

ECONOMICS OF HEALTHCARE IN NEUROSURGERY: COST EFFICIENCY AND FUNDING ANALYSIS IN THE MODERN HEALTH SYSTEM

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Abstract

Neurosurgery is a highly specialized branch of medicine that incurs exceptionally high costs and requires complex planning and financing strategies. This study investigates the key factors affecting the successful operation of neurosurgical institutions, including the formalization of planning processes, the stability of financing, the efficiency of implementation, staff resistance to planning, and the role of control and evaluation.

A global quantitative survey was conducted among neurosurgeons worldwide. The survey included 48 questions divided into thematic sections focusing on planning, implementation, financing, and control of business plans in neurosurgical institutions.

The results showed that the formalization of planning processes is prevalent in most neurosurgical institutions, positively impacting business success. Financial stability emerged as a crucial factor in successful plan implementation, while resistance to planning posed a significant obstacle. Institutions that regularly performed control and evaluation of their business plans achieved better results. The formalization of planning, stable financing, detailed control, and resistance management are critical for the successful operation of neurosurgical institutions. These strategies enable more efficient resource management, cost reduction, and high-quality patient care.

Keywords: *neurosurgery, health economics, planning, financing, cost efficiency, resistance*

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1. Introduction

Neurosurgery, as a highly specialized medical field, requires significant financial resources due to the complex and high-cost nature of the procedures and equipment involved. The economics of healthcare in neurosurgery encompasses multiple factors, including resource allocation, cost control, and financial sustainability, which play a pivotal role in ensuring the efficient operation of neurosurgical institutions.

This paper aims to investigate the economic aspects of neurosurgery by focusing on the formalization of planning processes, financial stability, resistance to business planning, and the role of control and evaluation in improving cost efficiency. Furthermore, this study highlights the need for optimized business models to address the unique challenges faced by neurosurgical institutions.

1.1 Methods

This research was conducted as a global quantitative study using a structured survey targeting neurosurgeons from different parts of the world. The survey consisted of 48 questions divided into several thematic sections, including planning, implementation, financing, and control of business plans. The participants were asked to evaluate the level of formalization in their planning processes, the stability of financing, the efficiency of business plan implementation, and any resistance encountered from staff members.

The data was statistically analyzed using SPSS software to identify patterns and correlations between the variables, particularly focusing on the role of financial stability and staff engagement in the successful implementation of business plans.

2. Results

The key findings of the study are as follows:

Formalization of Planning Processes: The results showed that 73% of the surveyed neurosurgical institutions employed formalized written procedures in their planning processes, which positively impacted their operational success. Institutions with formalized procedures demonstrated better efficiency in resource allocation and a higher rate of achieving their business objectives.

Financial Stability: The study revealed that institutions with stable financial resources had a significantly higher success rate in implementing their business plans (70%) compared to institutions facing unstable financial conditions (30%). Stable funding allowed these institutions to plan more effectively, reduce unexpected costs, and maintain consistent operational performance.

Resistance to Planning: Staff resistance to the planning process was identified as a major barrier to successful plan implementation. Institutions that reported high levels of staff resistance showed lower success rates (42%) compared to those with moderate or low resistance (65% and 78%, respectively). Resistance was often

linked to a lack of communication and insufficient involvement of staff in the planning stages.

Control and Evaluation: Institutions that conducted regular control and evaluation of their business plans achieved 76% success in meeting their goals. Regular evaluations allowed for timely identification of issues and course corrections, contributing to the overall success of the institutions.

3. Discussion

The results of this study underline the critical role of formalized planning processes, stable financing, and regular evaluation in the successful management of neurosurgical institutions.

Formalization of Planning: Neurosurgical institutions that adopted formalized planning structures experienced better operational outcomes due to clear guidelines and consistent processes. Formalization ensures that all staff members understand their roles and responsibilities, thereby reducing confusion and enhancing overall efficiency. This finding supports the hypothesis that formalized planning processes lead to greater success in neurosurgical management.

Financial Stability: Financial stability emerged as a key determinant of successful plan implementation. Institutions with stable funding were better equipped to allocate resources effectively and manage long-term projects, while those with unstable funding struggled with unpredictability and reduced efficiency. The results reinforce the hypothesis that stable financing significantly impacts the success of neurosurgical business plans.

Resistance to Planning: Resistance among staff members was found to hinder the execution of business plans. This resistance often stemmed from perceptions of planning as a bureaucratic process disconnected from daily operations. Addressing this issue through improved communication and greater staff involvement in the planning process can significantly reduce resistance and improve plan implementation. This aligns with the hypothesis that reducing staff resistance leads to better operational outcomes.

Control and Evaluation: Institutions that regularly evaluated their business plans were able to identify problems early and adjust their strategies accordingly, leading to higher success rates. The findings confirm the hypothesis that regular control and evaluation are essential for the successful operation of neurosurgical institutions.

4. Conclusions

This study highlights several critical factors for the successful operation of neurosurgical institutions. Formalized planning processes, stable financial support, and regular control and evaluation are essential for achieving business objectives and maintaining operational efficiency. Additionally, managing staff resistance to

planning through improved communication and engagement is crucial for the smooth implementation of business strategies.

Neurosurgical institutions that integrate these strategies into their operations can expect improved resource management, reduced costs, and higher-quality patient care. Future research should focus on developing specific interventions to address resistance to planning and further refine the financial models used in neurosurgery to ensure long-term sustainability.

REFERENCES

- [1] Arrow, K. J. (1963). Uncertainty and the welfare economics of medical care. *American Economic Review*, 53(5), 941–973.
- [40] World Health Organization (WHO). (2000). The World Health Report 2000 - Health Systems: Improving Performance. Geneva: World Health Organization.
- [41] Drummond, M.F., Sculpher, M.J., Claxton, K., Stoddart, G.L., & Torrance, G.W. (2015). *Methods for the Economic Evaluation of Health Care Programmes* (4th ed.). Oxford University Press.
- [42] Reinhardt, U. E. (2004). The economics of for-profit and not-for-profit hospitals. *Health Affairs (Millwood)*, 23(3), 134–144.
- [43] Porter, M.E., & Teisberg, E.O. (2006). *Redefining Health Care: Creating Value-Based Competition on Results*. Harvard Business Review Press.



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