gertler, 2003). This process may encompass either full integration, which entails the consolidation of operations between the merging hospitals, or strategic integration, which entails the alignment of services without the consolidation of divisions (Corwin et al., 2003; Cuellar & Gertler, 2006). Changes in efficiency, patient readmission rates, and quality and safety outcomes may result from hospital consolidation (Folcarelli et al., 2023; Wang et al., 2022).

The process of hospitals merging or being acquired by one another to form a larger healthcare network is referred to as hospital consolidation. The effect of hospital mergers on overall hospital performance has been the focus of investigation in the field of healthcare research. Several studies, approaching this topic from different angles, have been conducted on this topic, and their findings have provided insights into the consequences of hospital consolidation on several areas of hospital performance. According to a comprehensive analysis conducted by Kam et al. (2020), the available evidence does not support the claim that hospital consolidation improves the quality of healthcare services. From this theory, it can be hypothesized that:

H0: There is no significant influence between holding and hospital performance.

According to the findings of a study conducted in Norway, the outcomes of hospital mergers are debatable (Kjekshus et al., 2014). According to the findings of the study, a single administrative merger can have a substantial impact on hospital cost-effectiveness, although a broader merger involving a reduction in acute services may have a favorable impact on cost-effectiveness. This suggests that the impact of hospital consolidation on cost efficiency may differ depending on the form and scope of the merger considered. From this theory, it can be hypothesized that:

H1: There is a significant influence between holding and hospital performance.

In summary, consolidation can have a significant impact on company performance across various industries. It can lead to improved financial performance, operational efficiency, market competitiveness, and strategic decision-making. However, the specific effects of consolidation can vary depending on factors such as industry, company size, and the context in which consolidation takes place. Understanding these effects is crucial for companies considering consolidation as a strategic option.

Research Methods

The research design for this study will focus on evaluating the impact of the state-owned hospital consolidation on the performance of Krakatau Medika Hospital located in Cilegon, Banten. The study will involve the comparison of performance metrics before

and after the consolidation event in 2020. Non-parametric statistical tests, namely the Friedman Test, were employed to analyze the data.

The primary source of data for this research will be internal records and performance reports of Krakatau Medika Hospital for the years 2018 to 2022. These records will encompass a range of performance indicators, including but not limited to financial metrics (e.g., revenue, profit margins), operational efficiency (e.g., patient throughput, bed occupancy rates), and quality of healthcare delivery (e.g., patient satisfaction scores, clinical outcomes).

The research methodology includes a series of systematic steps to investigate the impact of holding on the performance of hospitals under its auspices. One of the frameworks that were used in this research is the Balanced Scorecard (BSC) on hospital performance which can be seen in *Figure 3*.

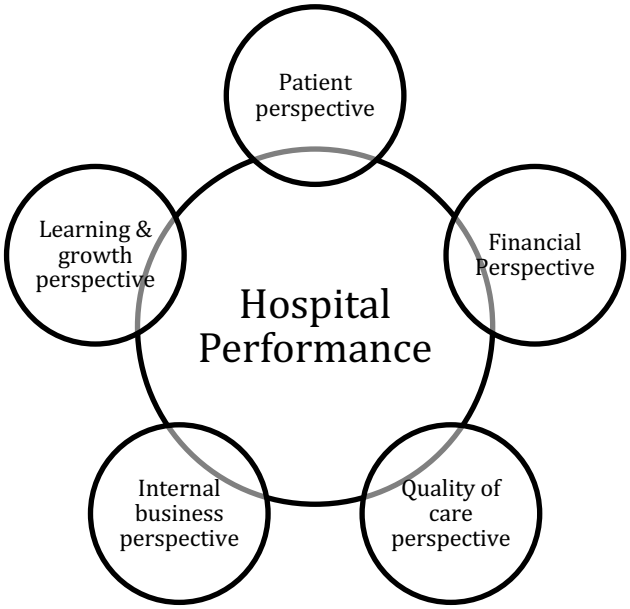

Figure 3: Hospital Performance Perspective on BSC
Source: Abu Jaber & Nashwan (2022)

Results and Discussion

The study's research topic includes a hospital performance perspective on balance-score card (BSC) that analyses five dimensions: financial perspective, customer perspective (patient-centeredness), quality of care, internal business perspective (operations effectiveness), and learning and growth (employees and innovation). Each dimension has its measures/indicators. In this case, the consolidation acts as the independent variable that impacted hospital performance (dependent variable) measured by BSC as listed below:

Table 1
Hospital Performance Perspective on BSC

Dimensions	Measures/indicators	2018	2019	2020	2021	2022
Financial perspective	Asset turnover	91%	99%	79%	82%	78%
	Return on investment	-17%	8%	62%	158%	102%
	Operating income	11%	31%	85%	204%	129%
	Return on equity	17%	-277%	99%	193%	100%
	Expense per service unit	80%	81%	91%	84%	93%
	Adherence to budget	99%	105%	134%	109%	121%
Customer perspective (patient-centeredness)	Patient Satisfaction	100%	100%	100%	100%	100%
	Complaints per 1000 patients	64%	58%	45%	49%	67%
	Appreciation/complements per 1000 patients	94%	91%	87%	100%	94%
	Market share	78%	80%	91%	70%	98%
Quality of care	Avoidable mortality rate	99%	89%	60%	95%	95%
	Adverse events rate	43%	20%	25%	21%	20%
	Hospital-acquired infection	92%	76%	50%	68%	40%
	Unplanned readmission within 48 hours	100%	100%	100%	100%	100%
Internal business perspective (Operations effectiveness)	Length of stay	101%	114%	114%	103%	88%
	Timelines of treatment	111%	105%	104%	105%	105%
	Bed utilization	127%	131%	178%	151%	107%
	Time from door to therapy	67%	50%	100%	67%	100%
	Patient turnover	95%	95%	58%	63%	93%
Learning and Growth (Employees and Innovation)	Employee satisfaction	100%	100%	100%	100%	100%
	Employees turnover rate	6%	30%	4%	4%	71%
	Employee training	63%	74%	166%	81%	80%
	Process improvement initiatives	75%	65%	118%	96%	87%
	Implementation of quality improvement principles (i.e., Six Sigma, lean)	100%	100%	100%	100%	100%
	Use of data warehousing	100%	100%	100%	100%	100%
	business intelligence	90%	200%	177%	112%	159%
	predictive analytics	100%	100%	100%	100%	100%

The following is an interpretation of the scores on the Balanced Scorecard provided for 2018 to 2022:

Financial Perspective: a) Asset Turnover: Asset turnover decreased from 91% in 2018 to 78% in 2022, indicating a decrease in the hospital's efficiency in using assets to generate revenue. b) Return on Investment (ROI): ROI fluctuated significantly over several years, with a negative ROI in 2018 but substantial positive returns in subsequent years, reaching 102% in 2022, indicating improved profitability. c) Operating Income:

Operating income has steadily increased from 11% in 2018 to 129% in 2022, indicating a consistent improvement in operating profitability. d) Return on Equity (ROE): ROE showed fluctuations but generally improved, from -277% in 2019 to 100% in 2022, indicating a positive impact on shareholders' equity. e) Expense per Service Unit: This metric increased year-over-year, which could be a concern if costs continue to increase relative to services provided. f) Adherence to Budget: The hospital generally adhered to its budget, with some variability but remained close to or above 100% in most years.

Customer Perspective (Patient-Centeredness): a) Patient Satisfaction: Patient satisfaction has consistently remained high at 100% over the years, indicating a strong focus on providing a satisfying experience for patients. b) Complaints per 1000 Patients: Complaints per 1000 patients have experienced some fluctuations but remain within a reasonable range. c) Appreciation/Compliments per 1000 Patients: Appreciation and compliments have also remained generally positive, with little fluctuation. d) Market Share: Market share showed variability, but generally increased year-on-year, reaching 98% by 2022, indicating a growing presence in the market.

Quality of Care: a) Avoidable Mortality Rate: This metric shows some fluctuation but remains relatively high, indicating the need for further investigation into avoidable mortality. b) Adverse Events Rate: The rate of adverse events decreased year-on-year, which is a positive sign, indicating improved patient safety. c) Hospital-Acquired Infection: Hospital-acquired infections are decreasing but remain a concern, especially in 2022. d) Unplanned Readmission within 48 Hours: The hospital managed to maintain a 100% rate of avoiding unplanned readmission.

Internal Business Perspective (Operations Effectiveness): a) Length of Stay: Length of stay fluctuates but generally remains reasonable. b) Timeliness of Treatment: Timeliness of treatment remained consistent and slightly improved. c) Bed Utilization: Bed utilization increased significantly, which could indicate improved resource optimization. d) Time from Door to Therapy: This metric improved significantly, reaching 100% in 2020, indicating efficient therapy delivery. e) Patient Turnover: Patient turnover fluctuated but showed improvement year-on-year.

Learning and Growth (Employees and Innovation): a) Employee Satisfaction: Employee satisfaction has remained consistently high at 100% over the years. b) Employee Turnover Rate: Employee turnover initially increased but then decreased substantially by 2022, which is a positive sign. c) Employee Training: The hospital invests in employee training consistently. d) Process Improvement Initiatives: The hospital actively undertakes process improvement initiatives. e) Implementation of Quality Improvement Principles: the hospital consistently implements quality improvement principles. f) Use of Data Warehousing, Business Intelligence, and Predictive Analytics: The hospital effectively uses data and analytical tools for decision-making and improvement.

These numbers were projected from calculations that were conducted per dimensions based on its measures/indicators. To get into more detail, these are the calculations per dimensions:

Table 2
Financial Perspective Caluculation

Dimensions	Measures/indicators	Definition	Formula	Target	Year								
					2018	Score 2018	2019	Score 2019	2020	Score 2020	2021	Score 2021	2022	Score 2022
Financial perspective	Asset turnover	Asset turnover is a financial ratio used to measure the efficiency of a company in using its assets to generate revenue or sales.	Asset Turnover = Total Revenue (or Sales) / Total Assets	2	1.82	91%	1.98	99%	1.58	79%	1.64	82%	1.55	78%
	Return on investment	ROI is a ratio that measures how much profit or return is obtained from an investment compared to the amount of investment itself.	ROI = ((Net Profit - Initial Investment) / Initial Investment) x 100%	15	(2.49)	-17%	1.21	8%	9.33	62%	23.72	158%	15.23	102%
	Operating income	Operating income is the revenue earned from the core operations or main business of the company after deducting all operating expenses related to the business.	Operating Income = Gross Revenue - Operating Expenses (in millions)	15,000	1,700	11%	4,701	31%	12,800	85%	30,535	204%	19,319	129%
	Return on equity	ROE is a ratio that measures how much	ROE = (Net Income/Equity)	0.2	0.03	17%	(0.55)	-277%	0.20	99%	0.39	193%	0.20	100%

	profit the company earns compared to shareholders' equity.													
Expense per service unit	Expense per service unit is a measurement of the average cost incurred by a company or organization to provide one unit of service or product to customers or consumers.	Expense per Service Unit = Total Cost / Number of Service or Product Units (in millions)	2,500	3,118	80%	3,088	81%	2,748	91%	2,972	84%	2,685	93%
Adherence to budget	Adherence to budget refers to the ability or action to adhere to a predetermined budget. This means carrying out activities or projects by adhering to predetermined budget constraints.	Adherence to Budget (%) = (Total Actual Expenditure / Prescribed Budget) x 100	100	101.20	99%	95.19	105 %	74.86	134 %	91.42	109 %	82.81	121 %

Table 3
Learning and Growth (Employees and Innovation) Calculation

Dimensions	Measures /indicators	Penjelasan	Rumus	Target	Year									
					2018	Score 2018	2019	Score 2019	2020	Score 2020	2021	Score 2021	2022	Score 2022
Learning and Growth (Employees and Innovation)	Employee satisfaction	Employee satisfaction is a measure of the extent to which employees feel satisfied,	Scale 1: very dissatisfied, 2: dissatisfied, 3:	4	4	100 %	4	100 %	4	100 %	4	100 %	4	100 %

	motivated, and engaged in their work. It reflects employees' level of happiness and satisfaction with their work environment and working conditions.	normal, 4 satisfied, 5: very satisfied										
Employees turnover rate	Employee turnover rate measures how often employees leave a job or organization. It can give an idea of the stability of the workforce and the effectiveness of human resource management.	Employee Turnover Rate = (Number of Employees Who Left / Total Number of Employees) x 100%	0.001	0.01625	6%	0.00332	30%	0.022727273	4%	0.02695	4%	0.00142	71%
Employee training	Employee training includes efforts to provide employees with improved skills, knowledge, and competencies to make them more effective in their jobs.	The amount of budget used / Total of overall budget	1	0.63444	63%	0.73856	74%	1.663750512	166%	0.8078	81%	0.80495	80%
Process improvement initiatives	Process improvement initiatives are efforts made by an organization to improve efficiency, quality, and productivity through improvements in existing business processes.	The amount of budget used / Total of overall budget	1	0.75049	75%	0.65155	65%	1.175551428	118%	0.95765	96%	0.87478	87%
Implementation of quality improvement principles	It reflects the application of specific quality improvement methods or principles, such	(Write 1 if done, 0 if not done)	1	1	100%	1	100%	1	100%	1	100%	1	100%

(i.e., Six Sigma, lean)	as Six Sigma or Lean, to reduce defects, minimize waste, and improve the efficiency and quality of products or services.												
Use of data warehousing	Data warehousing is the process of collecting, storing, and managing data in one central place that allows for easier access and better data analysis.	(Write 1 if done, 0 if not done)	1	1	100 %	1	100 %	1	100 %	1	100 %	1	100 %
business intelligence	Business Intelligence (BI) is the process of collecting, analyzing, and presenting business information that can be used for strategic decision-making in organizations.	The amount of budget used / Total of overall budget	1	0.89659	90%	2.00386	200 %	1.76559934	177 %	1.12277	112 %	1.59453	159 %
predictive analytics	Predictive analytics is the use of data and algorithms to make predictions about future events or business trends, assisting organizations in planning and decision-making.	(Write 1 if done, 0 if not done)	1	1	100 %	1	100 %	1	100 %	1	100 %	1	100 %

In summary, the hospital appears to have made significant improvements in various aspects of its performance, including financial stability, patient satisfaction, patient safety, operational efficiency, and employee engagement. However, some areas, such as avoidable mortality and hospital-acquired infections, still require attention. The data demonstrates a commitment to quality and continuous improvement.

To conduct a comprehensive analysis of data utilizing the Friedman test, it is imperative to possess a thorough comprehension of the underlying principles and practical applications associated with this nonparametric statistical technique. The Friedman test is commonly employed as a nonparametric substitute for the repeated measures analysis of variance (ANOVA) to identify variations in treatments across numerous test iterations (Carabante et al., 2016).

The test in question holds significant value in cases where the data fails to adhere to the assumptions of normality and sphericity, which are necessary for parametric tests such as ANOVA (Renard, 2016). This method becomes particularly advantageous in situations when the data exhibit a ranking structure or pertain to limited sample sizes (Carabante & Prinyawiwatkul, 2018). Before conducting the Friedman test, a test of normality was implied. As can be seen in *Table 7*, the significance of hospital performance in 2018, 2019, 2021, and 2022 are below 0.05, indicating that the data is not normally distributed. Therefore, the Friedman test can be conducted for this research.

Table 4
Tests of Normality

	Shapiro-Wilk		
	Statistic	**df**	**Sig.**
Standardized Residual for 2018	0.826	27	0.000
Standardized Residual for 2019	0.630	27	0.000
Standardized Residual for 2020	0.940	27	0.122
Standardized Residual for 2021	0.911	27	0.024
Standardized Residual for 2022	0.874	27	0.004

To implement the Friedman test, several procedures are required. The test commences with the data being ranked and subsequently proceeds with the computation of the test statistic, which is determined by the discrepancies among the ranked values. The p-value produced by the test indicates whether or not the differences between the interventions are statistically significant. It is possible to conclude that there are significant differences among the interventions if the p-value is less than a predetermined significance level (Carabante et al., 2016).

Table 5
Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
The year 2018	27	0.7726	0.35650	-0.17	1.27	0.6400	0.9200	1.0000
The year 2019	27	0.7130	0.79262	-2.77	2.00	0.5800	0.9100	1.0000
The year 2020	27	0.9359	0.40726	0.04	1.78	0.6200	1.0000	1.0400
Year 2021	27	0.9685	0.43343	0.04	2.04	0.7000	1.0000	1.0500
Year 2022	27	0.9359	0.25587	0.20	1.59	0.8700	1.0000	1.0000

The descriptive statistics presented in the context of the Friedman test for this research provide a comprehensive overview of the data collected over the years 2018 to 2022. The study includes a sample size of 27 for each year, reflecting a consistent and balanced approach to data collection. In 2018, the mean performance score was 0.7726, with a standard deviation of 0.35650. The performance scores ranged from a minimum of -0.17 to a maximum of 1.27. The 25th, 50th (median), and 75th percentiles were 0.6400, 0.9200, and 1.0000, respectively. This suggests a relatively stable performance in 2018 with a moderate level of variability.

Moving on to 2019, the mean performance score decreased slightly to 0.7130, while the standard deviation increased to 0.79262. The performance scores for this year exhibited greater variability, ranging from -2.77 to 2.00. The percentiles for 2019 were 0.5800 (25th), 0.9100 (50th), and 1.0000 (75th), indicating a wider distribution of performance scores compared to the previous year. In 2020, there was a notable increase in the mean performance score to 0.9359, with a standard deviation of 0.40726. The performance scores ranged from a minimum of 0.04 to a maximum of 1.78. The percentiles for 2020 were 0.6200 (25th), 1.0000 (50th), and 1.0400 (75th), suggesting a more positively skewed distribution with a concentration of higher performance scores.

The year 2021 continued the upward trend with a mean performance score of 0.9685 and a standard deviation of 0.43343. The performance scores for 2021 ranged from 0.04 to 2.04. The percentiles for this year were 0.7000 (25th), 1.0000 (50th), and 1.0500 (75th), indicating a consistent improvement in the overall performance of affiliated hospitals. Lastly, in 2022, the mean performance score remained at 0.9359, with a lower standard deviation of 0.25587. The performance scores ranged from 0.20 to 1.59. The percentiles for 2022 were 0.8700 (25th), 1.0000 (50th), and 1.0000 (75th), suggesting a relatively stable performance with a reduced level of variability compared to previous years.

Table 6
Ranks

	Mean Rank
The year 2018	2.80
The year 2019	2.80
The year 2020	3.06
Year 2021	3.17
Year 2022	3.19

Based on *Table 6*, the mean ranks for each year, ranging from 2.80 to 3.19, provide insights into the relative performance of affiliated hospitals across the five years. Year 2018 and Year 2019 share the same mean rank of 2.80, suggesting comparable performance levels in these two years. However, there is a slight increase in the mean rank for the Year 2020 (3.06), followed by a gradual rise in Year 2021 (3.17) and Year 2022 (3.19). These ascending mean ranks indicate a potential improvement or shift in performance from 2020 onwards.

The test statistics further support the assessment of the data, as can be seen in *Table 7*. The chi-square value of 2.118 with 4 degrees of freedom (df) is associated with an asymptotic significance (Asymp. Sig.) of 0.714. The non-significant p-value ($p > 0.05$) suggests that there is no statistically significant difference in the performance ranks across the years under investigation. This implies that any observed variations in mean ranks could have occurred by chance, rather than being indicative of a systematic trend.

Table 7
Test Statistics

N	27
Chi-Square	2.118
df	4
Asymp. Sig.	0.714

With a sample size of 27, the test encompasses a substantial number of observations, enhancing the reliability of the results. The non-significant chi-square value suggests that the null hypothesis of no difference in performance ranks is not rejected, providing a nuanced perspective on the stability or lack of a discernible pattern in the performance of affiliated hospitals over the specified years.

Conclusion

The lack of statistical significance in the Friedman test indicates that caution should be exercised in generalizing trends in hospital performance to broader implications of state-owned hospital consolidation. Other factors not considered in this study may contribute to the observed variations.

While the study provides valuable insights into the performance of affiliated hospitals, the nuanced nature of the results suggests the need for further investigation. Exploring additional variables, such as specific changes in hospital management, policies, or external economic factors, could contribute to a more comprehensive understanding of performance dynamics.

At the end of the day, the research suggests that the impact of state-owned hospital consolidation on the performance of affiliated hospitals, as exemplified by Krakatau Medika Hospital, is not conclusively demonstrated to be significant over the examined five-year period. The findings emphasize the importance of considering a multitude of factors that may influence hospital performance, and they call for continued research to uncover the complex dynamics at play in the context of hospital consolidation.

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