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ANALYSIS OF THE MARKET STRUCTURE OF HOSPITAL INDUSTRY IN INDONESIA

Analisis Struktur Pasar Industri Rumah Sakit di Indonesia

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Abstract

Background: Over the past decade, private investments in health care including hospital have grown significantly, more than doubling. As the number of hospitals in Indonesia increases, a competitive business environment develops. Identifying hospital market structure can help various stakeholders to optimize the hospital performance.
Aims: This study analyzed the market structure and concentration of the hospital industry in Indonesia.
Methods: This study used hospital characteristics data from Ministry of Health of Indonesia that retrieved in October 2020. Market concentration is determined by the number of industry players operating in a market, the distribution of services, and the types of services offered. The hospital market concentration was identified by measuring the Concentration Ratio (CR) and the Herfindahl–Hirschman index (HHI).
Results: The results showed that the market share of hospitals in Indonesia were still dominated by government hospitals, which represent 51.4% of the market share. The concentration ratio of four companies (CR_4) remains <40, indicating that competition remains relatively open among private hospitals at the national level.
Conclusion: Several cities have established hospital markets that are characterized by robust competition, whereas in other cities, the hospital industry remains oligopolistic or monopolistic. It is important to note, however, that this does not imply that the market structure is ineffective on account of competition; rather, it is the result of a scarcity of hospitals in a number of Indonesian cities.

Keywords: Concentration ratio, Economic competition, Herfindahl–Hirschman Index, Hospital market

Abstrak

Latar Belakang: *Selama dekade terakhir, investasi swasta dalam pelayanan kesehatan termasuk rumah sakit telah tumbuh secara signifikan, lebih dari dua kali lipat. Seiring bertambahnya jumlah rumah sakit di Indonesia, lingkungan bisnis yang kompetitif pun berkembang. Mengidentifikasi struktur pasar rumah sakit dapat membantu berbagai pemangku kepentingan untuk mengoptimalkan kinerja rumah sakit.*
Tujuan: *Studi ini menganalisis struktur pasar dan konsentrasi industri rumah sakit di Indonesia.*
Metode: *Penelitian ini menggunakan data karakteristik rumah sakit dari Kementerian Kesehatan RI yang diunduh pada Oktober tahun 2020. Konsentrasi pasar ditentukan oleh jumlah pelaku industri yang beroperasi di suatu pasar, sebaran layanan, dan jenis layanan yang ditawarkan. Konsentrasi pasar rumah sakit diidentifikasi dengan mengukur Concentration Ratio (CR) dan indeks Herfindahl–Hirschman (HHI).*
Hasil: *Hasil penelitian menunjukkan bahwa pangsa pasar rumah sakit di Indonesia masih didominasi oleh rumah sakit pemerintah yaitu sebesar 51,4% pangsa pasar. Rasio konsentrasi empat perusahaan (CR4) tetap <40, menunjukkan bahwa persaingan masih relatif terbuka di antara rumah sakit swasta di tingkat nasional.*
Kesimpulan: *Beberapa kota telah memiliki struktur pasar rumah sakit dengan kompetisi efektif sementara struktur rumah sakit di beberapa kota masih bersifat oligopoly maupun monopoly. Namun, perlu menjadi catatan disini bahwa hal tersebut tidak berarti bahwa stuktur pasar yang tidak efektif karena kompetisi namun lebih dikarenakan masih terbatasnya jumlah rumah sakit di beberapa kota di Indonesia.*

Kata kunci*: Herfindahl–hirschman index, Konsentrasi rasio, Pasar Rumah Sakit, Persaingan ekonomi*

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Introduction

Health spending measures the final consumption of health care goods and services (OECD, 2018). Global health spending reached US$ 8.3 trillion in 2018, about 10% of global gross domestic product (WHO, 2020). Before the Coronavirus Disease 2019 (COVID-19) pandemic in 2019, OECD countries spent ~8.8% of their Gross Domestic Product (GDP) on average on healthcare, a figure that has remained largely unchanged since 2013. The US spends the most on healthcare, equivalent to 16.8% of its GDP, well ahead of the next highest-spending country, Germany, at 11.7% (OECD, 2021).

At the global level, the hospital service market was worth US$ 9.58 trillion in 2020 and is expected to reach US$ 16.45 trillion by 2027 (Precedence Research, 2022). Similar trends are seen in Central European countries, where healthcare is currently one of the largest sectors in Germany (11.0% of GDP), Austria (10.1%), Slovak Republic (7.6%), and the Czech Republic (7.1%) (Lauraéus *et al.*, 2021). Studies have shown that increased health spending positively correlates with economic growth (Raghupathi and Raghupathi, 2020; Ying *et al.*, 2022).

Healthcare industry growth will continue while private interest in developing hospitals remains. Private investments in health services have increased dramatically over the last decade, more than doubling (Scheffler, Alexander and Godwin, 2021). The private sector in India invests in tier 2 and 3 cities and outside metropolitan cities, where hundreds of investment opportunities are available in the hospital sector (Sarwal *et al.*, 2021).

The health industry in Indonesia was estimated to reach US$ 60.6 billion in 2018, a growth of 14.9% compared to 2012–2018. Significant growth was seen in the hospital sector, with 2,083 hospitals in 2012 increasing to 2,820 in 2018 (Kuntjoro and Wibowo, 2018). The pharmaceutical industry sector grew by 11.4%, increasing from 193 industries in 2015 to 215 in 2017. The medical device industry also grew by 12.6%, increasing from 215 industries in 2015 to 242 in 2017 (Ministry of Health of Indonesia, 2018).

Over the last 11 years, the number of hospitals in Indonesia has increased by 80% (Trisnantoro and Listyani, 2018). However, The Indonesian tourists' demand for medical tourism services abroad is still high. It was estimated that the total money spent by Indonesian citizens for treatment in other Association of Southeast Asian Nations (ASEAN) countries in 2016 was US$ 11.5 billion annually, with the majority (80%) spent in Malaysia. Several private and public hospitals have expanded the number of beds or built new hospitals to overcome this. According to one study, the primary motivations of Indonesian tourists seeking medical treatment in Malaysia are dissatisfaction with Indonesian medical practices and a lack of expertise in the field (Md Zain *et al.*, 2022).

The hospital industry market in Indonesia is entering a more complex phase given that the Indonesian government has currently implemented the National Health Insurance (*Jaminan Kesehatan Nasional [JKN]*) program, operated by the Health Social Security Administration (*Badan Penyelenggara Jaminan Sosial Kesehatan / BPJS Kesehatan*). From an economic perspective, the JKN program has created greater demand in the health sector (Britton, Koseki and Dutta, 2018).

On the other side, the growth in the number of hospitals in Indonesia creates a competitive business climate. However, the existence of unfair business competition practices has an impact on various parties. Hidden yet perilous forms of competition exist in the Indonesian health service industry, according to the findings of a study; these include health business mafias, monopolies, and deceit involving the concealment of patient hands (Alfarizi and Zalika, 2023). Unfair business competition, for business actors and consumers, this practice can create an imbalance in business opportunities for various groups at different levels and can lead to consumer/ community losses. A broader interpretation of the loss would be inefficiency manifested in wastage or

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suboptimal resource allocation (Czyżewski *et al.*, 2020).

Identifying market structure of one industry is significant as efficiency is substantially impacted by the market structure within which a company, including a hospital, operates. The characteristics of the market structure dictate the level of competition, which varies from perfect competition, characterized by a multitude of small sellers and buyers, a homogeneous product, and price-taking by all, to pure monopoly, denoting a market with a single buyer, or monopoly, signifying a market with a single supplier. Other market structures exist between these two extremes, including monopolistic competition (many sellers and many buyers offering differentiated products) and oligopoly, which is characterized by a small number of sellers who vary in size and market power. Effective resource allocation results from the efficient operation of the market, which is facilitated by a number of conditions. The primary conditions are observable with respect to the structure of the market (Mwachofi and Al-Assaf, 2011).

Unfortunately, hospital market structure research in Indonesia remains understudied. One study has been conducted in 2014 examining hospital market structure in South Sumatera Province (Tatarifah, 2014). Another study has been conducted to identify the issue of competition in the Indonesian Health Services Industry (Alfarizi and Zalika, 2023). Therefore, this study analyses the Indonesian hospital industry's market structure and competition map through the concentration ratio (CR) and Herfindahl–Hirschman Index (HHI).

Method

This study used hospital data originating from the Online Hospital Information System (SIRS), which was obtained in October 2020 (Ministry of Health of Indonesia, 2020). SIRS is a hospital reporting system in the Ministry of Health of Indonesia that comprises hospital identity data, hospital personnel data, service activity recapitulation data, inpatient disease/ morbidity data, and outpatient disease/ morbidity data. Hospital identity data consists of their code, name, type, class, director's name, address, area, operator license, accreditation, accreditation date, service indicators, and bed facilities for the last three years. The data is further categorised into two divisions based on ownership and geography. In the first division, hospitals are divided into government and private hospitals, and private hospitals are subdivided into for-profit and nonprofit. Data generated is for each hospital group based on their service type (general or special) and the number of hospitals and beds. In the second division, hospital data on the number of beds are grouped by province to calculate the number of beds and bed ratios for each of the 34 Indonesian Provinces.

Market concentration is determined by the number of industry players operating in a market, the distribution of services, and the types of services offered. We discuss the hospital market concentration through an explanation of the relevant market, the calculation of market share, and the CR and HHI. Calculating an industry's competitive map requires determining the relevant market, which relates to the reach or marketing areas of business actors with the same or similar goods or services or substitutions for these goods and or services (Lubis *et al.*, 2017).

Market share is the percentage of total sales of goods or services controlled by each business actor, which are merged, or its competitors. Market share can generally be assessed by calculating the CR or HHI. The CR value represents the total market share of a certain number of companies (Calkins, 1983). The CR for the largest firm (k) in an industry is calculated by summing the market share of these k firms, which can be represented as:

$$CR_k = S_1 + S_2 + S_3 + S_4 + S_5 + ... + S_k$$

Where:
S_i = the percentage market share of firm i

The most commonly used CR is the CR of four companies (CR_4) (Gwin, 2001; Naldi and Flamini, 2014). CR4 is the total market share held by the top four

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companies in an industry, calculated based on the following formula (Naldi and Flamini, 2014) and the interpretation as follows: CR4 = 0 means Perfect competition, 0 < CR4 < 40 means Monopolistic effective competition or monopolistic competition, 40 ≤ CR4 < 60 means Monopolistic competition or loose oligopoly, 60 ≤ CR4 < 90 means Strict oligopoly or dominant firm with a competitive fringe, 90 ≤ CR4 < 100 means a dominant firm with a competitive fringe or an effective monopoly and CR4 = 100 means perfect monopoly.

In addition to CR, the HHI can be used to analyse market concentration (Calkins, 1983; Gwin, 2001). The HHI accounts for the number of companies in the market and their concentration by incorporating a relative measure (i.e., the market share of all companies in the market). The HHI is calculated by squaring the market share of all firms in the market and then summing the squares with the following formula:

$$HHI = s_1^2 + s_2^2 + s_3^2 + \dots s_n^2$$

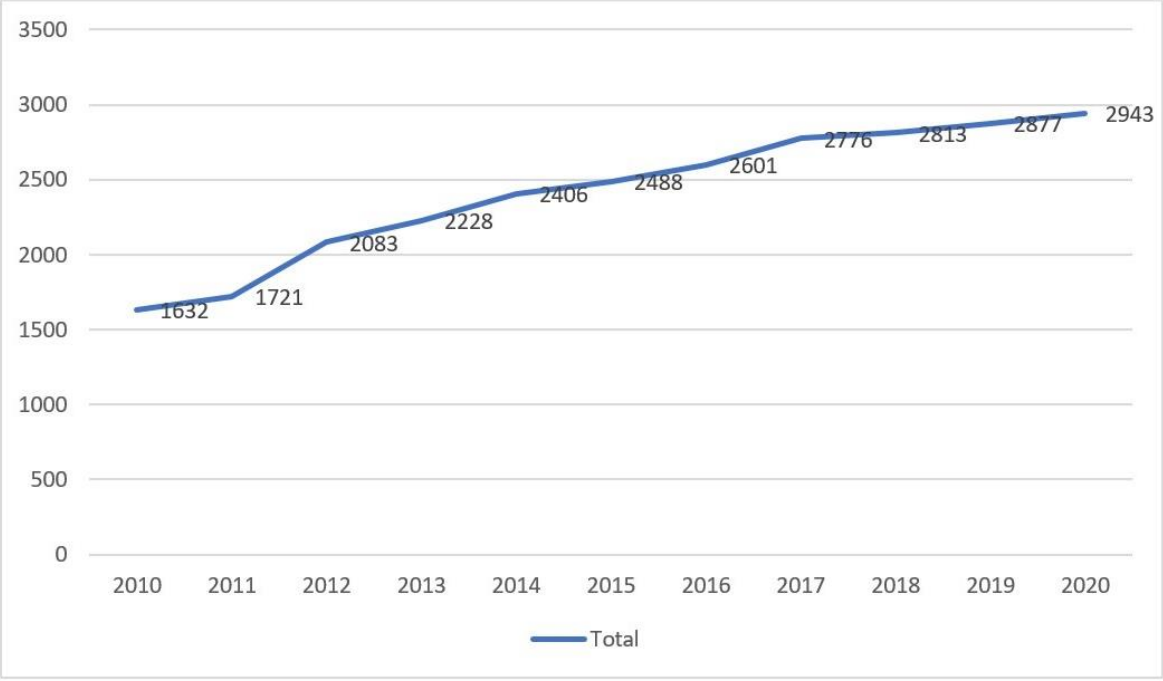
Where:
n = the total number of companies
S_i = their percentage market share of firm i

The HHI value indicates the concentration, where the maximum value refers to monopolistic and the minimum value to perfect competition. Therefore, the higher the HHI value, the higher the market concentration of the top companies (Naldi and Flamini, 2014). HHI < 1000 means unconcentrated market indicated effective or monopolistic competition while 1000 ≤ HHI < 1800 means medium concentration that indicated Monopolistic or oligopolistic competition and HHI = 1800 means highly concentrated that indicated monopolistic or loose oligopolistic competition.

Result and Discussion

Hospital Market Structure in Indonesia

Hospitals in Indonesia continue to show rapid growth with many owner entities. Over the last 11 years, the number of hospitals in Indonesia increased by 80% or >1,300, from 1,632 in 2010 to 2,943 in 2020. At the national level, there are 2,943 hospitals owned by 1,344 institutions, of which 1,319 are private entities and 25 are governments (Figure 1).



Source: Online Hospital Information System of Ministry of Health (SIRS Online)

Figure 1. Growth in the number of public and private hospitals in Indonesia from 2010-2020

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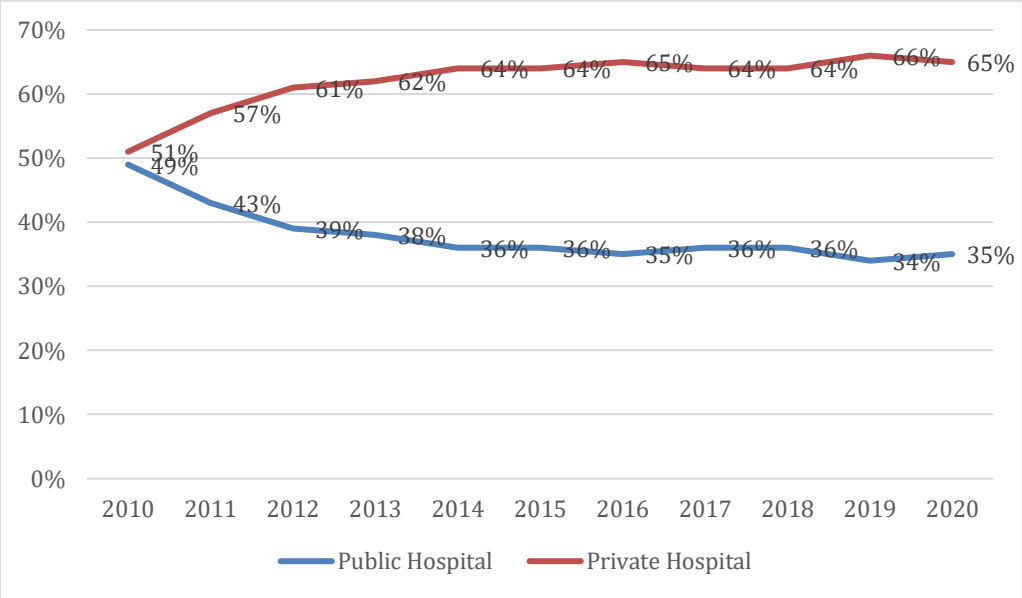
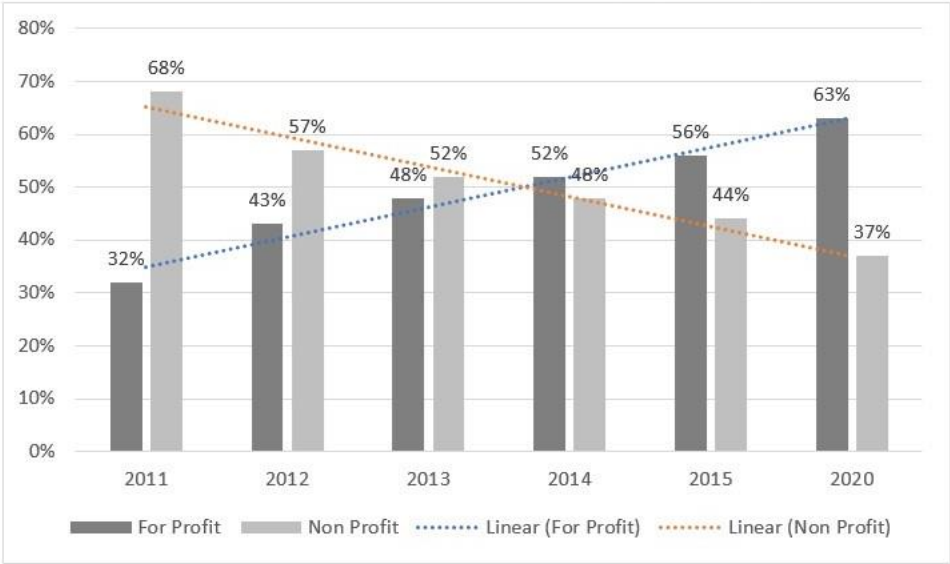


Source: Online Hospital Information System of Ministry of Health (SIRS Online)

Figure 2. Proportion of public and private hospital in Indonesia from 2010-2020



Hospital type	2011	2012	2013	2014	2015	2020
Nonprofit	655	727	724	736	705	706
For-profit	315	543	666	807	895	1,188
Total	970	1,270	1,390	1,543	1,600	1,894

Source: Online Hospital Information System of Ministry of Health (SIRS Online)

Figure 3. Changes in the proportion of for-profit and non-profit private hospitals

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Hospital ownership can be divided into government and private. The Ministry of Health data shows that private hospitals have historically experienced faster growth than government hospitals. Over ten years, government hospitals only grew 39%, from 751 in 2010 to 1,043 in 2020. In contrast, private hospital numbers almost doubled (92%), from 838 in 2010 to 1,900 in 2020. The proportion of government hospitals continues to decline, from 49% to 35%, while that of private hospitals continues to grow, from 51% to 65% (Figure 2).

The growth of private hospitals can be further seen from the nature of their business, for-profit and non-profit. The proportion of non-profit private hospitals still dominated the total number of private hospitals at 52% until 2013. Even in 2011, the number of non-profit hospitals was double that of for-profit hospitals. Currently, the proportion of for-profit hospitals is almost double that of non-profit hospitals (Figure 3).

Non-profit hospitals in Indonesia are mostly founded by religious and social organisations. The top 10 are dominated by hospitals established by Islamic organisations such as *Muhammadiyah*, which has founded 112 hospitals since its establishment in 1912, followed by *Nahdlatul 'Ulama*, which has 24 hospitals across Indonesia.

Hospital Market Concentration

The distribution of hospitals and the adequacy of beds in Indonesia are concentrated in big cities. CR calculations performed in provincial capitals show that almost all have met the minimum standard of 1 bed per 1,000 population. Only the capital city of Banten Province, Serang, has a bed ratio below the minimum standard of 0.88 beds per 1,000 population. Furthermore, several provincial capitals have very high bed ratios.

Twenty-six provincial capitals have a bed ratio of >2 beds per 1,000 population. Many provincial capitals have bed ratios above 3 or 4 beds per 1,000 population. The highest bed ratios were in Banda Aceh City with 7.57 and Manado City with 6.33 per 1,000 population. These findings show that most institutions build hospitals in big cities, especially provincial capitals, worsening equitable access to public health services in small towns.

Table 1. Market share of private hospitals in provincial capitals.

Provincial capital	CR4 value	TT ratio
Tarakan	100%	1.46
Mamuju	100%	1.32
Serang	100%	0.88
Gorontalo	100%	3.85
Bengkulu	100%	3.04
Sorong	100%	1.54
Jayapura	100%	3.70
Ternate	100%	1.95
Banjarmasin	95%	2.24
Palangkaraya	90%	2.32
Ambon	87%	2.69
Pangkalpinang	86%	2.53
Banda Aceh	83%	7.57
Pontianak	78%	2.42
Palu	78%	3.90
Kupang	77%	2.54
Samarinda	77%	2.25
Manado	74%	6.33
Yogyakarta	72%	3.84
Mataram	64%	2.55
Kendari	60%	3.72
Bandar Lampung	59%	2.44
Semarang	59%	2.41
Batam	54%	1.18
Jambi	53%	3.14
Bandung	53%	1.97
Pekanbaru	52%	2.94
Denpasar	51%	2.06
Palembang	48%	2.64
Pusat	47%	5.23
Padang	44%	2.66
Surabaya	32%	2.36
Makassar	31%	4.06
Medan	26%	4.15

Source: Online Hospital Information System of Ministry of Health (SIRS Online)

CR4 data shows that most of the hospital market in Indonesian provincial capitals is an oligopoly, while some cities such as Makassar, Surabaya and Medan experience effective competition with CR4 values <40. However, some cities such as Tarakan, Mamuju, Serang, Gorontalo,

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Banjarmasin, Bengkulu, Sorong and Jayapura, still have a CR4 value of >90 (Table 1). This indicates that there is still a tendency for hospital market monopolies in these cities. Monopolies on health services, whether carried out by profit or non-profit hospitals, are dangerous for consumers because they can set prices higher and create great inefficiencies. (Richman, 2012)

Market Share and HHI of the Indonesian Hospital Industry

Based on the National data, the market share of hospitals in Indonesia is generally dominated by government hospitals, which represent 51.4% of the overall market share. Meanwhile, private hospitals represent 48.6%. The average number of beds in private hospitals is less than that in government hospitals, causing the market share of private hospitals to be smaller despite their greater number (49,5% vs. 50,5% of market share) (Table 2). Similarly, their CR4 is <40, indicating that competition remains relatively open among private hospitals at the national level.

Hospitals in Indonesia continue increase over the last 11 years from 1632 in 2010 to 2943 in 2020 or increase 80%. In national level, the ownership of hospital dominated private entities and government. Historically, private hospitals grow faster than government hospitals. In last the 10 years government hospitals only grown by 39% while private hospitals grown by 92% that lead to the decline in the share market from 33% to 35%.

The study observed different growth rate between private hospitals based on the nature of their business. While for-profit hospitals did not initially grow very well, there has been a trend toward increasing for-profit compared to non-profit private hospitals in recent years.

Table 2. National market share of government and private hospitals

Network	Number of hospitals	Number of beds	Average number of beds	Market share	HHI
District government	569	70,637	124	23.7%	563.77
Provincial government	148	29,764	201	10.0%	100.10
Municipal government	100	16,269	163	5.5%	29.91
Ministry of Health	35	14,715	420	4.9%	24.47
*Muhammadiyah**	112	9,286	83	3.1%	9.74
TNI AD (Indonesian Army)	75	8,376	112	2.8%	7.93
*PT. Pertamina Bina Medika IHC**	56	5,961	106	2.0%	4.01
*PT. Siloam International Hospitals Tbk**	40	5,273	132	1.8%	3.14
POLRI (Indonesian Police)	49	5,011	102	1.7%	2.84
*Hermina Group**	36	3,631	101	1.2%	1.49
*Mitra Keluarga Group**	26	2,846	109	1.0%	0.92
Others	1,697	125,727	74	42.3%	4.62
Grand Total	2,943	297,496	101	100%	752.93
Government Hospitals	1,049	150,156	143	50,5%	
Private Hospitals	1,894	147,340	78	49,5%	

*Non-government hospitals, Source: Online Hospital Information System of Ministry of Health (SIRS Online)

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The proportion of non-profit private hospitals remain dominant within the total number of private hospitals until 2013, however the situation began to change in 2014 with a shift in the trend of hospital ownership, where for-profit hospitals began to grow faster than non-profit hospitals. Currently, the proportion of for-profit hospitals is almost double that of non-profit hospitals.

One of the instigators was the emergence of the 2009 Hospital Law that initially required hospitals to only be established by institutions that focus on hospitals. It also required all hospitals to have their own legal entity. The Central Executive of *Muhammadiyah* submitted a judicial review to the Constitutional Court to challenge this issue, which was granted by the Constitutional Court. As a result, many hospitals have changed from a foundation to a limited liability company.

Similarly, the amendment to the Foundation Law that prohibits entities from distributing business proceeds to owners disincentivises hospital managers from choosing a legal entity in their establishment and encourages many to choose a for-profit legal entity (PT/Limited Company [LC]) as a business strategy (Herawati, 2017). Therefore, foundation legal entities are considered less agile, conflict-prone, and unable to provide sufficient incentives for hospital development. The treatments and facilities obtained between foundation-based and LC hospitals are similar. While the hospital law states that public hospitals can be given tax incentives, there are no implementing regulations, resulting in this policy being unrealised.

Another factor influencing the growth of private hospitals is the JKN program, which expands the coverage of insurance ownership in the community to make the health sector more attractive for corporate investors. This factor also makes competition in the hospital industry increasingly fierce, making it difficult for non-profit hospitals to compete with for-profit hospitals since they require very intensive capital.

Universal health coverage also affected the growth of private hospitals in China, Vietnam, and the Lao People's Democratic Republic (Lao PDR) because the governments needed the private sector to provide community health services. Therefore, the private sector is expanding its presence in healthcare due to the increasing demand for modern and high-quality health services and fiscal constraints on public services. The role of the private sector in providing health services also dominates the hospital and primary healthcare (PHC) sectors in Japan and Korea since social health insurance and government funds guarantee health financing for citizens (Cowley and Chu, 2019).

The example of the fastest-growing hospital groups is the Siloam Group. Founded in 1996, Siloam now has 40 hospitals. This rapid development was driven by the company's strategy to expand its market share by acquiring existing hospitals (Siloam International Hospitals, 2022). In addition to acquisitions, company-based hospital expansion efforts in Indonesia have consolidated funding by turning into a public company. To date, seven hospital groups have listed themselves on the stock market, enabling them to receive fresh funds to finance their network expansion. For example, Siloam conducted a limited public offering of shares in 2017 (right issue) and received Rp 3.1 trillion in funds (Siloam International Hospitals, 2022).

In general, the growth of hospitals in Java is still higher than in other areas. Outside Java, hospital growth has expanded in Sumatra and Bali, which grew by 16% (Frost and Sullivan, 2019). Opportunities and demands for hospitals remain very high outside Jakarta because government hospitals cannot fulfil their needs. Regions outside Java still promise high growth opportunities, driven by the low demand for bedding, lower minimum wages, and lower land acquisition costs (Frost and Sullivan, 2019). Therefore, several hospital groups are aggressively targeting areas outside Java to balance the distribution of services throughout Indonesia. For example, Siloam built hospitals in Yogyakarta, Labuan Bajo, Bau-bau, and Jember, acquired two hospitals in

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Java and Kalimantan, and established an express clinic (Frost and Sullivan, 2019).

Different conditions are found when comparing the growth of private hospitals in Indonesia with that in several countries. In Indonesia, a significant increase in private hospitals began in 2014. However, in some countries, there has been a decline in private hospitals. The American Hospital Association (AHA) reports that hospitals decreased from 5,810 in 2000 to 5,795 in 2009 and 5,564 in 2015 (Center for Health Statistics, 2017). In Malaysia, there has been a decline in private hospitals from 252 in 2018 to 219 in 2020. Within a decade, hospitals in Taiwan also declined from 508 in 2010 to 479 in 2020 (Zhang, 2022).

In Australia, there has also been a decline in health service use at private hospitals, particularly for elective treatment. This decrease was due to increased costs, longer waiting times, and doctors practising more in government hospitals, decreasing hospital profitability, stock prices, and long-term investment capacity. Coupled with the coronavirus disease 2019 (COVID-19) pandemic that caused an economic recession, it is likely to reduce further the use of services in private hospitals (Bai *et al.*, 2020). According to Health Policy Plus (HPP) and The National Team for the Acceleration of Poverty Reduction, the rapid growth of private hospitals in Indonesia, particularly in Java and Sumatra, is due to the implementation of JKN. Group-owned private for-profit hospitals indicate a desire to profit from the JKN market. When the market for urban and suburban areas in Java and Sumatra is maximised, there will likely be an expansion in rural areas despite a lack of trained doctors and nurses. While JKN has encouraged private sector market growth, provided investment incentives, and increased competition, it has yet to encourage increases in the diversity of service areas or holistic products (HPP and TNP2K, 2018).

On market competition the study found that the distribution of hospitals and the adequacy of beds in Indonesia remain imbalance. Big cities and capital cities could provide and comply to meet the minimum standard of 1 bed per 1,000 population. However, the study found that based on the CR4 data, this study found out that the hospital market in Indonesia is oligopoly with some cities have effective competition with CR4 values <40, and some cities still have a CR4 value of >90 indicating there remains a tendency to monopolise the hospital market in these cities.

However, the assumption of a monopolistic trend in the hospital market does not apply in Indonesia since some regions still do not have enough hospitals to accommodate the needs of their community. Therefore, the government is expected to encourage hospital construction, particularly in areas where hospitals are minimal, so that everyone can access health services fairly and equitably.

While regarding the market share of Indonesia hospital industry, the study found that the HHI value for the combined market of private and public hospitals is 752.9, which is relatively high due to the high market share of government hospitals. Nevertheless, this figure indicates that competition remains relatively open since it is <1800. We calculated the HHI only for private hospitals to compare competition development with previous studies. Previous studies by The National Team for the Acceleration of Poverty Reduction (*Tim Nasional Percepatan Penanggulangan Kemiskinan* [TNP2K]) calculated the HHI of all national private hospitals, showing that Indonesia's HHI continued to increase from 0.27 in 2011 to 0.31 in 2013 and 0.32 in 2016 (Britton, Koseki and Dutta, 2018). Our HHI calculation in 2020 shows the national HHI is 94.63, significantly higher than the values reported in previous studies, indicating that the competition for private hospitals in Indonesia is getting tougher. Similarly, the CR4 is <40, indicating that competition remains relatively open among private hospitals at the national level.

Conclusion

The number of hospitals in Indonesia has increased rapidly in the last decade. Private hospitals have historically experienced faster growth than government hospitals. Over ten years,

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government hospitals increased 39%, from 751 hospitals in 2011 to 1,043 in 2020, while private hospitals almost doubled (92%), from 990 in 2011 to 1,900 in 2020. Private hospitals in Indonesia can be classified into for-profit and non-profit. There has been a recent tendency for for-profit private hospitals to increase compared to non-profit private hospitals in Indonesia.

The distribution of hospitals and the adequacy of beds in Indonesia are concentrated in big cities. CR4 calculations for provincial capitals show that almost all meet the minimum standard of 1 bed per 1000 population. CR4 data shows that most of the hospital market in Indonesian provincial capitals is an oligopoly, while some cities experience effective competition with CR4 values <40. However, some cities still have a CR4 value of >90. Nevertheless, this does not apply to the healthcare market in Indonesia, where this threshold does not indicate a monopoly by one entity but the small number of hospitals in various regions in Indonesia.

While competition between hospitals is relatively open, the government needs to pay attention to business competition between hospitals to prevent fraud by hospital business actors or health service market monopoly. The government also needs to encourage a conducive business climate while prioritising the quality of hospital services to encourage various hospital business actors to run hospitals that provide equitable access to public services for everyone throughout Indonesia. Additional research could be directed towards the identification of unfair business practices within the Indonesian hospital industry. This is essential in order to provide the government, in particular, with the insight necessary to establish a hospital business environment that is favourable.

Abbreviations

CR: Concentration Ratio; HHI: Herfindahl–Hirschman Index; SIRS: *Sistem informasi Rumah Sakit*.

Declarations

Ethics Approval and Consent Participant

Ethical approval will not be required because this study retrieved and synthesized data from already published information.

Conflict of Interest

There are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Availability of Data and Materials

Dataset available from SIRS Online of the Ministry of Health of the Republic of Indonesia.

Authors' Contribution

All authors conceived and designed the study. DWK, YU, MP, HN, SB, VSG conducted the data collection from SIRS and complete the data with secondary sources. ER, YU, DWK and MIN analyzed the data. ER, DWK, MIN wrote the original draft of the paper. All authors approved the final version of the manuscript and agreed to be held accountable for the content therein.

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