FINANCIAL-ACCOUNTING RISK MANAGEMENT REGARDING THE EMERGENCY PUBLIC HOSPITALS IN ROMANIA¹

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ABSTRACT

We have considered regarding this paper¹ the identification and evaluation of the financial and accounting risks within the public emergency hospital located in Bucharest, the capital of Romania, which has a great impact on its objectives.

The main objectives of the public emergency hospital in Romania are: guaranteeing the quality and safety of the medical act, endowment with medical devices and medical devices necessary for a quality medical act, institutional development by improving infrastructure, diversifying and increasing the quality of medical services offered to patients, tracking population accessibility and patient satisfaction, respecting the dignity and rights of patients, ensuring optimal conditions for medical investigations, treatment, accommodation, hygiene, nutrition and prevention of nosocomial infections, ensuring high standards of professional competence and encouraging their continuous development, increasing the satisfaction of medical staff, monitoring the achievement of the indicators contracted with the Health Insurance House, the management indicators, the realization of the revenues and expenditures, the analysis of the costs of the specific indicators on each section and the overall regarding the hospital, continuous professional training of employees, maximizing the efficiency of public funds.

The sample of the scientific research gathered a number of 7 emergency hospitals, multi-specialties, which according to the degree of competence belong to I¹ category (very high degree, respectively, having the highest level of equipment and equipment medical and human resources and ensures the provision of medical services of very high complexity) and II¹ (high degree, respectively, with a high level of medical equipment, as well as with human resources and ensures the provision of services medical complexity).

The period for the analysis is 2012-2017, the data being taken from the website of the Ministry of Health of Romania and of the National School of Public Health, Sanitary

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INTRODUCTION

In a super speed world within the technology and progress evolves with the "light speed", we must take care also for the medical sector. The paper is an approach regarding financial-accounting risk management in the Romanian emergency public hospitals. In Romania, the medical sector especially the public one is a very delicate topic because of some issues which we are confronting such number of beds, sterile conditions, procedures and red tape etc. A better management of the financial-accounting risk for emergency public hospitals will reduce in time some of the issues of our times. The interest is to constantly bring medical services of high quality.

The main factors which influence the objectives of the public emergency hospital in Romania are [1]:

I. Internal factors:
   
a) Financial risk factors:
   - costs higher than expected (both as sums and as calculated indicators);
   - failure to perform the service contract concluded with the National Health Insurance House;
   
   b) Accounting risk factors:
   - the invalidation of medical services, which is a loss for the hospital;
   - acquisitions that exceed the estimated need (investment in stocks);
   - elaboration of insufficiently substantiated income and spending budget;
   - expenditures without pursuing the approved income and spending budget at the hospital level;
   
Management and Sanitation – Research and Evaluation Center for Health Services.

Starting from the quantitative indicators of each analyzed hospital (number of beds, degree of bed use, number of hospitalization days, average of length hospitalization, number of hospitalization days, number of discharged cases), and taking into account the level of receipts and payments, we have concluded that the main financial and accounting risk factors that may influence the objectives of the public emergency hospital in Romania.

Keywords: financial-accounting risk management, emergency hospitals, statistical analysis, regression.
- failure to comply with the principle of exercise independence (when revenue and expenditure are recognized);
- lack of supporting documents and/or lack of accounting documents in accounting;
- failure to comply with applicable accounting regulations;
- the accounting documents do not include the minimum information provided in the legislation;
- reporting erroneous, incomplete or unrealistic data;
- the lack of written procedures/monographs on the functionality of the financial-accounting IT system;
- non-systematic training of computer system users;
- non-informal or whenever necessary changes to the computer system.

II. External factors:

- legislative changes;
- increasing the price of medicines, sanitary materials and other materials necessary for the medical act;
- the conclusion of the annual contract for the provision of medical services having a lower value than the cost of the treated patients;
- the non-settlement by the Health Insurance House of some expenses incurred with treated patients, for various reasons not imputable to the hospital.

The risk categories identified have been evaluated, and, depending on the outcome, solutions have been proposed to reduce, eventually eliminate their effects.

Using the maximum efficiency and cost-effectiveness of income/receipts, identifying new sources of financing of the activity, elaborating operational procedures and rigorous monitoring of each activity, designating for each activity of persons with appropriate training with specific attributions, are the main solutions to achieve the objectives of the public emergency hospital in Romania.

Considering the collected statistical data, we determined an econometric model illustrating the relationship between dependent and independent variables with valuable conclusions that could bring a beneficial change in improving the financial-accounting risk management regarding the public emergency hospitals in Romania.

METHODOLOGY RESEARCH AND KEY FINDINGS

We started from a database of information regarding public emergency hospitals which we have introduced in EViews 10.

Although, the “portfolio credit risk analysis does not have the same need for rapid turnaround that models used for trading liquid instruments do changes in the portfolio occur more slowly, you don’t need to respond to the needs of a trading desk requiring an up-to-date picture at the start of each trading day, or to contribute to the daily VaR market risk calculations. So there is much greater tolerance for full simulation runs that may require many hours or even a few days to produce statistics.” [2]
“In banking and accounting, risk is expressed quantitatively as the probability or degree of loss. Mathematically, probability is a quantitative measure, assumed risk, however, is not just mathematics but also a function of qualitative factors, such as the nature of the counterparty (a person, company, government or other entity), characteristics of the transaction and specifics of the exposure.” [3]

Furthermore, we have analysed the efficiency of hospital activity implies an optimal use of its material and financial resources.

The evolution of the main indicators reflecting the efficiency of hospital activity, the degree of beds use (GUP) and the average length of hospitalization (DMS) can be seen in Figure 1 and Figure 2.

![Figure 1. The degree of beds use during the period 2012-2017](image)

Source: Own data collected from the Research and Evaluation Center for Health Services - DRG site www.drg.ro and processed using Excel

The hospital with the maximum degree of beds use is Emergency Clinical Hospital, 346 days, value registered in 2013, while Dr. Carol Davila University Emergency Central Military Hospital had the lowest degree of beds use in 2016 (175 days).

It is considered that the optimum utilization rate is 320-330 days per year, more specific 85-90%, because periods of hygiene and disinfection of salons are necessary.

As for the evolution of the average length of hospitalization expressed in days, this can be seen in Figure 2.

The highest average length of hospitalization (33 days) was recorded in 2017 by the Bagdasar-Arseni Emergency Clinical Hospital, while the lowest was the Emergency Clinical Hospital, reaching 2012 (6 days).

The evolution of the total revenues achieved by the seven hospitals whose activity was analysed in the period 2012-2017 is reflected in Figure 3.
In order to determine the correlation between the dependent variable, the total revenues (VEN_TOTAL) and the two variables that reflect the efficiency of the hospital activity, namely the degree of beds use (GUP) and the average length of hospitalization (DMS), obtained as a ratio between the number of hospitalization days (NZS) and the number of discharged cases (NCExt), as independent variables, the linear multiple regression equation is:
Table 1. The linear multiple regression results
Dependent Variable: VEN_TOTAL
Method: Panel Least Squares
Date: 05/12/19   Time: 22:55
Sample (adjusted): 2013 2017
Periods included: 5
Cross-sections included: 7
Total panel (balanced) observations: 35

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.129691</td>
<td>0.021520</td>
<td>6.026569</td>
<td>0.0000</td>
</tr>
<tr>
<td>GUP</td>
<td>-1.228119</td>
<td>0.396977</td>
<td>-3.093676</td>
<td>0.0041</td>
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<tr>
<td>NCExt</td>
<td>0.897728</td>
<td>0.321060</td>
<td>2.796139</td>
<td>0.0087</td>
</tr>
</tbody>
</table>

R-squared: 0.283139
Mean dependent var: 0.140284
Adjusted R-squared: 0.238335
S.D. dependent var: 0.135849
S.E. of regression: 0.118560
Akaike info criterion: 1.344978
Schwarz criterion: 1.211663
Log likelihood: 26.53712
Hannan-Quinn criter.: 1.298958
F-statistic: 6.319523
Durbin-Watson stat: 2.532350
Prob (F-statistic): 0.004864

Source: Own results exported from EViews output

A financial-accounting risk manager will always track the increase in total revenue. In order to increase the total revenues by one unit, it is necessary to reduce the degree of beds use by 1.23 units and to increase by 0.90 units the number of discharged cases, thus increasing the degree of beds use.

Also, it is necessary to identify new sources of revenue, respectively to increase donations and sponsorships.

Next, we will analyze and determine how the degree of beds use (GUP) and the number of hospitalization days (NZS) influences the total expenditures (CH_TOTAL) of the public emergency hospital.

We have generated a multiple linear regression on a sample of 35 observations, the results registered the following values:

\[
CH\_TOTAL = 0.130087 + 1.127938*GUP - 0.375356*NZS
\]

In order for an activity to be effective, it must be ensured that the level of total expenditures decreases. If the number of hospitalization days is reduced by 0.38 units and the degree of beds use is increased by 1.13 units, then the total expenses will increase by one unit.
Table 2. The linear multiple regression results

Dependent Variable: CH_TOTAL
Method: Panel Least Squares
Date: 05/12/19   Time: 22:46
Sample (adjusted): 2013 2017
Periods included: 5
Cross-sections included: 7
Total panel (balanced) observations: 35

<table>
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<th>Variable</th>
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<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
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<td>C</td>
<td>0.130087</td>
<td>0.016689</td>
<td>7.794758</td>
<td>0.0000</td>
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<tr>
<td>GUP</td>
<td>1.127938</td>
<td>0.308033</td>
<td>3.661737</td>
<td>0.0009</td>
</tr>
<tr>
<td>NZS</td>
<td>-0.375356</td>
<td>0.296806</td>
<td>-1.264651</td>
<td>0.2151</td>
</tr>
</tbody>
</table>

R-squared: 0.295453
Mean dependent var: 0.110715
Adjusted R-squared: 0.251418
S.D. dependent var: 0.106715

S.E. of regression: 0.092330
Akaike info criterion: 1.845074
Schwarz criterion: 1.711758
Log likelihood: 35.28879
Hannan-Quinn criter.: 1.799053
F-statistic: 6.709616
Durbin-Watson stat: 2.370286
Prob (F-statistic): 0.003686

Source: Own results exported from EViews output

Figure 4. Total expenditures during the period 2012-2017

Source: Own data collected from the Ministry of Health site http://monitorizarecheltuieli.ms.ro and processed using Excel
The evolution of total expenditures at the level of the seven analysed hospitals is shown in Figure 4.

The highest total expenditures are registered by Emergency University Hospital in 2017 (392093.81 thousand lei), while the lowest level was reached by St. Pantelimon’s Emergency Clinical Hospital in 2012 (78741 thousand lei).

Regarding the number of hospitalization days, the highest level was reached by Emergency University Hospital in 2012 (355635 days), while St. Pantelimon’s Emergency Clinical Hospital recorded the lowest level in 2014 (122831 days). Evolution of this indicator can be seen in Figure 5.

**CONCLUSIONS**

First of all, the healthcare and medical system must design a income and spending budget based on a forecast in accordance to the last years evolutions.

If the hospital does not achieve the budget predicted due to the lack of patients, they will not conclude medical services contracts. The error comes from the unrealistic estimation of patients and the hospital will not receive from the National Health Insurance House the budget predicted, which means it cannot make acquisitions of goods and services and investments (expenses, in general).

Another situation of not achieving budget predicted is the invalidation of medical services, which is a loss for the hospital. An example of invalidation is when a patient is introduced in a category of handicap and that is not the right one. The National Health Insurance House will invalidate the

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**Figure 5. Number of hospitalization days during the period 2012-2017**

Source: Own data collected from the Research and Evaluation Center for Health Services - DRG site www.drg.ro and processed using Excel
expenses and the amount will have to be returned.

The best to reduce the financial risk is long time hospitalization instead of use beds on short time hospitalization (one day). If hospitals offers high quality services to their patients they will stay longer than a day and the emergency hospital will forecast and receive the specified budget.

The financial risk can be reduced by rising the period of hospitalization in the emergency hospitals, offering high quality services and positive results in short time for patients. Estimated expenses have a probability with high financial risk.

Another element which will reduce the financial risk is to attract more and more patients, which will increase the revenues of hospitals and permit to make investments in order to obtain more quality and more safety of the medical act.

Use of new technologies and intelligent assistant support decision software such as www.drg.ro will gain transparency, statistics and correlations in all the fields referring to the hospitals.

"New technologies in the medical sector such as e-health can contribute to a high-quality care of patients’ health, while maintaining the efficiency and sustainability of health systems." [4]

In the last few years, the society has made great progress regarding the process overall but the risk management was the least concerning and it was wasn’t the right approach because its high importance has not been appreciated at the corresponding value.

Romania in the public sector tries to align to the trends regarding the financial-accounting risk management regarding the public emergency hospitals in Romania.

“Since financial risk occurs in the context of this interaction between individuals with conflicting agendas, it should not be surprising that corporate risk managers spend a good deal of time thinking about organizational behavior or that their discussions about mathematical models used to control risk often focus on the organizational implications of these models.” [2]

Hospitals need to build a system to track the evolution of the main indicators that influence the efficiency of the activity. It is important to appoint a financial-accountant risk manager to identify in advance the negative evolution of the hospital from the financial and accounting point of view and to propose recovery solutions.

Currently, there are computerized applications built to generate reports required for hospital management in decision making, but given the medical training of a manager, it is necessary to hire a risk manager with training in economics.

Efficient work contributes to increased revenues and expenditures diminishing so that the profits earned are reinvested in hospital modernization, thus contributing to the achievement of the hospital’s main objectives.

As far as the accounting risk is concerned, it can be managed and controlled by:

- elaboration of operational working
- the annual performance evaluation of each employee;
- improvement courses in the use of computing techniques for employees, as well as in legislative changes regarding accounting;
- designation of a permanent substitute who can take over the duties of the post holder during his / her absence.

REFERENCES


