Oana DRĂGAN
The Bucharest University of Economic Studies

CONCEPT MAPS – IMPROVEMENT TOOL FOR ACCOUNTING INFORMATION

Empirical study

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Abstract

Concept maps, viewed as an innovative method for learning and evolution, are used to synthesize the knowledge of the participants to the learning process and are based on the main concepts and the relationship between them. They offer a visual representation of the information held by an individual, caught through his ability to synthesize the notions/the key concepts. The current study intends to show the importance and efficiency of using the concept maps in economics, especially in the accounting department, a method designed to settle the learning process and, also, to offer a sustainable value. The current empirical study is based on the manner in which the accounting knowledge is displayed by a sample group of 19 practitioners. The originality, the relevance of the concept maps method is underlined by the idea of the practitioners creating their own concept maps designed to point out the importance of the cognitive structure when describing the relationships between different accounting principles.

The accounting principles are a set of rules which helps the institutions issuing accounting information measure, clarify and present the financial information. At the same time, they are general rules which can be applied in many ways and which give rise to different accounting norms.

We all know that the "accounting principle" is based on an array of pros and cons regarding its relevant character in the economic activity of the companies. Most of the practitioners think that applying the accounting principles as they are presented nowadays may lead to the underestimation of the company patrimony consequently they don't lead to an economic reality that meets the exact definition as it appears in the specialized literature.

Reading the specialized literature, we will find a series of accounting principles which can be applied to the economic life of the company but, as far as we are concern, we will discuss about two of the most argued principles, namely: *true and fair view* and *prudence principle/creative accounting.*

The term *true and fair view* has a British origin and one of the few definitions (not till this very day does the true and fair view have a generally accepted definition) belongs to Lee who, in 1982, said: "Nowadays, true and fair view has become a term used in arts. It supposes the provision of accounts set up in accordance with generally accepted accounting principles, the use of very precise figures, the accomplishment of reasonable assessments, and their adjustment in such a manner that irrespective of current accounting practices' limits the most objective view could be supplied with no significant errors, alterations, influences or omissions. In other words, the content and operation of the law must be taken into account."

Therefore, the true and fair view represents the quality the accounting information should have, the result it must reach. *Fidelity* implies complete, clear, comprehensible information that can be easily exploited. But true and fair view does not confront itself with an exact copy of reality. The true and fair view is represented by "the view which can be trusted."

The traditional European accounting rules did not mention notions such as "fidelity," "loyalty" as concerns the accounting report. The objective of the true and fair view of the financial situations, as notion, was borrowed from the British and introduced by the 6th Directive in 25th of July 1978.

As Niculae Feleagă (1997) asserts, the prudence consists in not presenting a too favorable view by ignoring certain facts or events that can have a future impact on the financial situations. This implicit reference to the objective of the accounting report is very important as it avoids deviation from the prudence principle: we are not talking about the institutions issuing accounting information in the sense of being "prudent" with the purpose of protecting themselves, but with the purpose of protecting the receiver and the user of the information, who must not rely his/her analyses on the overrated patrimony. Prudence can be found in sincerity and must serve to the notion of "true and fair view".

The managers' main problem is to know which would be their ability to have a clear and unambiguous image on reality, by verifying the accounts, supposing they have no connection to the elaboration process of the financial situations and, therefore, wouldn't have any detailed knowledge about the financial situation and the achievements of the company. Being a coded language, the accounting becomes comprehensible only for those who master the codification system of this kind of language practically the user must know the language of figures. Thus, as it results from the above-mentioned facts, the true and fair view requires that both those who elaborate it and those who use it should have special knowledge.

The complexity of the economic life within the competition conditions imposed by the market economy and, at the same time, by the phenomenon of globalization entails the importance of information when making decisions regarding the presentation of a true and fair view of the patrimony. The quality of the accounting information influences the quality of the current decisions, as well as the future decisions and implicitly, the results pursuant the decision. The creative accounting results from the complexity of the economic reality and some psychological facts characteristic to the human nature. Naser (1993) says that "accounts handling is an old accounting problem that started in 1920." The studies concerning the creative accounting have increased within the last years, especially regarding the existence and the taxonomy of the creative accounting practices. Sen and Inanga have underlined in their study that the use of creative accounting has increased in the recently developed countries.

The specialized literature does not present a consensus as concerns the definition of the creative accounting concept. Thus, the specialized literature presents different approaches, starting with the idea that the creative accounting concept is generally used to describe the process through which the professional accountants use their knowledge in order to handle the figures included in the annual accounts.

As concerns the discipline of Economics and Accounting, the practitioners are confronted with aspects linked to the fidelity of the financial situations, taking into consideration that, in reality, we also use key-factors of the creative accounting. The theory applied in order to learn these rules is

not always very clear to those who study it. In this respect, even if our country has an education system based on the responsibility of rendering exact information, it does not guarantee the applicability of true and fair view as practice principle, thus we encourage the use of some innovative pedagogical tools designed to help the improvement of information so that we could come as close as possible to reality. Therefore, the use of concept maps can be taken into consideration in order to underline the necessity of reflecting the reality of the economic activities. According to Berger and Luckmann (1966), *society is a reality created by its members, therefore it is necessary that we should take advantage of their knowledge and urge them to ceaselessly think about the process of insuring the reliability of financial information*.

First described by the psycho-pedagogue Joseph Novak in 1977, the concept maps are presented as a visual representation technique of the information structure which depicts the relationship between the concepts of a field of activity. The development of these practices is based on Ausubel's theory, according to which the solid learning of these new concepts depends on the concepts that already exist in the student's mind and the relationships between them. More exactly, the new information makes sense when you find the premises on which to build the new accumulation of information in the student's mind. The concept maps give special importance to creating relationships between concepts during the learning process.

More exactly, the concept maps or the *cognitive maps* can be defined as mirrors reflecting the way in which the person who elaborates them thinks, feels and understands. They represent a diagram, becoming an important tool for teaching, learning, research and evaluation at all levels and for all disciplines.

We can state that the concept maps reflect the cognitive and emotional networks developed over the years regarding certain notions. They, and especially their transformations, reflect knowledge emergence. Thus, the cognitive networks are being resumed, the new ideas are being included in a cognitive structure and the already aggregated knowledge is being rearranged. The new ideas take shape on the existing cognitive patterns, and thus we underline the importance of the individual's cognitive background when creating such patterns.

Mircea Miclea (1998) states that: "the connectionist modeling of knowledge we already have in our memory takes place through interactive networks. It is believed that knowledge is distributed on the connections between the units of the network. The network has both visible units (= which can be accessed from the environment of the network), and hidden units (= which can be accessed only through the visible units). Each mesh point contains an information item, knowledge about a certain object which results from their interaction."

The concept maps can have as objective underlining the way in which an individual sees the relationships between facts, ideas and people (White & Gunstone, 1992), solves the existing problems and uses his/her memory. Once built, they can be extended in order to host new concepts, thus allowing the individuals to connect new information to the already existing one (Passmore, 2004) and to build "a structure concepts intertwined with different hierarchical levels, bifurcations and reticules" (Quinn et al., 2003). The use of concept maps is much more far-reaching. According to Novak & Canas (2008), they help students learn, researchers create new knowledge, managers organize and better handle the organizations, writers write and evaluators estimate the knowledge.

Used in education, in political studies and the philosophy of science, the concept maps, the cognitive maps and the argument forms deliver information and visual representations of the knowledge structures and of the debate methods. In education, Novak has developed a theory of the concept map that can be applied at a large scale when evaluating the learning process in school. Continuing the research, Novak and Gowin (1984) analyze the concept maps that represent the students' knowledge.

Most of the studies take into consideration the role of concept maps in education, as these tools stimulate creativity (Chevrier & Charbonneau, 1992) and evaluate the learning efficiency (Strahan, 1989). Other studies use the concept maps as means of data collecting and/or as means of analyzing data. According to Jackson & Trochim (2002), they represent the accurate method to analyze the answers to open questions and to questions which refer to encrypted concept scale or scheme, in a short period of time and with a greater analytical rigor as compared to other existing techniques. We mainly refer to the development of the expert systems, as well as to capturing and storing the know-how (Coffey & Hoffman, 2003).

It is not easy using the concept maps. Taking into consideration that the textual representations are by far adopted in education, the familiarization with a new method of representing the knowledge based on graphics becomes difficult (Basque & Pudelko, 2004). The studies have shown that many subjects confuse the types of knowledge (Basque et al., 2003), cannot break down the sentences into concepts and relations or reverse the relationships between concepts (Faletti & Fisher, 1996).

Actually, the essence of knowledge consists in the way in which knowledge is structured. In other words, not the amount of knowledge but the relationships between the assimilated knowledge are important so that you could use it afterwards to settle new knowledge. The performance depends on the way in which each individual organizes his/her experience and ideas as compared to the integrated structures and their applicability. A potential tool for capturing the important aspects of these concept interrelations can be these very concept maps.

The concept maps are frequently used as instructional tools rather than evaluation process.

If the concept maps are used as tools for measuring the structure and organization of the individuals' knowledge, it takes time and effort in order to underline the impact of different implementation technique (strictly supervised or unsupervised) on the connections that the individuals have.

Novak and Gowin (1984) describe the logic of the concept map by defining three key-terms: *concept, statement* and *learning*. The statements make the connection between the concepts; they must be clear and complete at the same time, as well as accessible; learning refers to the active building behavior of the new statements.

The concept map is typically a diagram consisting in *boxes* and labeled *arrows*. The boxes correspond to the important terms (concepts are listed) belonging to a field of activity. The arrows represent the relationship between two concepts (boxes); the indication reveals the way in which the two concepts interlink, the way in which they are connected.

The combination between two concept boxes, including the indication on the arrow, forms a logical statement, the key-element of the concept map and the smallest unit used to evaluate the validity of the relationship expressed between the two notions. Thus, the concept maps represent important aspects of the concept system that an individual has in a certain field of activity.

The study of the specialized literature reveals the fact that the concept maps have not been used when training in accounting, although they exist for over 30 years. Instead, the United States and other countries have used them in order to teach an array of disciplines and lately, they have been used as a base for developing the expert systems (Ford et all., 1991) or as means of storing the information by NASA (Coffey et al., 1999).

As far as I'm concerned, I used the concept map as a tool for learning/settling my accounting knowledge. The study included a sample group of 19 individuals who practice accounting and who were asked to create a concept map that answered a precise question, namely: "Is the true and fair view a solution or an obstacle as far as the creative accounting is concerned?" In our field work we have to deal with a series of obstacles referring to the true and fair view and the legal games of the creative accounting, therefore I considered that a study which underlines the main factor that could lead to a long term learning process is in order.

Methodological issues: choosing the sample group and analyzing the results

The organization science uses frequently three paradigms: positivist, interpretivist and constructivist. While the positivist paradigm tries to explain reality based on hypothesis identified in the theoretical approaches, the other two try to understand the phenomena and to build reality.

Thus, the interpretivism tries to interpret the meanings the people give to certain facts from reality, to certain intentions and motivations by direct integration in the studied phenomenon. The constructivism, on the other hand, enables the researches to build a complex reality. The current study presents a constructive approach by interpreting the concept maps created by the individuals who practice accounting.

Choosing the sample group

The sample group includes 19 Romanian practitioners who work for a multinational corporation, in the accounting department. The sample group is homogenous as regards basic training, more exactly all practitioners have knowledge in economics, and different as regards the professional experience in accounting and the cognitive structure and age of each practitioner. Based on the professional experience, we divided the sample group into: junior practitioners, with a 7 year experience, and senior practitioners, with an experience of over 8 years. The profile of the practitioners is described in tables 1 and 2.

Data collection

Each practitioner was asked to draw a concept map in which to describe, from a concept point of view, the relationship between the true and fair view as scope of each organization vs. the economic reality, creative accounting. For a successful study, the practitioners were explained the notion of "concept map," were given an example of concept map and were handed a list of 98 concepts necessary for the creation of the map, stressing that the list is not compulsory, each practitioner being able to use other concepts form his/her personal cognitive background. The practitioners worked individually when creating the map. They couldn't interact and were not influenced in their approach by the researcher, who offered them only technical and methodological support. The concept maps were created manually, without the use of any specialized informatics tool.

Data analysis:

The concept maps created by the 19 practitioners were analyzed from the point of view of the architecture and of the content, in order to identify the ability of improving the already acquired knowledge using the previous cognitive background of each practitioner, the cognitive dimension being an important part during this process (Piaget – 1932 and Kohlberg – 1969). The data were processed manually, without using any informatics software.

The first step was to analyze the architecture of the concept maps in order to establish if there is a correlation between their arborescence and the practitioners' experience. Using this hypothesis, I noticed that the arborescence of the concept maps is not influenced by the practitioners' professional experience, as there were ramified concept maps created by the junior practitioners. I must specify the fact that, from the point of view of the scientific context, of the thorough understanding of the concepts, the maps of the senior practitioners stands out through an array of notions which, transposed on a map, give sense to the initial question of the study, namely: "Is the true and fair view a solution or an obstacle as far as the creative accounting is concerned?"

The next step when analyzing the concept maps was to calculate the number of concepts used from the initial list that are connected to the term of true and fair view, respectively creative accounting and the number of concepts belonging to the cognitive background of the participants used in order to underline the role of the true and fair view vs. creative accounting. Most of the participants used the concepts from the list, but there were two concept maps created by two seniors who presented other concepts. There were also unused concepts, as they are presented in table 4.

Thus, we can notice that the senior practitioners used a smaller number of concepts in order to create their concept maps, but these concepts underline more deeply the relationship between true and fair view and the creative accounting.

Conclusions:

The results of the current study show the efficiency of using concept maps for a better understanding of the connection between true and fair view and the creative accounting. We can also notice that at the present, the cognitive structure of the individual exceeds his/her professional experience, the maps of the senior practitioners not being too different from those of the junior practitioners, which proves the interest of the junior practitioners in underlining the connections between the concepts with the purpose of transmitting the final information using modern learning and improvement methods as concerns knowledge. The junior practitioners concentrated on "the true and fair view" as main notion, whereas for the senior practitioners, concepts like "investors," "accounting principles" and "financial statements" were more important. Although this method cannot be easily applied, the concept maps can focus the individual's attention on what he/she perceives as a nucleus, taking into consideration the previous cognitive relationships.

The analysis of the concept maps also shows that, in practice, the accounting is seen as a set of rules which, once applied, are capable of offering a true and fair view of the image of the company, without referring to aspects linked to the creative accounting.

The current study was elaborated on a compact group of participants and it applies strictly to the analysis of the concept maps created by them. The future directions of the study will concern the accounting audit having as aim the analysis of the way in which the concept maps can contribute to the settlement of the accounting and audit information obtained by the practitioners both during their professional training, by applying the cognitive background of each person and during their professional practice.

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Table 1: Sample group composition based on experience

N° individuals	Experience	Education – professional background	Profile practitioner
3	2	Economics	Junior
1	3	Economics	Junior
1	4	Economics	Junior
2	5	Economics	Junior
2	6	Economics	Junior
3	7	Economics	Junior
2	10	Economics	Senior
1	12	Economics	Senior
1	14	Economics	Senior
1	24	Economics	Senior
2	29	Economics	Senior

Table 2: Sample group composition based on age

N° individuals	Age
1	24
4	26
1	27
1	28
5	31
1	32
2	35
1	36
1	43
1	51
1	56
Total 19	

Table 3: Initial list of concepts

Prudence, True and fair view, Conflicting relation, True and fair value, Accounting information, Patrimony, Shareholder-creditor, Conformity, Accounting principles, Rules, Assets and liabilities, Enterprise, Quality, Estimation, Financial statements, Law 81/1991, Users of accounting information, Exhaustiveness, Sincerity, Apprehensible, Clarity, Loyalty, Fake, 4th Directive, Impact, Fiscal year, Standard, Auditor, Chartered accountant, Accounts, Financial position, Performance, Synthesis documents, Neutrality, Balance sheet, Profit and loss statement, Rights and obligations, Claims/debts, Creditors, Debtors, Accounting policies, Dividend, OMFP 3055/2009, Professional accountant, Income and expenditure, State, Deontology, Information program, Laws, Need, Criteria, Stage, Economic reality, Penalty, Fine, Regularity, Matching principle, Pertinent, Justification, Opinion, Conflict, Behavior, Inventory, Accounting entry, Transparent, Procedure, Creative accounting, Client, Suppliers, Ethic, Responsibility, Technique, Phenomenon of Globalization, Decisions, Economic reality, Methods, Result, Handling, Manager, Accounting solution, Investors, Costs, Conflict of interest, Uncertainty, Risk, Reasoning, Microsoft Company, Accounting norms, Absence, Independent, Corporate governance, Accounting reform, Accounting truth, Fraud, Taxes, Taxation system, Accounting.

Table 4: Analyzing the number of unused concepts by the practitioner when creating their concept maps.

N° of concepts used from the initial list	N° of concepts used from the personal background	Junior practitioners	Senior practitioners
	14		2
	4	3	
69			7
80		12	

Table 5: Concepts included on the list but not used by the practitioners

Concepts included on the list but not used	Absence, criteria, stage, corporate governance, matching principle, need, methods, accounting reform, conflicting relation
Other concepts used by the practitioners	Contracts, provisions, economic agreement, economic operations, cash flow, accounting records, balance sheet, liquid assets, capital assets, equity, debts, credibility, figures, prejudice, control, credibility, creativity, state institutions