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Hospital controlling as a tool for making conscious, future-oriented decisions

PHD THESIS

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1. Introduction

In Hungary, the social security and health care system is based on German (Bismarck) system. The emergence of the market economy in the common economic systems is also taking shape, and it has gradually become obvious that the traditional budget approach cannot continue to operate health care. As a result of these changes, the importance of controlling has become more and more significant in supporting maintenance and management decision-making, thus increasing interest in controlling methods.

In this dissertation, the author analyzes those controlling techniques and tools, that can be used to support decisions at the right time and with the adequate basis.

Due to austerity (withdrawal of funds) and frequent changes in funding, response needs to be as quick as possible, therefore it is important to be able to immediately provide complete, up-to-date and credible data and information to management and senior and middle management.Controlling in health care management is an economic planner-analyst-control, managerial information system, and decision-making tool that is capable of reviewing, monitoring and controlling processes in the hospital, essential for the successful adaptation to changing circumstances.

In order to illustrate the topic more clearly, the author examines controlling activities using case studies from the Erzsébet Teaching Hospital and Rehabilitation Institute of Sopron, since it has been managing the Controlling, Information Technology and Finance Department of the Hospital for 14 years now.

2. Topic and object

The importance of controlling was recognized not only by management, but it also became an expectation for the industry and the maintainer. In this regard, a controlling handbook was compiled in 2015 within the framework of the project TÁMOP-6.2.5-B / 13 / 1-2014-0001 entitled "Developing a controlling handbook providing

a unitary institutional controlling methodological basis for health care providers maintained by the ÁEEK[1] ".

In the course of the research, the author examines the tasks and challenges of the Hungarian health care system, its financing, hospital management, the new unified system of accounts and accountancy. In addition, the author examines whether the controlling methodological manual produced in the ÁEEK TÁMOP-6.2.5-B project is appropriate and sufficient for the management of the institution and, as a result, analyzes the relationships between the individual system components, when, with what information is needed and the means of controlling to serve the needs of management in preparing decisions. The author examines the minimally applicable methods and tools that controlling should have to provide relevant, up-to-date, credible information to institutional leaders in order to achieve conscious, future-oriented institutional governance, and to seek to develop theoretical and practical research a comprehensive controlling system that can be applied in practice and **the main objective of the dissertation is to try to develop a comprehensive, practically applicable controlling system through theoretical and practical research.**

In the dissertation the following hypotheses were formulated for the years 2018-2019, using the financing data of 2006-2017 and controlling data of 2016-2018:

(H1)Lossless operation can be ensured even in the case of underfunding.
In Hungary, in 2019, industry-wide expectation that health care institutions operate at a loss, one of the prerequisites of which is that health financing - basic fees, Power Volume Limits (TVK), Homogeneous Disease Group (HBCs) weight - follows inflation, and related changes in patient care, and help spread new, effective, diagnostic, therapeutic interventions over old, outdated, and less effective methods. If this basic condition is met, the lossless

[1] State Health Care Center

operation is evident, and the support depends on management and well-designed controlling. Despite this, it is well-known that financing does not follow the changes, there are loss-generating professions, fields and institutions. It analyzes the extent of underfunding and examines the available data using the context of lossless operation.

(H2) The regulatory environment and the funding system facilitate the operation of hospitals.
Health care institutions are complex and therefore have a compound financing system. For the sake of transparency and effective operation, it is in the interest of both the maintainer and the sponsor to establish appropriate regulations to help institutions operate more efficiently. Therefore, it examines how regulations affect health care institutions.

(H3) The controlling methodology developed by the ÁEEK is fully appropriate and sufficient for effective management, operation and preparation of institutional leaders
Between 2014 and 2015, the maintainer developed a controlling methodology within the framework of the TÁMOP-6.2.5-B project, which unifies the operation of both its own and institutional controlling. The controlling methodology elaborated by the ÁEEK provides future-oriented, conscious institutional management and provides full, up-to-date and credible information to the heads of institutions. The author formulated his third hypothesis related to this assumption.

(H3/1) In addition to controlling designed and operated on the basis of the manual, a hospital can be operated without loss.
The maintainer and the industry expect hospitals to operate at a loss even under current conditions. It is a general statement that institutions are unable to operate without loss due to mismanagement, so assuming that institutions set up control according to the methodology, management will have access to the information they need to function effectively, they will be able to

operate the institution without loss This hypothesis is formulated as a sub-hypothesis of the third hypothesis (H3 / 1), due to the close connection.

(H3/2) The introduction of a single institutional account mirror facilitates departmental controlling.

Government Decree 4/2013 (I.11.), which entered into force on 1 January 2014, amended the general government accounting. Cash accounting and business accounting were made compulsory and their institutional accounts were unified. Regulation and standardization help institutions work because controlling can work with data from the general ledger at the appropriate department level, and standardization provides a good basis for national comparisons. Also due to the close correlation, this hypothesis is also formulated as a sub-hypothesis of the third hypothesis (H3 / 2).

(H4) BSC can also be used in health care institutions to improve efficiency.

The Balanced Scorecard (BSC) system is useful not only for private sector companies but also for use in healthcare institutions. In the ű opinion of the author, supplementing the controlling system can improve the operational efficiency of health care institutions.

3. Research methods

The author begins the dissertation with secondary research, in the course of which he prepares a number of academic literature on the subject and creates a summary picture based on it.

After the theoretical review and analysis section, he conducts primary research using national and hospital databases. Analyzes and examines the relationships between funding-related Homogeneous Disease Group (HBCs) strain changes since July 1, 2006.

He performs mathematical and statistical methods (linear relationship with Pearson's coefficient, deviation test with two-sample t-test, analysis of variance) and uses correlation data using the controlling database of Erzsébet Teaching Hospital of Sopron, the controlling database of a county hospital, and data from 20 hospitals from the national controlling database.

In the course of his research the author utilizes his practical experience, on the basis of which he tries to make comments, suggestions for modifications on the factors influencing the operation of hospitals and controlling tools with the intention of helping and improving.

Develops a comprehensive, practically applicable hospital controlling system for management work.

4. Research structure

The dissertation begins with a theoretical overview of controlling and then introduces the regulatory and financing system of hospitals.

After the theoretical part, using the available data, it examines the controlling effects on the financing and management of hospitals.

It then goes on to elaborate on proposals to supplement the controlling methodology. In order to establish appropriate controlling, it analyzes the single institutional account and the controlling methodology of the ÁEEK, to which it makes proposals, modifications and additions.

It introduces the liquidity control, performance control, framework management, operating organization, BSC, which it has developed, and then organizes and defines the relationships.

At the end of the dissertation, he summarizes his results, conclusions and recommendations.

5 Results of the research conclusions, recommendations

In order to prove the first hypothesis (H1), underfunding and its extent have been shown. Based on calculations, the current figure would be HUF 376,230 / volume instead of the current figure of HUF 198,000/ volume. Based on statistical analyzes, the hypothesis that, even with such underfunding, an institution can operate on a lossless basis, but only under certain structural conditions over which the institution has little or no influence[2]., is well-established.

The author examined the regulations in relation to the second hypothesis (H2), where he concluded that over-regulation of the system narrows the room for maneuver of institutions, thus making it

[2] Professional structure.

difficult or even impossible to operate efficiently, therefore the hypothesis has not been proved.

The third hypothesis (H3), which examined the AEEC controlling methodology, which is a well thought-out, logical method, was rejected, but unfortunately the data needed for the method is only available in the second month after the current monththus does not meet the up-to-date criterion, which makes it impossible to intervene, however, it is fully compliant with feedback, back-checking, benchmarking. However, additional controlling tools are needed for effective management support, so it has identified and developed the minimum required tools, and organized them into systems and defined relationships.

Custom made tools are the following:

according to business management approach,

- performance controlling,
- dynamic user framework management,
- operating organization,

according tocash flow approach

- liquidity controlling
- purchaser management by date of payment, it can also contain business data, cash flow data,Balance Score Card (BSC).

In order to clarify and improve the ÁEEK methodology, he made four suggestions:

1. To avoid VAT calculation, the author has defined a simple software development to ensure accurate reporting, avoiding inaccuracies in the calculation,
2. It is recommended that 923 accounts be treated in the same way as revenue and expenditure of "non-operating aid",
3. it is recommended that the amount covering wages of the income from tenders be included in the total income of the departments,
4. It would be advisable to allocate the costs of specialty consultation not in a single amount but in a cost breakdown. It would be advisable to include the cost of the

specialist department in its department separately as direct costs. This method eliminates differences due to the different accounting practices of hospitals.

In the first sub-hypothesis of the third hypothesis (H3 / 1), he examined that if the institution establishes and operates the controlling properly, information will be available which will enable it to operate the institution on a lossless basis. Based on the conclusions of the conclusions, the hypothesis has not been validated, since besides the current financing, the provision of adequate information and efficient management does not depend on loss-making operation, but on structural, TVK and financing issues.

The result of the examination in the second sub-hypothesis of the third hypothesis (H3 / 2) is that the unified account mirror and accounting policy only partially supports the class controlling functions, because the accounting income contains inaccurate data, therefore the methodology also calculates from cash flow and goods. The hypothesis can be partially justified, as it provides an adequate basis only for quarterly expenses.

The fourth hypothesis (H4) has proved that the use of the Balanced Score Card is possible and desirable in Hungarian health care institutions, but it is necessary to narrow the KPIs[3] and to introduce new industry-specific KPIs.

From a controlling point of view, the biggest issue with accounting for hospital performance is the difference between pre-approval and confirmation, and the delay in validated data[4]. In the opinoin of the author, there are technical conditions[5], that allow you to confirm performance immediately, or within a few days of reporting. By shortening the response time, many of the issues that were discussed in the dissertation would be resolved.

Based on its research and practical experience, it can be evidently stated that efficiency can be significantly improved if the institution also operates an interest system based on data from controlling instruments.

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[3] Key Performance Indicator

[4] Two-months delay

[5] For Example: EESZT, electronic performance report.

In the opinion of the author, the system could be further improved if, as in the case of medicines, a nationwide uniformed body of articles was used and case-by-case administrative costs were added to the controlling system. The information provided by the additional supplements could, in his view, further improve efficiency.

As a result of his investigations the author created a controlling process diagram, which adequately illustrates the connections and relationships of the system components. There were two major inconsistencies between the processes.

- There is no correlation between the original annual appropriation and the Institutional Annual TVK. Despite several attempts at the Erzsébet Teaching Hospital in Sopron, the management has been unable to adjust their annual allocations to the amount of Hungarian forints receivable provided by TVK since 2013. Their initial appropriation is HUF 5.9 billion, while TVK's callable HUF revenue is between HUF 7.8 billion and HUF 8.6 billion. An appropriation, duly substantiated, may be the subject of an amendment to the initial allocation which has been entered during the year. From an institutional point of view, it represents an additional administrative burden but, from a macroeconomic point of view, represents an unrealistic annual budget plan.
- Another contradiction is that the annual cash-based appropriation is charged with a business-oriented commitment. In this regard, the author elaborates his proposals in the section on the contradiction of appropriation and commitment.

6. Further potential of the research

On the basis of the proposals for modifying the controlling methodology of the ÁEEK, the institutional framework can be re-prepared after the modification of the methodology. Statistical analyzes of the new data can also be carried out, and further conclusions and correlations can be revealed in comparison with the current results.

The current ÁEEK controlling methodology also provides opportunities for future research. The production of statistical analyzes by profession may result in further correlations.

7. Summary

In conclusion, a well-designed controlling system significantly improves the efficiency of management and can be used as a method of management work in health care institutions as well. The main aim of the dissertation was for the author to attempt to develop a controlling system that can be applied in practice. Ehhez
He stated that in his opinion, what are the minimum controlling tools and elements that should be used for efficient, conscious, future-oriented operation. He organized the tools and elements into a system and tried to define correlations and relationships.

- Research of the author has shown that there are many contradictions in the system that need to be addressed in practice, which pose major challenges.
    - Effective budgetary institutional operation
      Most health care institutions operate in the form of a budgetary institution, with appropriated annual budgets. This contradicts the changing, only statistically predictable stochastic development of patient turnover. Predicting patient traffic as the most important determinant of revenue is a major challenge for controlling.
    - The Power Volume Limit as a central rule limiting the number of important intervention cases
      Performance above the established volume of performance for institutions is not funded, even if it is based on actual supply needs or constraints. Therefore, avoiding overperformance imposes significant navigation tasks on controlling, which cannot be accomplished without management support. Another problem is that the TVK is often not determined based on the actual needs or to the actual population, which further increases the importance of control tasks.
      The performance controlling developed by the author provides the ability to respond quickly and flexibly, as he

has defined processes and data contents so that he can intervene immediately with the right information.

- Contradictions of the hospital funding system
  In his dissertation he shows that the relative value of the volume fee and the level of financing have been steadily deteriorating in recent years. A more serious problem is that the current HBCs volume system has not been properly developed even after a decade of lag, despite the fact that 95% of the 730 HBCs in hospitals, only about. 300 pieces are coded / used. The volume for HBCs did not follow the changes resulting from the development, so lossless and profitable benefits appeared in the system, which also poses a serious challenge for controlling to strike the right balance between them. (This is called HBCs selection.)
- Conflict between hospital appropriation and commitment
  The charge on the appropriation considers the issue of the order as the date of the commitment. This is incorrect, since the appropriation is cash-based, but the order-issuing is business-oriented. The order may vary in price and quantity, not to mention the date of delivery and the due date, so the date of the commitment could be regarded as the confirmation order, and the appropriation should be debited with the due date as stated in the confirmation.
- Autonomy of the health care system
  Controlling can be fully effective if the institution can exploit the results without external influences. Failing this, controlling must also take into account external influences, which can also be difficult, since external influences may be contrary to internal interests.Az intézményvezetés autonómiája
  The control can only perform its function if the system can make managerial decisions independent of external influences on deviations.
- Lack of correlation between regulatory elements

It occurs, the elements that regulate the operation are not fully consistent (eg TVK, catchment area, population, hours, minimum condition, human resource capacity, German point and weighting system, etc.), in which case controlling tries to find a solution to the contradictions.

- The author has analyzed the controlling methodology set out in the ÁEEK and identified the controlling tools that are necessary to supplement it, which ensure the immediate provision of information.

As a result of his research, he produced a summary flow chart that illustrates the relationships and contradictions.

In a detailed description of the controlling tools, he presented which data is immediately available and which will be accurate only after 2-3 months.

Controlling tools that use data available immediately or with minimal delay:

- performance controlling,
- liquidity controlling,
- dynamic user framework management,
- Purchasing framework management by date of payment,
- operating organization.

Tools available with 2-3 months delay:

- ÁEEK controlling (business analysis)
- Balance Score Card (BSC).

Based on his practical experience and theoretical knowledge, he has developed unique controlling tools that he believes will effectively help institutional management and enhance the effectiveness of controlling.

- Defined data contents, comparative data, structures, management process in performance controlling.
- Defined data contents, structures, and management processes in dynamic user framework management. He has created auxiliary tables that convert data from different reports into an appropriate structure, making data processing easier and

faster. In order to function properly, he has made improvements with his IT system provider.

- Developed a complete operating system. The organization and management process has been developed, together with his colleagues, who has developed a user-friendly software that effectively supports the organization process and provides complete, up-to-date, reliable data for management and surgical management.

7. Publication list

Mattiassich, N. (2018) *Data Security, Data Protection in Health*, In: Resperger, Richard (ed.): Demographic Change, Changing Economic Challenges, International Scientific Conference. Study volume. University of Sopron Publisher, pp. 259-270. 12 p. Bulletin: 30459967 (Conference Bulletin)

Mattiassich, N.; Bubori, Zs.; Mattiassich-Szokoli, E. (2015) *Difficulties of introducing controlling approach and methodology in small and middle sized company environment*, IME: Interdisciplinary Hungarian Health Care / Information Technology and Management in Health 2015XIV: (8) pp. 25-29, 5 p.m. Bulletin: 2956237 Journal article (Article)

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Mattiassich, N. (2014) *Effective Surgery Management*, IME: Interdisciplinary Hungarian Health Care / Information Technology and Management in Health 2014/2013: 9 pp. 13-18., 6 p.
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