

CONTRIBUTION OF INTERNAL AUDITING IN THE VALUE OF A NURSING UNIT WITHIN THREE YEARS

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***D**URING the present time, internal auditing is witnessing a rapid development because of concrete changes and bizarre tendencies in the enterprising environment. In the present article an attempt has been made to study the scientific assessment of financial results spawned by internal auditing in the value of a nursing unit. For the assessment of the financial results (a) we followed a line of hypothesis, (b) we used economic figures, which were received by the published financial statements of a Greek private maternity clinic for the period between 31/12/1997 to 31/12/2000 and c) we used economic figures that were collected from the corresponding department of internal auditing. From the comparison of individual cases we realize that according to hypothesis that were followed it appears that the internal auditing had financial profits for the scrutinised Greek private maternity clinic. From the analysis critically applied on the financial figures of the company and in concordance with the hypotheses laid out of hypotheses it appears that its value was increased during a period of three years at a sum varying between 0.4 and 1.6 millions of Euros or in percentage increase between 10% and 36%.*

General

In our days internal auditing faces a rapid development because of concrete changes and tendencies in the enterprise environment (Moore, 1999, Oxner, 1998, Kusel, 1996, Oxner, 1994, Kaplan, 1995, Cashin, 1986, Meigs, 1984, Brink, 1958):

- **The rapid growth and the complexity of basic operations of enterprise** - The growth of modern organisational units has caused various problems in their management. Modern management faces more levels in the organizational structure of enterprise and finally communication is one of the most important problems in the modern enterprises. Internal auditing can substantially facilitate the intercommunication of various levels of hierarchy.
- **The internationalization of markets and the dissemination of activities in wider geographic regions** – During the first middle of 20th century most enterprises were usually operating in a close geographic region. The globalization of markets and the existence of various seductive enterprising occasions have led the enterprises to expand their activities to other regions.
- **The tendency for decentralizing management** – Many of companies have realized that the model of centralized management, which was applied to a large extent in the past, have led to declining results. These companies have begun to adopt the model of decentralizing management.
- **The rapid growth of mergers and acquisitions** – The effort of enterprises to achieve economies of scale can explain the rapid growth of mergers and acquisitions. This business practice has caused important changes in the structure of involved enterprises.
- **The rapid growth of technology** – The rapid growth of technology has caused the appearance of important changes in the business environment, the rapid growth of volume of transactions, the growth of new forms of enterprising action and the development of new products. The enterprises face new challenges and new risks that were unknown in the past.

According to the latest definition of the Institute of Internal Auditors “internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization’s operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, audit, and governance processes” (Institute for Internal Auditors, 1999). In the present article becomes an effort of scientific assessment of financial results from internal auditing in the value of a nursing unit. For the assessment of the financial results a) we followed a line of hypotheses b) we used economic figures, which were collected from the published financial statements of a Greek private maternity clinic for the period between 31/12/1997 to 31/12/2000 and c) we used economic figures that were collected from the corresponding department of internal auditing.

Financial results from the internal auditing

The operational audits constitute the more important percentage of audits of the department of internal auditing. During the operational audits important matters, were realized which influenced the income, and also the costs of maternity clinic. The contribution of the department of internal auditing in the increase of income and also in the reduction of cost was important. The internal auditor with the collaboration of persons in charge of departments and with the submission of relative proposals to the administration for change in the existing processes and in the productive operation, contributed to the achievement of financial profits in the economic sizes of the maternity clinic. The most important financial profits from the realization of operational audits are the following:

- a) **Restriction of loss of income** – An important part of the income of hospitals, and also the important source of cost, constitutes the sanitary material that is spent in the interventions and in the hospitalization of patients. With the narrow follow-up of process of debit of sanitary material in the accounts of patients and the continuous sensitization of personnel for the consequences of not debit of sanitary materials in the economic results of maternity clinic, the loss of income was limited. The submission of relative report about the audit findings, to the administration had given a serious awakening to nursing personnel and at the same time with the help of audits and the change of certain processes this divergence was limited by 17% as in 1998, which was hardly 2% in 1999. This rate of reduction of divergence of income at 15% meant real financial income for the company.
- b) **Restriction of cost of production** – The restriction of cost of productive process is a point, by which will be judged in future the hard competition between the private nursing units. The revelation by the department of internal auditing of counterproductive use of resources of diagnostic laboratory, led to rearrangement of productive process resulting the company profits totally to a sum of 100 thousands of Euros.
- c) **Creation of mixed delegates of evaluation** – supply of burnable materials and medical equipments.

The creation of delegates of evaluation - supply of burnable materials and medical equipment, in that participated the members of the Board of Directors (the creation of such delegates was included in the internal drawing of organization of the company and is conformed with the basic principles of equitable management and internal auditing), helped the administration in the achievement of efficient economically sound agreements and in the saving of money at the negotiations of these delegates of a total sum 152 thousands of Euros.

Consequently we see that from internal auditing savings totalling to approximately 432 thousand Euros were altered.

The assessment of financial results in the value of the company

For the assessment of financial results of internal auditing in the value of company we will use the model of discounted net cash flows with succinctly runs as under:

$$\text{Value of enterprise} = \text{NPV}_{\text{NCF}} + \text{Residual value} + \text{Value of non operational assets}$$

With regard to the individual elements of this model we can observe the following:

- **Calculation of the Net Present Value of the Net Cash Flows (NPV_{NCF})** – The method of discounted net cash flows is based on the perception that the investor is not interested so much for the accounting profits of enterprise (the difference of income - expenses), as much as for the financial surplus that the enterprise creates and it is possible for him to collect the or they can be reinvested also in the enterprise, and increase in future value of the company. The Net Present Value of the Net Cash Flows (NPV_{NCF}) is calculated as follows

$$NPV_{NCF} = \sum_{t=1}^T [NCF / (1 + i)^t]$$

where

NCF = Net Cash Flows = Profits pre taxes – Tax of Income + Depreciation

I = the discounting interest-rate of Net Cash Flows = $i_{RISK-FREE} + i_{RISK}$

For the calculation of the Net Present Value of the Net Cash Flows we will follow the following stages:

- **Calculation of Net Cash Flows (NCF)** – The annual Net Cash Flows of enterprise counterbalance the annual profits before taxes minus the income tax plus the depreciation. The real Net Cash Flows have incorporated the financial profits from the internal auditing, which were about 432 thousands Euros. Because our final aim is to show the financial results of internal auditing in the value of company it will be needed to calculate the Net Cash Flows of the company in case we didn't have internal auditing. In this case it will need to make the following hypothesis:
- Without internal audit it would not exist as consequence the realization of profits of 432 thousands of Euros with corresponding negative consequences in the configuration of Net Cash Flows.
- The distribution of total financial profits of 432 thousands of Euros we suppose that it is distributed commercially in three years (with the hypothesis that we consider as single the scrutinized period in the accumulation of financial profits from the internal auditing), or that it is distributed proportionally according to the profits of each year. For this aim we will create two scenarios for the calculation of Net Cash Flows without the internal auditing.

According to the above hypothesis the Net Cash Flows with and without the internal auditing, will be calculated at Table 1.

Table 1: Net Cash Flows with and without internal auditing for the period 1998-2000

Year	NCF with Internal Auditing (Million Euros)	NCF without Internal Auditing & Isomeric Distribution (Million Euros)	NCF without Internal Auditing & Distribution Based on Profit (Million Euros)
1998	1.3	1.2	1.2
1999	1.5	1.3	1.4
2000	2.1	1.9	1.9

- **Selection of discounting interest rate for Net Cash Flows** – The discounting interest-rate for Net Cash Flows represents the required output that the investors expect in a given level of danger in order to place their capital in a concrete investment. The discounting interest rate is constituted by two

elements without risk interest-rate and the premium against risk. The interest-rate without risk is a rate of output that the investor feels with certainty that it can acquire in a given time from the placement of his capital investment. For our analysis we will use an interest-rate without risk the nominal output of short-term Greek Government Bonds of January 1998, which amounted to 12.4%. The premium against risk is the necessary percentage with which it should be increased to arrive at the rate of discount, so that the risks of investment are incorporated. The premium of risk for our analysis will be calculated with the essential of base those who fix the model of line of securities. A particular model calculate the premium against risk of follows:

$$i_{\text{RISK}} = \beta X (\text{Rm} - \text{Rf}) = \frac{\text{Cov} (\text{Rj}, \text{Rm})}{\sigma_m^2} X (\text{Rm} - \text{Rf})$$

where

β = the systematic risk of company

Rf = the interest-rate without danger (Risk free interest rate)

Rm = the medium attribution of market

$(\text{Rm} - \text{Rf})$ = the required moreover output

Rj = the attribution of particular investment

$\text{Cov} (\text{Rj}, \text{Rm})$ = the covariance between the attribution of investment and the output of market

σ_m^2 = the variance of output of market

Applying the particular model in our analysis for the calculation of premium against risk we can postulate the following:

- **Estimate of systematic danger β** – The examined Greek private maternity clinic is not a listed company in the stock market and for this reason we used factor β of company “Athens Medical Center”, the older listed company of health sector in Greece in the stock market. The factor β was 0.88. We consider therefore that also the examined Greek private maternity clinic has the same systematic risk with that of “Athens Medical Center”. This practically means that if the enterprise was listed in the stock market, the price of its shares would have altered on average 88% for each change of 100% of the market.
- **Estimate of required moreover output $(\text{Rm} - \text{Rf})$** – According to studies that have been conducted in western money markets this percentage is between 8,5% and 9%, while in relative research that was conducted in Greece this percentage was appreciated in 10%. For our analysis we use the percentage of 10%.

According to the above hypothesis we can calculate the premium against risk as follows:

$$i_{\text{RISK}} = \beta X (\text{Rm} - \text{Rf}) = 0.88 X 10\% = 8.8\%$$

Having calculated the risk free rate and the premium against risk we can calculate the discounted interest-rate of Net Cash Flows. As we analyzed above the discounted interest-rate is calculated as follows:

$$i = i_{\text{RISK FREE}} + i_{\text{RISK}} = 12.4\% + 8.8\% = 21.2\%$$

- **Estimate of residual value of enterprise** – The residual value of enterprise is the value that the enterprise will have at the end of examined period. For our analysis we shall presume that the residual value at the end of three-year period is appreciated in the present value of Net Cash Flows it is expected that the enterprise will realize in the following two years and that the Net Cash Flows are appreciated in the mean of Net Cash Flows of three-year period. According to Table 1 the mean of Net Cash Flows of three-year period is appreciated in the 1,6 millions of Euros (for the case with internal auditing) and in the 1.47 millions of Euros (for the two scenarios without internal auditing).
- **Estimate of value of non operational assets** – The value of non operational assets includes those which are not essential for the realization of operational objectives of the enterprise and usually are acquired for investment purposes or are intended for sale. In the examined period the company does not possess such assets and consequently the value of particular element is zero.

In this point we have determined all the elements that will allow us to calculate the value of examined Greek private maternity clinic with and without internal auditing, as this results from the model of discounted Net Cash Flows. For the creation of relative tables of value we will need of course to make the following additional hypothesis:

- **Hypothesis about the discounted interest-rate** – The internal auditing has multiple advantages and can decrease the risks of enterprises. The internal control system is drawn aiming at the compliance of a) operation of enterprise according to the policy of administration of b) precision and reliability of information c) conformity of enterprise with the laws d) the safety of assets e) the economic and effective use of available resources and f) the determined operational aims of enterprise. Consequently after the risk of enterprise is decreased and the premium of risk is decreased and consequently the total interest-rate of discount becomes smaller increasing the net present value of Net Cash Flows. From the analysis we infer that the investors for the determination of suitable interest-rate of discount take into consideration the interest-rate without risk and the premium against risk. As we calculated above the first is fixed at 12.4% and the second in 21.2%. Theoretically we found that the internal auditing leads to reduction of risk, we will suppose that in the case of calculation of value with internal auditing the discounted interest-rate used will be between the 12.4% (extreme affair that the risk is eliminated completely) and 21.2% (the maximum limit of discount interest-rate according to the model of market of securities). Because in practice, the final elimination of risk is difficult to be achieved only with the internal auditing, will calculate the value of company and with two intermediary interest-rates the 15.3% and the 18.2%, that abstain roughly at the same percentage from the two extreme interest-rates the 12.4% and 21.2%. In other words we will calculate in the case of internal auditing 4 different scenarios of value. Finally in the case of value of maternity clinic without internal auditing we will use the total discounted interest-rate of 21.2% from model of market of securities.
- **Hypothesis about the residual value** – For the calculation and the discount of residual value we will use the same interest-rate of discount of each case.

According to the above additional hypothesis and the elements that we analyzed in this particular article we have calculated the value of the company and summarized the elements of 6 scenarios that are created in Table 2 which follows at the end of the article.

Table 2: Scenarios of value of company for period 1998-2000

Scenario	Interest-rate of discount (%)	Total value (Million of Euros)
1st: With internal auditing	12.4%	5.7
2nd: With internal auditing	15.3%	5.3
3rd: With internal auditing	18.2%	5.0
4th: With internal auditing	21.2%	4.6
5th: Without internal auditing /isomeric distribution	21.2%	4.1
6th: Without internal auditing /distribution based to profits	21.2%	4.2

From the review of above tables and with the base of the hypothesis that have been postulated during the certain conclusions can be drawn with regard to the change of value of the company as a consequence of internal auditing. From the comparison of the elements of the 6 scenarios we have the following conclusions:

- **Comparison between 1st and 5th scenario** – The 1st scenario is more positive in the analysis of financial results. This scenario results the bigger increase in the value of fortune of examined Greek private maternity clinic with the internal auditing, which amounts to the sum of $5.7 - 4.1 = 1.6$ millions of Euros. The particular increase means according to the hypotheses that were followed it appears that the value of enterprise was increased in a three-year time period by the internal auditing at 36%.
- **Comparison between 1st and 6th scenario** – The increase in the value of fortune of examined Greek private maternity clinic with the internal auditing amounts in the sum of $5.7 - 4.2 = 1.5$ millions of Euros. The particular increase means that according to the hypotheses that were followed it appears that the value of enterprise was increased in a three-year time period by the internal auditing at 35%.
- **Comparison between 2nd and 5th scenario** – The increase in the value of fortune of examined Greek private maternity clinic with the internal auditing amounts in the sum of $5.3 - 4.1 = 1.2$ millions of Euros. The particular increase means that according to the hypotheses that were followed it appears that the value of enterprise was increased in a three-year time period by the internal auditing at 26%.
- **Comparison between 2nd and 6th scenario** – The increase in the value of fortune of examined Greek private maternity clinic with the internal auditing amounts in the sum of $5.3 - 4.2 = 1.1$ millions of Euros. The particular increase means that according to the hypotheses that were followed it appears that the value of enterprise was increased in a three-year time period by the internal auditing at 26%.
- **Comparison between 3rd and 5th scenario** – The increase in the value of fortune of examined Greek private maternity clinic with the internal auditing amounts in the sum of $5 - 4.1 = 0.9$ millions of Euros. The particular increase means that according to the hypotheses that were followed it appears that the value of enterprise was increased in a three-year time period by the internal auditing at 18%.
- **Comparison between 3rd and 6th scenario** – The increase in the value of fortune of examined Greek private maternity clinic with the internal auditing amounts in the sum of $5 - 4.2 = 0.8$ millions of Euros. The particular increase means that according to the hypotheses that were followed it appears that the value of enterprise was increased in a three-year time period by the internal auditing at 17%.
- **Comparison between 4th and 5th scenario** – The increase in the value of fortune of examined Greek private maternity clinic with the internal auditing amounts in the sum of $4.6 - 4.1 = 0.5$ millions of Euros. The particular increase means that according to the hypotheses that were followed it appears that the value of enterprise was increased in a three-year time period by the internal auditing at 11%.
- **Comparison between 4th and 6th scenario** – The increase in the value of fortune of examined Greek private maternity clinic with the internal auditing amounts in the sum of $4.6 - 4.2 = 0.4$ millions of Euros. The particular increase means that according to the hypotheses that were followed it appears that the value of enterprise was increased in a three-year time period by the internal auditing at 10%. The comparison of these 2 scenarios shows the lower percentage increase in the value of company from the internal auditing.

Deductively from the comparison of individual cases we realize that with base and the hypotheses that were followed it appears that the internal auditing had financial profits for the examined Greek private maternity clinic. From the analysis that preceded and was supported in the financial figures of the company and in line of hypotheses it appears that its value was increased in a three-years period of time at a sum that varies between 0.4 and 1.6 millions of Euros or in percentage increase between 10% and 36%.

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