Abstract. *According to the new economic models, knowledge has to be incorporated in production functions as a key factor. Therefore, in the new knowledge based economy the main challenge is to develop, combine and integrate the knowledge of thousands of employees within an organizational framework. The main purpose of this paper is to present a new model of organizational knowledge dynamics developed by the authors by using the Analytic Hierarchy Process (AHP) methodology. The research approach is both theoretical and empirical. The developed model was tested within the Romanian business environment and the results prove the existence of high correlations between the results of the model and the actual strategies with regard to knowledge of the company, thus enhancing the efficiency of the model.*

Keywords: Analytic Hierarchy Process (AHP), knowledge modelling, Organizational Knowledge Dynamics (OKD) Model.

THE ORGANIZATIONAL KNOWLEDGE DYNAMICS (OKD) MODEL. CASE STUDY VODAFONE ROMANIA

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1. Introduction

Knowledge has become important economic growth force and, consequently, important variable in the new theories and models of economic development (Becerra-Fernandez & Sabherwal, 2010; Debowski, 2006; Geisler & Wickramasinghe, 2009; Jashapara, 2011; Nonaka & Takeuchi, 1995). The classic theories and models contain variables derived from the tangible economic environment, with emphasis on capital, labor, materials and energy. Knowledge has been regarded upon as external factors capable of influencing the production functions. But, according to the new economic models, knowledge has to be incorporated in these functions as a key factor. In the new knowledge based economy the main challenge is to develop, combine and integrate the knowledge of thousands of employees within an organizational framework. This would mean to create an environment in which knowledge can be easily acquired, transferred and used. Therefore, the modern organizations, wanting to accept the new challenges of the knowledge based economy, must evolve towards becoming knowledge creating, integrating but, also, protecting organizations.

The main difficulty of understanding and operating with knowledge and intellectual capital comes from the intangible nature of knowledge and its strongly nonlinear character (Brătianu, 2009; Brătianu, 2011; Davenport & Prusak, 2000). *Linearity* is a property of conceptual spaces that satisfy a set of operations, and this property is embedded in the tangible world as a result of our thinking pattern. Just for illustration we may consider three arbitrary numbers representing money: a = 5; b = 10; c = 100. Let *N* be the set of all natural numbers. Then, let us apply the scalar requirements for a linear space (Brătianu, 2009):

- If 5 and 10 are numbers in N, then 5 + 10 is also a number in N.
- If 100 is a number in N, then 100 × 5 is also a number in N.
- The number addition is *commutative*: 5 + 10 = 10 + 5.
- The number addition is *associative*: (5 + 10) + 100 = 5 + (10 + 100).
- There is *an identity element* such that: 5 + 0 = 0 + 5.
- There is *an inverse element* such that: 5 + (– 5) = 0.
- There is *distributivity* over number addition: (5 + 10) × 100 = 5 × 100 + 10 × 100.

In this case, all of the above requirements are satisfied, and the *linearity property* can be defined. Linearity can also be discovered as a dominant property for the thinking pattern used to handle problems in the tangibles domain. Linear thinking patterns are used as cognitive approximations for real complex situations. It is like using linear segments to approximate curves of different shapes. The *linear thinking pattern* is a conceptual construct representing linear processes, which are based on linear equations. In simple words, a process is linear when the output or the final result is proportional with the input. It is such an easy way of thinking that our everyday life is full of linear thinking examples. For instance, all measurements systems are based on this thinking pattern. Let us consider temperature measurements, by using thermometers. Regardless of the temperature scale used (i.e. Celsius or Fahrenheit) the

mercury dilation is proportional to the measured temperature. Let us consider the process of heating the water contained in a small tea kettle put on a gas stove. We introduce a thermometer inside the water and watch carefully its indication. Due to heat received the water temperature is increasing linearly up to 100 degree Celsius, and then stops. It is the saturation temperature when water is transformed into steam. This is a phase transformation, and from physical point of view it is a nonlinear process. Thus, the linear property of heating the water is not transferred to the phase change. The temperature of 100 degree Celsius becomes a frontier for the water heating, although the gas stove has not been put off. It is an interesting phenomenon to keep in mind when we switch from the tangible world to the intangible one. The knowledge field is strongly nonlinear, and all of the above operations that are characteristic for the linear space do not apply anymore. For instance, in applying the *commutative rule* we cannot have:

- The cat + eats + the mouse = The mouse + eats + the cat

These is a simple example, but in the knowledge field we may think of more complex examples involving emotions, theories and even some transformations between them (Brătianu, 2011). Linearity is like a barrier between the field of tangibles and the field of intangibles. We stress this idea because we are going to present our Organizational Knowledge Dynamics (OKD) model, based on ideas coming from the laws of conservations. However, we do not consider the tangible quantitative aspects of the equation components but the intangible functional relations between them. This new model of the organizational knowledge dynamics is conceived in a different perspective than the well known Nonaka model (Nonaka & Takeuchi, 1995). In the same time, the mathematical approach is based on the Saaty's Analytic Hierarchy process (AHP). The research approach is both theoretical and empirical.

2. The Organizational Knowledge Dynamics (OKD) Theory

Any organization is constantly under the action of two fields of forces, the internal field of forces and the external field of forces. These two fields are in a continuous movement. The external environment, subject to a large number of forces acting towards its modification, conditions at its turn the modification of the forces acting within the internal environment of the organization. As knowledge has become the main resource of any organization, onto it exerts their action both the internal and the external field of forces, which in turn imprint knowledge a dynamic character. Due to the dynamic character, the total quantity of knowledge of an organization changes over time under the action of three main processes: knowledge creation, knowledge acquisition and, last but not least, knowledge loss. These processes have been integrated into a new model of *Organizational Knowledge Dynamics (OKD)*. Moreover, analyzing the impact of each of the processes onto the total quantity of knowledge, it can be easily concluded that the processes of knowledge creation and

acquisition will have a positive impact, whereas knowledge loss will have a negative impact (Brătianu, Agapie & Orzea, 2011).

Knowledge creation is a complex process and it involves both explicit and tacit knowledge. Also, we may consider both cognitive knowledge and emotional knowledge (Becerra-Fernandez & Sabherwal, 2010; Brătianu & Orzea, 2010; Davenport & Prusak, 2000; Jashapara, 2011). Organizational knowledge may be born as a result of an individual action or as a result of a social interaction, in the *Ba* space. "*Of the four modes of knowledge conversion, externalization is the key to knowledge creation because it creates new, explicit concepts from tacit knowledge*" (Nonaka, Toyama & Byosiere, 2001, p. 495). In the Nonaka's model, externalization and internalization on one hand, and socialization and combination on the other hand need a specific context of meanings and a framework of same thinking patterns in order to be operational. This context is considered to be *Ba.* Thus, *Ba* is in the same time a physical and a non-physical space where social interchange can take place and generate knowledge. It can be a context for an individual, a team or even an organization. *Ba* is a shared context in motion, since it is constantly under change forces. It is a conceptual working space where individual subjectivity meets the other objectivity and through social interaction knowledge is generated.

Knowledge acquisition is a result of the knowledge influx from the external business environment. Knowledge is usually imbedded in books, written papers, knowledge databases, software, and different training programs organized by specialized companies. Also, knowledge can be imbedded in patents, trade marks, and different copy rights. For instance, franchising is a well known approach of knowledge acquisition in business. In many companies knowledge acquisition is preferred to the knowledge generation because it is much easy to be performed.

Knowledge loss is also a complex process that involves: forgetting, unlearning, retirement or just leaving the company from different individual or organizational causes. These different activities can be grouped into two main categories: intentional unlearning and unintentional unlearning, and the knowledge loss represents their final result. "*It can be argued that the presence of an internal context that fosters the replacement of old knowledge is likely to be essential if organizations are to implement and use new knowledge. To this end, we propose 'unlearning context' to enable intentional unlearning. At its heart, this context facilitates the reorientation of organizational values, norms, and/or behaviors by changing cognitive structures, mental models, dominant logics and core assumptions that guide behavior"* (Cegarra, 2011, p. 17).

Based on these above considerations, we can write the equilibrium equation of the total quantity of organizational knowledge available within a determined (ΔT) time interval as:

$$\Delta K = F_c(\Delta Cr) + F_a(\Delta A) - F_l(\Delta L) \qquad (1)$$

where: ΔK represents the organizational knowledge variation within the determined time interval; ΔCr – the variation of knowledge creation within ΔT time interval; ΔA – knowledge acquisition variation within ΔT time interval; ΔL – knowledge loss variation within ΔT time interval; F_c, F_a, F_l – the weight coefficients of each of the factor of the equation.

At its turn, each factor of the equilibrium equation is influenced by the managerial strategies that determine their variation. Consequently, the equilibrium equation for a generic factor can be written as follows:

$$\Delta C = w_1(\Delta A_1) + w_2(\Delta A_2) + w_3(\Delta A_3) + w_4(\Delta A_4) \qquad (2)$$

where: ΔC represents the variation of the generic component (knowledge creation, knowledge acquisition, knowledge loss) within the determined time interval ΔT; ΔA_i – the variation of the strategy C through the organizational activity A_i, during the time interval ΔT, and w_i – the weight coefficient of the activity A_i.

Thus, the level of knowledge in organization depends of how much new knowledge is creating during a given time period, how much knowledge is obtained from the external environment through different methods in the same time period, and on the knowledge loss toward the external environment through people leaving the company. People may leave the company due to their retirement age, in searching for better professional and payment opportunities, or being fired.

Because the variation of the three processes of the equilibrium equation from the model of organizational knowledge dynamics contributes to the variation of the total quantity of organizational knowledge in different extents, with different weights, the second part of the model is based on the method introduced by Saaty (1980), Analytic Hierarchy Process (AHP). AHP method uses a hierarchy with several levels, structured in objectives, criteria, sub criteria, alternatives. In its general form, the AHP is a nonlinear framework for carrying out both deductive and inductive thinking without use of the syllogism. It is used to derive relative priorities on absolute scales from both discrete and continuous paired comparisons in multilevel hierarchic structures (Saaty & Vargas, 2006).

Using the AHP method philosophy, the first step in order to identify the weights of the component factors of the equilibrium equation is to structure the problem under discussion. Thus, for the organizational knowledge dynamics we used a three layers structure. The general objective, *to increase the total quantity of organizational knowledge*, is evaluated in terms of members' perception with regard to four activities: (A_1) *recruitment of new qualified human resources*; (A_2) *development of training programs*; (A_3) *the creation of an efficient motivation system*; (A_4) *acquisition of books, journals, software and other informative materials*. The evaluation of the objective is done in terms of three knowledge strategies or criteria as well: (C_1) *increase of knowledge creation processes strategy*; (C_2) *increase of knowledge acquisition strategy*; (C_3) *the reduction of knowledge loss strategies*. Consequently, a three level hierarchy has been considered as framework where the

employees can express their opinion from a quantitative point of view with respect to the general objective (Figure 1). The structure of the whole organizational process of knowledge dynamics is based on the theory of knowledge field, developed by Brătianu (Brătianu & Andriessen, 2008; Brătianu, 2011). This theory represents a metaphorical approach to the theory of energy field from science. Basically, the organizational knowledge can be represented by a continuous field of knowledge that is nonuniform and nonhomogeneous. Nonuniformity generates fluxes of knowledge from one part to another within the organization, while non-homogeneity allows for the presence of different forms of knowledge, like explicit and tacit knowledge, cognitive and emotional knowledge.

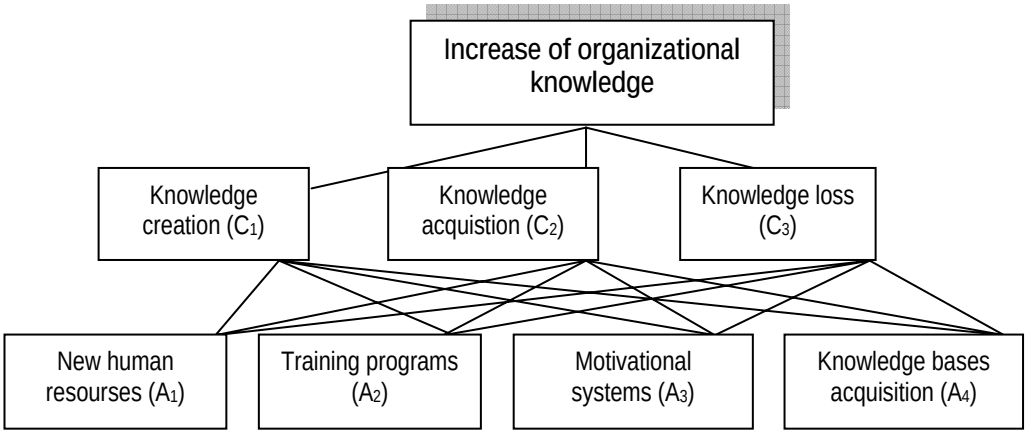

Figure 1. **Knowledge dynamics structure using AHP method**

3. Research methodology

To verify the accuracy of the model we have decided to test it within organizations from the Romanian business environment. In order to attain the aforementioned objective a questionnaire was used. The questionnaire was designed based on the model of organizational knowledge dynamics, approached from the AHP method perspective. In the first part of the questionnaire was dedicated to gathering general information about the position of the respondent in the considered company. The questionnaire's second part was devoted to the determination of the priority vectors of the three chosen criteria in the knowledge variation in organization: (C_1) *increase of knowledge creation processes strategy*; (C_2) *increase of knowledge acquisition strategy*; (C_3) *the reduction of knowledge loss strategies*. The goal of the company considered in this research is to increase the total level of organizational knowledge. The measurement scale used is the one described by Saaty (1980, 1990) with 9 levels of measurement. As described at AHP methodology, each pairwise comparison question has two parts. The first part aims at identifying the most

important strategy out of the two under study, while the second part of the question aims at determining the respondent's perception with regard to relative importance of the strategy previously determined more important within the pairwise comparison. The general structure of the questionnaire is as follows. In square brackets is presented an example of answer.

1. a) Given the goal, what do you think is more important: *the strategy for increasing knowledge creation* (C_1) or *the strategy of increasing acquisitions of new knowledge* (C_2). [C_1]

b) Please indicate, on a scale from 1 to 9, to what extent you consider your previous choice is more important than the other one. [6]

2. a) Given the goal, what do you think is more important: *the strategy for increasing knowledge creation* (C_1) or *the strategy for reducing knowledge loss* (C_3). [C_3]

b) Please indicate, on a scale from 1 to 9, to what extent you consider your previous choice is more important than the other one. [4]

3. a) Given the goal, what do you think is more important: *the strategy of increasing acquisitions of new knowledge* (C_2) or *the strategy for reducing knowledge loss* (C_3). [C_3]

b) Please indicate, on a scale from 1 to 9, to what extent you consider your previous choice is more important than the other one. [6]

The survey's third part is devoted to the determination of the priority vectors of the alternatives (*hiring new valuable human resources* (A_1), *developing training programs* (A_2), *creating a performing motivation for the employees* (A_3) and *purchasing books, journals, software programs and other informative materials* (A_4)) taking into consideration the criterions in the above level of hierarchy. For the first criterion or strategy for increasing knowledge creation (C_1), questions were formulated as follows:

1. a) Given the criterion (C_1), what do you think is more important: *hiring new valuable human resources* (A_1) or *developing training programs* (A_2)? [A_2]

b) Please indicate, on a scale from 1 to 9, to what extent you consider your previous choice is more important than the other one. [8]

2. a) Given the criterion (C_1), what do you think is more important: *hiring new valuable human resources* (A_1) or *creating a performing motivation for the employees* (A_3)? [A_3]

b) Please indicate, on a scale from 1 to 9 to what extent you consider your previous choice is more important than the other one. [8]

3. a) Given the criterion (C_1), what do you think is more important: *hiring new valuable human resources* (A_1) or *purchasing books, journals, software programs and other informative materials* (A_4)? [A_4]

b) Please indicate, on a scale from 1 to 9 to what extent you consider your previous choice is more important than the other one. [5]

4. a) Given the criterion (C_1), what do you think is more important: *developing training programs* (A_2) or *creating a performing motivation for the employees* (A_3)? [A_3]

b) Please indicate, on a scale from 1 to 9, to what extent you consider your previous choice is more important than the other one. [7]

5. a) Given the criterion (C_1), what do you think is more important: *developing training programs* (A_2) or *purchasing books, journals, software programs and other informative materials* (A_4)? [A_2]

b) Please indicate, on a scale from 1 to 9, to what extent you consider your previous choice is more important than the other one. [5]

6. a) Given the criterion (C_1), what do you think is more important: *developing creating a performing motivation for the employees* (A_3) or *purchasing books, journals, software programs and other informative materials* (A_4)? [A_3]

b) Please indicate, on a scale from 1 to 9, to what extent you consider your previous choice is more important than the other one.[8]

Similar questions as those from 1 to 6 are establishing comparisons among alternatives A_1 to A_4 with respect to the next two criteria, C_2 and C_3, so that a total of 21 questions are used as a base for establishing decision matrices associated with one respondent.

The criteria used in the selection process of the companies to participate to the testing of the model included: a sufficiently large number of employees (preferably over 50) involved on a continuous basis in the organizational decision making process and organizational orientation towards knowledge management processes. The criteria expressed aimed at obtaining clear data onto the phenomena under observation and a better operational control of the data collection process. The company S.C. Vodafone Romania S.A. respected the criteria expressed, thus we tested the model of organizational knowledge dynamics within the company's headquarters in the period November – December 2010. In 2010, the company had more than 3500 employees with growth expectations despite the global economic crisis. Moreover, the company has an orientation towards knowledge management having a knowledge management department. The objective of knowledge management within the company, according to the statements of the Vice-president of Human Resources, Anca Podeleanu (Dogariu, 2007), is to enhance the decision processes, to integrate and reintegrate the employees' experiences, to increase the innovations and to transform the information into knowledge to be further used in the processes of new knowledge creation. The employees actively participate to the strategic projects of the company, having at their disposal data bases with similar projects undergone by colleagues from other countries, legislative information, local and international press articles and, also, personalized discussions forums (Dogariu, 2007).

There were electronically distributed 200 questionnaires to the employees in middle and top management positions from various departments of the company. The response rate was of 49.5%. Following the AHP methodology the first step in data analysis is to construct the judgment matrix corresponding to each respondent.

The first matrix, denoted with [C], [C] = $(c_{ij})_{i,j}$=1,2,3, corresponds to the pairwise comparisons between the three strategies (C_1, C_2, C_3). It is a positive, reciprocal ($c_{ij}>0$, $c_{ij}=1/c_{ji}$, i,j=1,2,3 and i≠j) matrix with the elements of the main diagonal equal to 1 ($c_{ii}=1$, i=1,2,3). If, for example, strategy C_1 is considered 6 times more important than strategy C_2, we can write $C_1 >^6 C_2$, and within the judgment matrix we assign to c_{12} the value 6 ($c_{12}=6$). As the judgment matrix is reversible with regards to preferences, we can say that strategy C_2 was preferred to strategy C_1 with a value of 1/6, therefore, we assign within the judgment matrix to c_{21} element the value 0.1666 ($c_{21}=0.166$). The next three matrices correspond to the choices done among the alternatives A_1, A_2, A_3, A_4 from three points of view: the strategy for increasing knowledge creation (C_1), the strategy of increasing acquisitions of new knowledge (C_2) and the strategy for reducing knowledge loss (C_3). These matrices are denoted $C_1^{A1,A2,A3,A4}$ and respectively $C_2^{A1,A2,A3,A4}$, $C_3^{A1,A2,A3,A4}$.

For all this four matrices, the corresponding vector of priorities is calculated in an eigenvalue formulation. The solution is obtained by raising the matrix to a sufficiently large power, then summing over the rows and normalizing to obtain the priority vector. The process is stopped when the difference between components of the priority vector obtained at the k-th power and at the (k+1) power is less than some predetermined small value. The vector of priorities is the derived scale associated with the matrix of comparisons (Saaty, 1994; Saaty, 2009). After setting priorities for the criteria, pair wise comparisons are also made ratings themselves to set priorities for them under each criterion and dividing each of their priorities by the largest rated intensity to get the ideal intensity. Finally, alternatives are scored by checking off their respective ratings under each criterion and summing these ratings for all criteria. For the example considered in the section above, the first two pairwise comparison matrices are given in Tables 1 and 2.

Table 1

The pairwise comparison matrix C

Absolute judgments amongst criteria	C1	C2	C3
C1	1	6	0.25
C2	0.166	1	0.166
C3	4	6	1

Table 2

The pairwise comparison matrix C1 A1,A2,A3,A4

Absolute judgments amongst alternatives with respect to Criterion 1	A1	A2	A3	A4
A1	1	0.125	0.125	0.2
A2	8	1	0.142	5
A3	8	7	1	8
A4	5	0.2	0.125	1

The correspondent vector of priorities for the C matrix calculated as briefly presented above is given by any column in the above normalized matrix, as presented in Table 3.

Table 3

Vector of priorities for the pairwise comparison matrix C

	Vector of priorities for the pairwise comparison matrix C
C1	0.20736
C2	0.09572
C3	0.69691

Table 4

Corresponding vector of priorities to matrices C1 A1,A2,A3,A4, C2 A1,A2,A3,A4, C3 A1,A2,A3,A4

	Vector of priorities corresponding to matrix C1 A1,A2,A3,A4	Vector of priorities corresponding to matrix C2 A1,A2,A3,A4	Vector of priorities corresponding to matrix C3 A1,A2,A3,A4
A1	0.07536	0.67814	0.03784
A2	0.12651	0.15191	0.35230
A3	0.70623	0.09432	0.10885
A4	0.09188	0.07561	0.50099

After we presented the simple example with the answers indicated arbitrarily in square brackets, we shall present the main results of our case study. In the first stage we considered each respondent's answer, and then we aggregate all their answers. Following exactly the same algorithm we present in the Table 5 an example of a full judgment matrix of a random respondent from the company under study.

Table 5

The priority vectors matrix corresponding to a random respondent

Respondent 43	C1	C2	C3	Aggregated values of the alternatives
	0.78853047	0.08781362	0.12365591	
A1	0.67757623	0.55067204	0.04415841	0.5881065
A2	0.09971132	0.12075257	0.01943345	0.0916322
A3	0.13421919	0.07416988	0.18601968	0.1353515
A4	0.08849327	0.25440551	0.75038846	0.1849099

According to the results presented in Table 5 we can conclude that, at selected respondent level, the most important strategy in order to achieve the general objective of increase in the quantity of organizational knowledge, is strategy C1, the increase of

knowledge creation processes, with the highest value of 0.7885. The second place in the hierarchy of preferences at the level of the selected respondent is strategy C3, reduce the loss of knowledge, with a value of 0.123. And, the third place in the hierarchy is occupied by strategy C2, increase of knowledge acquisition, with the lowest value of 0.0878.

In order to establish the composite or global priorities of the alternatives considered we lay out in a matrix the local priorities of the alternatives with respect to each criterion and multiply each column of vectors by the priority of the corresponding criterion and add across each row, which results in the composite or global priority vector of the alternatives. The results obtained are presented in the column Aggregated values of the alternatives from Table 5. Therefore, according to these results, the selected respondent, considers alternative A1, recruitment of new qualified human resources, the most important in order to achieve the general objective, with a value of 0.5881. Alternative A4, acquisition of expertise books, magazines and journals, ranks the second place within the preferred alternatives, being closely followed by alternative A3, efficient personnel motivation, having a value sensible smaller than the previous one. The selected respondent, considers alternative A2, development of training programs, the least preferred, with a value of 0.091

The aggregation of the individual priorities both at strategy and alternative level was realized by calculating the arithmetic mean of the elements of the individual vectors of priorities. The results are presented in Table 6. With a global value of 0.333728, strategy C1, increase of knowledge creation processes, ranks first in the preferences list of the respondents. Strategy C3, reduction of knowledge loss, with a value sensible smaller than strategy C1, 0.3342, ranks second in what concerns the priorities in obtaining the general objective of increase of total quantity of organizational knowledge. The differences in the values of the global vector of priorities corresponding to the strategies are very small, which denotes a relatively equilibrated approach of the processes of knowledge management. A possible explanation of these results can be based on the fact that the company has over a decade experience within the Romanian business environment, and in that period of time the management of the company managed to maintain it in the top of most competitive companies.

Table 6

The matrix of global priority vectors

Global level	C1	C2	C3	Aggregated values of global alternatives
	0.33728707	0.32850184	0.33421109	
A1	0.34433433	0.38872747	0.0948186	0.275527
A2	0.3237552	0.24283925	0.15918846	0.242174
A3	0.16917937	0.10651748	0.51098198	0.262829
A4	0.1627311	0.26191581	0.23501096	0.21947

Moreover, the company benefited by the affiliation to a multinational group, with strategies and visions imposed by the mother company, Vodafone UK, where the initiatives in the field of knowledge management started at the end of 90s.

Therefore, based on the results obtained from the processing of the data collected we can rewrite the organizational knowledge dynamics (OKD) equilibrium equation for the company Vodafone Romania as follows:

$$\Delta K = 0.33728\ (\Delta Cr) + 0.32850\ (\Delta A) - 0.33421\ (\Delta L) \qquad (3)$$

The same tendency of slight differentiation is observed in the case of alternatives too. The alternative with the highest value, 0.2755, is alternative A1, recruitment of new qualified human resources, followed by alternative A3, efficient motivation of existent personnel, with a value of 0.2628. Closely connected in terms of values with alternative A3, is alternative A2, development of training programs, with a value of 0.2421. The least preferred of the four alternatives is alternative A4, acquisition of expertise books, magazines, journals, with a value of 0.2194.

Conclusions

As knowledge has become the key factor within the new knowledge based economy the organizations must evolve towards becoming knowledge creating, integrating but, also, protecting organizations. But the main difficulty comes from the intangible nature of knowledge and its strongly nonlinear character. Moreover, the continuous interactions among various forms of knowledge and the action of both the internal and external field of forces imprints knowledge a strong dynamic character. The paper presents a model developed in order to incorporate the dynamics of organizational knowledge by integrating the action of three main processes: knowledge creation, knowledge acquisition and knowledge loss. We would like to make a special remark on knowledge sharing. Although knowledge sharing is an important component of the organizational knowledge dynamics, it does not contribute to the increase of the total level of knowledge in organization. It contributes only to the increase of the average knowledge level in the organization through the levelling out of the knowledge field nonuniformities. Thus, knowledge sharing is not a part of the equilibrium equation, but is a part of the general process of knowledge dynamics within the organization. Knowledge sharing contributes directly to the increase of the organizational entropy.

The mathematical method we used in this analysis was based on the Analytic Hierarchy Process developed by Saaty, and used in managerial decision making. The main goal of the research is to determine the priorities of the alternatives the members of the organization have in order to achieve an increase of the total quantity of the

organizational knowledge. Determining these priorities, the organization can develop knowledge strategies to encourage but, also, reward the increase of organizational knowledge.

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