Expert Systems Aplicated in Book-Keeping

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Abstract: Specialists preoccupation was straighten to words the solving problems about knowledge taking decisions. In this way the expert system appeared. The purpose is the reproduction of the computer of human reasoning that is why the first problem that must be taken care of is knowing how humans think.

1   General Description

Any economical unit is an open system that interactionet always with external medium (environment). Some components of the external medium have direct effects on the units activity, some indirect, throught the other components. The elements with direct action are: purveyors, clients, competition, money market, financial and currency, and the elements with indirect action form a general medium of economical unit that are made of: a macroeconomical medium, technological medium, and political medium.

Within the economical activity, about the supplying process, production and selling, are made values exchanges between the economical unit and the actions components with direct action on the external medium. All these exchanges form the mould of external fluxes of which origins or destination is on external medium agent.

Technical evolution and systems of calculation that took place in the last period of time was followed by the evolution of economical informatics.

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Ways of ration are plenty, and they are divided into two:

-   deduction which allows to obtain conclusions learning from rules who's premises are checked;

- inductions that leads to rules leaving from partial observations, determined by predefined schemes [4].

A problem, in the systems based on the artificial wit are expresses formal through a representation method of knowledge [2]:

- problem data – are descriptions referring at abstract objects or real, that make the universe of the problem;

- problem conditions – are descriptions which are applied on the mentioned objectives or rules that obeys to them;

- unknown of the problem - are objects, proprieties or conditions unexpressed in the problem text.

Taking into consideration the expert system function: interpretation, diagnostics, formation, looking over, prevision, planification, conception, the domains are very large.

From a chronological point of view, we have to mention the medicine domains and biology. The functions used by the diagnostic and therapeutics prescription.

Technical diagnostic and maintaining make the object of the many expert systems.

In the economical and financial bookkeeping, these function of diagnostic are the center of preoccupation. Elaborating the application in the domains of assistance decisions, planifications function, diagnostic and stimulation can be combined.

Reality operation criterions suppose that all material elements recorded in bookkeeping evidence are the some with those physical identified and that all elements of active, passive, incomes and sells reflects the real values and not fictive or those who don't concern the firm. In this way, all the informations presented by the annual financial situations must be cheeked and justified.

Bookkeeping is the main source of information for doing the financial – bookkeeping audit. The informational system of bookkeeping has two classic function [6]:

- to determinate the global result of exploatation and the net result of the administration period for establishing the fiscal result;

- to present the patrimonial situation of the firm with the help of the bookkeeping scales.

Through these differed aspects, general bookkeeping form an instrument of analyses not unelectable for the control activity.

2 The Specific Problems

The task that it must fulfill the expert system must be very well defined.

The main characteristics that should be taken into consideration are:

- to use the knowledge from a very well known domain;
- not to be simple;
- to be dominated by one or more available experts;
- to be structureted.

An evaluating problem is asked in these cases:

- the evaluation exists, but the specialist is very busy and be can't be approached;
- more experts are specialists are necessary and they can't compare their points of view;
- methods of solving or applying the rules are different and depends on those who described them;
- necessity of reaching a human expertise that the time to be shortened and a higher capacity of learning.

Expert systems from the bookkeeping domain help specialists from these field, do hold on the great number of bookkeeping norms, and also at the complexity of bonk accounts plans and the norms of using them.

Taking into consideration the categories of users of informations offered by financial bookkeeping, the area of application of expert systems can be resumed at the next activities:

- leading the unit (firm) – in order to maintain financial balance and measuring the performances of the firm, rent abilities, the analysis of paying systems;
- for the purveyors, the financial situation analysis and the solvability y the firm;
- for banks the risck evaluation on giving credits;
- solvability and credibility of potencial clients.

If we take an exemple of expert system that works in steps we can stop at GREATE. For elaborating the financial reports, these system works in thre stages [7]:

1 determination (fiding)the accounts beeing used
2 identification (identyfing) the links between accounts;

3   looking for alternative possibilities.

Using the financial – bookkepping expert sastems they determineted modifications in the way of planing and realising financial control.

Managerial book keeping having having an important position in deciding procces of anz firm occuppies an imortant place in applications of expert systems.

Talking more and more about using the expert system in the linyar programing applicated in the costs bugeting throught which the relative aspects are pointed, at forming problems about also at analysing the results.

An important problem for determination of production costs is representeed through distribute expenses by products and the unit of product.

Indirect expenses are those that concern fabrication of more products, performances of more working, services and comends, phases, activities, asobjects of calculation within the framework of a workshop or even in the firm. This kind of spend can't be identified on a certain object of calculation (product, work paper, services, commands), in the moment of performing them, and because of that them can't be included direct in the costs of these, but indirect, through distribution on the conventional criteria's. Towards the indirect spends, the directs ones identifies on a certain objects of calculation (product, service, work paper, command), in the moment of performance and they are included in the respective objects costs.

The role of expert systems are manifested both I the selection of indicators and in the diagnostigation of situations.

Financial – book keeping informations play on important role at a strategic level I the diagnostic stage and the realization of choose strategies.

Considerable extension of using expert system due o the fact that development of generating system expert, which represent the vacuum expert system, applicable in different domains.

An generating expert system is formed generally from an engine of interferences or searching, users interference and ways that make cashier the development of a expert system.

Such a system needs facts and rules. Facts are stored in a storage base of data, and rules in a base of rules.

Regularity means conformations with the settlement, or in absence of them, with the principle general admitted. These rules are fix on the low and on the professional organizations (Corps of experts Book keeping and authorized Book keeping from Romania). Conform regulation watching the application of the book keeping Low and International Standards of Book keeping, the juridical persons from Romania have the obligation to organize and conduct book keeping following the next principle of general book keeping

- the principle of continuations activities;
- the principle of permanent methods;
- the principle of carrefuly;
- the principle of independent exercises;
- the principle of separate evaluation of active and passive;
- the principle of intangibility balance sheet of opening;
- the principle of uncompensation;
- the principle of economical prevail cupon juridic;
- the principle of semnification brink.

A correct evaluation made, on the base of the principle mentioned earlier, assure the condition of performing a good image of the patrimony financial situation and the exercise result.

For example if we take the base of facts and the base of rules necessary for a system expert for caring out a book keeping analysis in order to establish a link between accounts we will have next:

Base of facts contain accounts representative from the plan of accounts.

101 Social capital is Passive account

2111 Domains (Fields) is Active account

301 Prime materials is Active account

302 Consumption materials in Active account

401 Purveyors is Passive account

51321 Account in banks in lei is Active account

531 Account house is Active

Base of rules includes the transpose in rules of production of the four rules of function of the accounts.

R1. If the account is Active AND account registers a increase

     Then the account utters

R2. If the Account is Active AND accounts registers a diminution

     Then the account is credited

R3. If the account is Passive AND accounts registers a increase

     Then the account is credited

R4. If the account is Passive AND account registers a diminution

      Then the account utters

If we want to analyze a book keeping operation, through the dialog mode the expert system unrolls the next dialog:

    1.   Which accounts goes in to function?

    The user answer let's say + hat will be

    401 Purveyors

    5121 Bank accounts in lei

The rules base is crossed with the four rules that ascertain that the R4 is true and the account 401 Purveyors is utter.

The some think will happen for account 5121, that after going the base of rules ascertain that 5121 Bank accounts in lei are credited.

In these way will happen with all accounts that will form that book keeping registry. The advantages that should be taken into consideration for seeing the opportunity of expert system are:

- it can give you admises when the human expert is missing;
- it can work on without a break;
- it can be multiplyed;
- it doesn't have politic motivation;
- it's not partial;
- it can epress the rational line used for each problem solved;
- they know to react at uncertany;

Conclusions

In conclusions an expert system can be created also for simple problems, of small dimension lust also for complex problems. Problems of small dimensions use the human expert less, and the construction of data base being build quite fast. For the complex problems the human expert is requested for a long period of time and for elaborating the knowledge data base, requires a longer period of time. From here we can conclude that the idea of creating an expert system for problems of small and middle dimension.

In case the artificial wit on a large scale in a unit, the entire organization mulct be thin ked again. If the three parameters are analyzed organizational structures, differences of the activities decentralizations, we can find that the impact is considerable. At the level of financial book keeping activity, the organizational structures must hold consideration about the financial book keeping, transparence.

Also there is a contribution to a standardization of decisions and of destandardization of these. Registration of a big number of expertise's rich are deducting cost (lower costs) of using expert system.

References

[1] Airinei, D. – Sisteme expert în activitatea financiar-contabilă, Editura Junimea, Iaşi, 1997

[2] Călin, O. – Contabilitate de gestiune, Ed. Tribuna Economică, Bucureşti, 2000

[3] Gervais, M. - Côntrole de gestion et strategie de l'entreprise, Economica, Paris, 1991, p. 22

[4] Holsaple, C. W., Whinston, A. B. – L'utilisation des systemes experts dans l'entreprise, Les editions d'organisation, Paris, 1989

[5] Savall, H., Zardete, V.- Le nôuveau controle de gestion, Editions Eyrolles, Paris, 1993, p. 28

[6] Zaharie, D., Năstase, P. – Sisteme expert de gestiune, Editura Romcart, Bucureşti, 1993

[7] Zaharia, M., Cârstea, C., Sălăgean, L. – Inteligenţa artificială şi sisteme expert în asistarea deciziilor economice, Editura Economică, Bucureşti, 2003