

Aspects of Using the Expert Systems at a Large Scale in the Financial and Bookkeeping Activity

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Abstract: The use of the expert systems at a large scale in the field of accountancy must take into consideration the possibilities of knowledge modelling. The reasoning and the symbolic knowledge are present in any activity. Wherever the knowledge administrated by experts is present, there is also the possibility of expert systems application.

1 The Specific Problems

The financial and bookkeeping field benefits of a coherent system of knowledge. We must ask what part of the reasoning and interpretation of the bookkeeping activity could be approached by the expert systems?

At the nowadays technical and methodological level, a large part of the bookkeeping reasoning may be approached by the expert systems.

Starting from the bookkeeping activity, continuing with data processing of the primary documents, checking the legality and opportunity of operations and up to the interpretation of the information of synthesis - we find out that we are within the area of the symbolic processing.

In order to settle the outcome of the exercise, we have to conclude the counts of expenses corresponding to the current period, by undertaking them in the debit of the 121 account “Profit and losses” as well as to conclude the accounts of incomes corresponding to the same current period, by undertaking the credit balances in the credit of 121 account “Profit and losses”.

At the end of the exercise, the situation in the 121 account “Profit and losses”, without the registration of incomes and expenses for the month of December, looks as below:

Cumulative expenses until 30 November, including expenses for the profit tax	Cumulative incomes until 30 November
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Balance in hand – Net profit	Balance due – Net loss
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At the conclusion of the financial exercise, 121 account of “Profit and losses” contains the expenses for the month of December, including also the calculated tax for the month of December and the incomes achieved in the same month. The mention is that the size of the profit tax for the month of December is equal with the calculated tax for the month of November.

There must be made a distinction between the bookkeeping outcome and the fiscal outcome.

The bookkeeping outcome represents the global sum of the profit or loss of the financial exercise, mentioned in the 121 account of “Profit and losses”, before taxation.

The fiscal outcome represents the taxable profit or the fiscal loss of the exercise, settled according to the fiscal rules. In terms of the fiscal outcome it is calculated the exigible volume of taxes (or reimbursable ones).

The taxable income is calculated as difference between the incomes achieved from any source (V) and the expenses made for their achievement (Ch), within a fiscal year, at which there are added the un-deductible expenses (Chn) and there are subtracted the untaxable incomes (Vn) or the fiscal deductions. From the achieved outcome there must be subtracted, if applicable, the fiscal loss that had to be recovered from the previous years (Pfr).

$$\text{Taxable profit} = V - Ch + Chn - Vn - Pfr$$

The untaxable incomes considered for the determination of the taxable profit are:

- a) the dividends received by a Romanian juridical person from another Romanian juridical person,
- b) the favourable differences of value concerning the titles of participation, registered as a consequence of reserves, benefits or agios on issue absorption, or by the compensation of certain debts at the company where the participations are held;
- c) the incomes resulted by debts annulation – who were considered as undeductible expenses, as well as by provisions annulation – for which there wasn't granted deduction or of the incomes achieved from the recovery of some undeductible expenses;
- d) other untaxable incomes, expressly mentioned in special documents of reference.

When calculating the taxable profit, expenses are deductible if they correspond to the taxable incomes, only.

When calculating the taxable profit, the following amounts used for the setting up or increase of the reserves and provisions are deductible:

- a) the reserve, within 5% from the bookkeeping profit, until it reaches the fifth part from the subscribed and paid-up capital, according to the provisions of the Law 31/1990 regarding the trading companies, republished, with the subsequent changes and supplements;
- b) In the case of the banks and authorized credit cooperatives, the obligatory provisions settled up according to the recommendations of the National Bank of Romania. The same regime also applies to the guaranty funds;
- c) The technical reserves calculated by the insurance and re-insurance companies, set up following the provisions of the Law 32/2000 regarding the insurance companies and insurance monitoring, with the subsequent modifications. There are undeductible the amounts used for the reserves setting up or increase concerning the contracts given in re-insurance.

When calculating the taxable profit, there are deductible:

- a) the expenses of sponsorship incurred according to the law, within the limit of 5%, applied over the difference from the total incomes and total expenses, excises included, without the expenses for profit tax and expenses with sponsorship and/or patronage,
- b) perishables, within the limits foreseen in the norms approved by Government Decision, that will be elaborated in 90 days from the date of this law application.

According to art. 2 of the Law 414/2002 regarding the profit tax, the taxation quota represents 25%, except the cases foreseen by the above-mentioned law.

For the National Bank of Romania, the taxation quota on profit represents 80% and applies over the incomes obtained after subtracting the deductible expenses and of the reserve fund.

The taxpayers who obtain incomes from activities developed based on license in the free area, pay a taxation quota on profit of 5% for the taxable profit corresponding to these incomes, until 31 December 2004.

The taxpayers who have cashed - from a bank account in Romania -, incomes in foreign currency, proceeding from the export activities with goods and/or services, achieved from the own activity, directly or by a contract of commission, pay a taxation quota on profit of 6% for the part from the taxable profit corresponding to the these incomes weighting from the total volume of incomes. The amount afferent to the reduction of the taxation quota of profit from 25%, is distributed at the end of the year as own source of financing, within the profit remained after the registration of the expenses for the profit tax. The services performing at which apply the reduced quota of profit are those for which the beneficiary of these services is in abroad.

The trading companies may distribute the profit for:

- Setting up legal reserves;
- Covering the fiscal losses from the previous years.

These two assignments are made from the gross profit.

From the net profit there are made assignments for:

- Employees participation at the profit
- Reserves setting up, others then the legal ones;
- Dividends of payment.

E.g.:

Let's consider that the gross profit obtained at the end of a financial exercise is of 150.000.000 lei. The General Assembly of the Shareholders decides the following distribution of the profit:

- legal reserves 7.500.000 lei
- statutory reserves 30.000.000 lei
- employees participation at profit 36.875.000 lei
- dividends 40.000.000 lei
- profit tax registration:

$$25\% \times (150.000.000 - 7.500.000) = 36.625.000 \text{ lei}$$

691 "Expenses with = 441 "Profit tax" the tax profit"	35.625.000	35.625.000
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- conclusion of 691 account "Expenses with the profit tax"

121 "Profit and losses" = 691 "Expenses with the profit tax"	35.625.000	35.625.000
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- profit distribution

129 "Profit distribution" = %	114.375.000	
1061 "Legal reserves"		7.500.000
117 "Reported output"		106.875.000

If the final balance of 121 account "Profit and losses" is a debit balance, the patrimonial unit concludes the financial exercise with a loss. The annual loss declared by the taxpayers will be recovered from the taxable profit of the following financial exercises, but not exceeding 5 consecutive years.

The loss recovery will be made in the order of their registration, at each term of payment for the profit tax, according to the legal provisions in force in the year of their registration. If the recovery of the fiscal loss is made from the legal reserves, set up from the profit before taxation, the rebuilt of the legal reserve will be no longer an amount deductible at the calculation of the taxable profit.

When the shareholders or the managing board want to understand the meaning of each position from the balance or from the account of profit and loss, they have to consider the intern and the extern factors, to combine the available indicators and compare them.

We are working with hypotheses that might confirm, or not, we are taking into consideration the risk and the uncertainty, we have to deal with incomplete or imprecise information, and the reasoning of expert type will lead to pertinent solutions.

Conclusions

The conclusion that can be drawn from the above-mentioned facts is that in the financial and bookkeeping field we face to a mixt knowledge, based on algorithms and heuristics, and the essential problem is to find out these categories of knowledge in a correct manner and integrate them accordingly.

The expert systems provide the fertile frame for the unitary application of the bookkeeping principles and rules. It is provided thus, a reliable interface for undertaking the information in the existing systems. The fundament of knowledge integrates the model of the financial bookkeeping, as well as the model of the analytic bookkeeping and the control activity.

The concept of model of expert system extended to the financial and bookkeeping activity contains as nucleus the components of expert type, as the engine of inferences, simulation modules specific to the support systems for decisions, as well as procedural modules and of interface with classic applications.

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