

# The Application of Strategic Management in a Public Healthcare Service System

Luo Jiaxiang<sup>1\*</sup>, Fadilah Binti Puteh<sup>2</sup>, and Sarina Binti Othman<sup>3</sup>

<sup>1</sup> General Hospital of Ningxia Medical University, Ningxia, China

<sup>1, 2, 3</sup> Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA, Shah Alam, Malaysia

<sup>1</sup>2021417318@student.uitm.edu.my; <sup>2</sup>fadilahputeh@uitm.edu.my;

<sup>3</sup>sarina583@uitm.edu.my

\*Corresponding Author

Received: 31 January 2023

Accepted: 5 June 2023

Published: 30 September 2023

## ABSTRACT

*The financial operating condition of a public hospital is directly associated with developing healthcare services. When the operating environment changes completely, financial management is a key driver in hospital management, and its importance is self-evident. A public hospital needs to make scientific decisions in the face of current healthcare reform, optimising business processes and reducing operating costs. These measures are directly related to the financial management in the hospital. This paper is on the premise of public hospital reform, initially following the rules and regulations of hospital financial management. Considering the General Hospital of Ningxia Medical University as the practical case, comprehensive approaches have been taken to evaluate the hospital's operation as well as analyse problems and challenges to define the strategic position for better healthcare service management.*

**Keywords:** *Strategic management; strategic triangle; analytical hierarchy process*



This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0>).

## **INTRODUCTION**

The main function of strategy is to lead an organisation towards future growth and sustainable success (Carter et al., 2008). Compared with other public sector organisations, pluralistic organisations with internal political interaction can affect the process of strategic thinking and act in the case of hospitals (Bolman & Deal, 2008). In China, public hospital dominates the healthcare sector, representing more than 90 per cent of hospital beds and workforce. Additionally, they supply more than 90% of the nation's inpatient treatments and more than 50% of its outpatient services (Yip & Hsiao, 2014). However, the public hospital suffers from growing problems such as bad financial conditions, inequalities, inefficiency, volume to improving access, urbanisation, an ageing population, and service quality. What is worrying is that there is not much of a gatekeeping or referral system for healthcare treatment in hospitals. As a vital organisation, hospitals are social institutions where practical management and organisational performance cannot be neglected. The goal of hospital strategic management is to employ the added value, including quality and reliability of the health services provided and performance improvement.

As mentioned, all patients experience healthcare as a service (Berry & Bendapudi, 2007; Makarem & Al-Amin, 2014). However, few scholars have considered the concept of strategic management adopted in relation to healthcare organisations. Moreover, there is minimal research on operation strategy in healthcare despite its importance to operations (Rifai & Pecenka, 1990; Butler et al., 1996; Li et al., 2002; Silvestro & Silvestro, 2003). Therefore, many organisations fail to maximise the potential benefits of strategic management because they fail to recognise the limitations of the process or the pitfalls that await the uninformed. Researchers have agreed that the potential benefits of strategic management are considerable. Strategic management addresses the problems of how an organisation should position itself in the face of an increasingly uncertain reality and future environment. With a clear formulation of the strategic and tactical objectives for the activity, strategic management allows for the definition of future growth vectors for the organisation (Van Dooren et al., 2015). The development of a strategy is a managerial commitment to follow a clear set of actions to develop the business, attract and satisfy clients, compete effectively, execute operations, and enhance the financial and market performance of the organisation (Makarem & Al-Amin, 2014). The

financial operation condition of the public hospital is directly associated with the development of healthcare services.

When the operating environment changes completely, financial management is a key driver in hospital management, and its importance is self-evident. The public hospital needs to make scientific decisions in the face of current healthcare reform, followed by optimising business processes and reducing the operating cost of the hospital, which these measures are directly related to the hospital's financial management. According to Fang and Li (2021), “quantifying the strategic objectives of the 14th Five-Year Plan, planning key projects and improving safeguard measures” is the path (p. 41). The strategy of gathering opinions, consulting and demonstrating, and forming evaluations is to provide references for public hospitals to draw up the strategic plan for healthcare reform (Ekung & Odesola, 2018; Karim, 2021).

## **Computational Details**

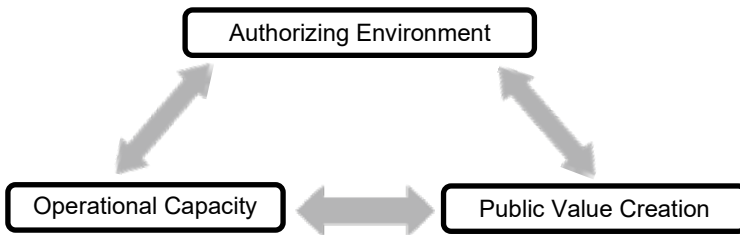
The research adopts a case study with a customised design and combines the theory with real practical context. The case study approach is adopted to provide an explanation and practical insight regarding the relationship between the two concepts: hospital operation and strategic management. Centring on the context of understanding the construction of a process, most of the evidence comes from interviews. This corresponds with a case study approach in that the researcher firmly believes the appropriate methodology follows the scientific inquiry tradition (Barratt et al., 2011; Kayakutlu & Büyüközkan, 2008).

The effectiveness of enhancement and the increase in service quality and dependability contribute to the purpose of this research. Following the trend of thought, Moore (1995) points out that strategies in non-profit organisations should focus on creating public value, sources of legitimacy and operational capacity to deliver value. Thus, as a strategist, one manages and adapts the organisation's assets toward maximum value creation. Public hospital strategic actions will contribute to the pursuit of the social mission, adding value and generating legitimacy and trust among citizens in society. The strategic triangle is employed as the research framework. This comprehensive framework evaluates public sector programs and service delivery (Alford & O'Flynn, 2009). The strategic

triangle as a framework draws attention to the specifics of the public sector and strategic management for public value. This framework helps to create an understanding of strategic management and management control practices concerning public value.

A public sector organisation’s strategy must meet three primary needs, according to Moore (1995): it must be morally just and politically feasible, create actual value, and satisfy administrative and operational constraints. Each of the three tests is strategically important, and crafting and implementing a strategy requires maximising the degree of alignment among them (Alford & O’ Flynn, 2009). According to the public value strategic triangle (Figure 1), public value can be created in three areas: (a) the value that the government seeks to create; (b) the “base of legitimacy and support” that it depends on to authorise action; (c) the resources required to sustain the effort to generate value (Mazzucato & Ryan-Collins, 2019). The primary analytical challenge of the strategic triangle is to ensure that its three nodes are in line and mutually supportive: public value is created when the goals of the public organisation are supported; the goals attract financial, legal, and social support from those in a position to authorise and support the planned action; and the organisation is aware of how to utilise to achieve the desired results (Alford & O’ Flynn, 2009).

**Figure 1**  
*Moore’s (1995) public value strategic triangle*



In line with the strategic management and strategic triangle mode, reforming medical service is a central task for a hospital. The cases need to embrace management by objectives, constructing a joint vision, common guidelines, policies, and processes. Apart from the interview and sorting up the questionnaire data, strategy documents such as the budget, the long-term and mid-term development strategy and financial statements can describe

and measure the goals and performance indicators. To accurately evaluate the hospital's financial operation, a two-step approach was carried out. The first step is to understand how corporate-level strategy was set up. The second step is to understand how the strategy was operationalised and to establish the processes used. Data are collected from non-participant observation, financial statements documents and interviews with middle- and upper-level managers from the hospital. This paper uses the idea of the Analytical Hierarchy Process (AHP) to classify the relevant indicators of hospital financial operation by layers and construct a preliminary evaluation system of hospital financial operation indicators. The AHP software is used to compare the indicators of each layer in the financial operation indicator system, complete the consistency test, remove invalid data, and establish a reasonable hospital financial indicator evaluation system to predict the operating results and effectively prevent hospital operation problems.

## **Hospital profile**

The General Hospital of Ningxia Medical University (GH) is a large public tertiary general hospital in Ningxia Hui Autonomous Region. With constant development and innovation in the past 80 years, the hospital has been upgraded to a comprehensive Grade-three, Class-A Hospital with multi-functions in medical treatment, education, scientific research, examination and training. The hospital has achieved social and economic benefits, occupied a favourable market position in Ningxia, and recently received wide recognition and praise from patients in the region. Currently, the hospital covers a total area of 165,480m<sup>2</sup> and has a construction area of 265,485m<sup>2</sup>. It also has three branch hospitals of Cardio-cerebrovascular Disease Hospital, Tumor Hospital and Stomatology Hospital. The Hospital Group of General Hospital was established in 2012 with 34 hospital staff. The General Hospital has 3684 open beds, 53 clinical departments, and 12 medical technique divisions; the whole-year number of patients treated in the hospital in 2020 was up to 2.6079 million person-time, 142,200 person-time discharged and 53,100 operations conducted. The average length of hospitalisation comes to 8.04 days.

## **METHODOLOGY**

Since a multiple-criteria decision-making problem is subjective and qualitative, it is very difficult for the decision-maker to express the strength of the preferences using exact numerical values (Kayakutlu & Büyüközkan, 2008). Therefore, the fuzzy AHP method, which combines traditional AHP with fuzzy set theory, was developed to cope with uncertain judgments (Chiou et al., 2005) and to express preferences as fuzzy sets or fuzzy numbers which reflect the vagueness of human thinking (Liou et al., 2011). The public value theory of university hospitals can identify enabling elements that affect the hospital's financial strategic management administration and create a theoretical framework for examining the most important enabling aspects. The evaluation model for the university hospital is implemented using the AHP. Public value theory defines "performance drivers" as internal resources and operational competencies crucial for long-term growth and top performance. Based on this framework, the strategic decision-making process of optimising the factors can be defined as a hierarchical structure model in the AHP method.

Financial strategic management, as the vital dimension of operational capacity in the public value strategic triangle, is based on achieving strategic goals and establishing competitive advantages. The overall business activities use certain management methods, planning the various problems faced in the hospital operation process to ensure the hospital's financial status of operating healthily and realising the hospital's business objectives. What is feasible for the manager is to push the organisation to accomplish operational capacity fully and ensure the systems, processes, and resources must be developed to move forward on value creation. It is more concerned with the core elements when a hospital develops and implements its strategic plan and the efforts needed to obtain or revise them. Therefore, the main issues that operation management should consider include achieving the mission of high-quality hospital development and reaching the expected strategic goals of the hospital, making the investment and construction of medical resources, and improving working processes.

## **Construct a hospital operation evaluation index system**

In order to accurately evaluate the hospital's financial operation, this paper uses the idea of the Analytical Hierarchy Process (AHP) to classify the relevant indicators of hospital financial operation by layers and construct a preliminary evaluation system of hospital financial operation indicators. The AHP software is used to compare the indicators of each layer in the financial operation indicator system, complete the consistency test, remove invalid data, and finally establish a reasonable hospital financial indicator evaluation system that predicts the operating results and effectively prevents hospital operating in trouble.

### **Establishment of a hierarchical structure**

By consulting relevant financial experts in this field and referring to the literature, this paper preliminarily divides public hospital financial evaluation system indicators into a general target layer, sub-target layer and specific indicator layer. The overall target layer is the hospital's financial operation status, and the sub-target layer includes solvency, operational capacity, development capacity, cost control capacity, and work quality capacity. There are 2 to 7 evaluation indicators under each sub-target layer, 22 evaluation indicators in total.

### **Weights calculation**

When determining the weights of the indicators at each level, the questionnaire survey method was used. Experts were also invited to quantify the importance of the indicators at all levels. Ten questionnaires were sent out, and nine were received, with a recovery rate of 90%. When scoring, the indicators at each level were compared and scored in pairs, and the quantification was based on a scale of 1 to 9. Specifically, scale 1 represents "comparing the two indicators, they are equally important to the hospital's financial operation", whereas scale 9 indicates "comparing the two indicators, The former is extremely important than the latter"; see Annex 2 for details. In this paper, the AHP software was used to comprehensively judge the consistency of the questionnaire survey results issued by each expert, filter out the invalid matrix (with  $CR \geq 0.1$  as the standard), calculate the weights for the remaining valid matrices, and use the weighted average

method to obtain the final results. The final weight of each indicator was established; see Table 1 for details.

Among the five first-level indicators, the weight of solvency is the highest and accounted for 0.5211, reflecting that debt paid ability plays a very important role in evaluating hospital financial operation. Among the 22 sub-indicators, the top three indicators were the current ratio, asset-liability ratio and receivable turnover days. Therefore, special attention should be given to these sub-indicators.

**Table 1**  
*The Weight of Hospital Financial Operation Evaluation Index*

<b>First Level Indicator</b>	<b>Weights</b>	<b>Secondary Indicator</b>	<b>Weights</b>
Solvency	0.5211	Current Ratio	0.1707
		Quick Ratio	0.0784
		Cash Ratio	0.0548
		Assets and Liabilities	0.1701
		Business Balance	0.0477
Operating Capacity	0.1373	Accounts Receivable Turnover Days	0.0915
		Inventory Turnover	0.0458
Development Capacity	0.0939	Total Asset Growth Rate	0.0546
		Net Asset Growth Rate	0.0290
		Equity Ratio	0.0103
Cost Control Capacity	0.1905	Income for Medicine and Hygiene Consumables	0.0413
		Staff Expenditure Rate	0.0197
		Management Expense Ratio	0.0711
		Expenditure Rate of Medicines and Hygiene Materials	0.0302
		Pharmaceutical Revenue as a Percentage of Medical Revenue	0.0152
		Income Per Outpatient Visit	0.0064
		Income Per Hospital Admission	0.0067
Work Quality Capability	0.0572	Bed Occupancy	0.0041
		Bed Turnovers	0.0299
		Average Days in Hospital	0.0071
		Self-Sufficiency Rate	0.0089
		Fixed Assets Medical Income	0.0071



## **Comprehensive evaluation**

Each primary or secondary index can only reflect a certain aspect of the hospital's financial operation. If the results of the hospital's financial operation are objectively and comprehensively evaluated, it is necessary to conduct a comprehensive evaluation of the hospital's financial operation. The comprehensive evaluation of hospital financial indicators is a comprehensive evaluation of the hospital's overall financial management level and operating status.

Through the calculation and analysis of each matrix, the consistency ratio C.R. is within the allowable range, all judgment matrices have passed the consistency test, and the weights of all indicators, among the five categories were acceptable. This aligns with the expert's decision on the grade and calculated weight to implement a comprehensive evaluation of hospital finance. The calculation method of the comprehensive evaluation of the financial indicators of a hospital is multiplying the standard value and weight of the comprehensive evaluation indicators.

The formula for the comprehensive evaluation of hospital financial indicators is as follows:

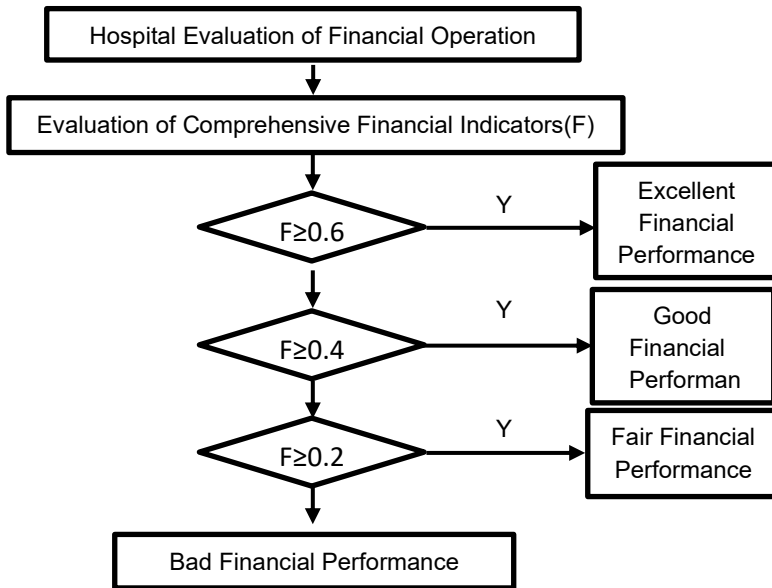
Comprehensive evaluation index of financial operation = solvency index \* weight + operating capacity index \* weight + development capacity index \* weight + cost control capacity index \* weight + work quality capacity index \* weight.

The evaluation indicators affecting the financial operation of hospitals are quantified, and the comprehensive score obtained by multiplying the score of each indicator by the weight can be used to assess the financial operation of public hospitals as shown in Figure 2.

When the comprehensive financial index of the hospital is  $\geq 0.6$ , it indicates that the hospital has an excellent financial operation with only slight problems. When the index is  $\geq 0.4$ , it indicates that the financial operation of the hospital is good and there are a few problems. When the comprehensive financial index of the hospital is greater than or equal to 0.2, it indicates that the financial operation of the hospital is fair. Still, more problems need to be given focus. When the index does not reach 0.2, it reflects the poor operation of the hospital, and the existing problems are

extremely serious and need to be solved as soon as possible. By multiplying the weight of the primary and secondary indexes, it can be concluded that the GH comprehensive financial index evaluation score equals 0.33, indicating that the hospital's financial operation is ok. However, there are still some problems to be noted.

**Figure 2**  
*Comprehensive evaluation of hospital financial operation*



## RESULTS AND DISCUSSION

It is discovered that the liquidity of hospital assets is weak, the operating situation is not ideal, and there is a potential debt crisis. On the other hand, when a comparison is made with the industry, the asset-liability ratio is relatively high, greatly improving hospitals' operation risk. Apart from that, the balance rate of income and expenditure is always lower than that of income and expenditure, and the imbalance of income and expenditure will affect the healthy operation of hospital finance. In general, hospitals should keep up with the industry's average level, improve the management mode,

enhance the level of hospital financial management, and ensure the sound and lasting operation of hospital finances.

When GH is committed to expanding its operation scale, it also needs to pay attention to the current situation of its financial operation, especially the excessive number of medical receivables caused by asset liquidity, expansion of operation scale and medical insurance policy, which makes the hospital pay too much in advance, which may easily lead to the potential operational risks of the hospital. When managers see the operating capacity level of hospitals in the same industry, they should find how they need to optimise the financial management level of hospitals while developing and expanding.

The expansion of the hospital has continuously enhanced the business scope and brand awareness of the hospital. However, the weak liquidity of hospital assets brought by the expansion, the increase of operational risks as well as the erosion of assets will trigger potential risks.

In the proportion of the total medical costs and drug spending reaching stability, management fees accounted for a large proportion of total spending, reflecting the GH in the future have much space to control the management costs. Managers must understand the source of the cost, reduce unnecessary waste and optimise the resource allocation of the hospital. Besides, the hospitals need to constantly optimise the allocation of hospital resources to improve the medical treatment needs of patients, The optimisation and promotion of hospital resource allocation are closely related to the financial operation of the hospital.

The strategic triangle links the organisation to the external setting and reflects management's movements and techniques to achieve the desired results. Under traditional thinking, the development mode of relying on expanding scale and increasing business revenue has gone. The macro-environment and market competition under the new economic normal also do not allow this sloppy development model. Public hospital reform aims to recognise the characteristics of its industry and the scientific strategic positioning. Public hospitals should be laid out as early as possible, and they should seek policy support. Managerial practices in these organisations should ensure added value regarding the quality and reliability of health services and performance improvements. According to this line of thought,

Moore (2000) pointed out that non-profit organisations' strategies should focus on creating public value, sources of legitimacy, and operational capacity to deliver value (Kelly et al., 2002). Thus, in public hospitals, strategic actions should also contribute to pursuing the social mission, adding value and generating legitimacy and trust among stakeholders and society.

## **CONCLUSION**

Some recommendations proposed are to positively broaden a hospital's financing channels and actively strive for more financial support and better and more sustainable healthcare service management. Construct a system in which equipment can be shared between various departments, thus, improving investment efficiency. Strengthen medical accounts receivable management and enhance the efficiency of funds usage. Establish and improve the cost accounting system that will reduce the cost of medical services. Finally, create and build a high-quality hospital financial management team.

Based on the analysis of healthcare systems in the General Hospital of Ningxia Medical University, this paper examines the difficulties and weak points in the process of deepening hospital reform, proposing development strategies for the General Hospital from the perspective of improving the healthcare system and strategic planning in turning the challenges of healthcare reform into development opportunities. The target is to turn the challenges of healthcare reform into development opportunities, improve market competitiveness, promote the sustainable development of the hospital, and provide a reference for further deepening the reform of the healthcare system in the region.

## **ACKNOWLEDGEMENT**

The researchers would like to thank the anonymous reviewers and participants of this study.

## FUNDING

There is no funding for this research.

## AUTHOR CONTRIBUTIONS

All authors contributed to the design of the research, the questionnaire, and the write-up. Researchers undertook the survey, data cleaning and tabulation. All authors have read and approved the final manuscript.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## REFERENCES

- Alford, J., & O'Flynn, J.L. (2009). Making sense of public value: concepts, critiques and emergent meanings. *International Journal of Public Administration*, 32(3-4), 171-191.
- Barratt, M., T. Y. Choi, & M. Li. (2011). Qualitative case studies in operations management: Trends, research outcomes, and future research implications. *Journal of Operations Management*, 20(4), 329-42.
- Berry, L.L., & Bendapudi, N. (2007). Health care: a fertile field for service research. *Journal of Service Research*, 10(2), 111-122.
- Bolman, L., & Deal, T. E. (2008). *Reframing Organizations: Artistry, Choice, and Leadership*. (4th ed.). San Francisco, CA: Jossey-Bass.
- Butler, T. W., Leong, G. K., & Everett, L. N. (1996). The operations management role in hospital strategic planning. *Journal of Operations Management*, 14(2), 137-156.
- Carter, C., Clegg, C. R., & Kornberger, M. (2008). *A very short, fairly interesting and reasonably cheap book about studying strategy*. London: Sage.
- Chiou, H. K., Tzeng, G. H., & Cheng, D. C., (2005). Evaluating sustainable fishing development strategies using fuzzy MCDM approach. *Omega*, 33(3), 223-234.

- Ekung, S., & Odesola, I. (2018). Learning models for effective propagation of sustainable construction practices in the built environment. *Malaysian Journal of Sustainable Environment*, 4(1), 113-136.
- Fang, P.Q., & Li, X.Y. (2021). Development strategies and key directions of China's hospitals during the 14th Five-Year Plan. *China Hospital Management*, 41(3), 6-10.
- Kayakutlu, G., & Büyüközkan, G. (2008). Assessing knowledge-based resources in a utility company: identify and prioritise the balancing factors. *Energy*, 33(7), 1027-1037.
- Kelly, G., Mulgan G., & Muers S. (2002). Creating Public Value. An Analytical Framework for Public Service Reform. *London: Cabinet Office*.
- Li, L. X., Benton, W. C., & Leong, G. K. (2002). The impact of strategic operations management decisions on community hospital performance. *Journal of Operations Management*, 20(4), 389-408.
- Liou, J. J., Wang, H. S., Hsu, C. C., & Yin, S. L. (2011). A hybrid model for selection of an outsourcing provider. *Applied Mathematical Modelling*, 35(10), 5121-5133.
- Makarem, S. C., & Al-Amin, M. (2014). Beyond the service process: The effects of organizational and market factors on customer perceptions of health care services. *Journal of Service Research*, 17(4), 399-414.
- Mazzucato, M., & Ryan-Collins, J. (2019). Putting value creation back into “public value”: from market-fixing to market-shaping. *UCL Institute for Innovation and Public Purpose*. [https://www.ucl.ac.uk/bartlett/public-purpose/sites/public-purpose/files/public\\_value\\_final\\_30\\_may\\_2019\\_web\\_0.pdf](https://www.ucl.ac.uk/bartlett/public-purpose/sites/public-purpose/files/public_value_final_30_may_2019_web_0.pdf)
- Moore, M. H. (1995). *Creating public value: Strategic management in government*. Harvard university press.
- Moore, M. H. (2000). Managing for value: Organizational strategy in for-profit, non-profit, and governmental organizations. *Non-profit and Voluntary Sector Quarterly*, 29(1\_suppl), 183-204.
- Karim, K. N. (2021). A review of the sustainable development goals policy framework for Malaysian local governments. *Malaysian Journal of Sustainable Environment (MySE)*, 8(1), 157-177.
- Rifai, A. K., & Pecenka, J. O. (1990). An application of goal programming in healthcare planning. *International Journal of Operations & Production Management*, 10(3), 28-37.

- Silvestro, R., & Silvestro, C. (2003). New service design in the NHS: An evaluation of the strategic alignment of NHS direct. *International Journal of Operations & Production Management*, 23(4), 401-417.
- Van Dooren, W., Bouckaert, G. & Halligan, J., (2015). *Performance management in the public sector*. Routledge, New York.
- Yip, W. & Hsiao, W. (2014). Harnessing the privatisation of China's fragmented health-care delivery. *The Lancet*, 384(9945), 805-818.

