



**Doctoral School of
Management and
Business
Administration**

THESIS SUMMARY

Csaba Dózsa

**Strategic Responses of Hospitals in Hungary to a Changing Environment
in the Early 2000s -**

Ph.D. Thesis

Consultant:

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2010, Budapest

Institute of Management

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I. Relevance of the topic and the applied methods

The topic of this thesis is centred on the strategic responses of the hospitals in Hungary to the changing environment. (During the period 2000 and 2009 the number of elements showed a decreasing tendency with 135-120 institutions). The rapid changes of the external and internal factors of the environment require a flexible structural adaptation from the health care providers. Contingency theory holds that institutional adaptation is not entirely determined by environmental factors, but institutional management and owners have the opportunity to decide on strategic alternatives.

The topic is focused on hospitals as complex organisations. In the present study the term hospital is restricted to publicly financed institutions providing acute in-patient care. The hospital sector plays a key role in the Hungarian health care system, universities and big hospitals work as important centres of technology and know-how, concentrating high technology and specialist excellence. The economic importance of the Hungarian hospital sector is evident if we consider that it uses the 33-35% of the public health expenditure and a 1.8-2.2% of the GDP. In many towns hospitals are the main employers with between 600 and 1500 employees.

After the introductory Chapter 1 Chapters 2 and 3 are dedicated to the description of the factors of the changes in the internal and external environment and the main tendencies of these changes in the first decade of the 2000s. Among external factors I examined demographic changes, the macro level changes of financing and regulation and the situation that characterises the human resources. As to the internal factors I analysed the trends characterising the ownership structure, scale, technology content, specialities and profiles.

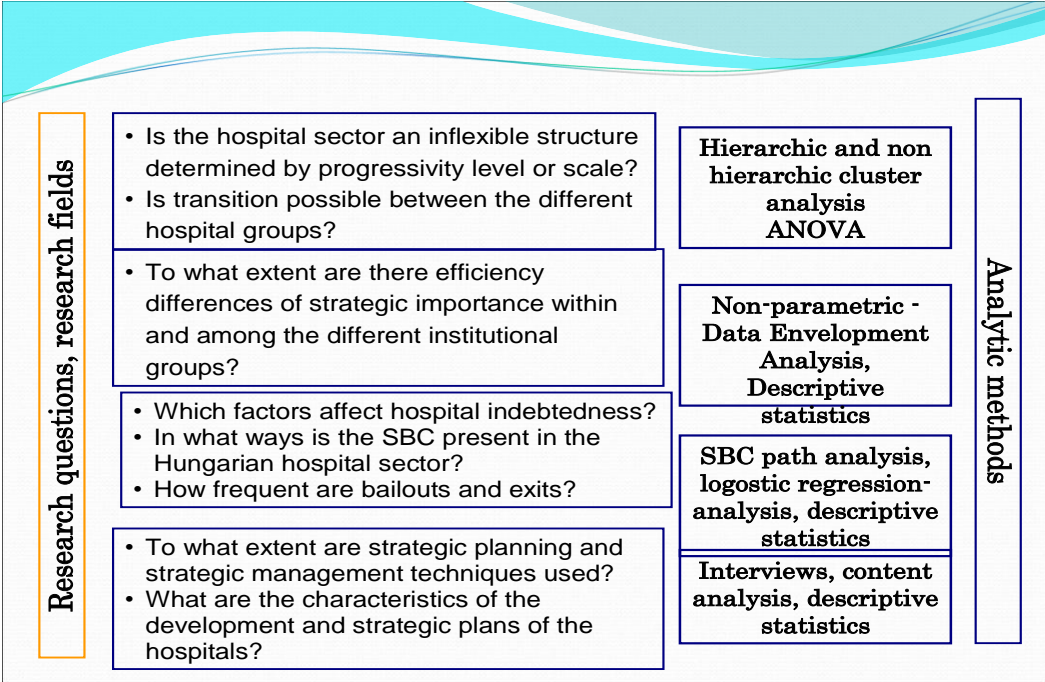
In Chapter 4 I describe strategic decision-making situations and alternatives of the top management and owners using four dimensions: hospital size and capacity, professional and activity content, technology characteristics and types of reorganisation (change of profile, structural changes, organisational development, set up matrix structure). The reveal of characteristics and types of the decision-making situations is supported by a systematic review of the literature, the analysis of sector data on capacity and performance, by interviews with hospital management and by content analysis of documents on development.

In Chapter 5 empirical analysis was applied to describe the characteristics of the sector and of institutional groups:

- 1) Cluster analysis was used to test possible groupings of acute profile hospitals by scale and progressivity level in the years 2006 and 2009. The results were tested by variance analysis (ANOVA). 15 variables were included in the cluster-analysis on the acute hospital sector, and the tests were checked by centroid, two-step and hierarchic clustering. The capacity and performance values of the hospital groups (clusters) were also compared to each other.
- 2) Non-parametric Data Envelopment Analysis was applied to reveal efficiency differences. Within the analysis I used CRS (constant return to scale) and VRS model (variable return to scale). The included variables into the DEA model were the number of acute care beds, number of DRGs admitted cases and the number of DRGs score. The efficiency differences of the different institutional groups (university clinics, county-regional, town and small town hospitals) were examined separately. I also examined data on efficiency differences among county hospitals in the years 2003, 2006 and, 2009.). Efficiency values were also analysed with regard to province vs capital city and priority vs non-priority hospitals. In the DEA model I included acute bed numbers as input variable and DRG case and weight numbers as output variables.
- 3) Main factors of hospital indebtedness were analysed by logistic regression. Descriptive statistical methods were used to describe types of bailouts (financial subsidies, consolidation, support from the owners) and the frequency of exits (closure, fusions). Beyond this I examined 5-year history of 42 hospitals that were seriously indebted at the middle of the year in 2002 with respect to closure, more debt, bailout and stabilisation.
- 4) As a final step a field research was carried out in 18 hospitals through interviews with the high level leaders, and by organising strategic training programmes and analysing documents aiming at professional development and strategy plan. The questions are focused on the structure, content, communication, preparation, participants involved and the pursuit and the success of implementation of professional development plans and strategies. Moreover, a systematic comparison has been made of the typical differences in the content and structure of the professional development plans and strategic plans.

The Figure below summarises the research questions and the analytic methods applied for this dissertation.

Research questions and applied statistical methods to analyze hospital sector



II. Results of the doctoral thesis

1. The detailed analysis of *the most important factors of a changing external and internal environment* led to the following conclusions:

- In the period under scrutiny a number of internal and external factors of the environment were changing. Therefore it is appropriate to say that hospitals have worked in a turbulent environment during the last decade.

Number of environmental factors and the speed of their changes

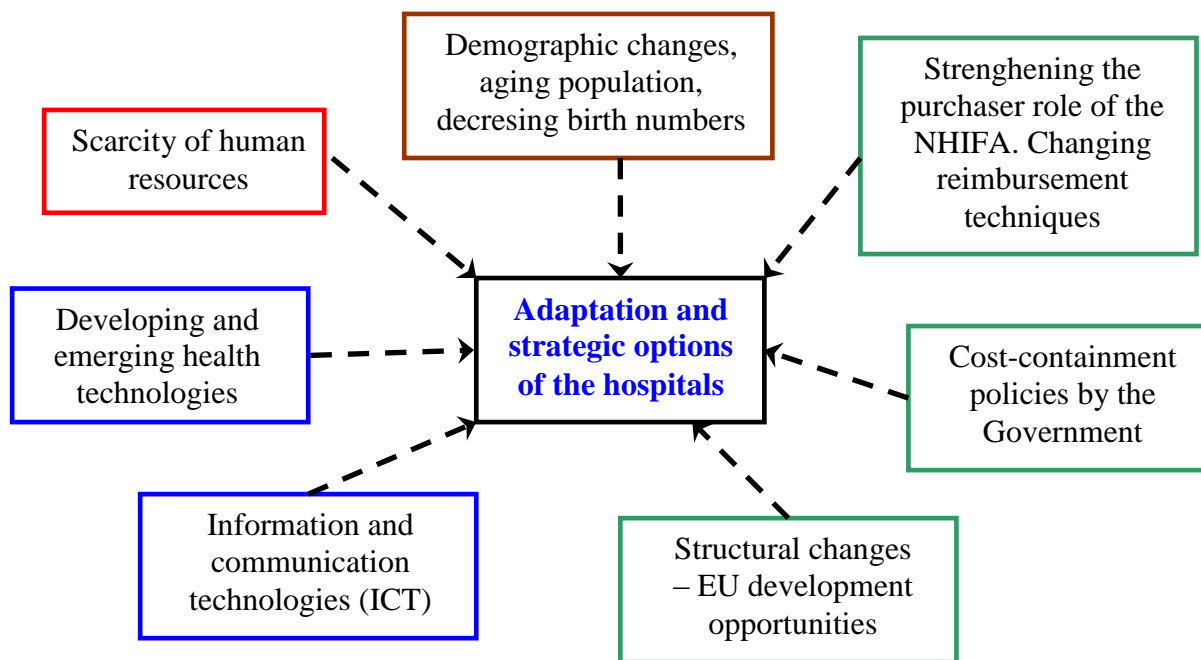
Speed of change	Slow	Fast
Number of environmental factors		
Many	Complex	Turbulent
Few	Stable	Dynamic

- The main demographic tendencies are represented by the considerable growth of aging population, a decrease in births and a constantly low birth rate. Aging brings about the growth in the number of patients with chronic diseases.
- In the field of human resources the sector faces the problem of growing shortage of physicians and nurses and the emigration of skilled workers to other EU countries.
- The representative examples of health technologies and therapies influencing the Hungarian health sector are the following: high-value imaging diagnostic technologies became widespread (CT, MRI, PET), one-day surgery gained terrain, a nationwide network of invasive cardiologic care was established, oncoradiology and chemotherapies became widely available in oncology centres.
- The period is characterised by repeated and significant administrative changes in the regulatory framework and in the financing, which affected the stability of the economy of the hospitals as well as their opportunities for development. Examples for such changes are the repeated corrections of the DRG system on which hospital financing is based, the introduction of the performance volume limit (PVL), the reduction of acute bed numbers by 27%, moreover the introduction of the EU directives on working hours.
- In the second half of the decade cost-containment and cost-cutting policies were favoured by the government. (The convergence programme (2006-2008) decreasing the costs in real value had the most detrimental effect on the hospital sector).

- The spread of integrated information systems (eg. PACS) within the institutions and the info-communication technologies (ICT) among the institutions (telemedicine, teleradiology).
- Development opportunities affecting the whole sector: earmarked investments, national development Plan I and the New Hungary Development Plan with a wide range of calls for institutional development (innovative pole programmes, programmes supporting infrastructural development, calls supporting the development of emergency care).

The most important environmental factors are contained in the Figure below.

Environmental factors affecting strategic scope of action and adaptation of hospitals in the first half of the years 2000



2. Theses related to *strategic decision-making situations*:

- Publicly financed health provider institutions have had and do have scope of strategic action and behaviour.
- Management and the owners of hospitals can choose from realistic alternatives of strategic importance. This strategic scope of action includes institutional scale, technology content, specialist profile, structure, organisation and operational legal form.

- The extent to which institutions can benefit from strategic decision-making situations depends on the willingness of local or governmental authorities to give support.
- Strategic scope of actions is highly dependant on the flexibility and predictability of the regulatory environment.
- Overregulation at sectorial level and cost-containment policies considerably limited the possibilities of strategic development and the appropriate adaptation to changing environment narrowed decision-making alternatives of health care providers.

3. *Cluster analysis of the possible grouping of acute profile hospitals by scale and progressivity level* gave the following results:

- The present situation allows institutions to achieve a higher progressivity level by conscious development and proper political background. On the other hand there is the risk of stranding behind and getting to a lower progressivity level.
- The other part of the cluster analysis focuses on the grouping of priority and non-priority hospitals based on the regulation (Act CXXXII on the Development of Health Care Sector, 2006 - Eftv). The results show that the regulation did not reflect real differences between the hospitals in scale and progressivity level. Furthermore, this regulatory method led to instability and insecurity in the hospital sector.
- Cluster-analysis can create a more homogenous and more stable grouping system which can be considered as a good basis for regulation. It is advisable to include more than one dimensions (such as scale, progressivity level of the activities, situation) instead of relying exclusively on whether the institution can be reached from a 50 km distance or not as the regulation in question (Eftv) does.
- Cluster analysis proves that a four-scale group system, a four level progressivity grouping is relevant to the Hungarian hospital sector. The groups are: a) university clinics, national institutions, b) county-regional hospitals, c) (multi-scale) town hospitals and d) basic care small town hospitals.

4. *Data Envelopment Analysis was used to compare technical efficiency of the hospitals.* I could include only a few input and output variables which questions the explanatory power of these early results. Still, these results can serve to support the following conclusions:

- There are significant (25-30 %) efficiency differences *within and among the different hospital groups*
- The efficiency of the county-regional hospital group decreased after the introduction of PVL and later improved due to capacity reductions implemented by the Eftv regulation.
- *According to progressivity level* (university, county-regional institutions, multi-scale town and small town basic care hospitals) university hospitals excelled in the fields covered by the variables examined, while town hospitals produced the weakest results with almost 30% of efficiency reserves.
- Capital city hospitals and priority hospitals show better economies of scale than non-capital city and non-priority institutions (by 9% and 5 % respectively).

5. *The analysis of the phenomenon of the Soft Budget Constraint and of indebtedness* can be considered as a rather elementary approach to the topic which is to be deepened in the future. However, here I list some early results that seem valuable:

- Indebtedness slightly relates to bed numbers, geographical situation and some ownership types. Using the data that is also available for sector leaders path analysis method can detect the characteristics of the recurrently indebted institutions and of the institutions in a debt spiral.
- The differences in institutional management are illustrated by the fact that even under the most difficult circumstances and hardest restrictions there are hospitals that are able to keep stable operation and afford professional development. On the other hand, there are hospitals that produced deficit even in the best years of financing.
- At the beginning of the period examined the *soft budget constraint* and the real value increase of the budget hid the problems caused by structural inflexibility and insufficient financial management. Recurrent debt was usually paid by state or municipal subsidies (the main types of revealed bailouts are: consolidation, ownership contribution, individual HIF actions, targeted modification of DRGs and PVL).
- Since the middle of the observed decade, 2004 as a result of financial pressure and consequent need for cost-containment measures many institutions became exit (closure,

fusion, change of operational form or change of profiles), and deficient operation was no more subsidised by the state or the municipalities, so they were bailed out no longer.

- The set of variables and categories created to examine exit-types and bailout types may serve for future research on the topic at a sector level.

6. Statements based on *the analysis of the strategic management practice* of the hospitals:

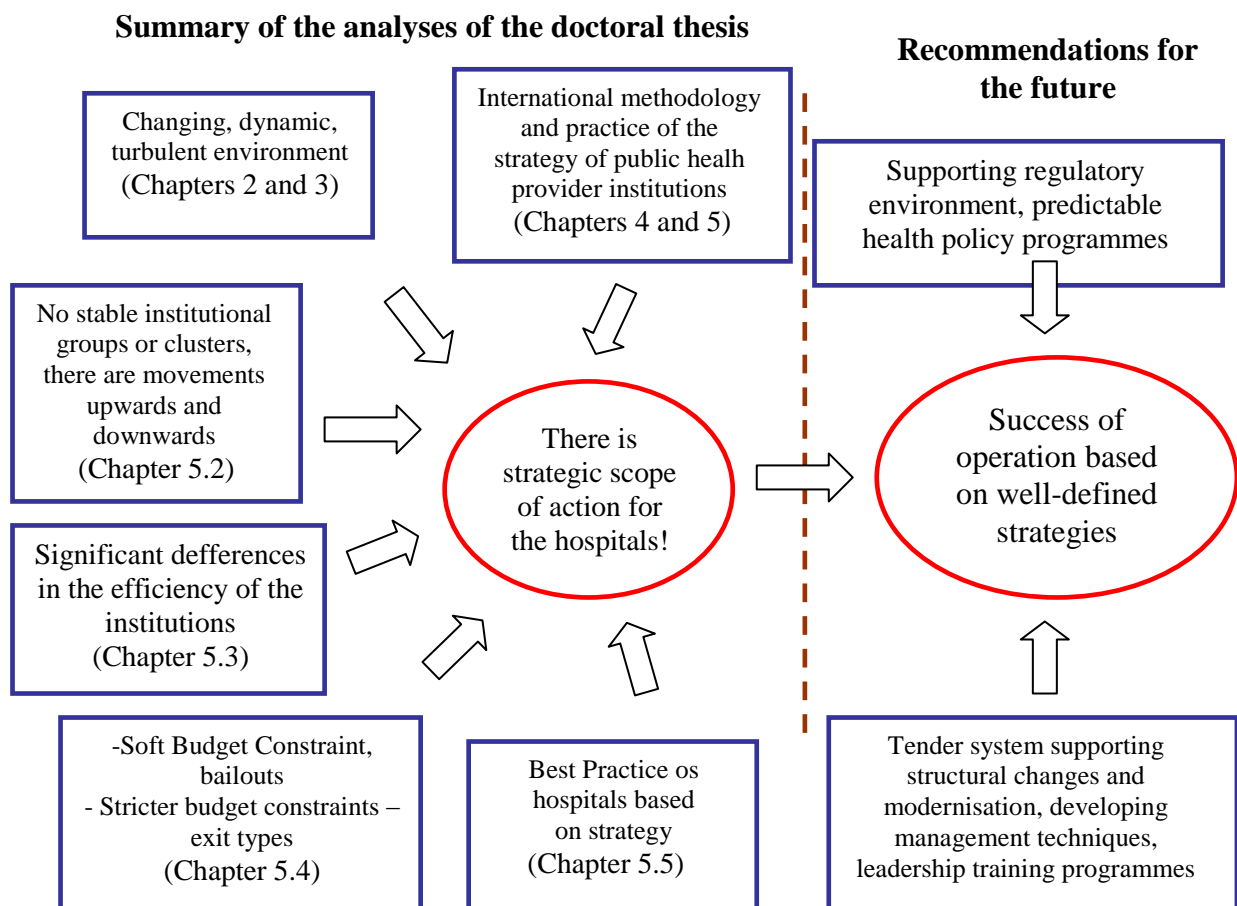
- Strategic planning and strategic management plays a key role in the institutions providing public services. The more changeable the environment, the more important these management tools are.
- There are considerable differences in the regularity and depth of the application of strategic management tools among high level leaders of Hungarian publicly financed hospitals.
- Stability and professional knowledge of the management play crucial role during the operation and strategic development of the institutions.
- The strategies of publicly financed hospitals in Hungary are not independent, but mostly adaptive, reflecting current health policy programmes, slogans and national or EU calls, tender opportunities.
- The analysis of the application of strategic management and of the development plans of the hospitals proved that best practice institutions exist in Hungary, and they can serve as models for the rest of the institutions.
- There are a number of institutions in Hungary that are able to plan and to pursue medium-term (and sometimes long-term) strategies. The management of these institutions was able to stabilise operation, to modify structure of care and to build up human resource management according to strategic goals and responding to the changing environment. These successful institutions should serve as models for the modernisation and for the structural renewal of the health sector.
- According to legal regulations hospitals have elaborated detailed medical-professional programmes and middle-term development plans in the past few years. Still, these plans fail to cover some content and methodology issues:
 - No priorities are set between the institutional goals;

- Strategic goals are not transformed into action plans; systematic execution, monitoring, feedback and regular revision are missing;
- Objectives aiming at financial stability and human resource development are either missing or having little weight;
- Development plans and strategic plans are dependant on resources provided by tenders;

III. Summary of conclusions

The analysis of the health provider institutions reveals that in a turbulent environment restrictions and overregulation lead to efficiency losses and weakens the ability to adapt of the institutions. Inflexible regulation and frequent changes in hospital management contribute to the conservation of inefficient, out-of-date structures which hinder proper responses to the changes of the environment. The figure below includes *the main elements and results of the thesis* and contains the suggestions I offer on the basis of the results.

The importance of strategic environment analysis and strategic management in the successful operation of the hospitals in Hungary



The most important conclusion of the thesis is that strategic planning and strategic management play a crucial role in the operation of the publicly financed hospitals in Hungary. In the period examined the dynamic or even turbulent changes of the environment provided many decision-making opportunities for hospital leadership. In order to give a flexible and adequate response in such situations it is imperative that the institutions elaborate a set of

strategic goals and action plans for middle-term and long-term development. The comprehensive empirical research proves that such awareness and consciousness characterise only a few hospitals. The reasons for this are the frequent changes of hospital management or the lack of consensus on development issues between the owners and the management.

To conclude, the analyses performed indicate that there are at least two conditions that have to prevail in order to assure a successful and stable operation of the hospital sector: 1) a stable health policy and a more stable financing environment have to be established, where the objectives are clear and stable at least at a middle-term period. 2) educational programmes and training programmes should be organised to support institutional management. Benchmark examples should be made widely known, and the abilities and knowledge that proved successful in some institutions should be developed in other institutions as well.

Recommendations for further research on the hospital sector

There are many fields that could not be analysed or dealt with in this thesis, so I make some recommendations for *long-term investigation areas*:

1. *Regular and systematic analysis of the sector* (capacities, performance distribution and concentration, availability of care, main trends by specialities and by therapy groups).
2. *Efficiency analysis* within and among the institutional groups of out-patient and in-patient care, including a wide range of input and output variables.
3. *Efficiency analysis* based on qualitative methods, detailed comparison of positive and negative case study results.
4. Studies on the distribution of *decision-making competence* between the owners and the management, the way of making strategic decisions.
5. Studies on *why and how hospitals go indebted*. A more detailed analysis of the *soft budget constraint* phenomenon.
6. *Cause-effect analysis* before (modelling) and after government decisions (analysis of the effects of capacity regulations and financing, analysis of hospital strategic development and reorganisation).

Development needs of the information system and data bases to support the recommended research

- a) Standardisation of collection and registration of data related to capacity and performance and use of care;
- b) Systematic data collection on number of personnel and wages (valid physician numbers as the main input factor in health care institutions);
- c) Registering valuable (high-) technology and special therapies;
- d) Collection and registration of further input data (used medicines and materials, number and type of implants);
- e) Using quality indicators to get a realistic picture of performance (outcome);

The nationwide availability of these data is necessary for further studies on efficiency and cost-efficiency in the Hungarian hospital sector. The validity of the research and of the analyses can be improved in two directions: by involving more input and output variables and by data standardization.

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V. Related publications

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