CLASSICAL SOLUTIONS FOR IMPROVEMENT OF RESTRUCTURING PROCESS AND REPRESENTATION OF ORGANIZATIONAL STRUCTURE AND ALTERNATIVE FUTURE SOLUTIONS OF QUANTUM ECONOMICS

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Abstract. *Abstract: This paper presents improvement of restructuring process and representation of organizational structure through different measurements and divisions, based on theoretical assumptions of Henry Mintzberg and Michael Porter. By combining these concepts, we have proposed a new job classification approach, which could improve decision making process during restructuring. Data used for development of this model comes from analysis of 21 communal and public service enterprises, project implemented by Faculty of organizational sciences during the year of 2009. Background documents were mainly job descriptions, basic HRM data and performance data, along with wide array of other formal organizational documents. Time span of analysis covered 18 months, and we have analyzed data according to usual methodologies and good practices of consultancy in organizational design, with main proposed improvement that is described in this paper. Reason for introduction of that improvement was due to the fact that the companies perform wide variety of activities, and thus have defined different job structure, very hard to compare between different companies. This model standardized usual existing approach and introduced a new model of job classification. In this way, conditions were created for comparison among companies from totally different industries, yielding better results during restructuring. The model is based on set of typical jobs, connected with particular jobs in each organization. Connecting existing positions in companies with positions in the introduced standardized model was done relying on the descriptions of tasks performed for the observed positions. It should be emphasized that employees in different positions often belong to the same process and are thus responsible for the same performance, so they are linked and grouped in the analysis. This model provides more quantitative background for decision making during restructuring processes.* The second part of this paper offers some alternative solutions in a new economic way of thinking. An original analysis made under the circumstances of Quantum Economics new approach can change the classical way of thinking in contemporary economics and in the future of economic process or phenomena.

Keywords: *Restructuring, Value chain, Organizational configurations, Job classification, Benchmarking, Quantum Physics, Quantum Economics.*

1. INTRODUCTION

This paper proposes improvements of restructuring methodology by introduction of job classification model based on combination of value chain and organizational configurations. It came from consultant work of the project team from the Faculty of Organizational Sciences during the project of business restructuring of the group of public and public-utility companies, implemented in the second half of the year of 2009, including 21 public and public-utility company in Serbia that are employing over 18,000 people. During similar projects a common problem of the lack of standardized systematization of job positions in the company often occurred. Theoretical background for this idea was provided by works of Henry Mintzberg and Michael Porter. In the light of their organizational configurations and value chain, during the project of restructuring public enterprises and public utilities we have proposed systematization of typical basic jobs, which diminished different number of jobs in observed companies by several tens of times. The analysis were performed to describe current status within each company - subject of the project, but also to compare companies among themselves.

In order to perform mentioned analysis effectively, it was necessary to modify representation of the existing structures in those companies. The cause of this was that the companies engaged in different industries and have had different classification of jobs, making comparison among them difficult. Consequently, employees performing similar jobs in different companies have different job titles, and specific positions are often treated as different jobs, although in essence are not. It was therefore necessary to introduce a new model that would have the smallest set of typical jobs and to associate these jobs with job existing in observed companies.

2. APPLIED MODEL OF STRUCTURE REPRESENTATION

In order to represent structure of each enterprise, Porter's value chain has been used, as a well known in the literature and empirically proven model. According to that model, sharing of the overall organization's task is based on the different contributions of specific activities to competitive ability of the organization.[1] The functions are divided into 2 groups - support activities and primary activities - and then can still be divided to the subgroups integrating a partial set of activities by functions.[2] Porter value chain is combined with Mintzberg's model, which divides organization into the 5 elements, namely the strategic apex, middle line, operating core, technostructure and support staff.

Adapting to the needs of the project, we proposed a new model with 91 positions. This standardized positions match activities that are identified by modifying the Porter's value chain and Mintzberg's model in another paper[3], as each part of value chain or organization block corresponds to one or more typical positions. The presented model is extended in each company for more specific positions in the operational area. Types of positions are shown below:

1. **Support activities**
   1.1. Top management
   - 1.1.1. Chief Executive Officer
   - 1.1.2. Executive Officer
   - 1.1.3. Chief Technical Officer
   - 1.1.4. Chief (Sector function) Officer
   - 1.1.5. Deputy to Executive Officer
   - 1.1.6. Executive Officer's Assistant
   - 1.1.7. Advisor to Executive Officer
   - 1.1.8. Top Management Support Staff
   - 1.1.9. Top Management Assistant

   1.2. Management
   - 1.2.1. Director
   - 1.2.2. Manager
   - 1.2.3. Supervisor
   - 1.2.4. Foreman
   - 1.2.5. Management Support Staff
   - 1.2.6. Management Assistant

   1.3. Finance
   - 1.3.1. Financial Manager
   - 1.3.2. Financial operations staff
   - 1.3.3. Financial planning and Analysis Staff
   - 1.3.4. Salary and Personal Finance Staff
   - 1.3.5. Other Financial Staff

1.4. Accounting
   - 1.4.1. Accounting manager
   - 1.4.2. Accountant
   - 1.4.3. Other accounting staff

1.5. IT Support
   - 1.5.1. IT Support Manager
   - 1.5.2. IT Support Designer
   - 1.5.3. IT Support Administrator
   - 1.5.4. IT Support Operator
   - 1.5.5. Other IT Support Staff

1.6. Legal Affairs
   - 1.6.1. Legal Affairs
   - 1.6.2. Labor Law Affairs Staff
   - 1.6.3. Legal Attorney
   - 1.6.4. Other Legal Affairs Staff

1.7. Planing, Preparation and Control
   - 1.7.1. Planning, Preparation and Control Manager
   - 1.7.2. Planer
   - 1.7.3. Controller
   - 1.7.4. Technologist
   - 1.7.5. Planning, Preparation and Control Support Staff
   - 1.7.6. Dispatcher
   - 1.7.7. Other Planning, Preparation and Control Staff

1.8. Marketing and Public Relations
   - 1.8.1. Marketing and Public Relations Manager
   - 1.8.2. Marketing and Public Relations Staff

1.9. Other Business Infrastructure Activities
   - 1.9.1. Business Infrastructure Activities Manager
   - 1.9.2. Business Infrastructure Activities Staff

1.10.   Human Resources Management
   - 1.10.1. Human Resource Manager
   - 1.10.2. Human Resource Support Staff

1.11.   Technological Development
   - 1.11.1. Technological Development Manager
   - 1.11.2. Technological Development Support Staff

1.12.   Public Procurement
   - 1.12.1. Public Procurement Manager
   - 1.12.2. Public Procurement Support Staff
   - 1.12.3. Other Public Procurement Staff

1.13.   Procurement
   - 1.13.1. Procurement Manager
   - 1.13.2. Procurement Staff

1.14.   Security and Safety
   - 1.14.1. Security and Safety Manager
   - 1.14.2. Security Staff
   - 1.14.3. Fire Protection Staff
   - 1.14.4. Occupational Health Staff

1.15.   Facility Maintenace and Hygiene
   - 1.15.1. Facility Maintenance and Hygiene Manager
   - 1.15.2. Facility Hygiene Staff
   - 1.15.3. Facility Maintenance Staff

1.16.   Nutrition and Employee Standard

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[1] Porter M. E., "Strategy and the Internet," Harvard Business Review, 2001.
[2] Dulanović Ž., Jaško O., "Osnovi organizacije poslovnih sistema", Fakultet organizacionih nauka, Beograd, 2009.
[3] Čudanov M, Savoiu G, Krivokapić J, 2010, Organizational configurations and value chain as basis for restructuring. Proceedings of Symorg 2010 XII International symposium, Faculty of organizational sciences, Belgrade

Existing positions in companies were connected with standardized jobs by using jobs systematizations and description of tasks on each specific workplace. Consequently, different positions with similar job descriptions were linked to one typified position in new model. For example, position of "Bookkeeping expert", "Examiner of business accounts", "Account clerk", "Financial account inspector" were associated with the position of "Accountant", after detailed analyses. Therefore, this model provided not only basis for benchmarking between companies, but also for analyses that will be presented in this paper.

3.PERFORMANCE ANALYSIS ENABLED BY THIS MODEL

Decisions regarding performance analysis are in nature made by quantitative means, but comparison among different performance analysis or even the same performance analysis has been much burdened by subjective approximations. This can be very important issue if restructuring includes downsizing, demanding responsible approach that avoids unnecessary layoffs.[4] Restructuring and downsizing are often interconnected,[5] because downsizing changes proportion among employees in different activities[6] and therefore initiates changes in

organizational structure. In such connection, often the focus of the process can be ration of employees in support and core activities.[7] Performance of the company includes its ability to achieve a certain result, under the given conditions of operation. Performance is, therefore, the ability to provide certain services or produce the products, based on what will be achieved by the income, with certain costs, by a number of people for some time.

The analysis led to the performance data of the period in which it was achieved with more or less efficiency, and identified the key causes of the achieved results. Performance management, in the context of the project, meant to determine the optimal relationship between specific characteristics of the organizational and staffing structure and the achieved results. Improving performance is often stated as the goal of restructuring, especially in transition economies.[8] This means that it is possible to determine in which direction some changes (rationalization) in the current organizational and staffing structure could be made, and this reduction should not affect the ability of the fulfillment of tasks. The achieved results by listed standardized jobs, which are measured on the basis of appropriate indicators, suggest that there are potential reserves for employees who perform these tasks.

[4] Cascio W, 2002, Rensponsible restructuring: creative and profitable alternatives to downsizing, San Francisco, USA: Berrett-Koehler Books, p 54.
[5] Burke R.J, & Nelson, D.L, 1997, Downsizing and restructuring: lessons from the firing line for revitalizing organizations", Leadership & Organization Development Journal, Vol. 18 No. 7, pp 325-334.
[6] Lewin J.E, Johnston W.J, 2000, The Impact Of Downsizing And Restructuring On Organizational

Competitiveness. Competitiveness Review: An International Business Journal incorporating Journal of Global Competitiveness, Vol. 10, No. 1, pp. 45 - 55
[7] Cascio F.W, 2005, Strategies for Responsible Restructuring, Academy of Management Executive. 2005, Vol. 19, No. 4, pp 39-50.
[8] Mathijs E, Swinnen J, 2001, Production Organization and Efficiency during Transition: An Empirical Analyses of East German Agriculture. Review of Economics and Statistics, Vol 83, pp. 100–107

- **Analysis of performance by core and support activities:**
  Organization performances are shown using a clear distinction between the direct value creation activities and support activities. It is important to notice that support activities could be compared between enterprises in observed group, but activities which create outputs are specific for each company, and therefore, comparison is only partially possible at the group level. On the other hand, it is possible to make some comparison with companies that operate in the private sector.
- **Performance analysis by the standardized jobs with the most employees:**
  This analysis is completed in order to show twenty standardized jobs with the most employees, and to find potential reserves among them. A negative value indicates that there was a lack of workers in a particular workplace, while positive value in this column indicates that there are reserves in the observed workplace.

4. ANALYSIS OF STAFF STRUCTURE ENABLED BY THIS MODEL

This model enables analysis of the staff structure to be done more efficiently and effectively during the restructuring process, as it was applied on this particular project. Analysis of HR can set directions for restructuring and downsizing, as observed in the case of oil and chemicals industry[9]. HR data has been analyzed in order to check its conformity with the requirements of efficient conduct of all business tasks. The analysis included both qualitative and quantitative characteristics of the organizational structure. Background data for the analysis of the observed group of companies were individual reports related to human resources in each company. These partial reports consist of analysis of the organizational structure and division of work in the company, analysis of span of management control, analysis of organization units by the criteria of core/non-core activities, analysis of the current job classification, the proposed systematization of jobs, analysis of qualification of employees, age structure, service and overall fluctuations. Analyses related to human resources have strong impact not only to restructuring and downsizing directions, but also imply financial results of the enterprise[10].

- **Specialization:**
  This analysis is completed in order to recognize existing model of organizational structure in each company, then its organizational units, and the employees' number in each one of them.

- **The span of control:**
  This analysis is associated with the cost of management and efficiency of task control. The span of control indicates the number of workers directly subordinated to a supervisor. In this project it is presented by the total number of managers in the company, the average span of control by a supervisor, and also the highest and lowest range by the organizational units.

- **Organizing units by the criteria of core/non-core activities:**
  During this project it was necessary to recognize core units, which directly contribute to carrying out basic activities of enterprises, and non-core units, which provide indirect contribution. This analysis was made at the level of sectors and/or offices, depending on the company size this analysis.

- **Organizing employees by the criteria of core/non core /support activities:**
  Three groups of employees were recognized by this criterion. The first group consists of employees who directly contribute to the basic business activities, the second of employees who contribute indirectly to the basic activities of the company, and the third group of employing support staff, whose job is to provide support and assistance to other employees while performing their tasks.

- **The current position classification analysis:**
  As it was mentioned earlier, a large number of positions, that were valued differently, were observed in the existing classification. The main reason was the ability or commitment of employees. Therefore, standardized positions are suggested and it still allows stimulation of employees over the variable part of salaries and related mechanisms. This analysis shows the total number of positions in the existing classification, as well as the total number of standardized positions in the company.

- **Systematization of typical positions:**
  The next step was to propose a set of standardized positions, through the enrichment of basic activities, but with respect to technological limitations. The common services were conducted at the level of coordination of all public and public utility companies which were included in the project. For such defined positions, various categories that would depend on the level of education of an executor or any other parameter such as experience or previous results could be defined.

- **Employees' qualification analysis:**

[9] Ritson N, 1999, Corporate strategy and the role of HRM: critical cases in oil and chemicals. Employee Relations, Vol. 21 No. 2, pp 159-176.

[10] Chhinzer N, Ghatehorde G, 2009, Challenging Relationships: HR Metrics and Organizational Financial Performance. The Journal of Business Inquiry, Vol. 8, No. 1, pp. 37-48.

Education of employees is analyzed according to the classification of the seven degrees of qualification.

- **Employees' age structure analysis:**
  Age structure of employees is analyzed by two classifications. The first classification divides the workers into groups by common organizational culture. Age group up to 30 years (although specific manifestation depends of the organizational culture) usually seeks success and ambitions that motivate them, and is ready to work hard with the use of new technologies. Main motivators for the group aged 30-45 are quality of life, nonconformity, seeking autonomy, and loyalty of employees is directed primarily towards themselves and their own family. Age group over 45 years is characterized by conservatism, which can be manifested differently, but in environment of this project is often expressed through the rejection of change, desire for job security and resentment with new values that are accepted in the enterprise, as also stated in the literature.[11] The second classification groups workers by decades of age, where the first covers the period up to 30 years, next to 40 and so to the last, which includes workers aged 60 and older. This analysis includes indicators of average age, then determines the difference in years between the youngest and oldest employee in the company, the average age by the organizational units that were previously defined, and the prevailing culture of the company.

- **Overall employee experience analysis:**
  Experience of employees was analyzed by average, minimum and maximum values for all organizational units at the highest level. Four groups were formed: a group of up to 30 years of service, a group of 31-35 years of service, a group of 36-38 years of service and a group of over 38 years of service.

- **Fluctuations analysis:**
  Fluctuation analysis was performed for the period from 01/01/2008 to 01/07/200. It presents the total number of newly employed workers and the total number of workers who had left the company during this period.

5.CONCLUSION

The comparison of organizational and HR structure between companies engaged in different activities has long been burdened by flaws of organizational structure representation. It was mostly regarded as impossible or essentially subjective task,[12] due to lack of standardized model applicable to average enterprise. Subjectivity of approach described in this paper is mostly limited to the classification of jobs according to job descriptions in the corresponding categories. When this task is complete, the organization can be represented as a standardized system that could be compared with other business systems, and consultants can make objective decisions on restructuring and downsizing after benchmarking different companies with structure represented in this way. Another benefit is the possibility of comparing various parameters of organizational structure, either at the particular organizational level, in particular organization or in business system that consists of multiple organizations. At the level of the complex business systems, application of these approaches can create a synthetic image that incorporates all parts of the structure for all the organizations that are parts of that system. The third advantage was observed during the study was that the implementation of such concise view of simplifying the model and the structure becomes clearer, it is very important during the analysis phase. Creative ideas and suggestions are much easier to generate if the basis for making decisions is concisely presented. Also, in the later stages, in which the consultants present their ideas to management, or they are employed, a graphical representation is much simpler and is not burdened with details. A simple version may be developed in detailed, classical model of the organizational structure if there is a need for it.

The general theory of management offers several theoretical approaches that comply with described problem, and we have used Porter value chain model and Mintzberg's organizational structure. In this case, as often occurs in management, it became necessary to combine the techniques into new methods, and even methods into new leadership and management systems, with a view to attain an increased management efficiency.[13] In order to answer on demands of the project, a new set of standardized positions, and a new way to represent organizational structure was presented, and explained in this paper. First step that needs to be done is the simplification of the existing structure, with goal to detect the key similarities and differences between the observed companies. Next, usage of this generalization enables new model to be developed, with special concern to limitations that result from perceived differences in basic set of jobs specific for different core operations in enterprises. Internal

[11] Hofstede G., "Cultures Consequences, international differences in work related values", Beverly Hills, Co, Sage Pubblication, 1990.

[12] Krivokapić J, Čudanov M, 2010, Typification of Related Positions as the Base For Internal Benchmarking in a Group of Companies. Proceedings of Symorg 2010 XII International symposium, Faculty of organizational sciences, Belgrade

[13] Savoiu G, Jaško O, Dulanović Ž, Čudanov M& Craciuneanu V, 2008, The Value of General Methods, Quantitative Techniques and Management Models in Professionalizing Management. Management – Journal for Management Theory and Practice, Vol. 13, No. 49-50, pp. 5-11.

benchmarking is enabled by classification of 91 standardized positions, and analysis described above can be used to evaluate and improve performance. Therefore, the general conclusion is that the application of the described model improves the process of organizational restructuring and representation technique of organizational structure.

6. QUANTUM ECONOMICS – A NEW METHOD, A NEW APPROACH OR A NEW WAY OF THINKING IN ECONOMICS ?

A distinctive feature of the economical sciences is that, while these share with physics the descriptive and explanatory application of mathematical statistics – in population and probabilistic interpretations – it seems to lack strict and universal laws of the sort "recognized" in physics. The profound implications of physics in the fields of economics or social sciences have already created econophysics, sociophysics, and quantum economics. Econophysics and sociophysics seek to integrate the physics' methods, models, and laws with classical economics' and sociology's theory and thinking, seeing this new domain of applied physics as an unlimited one. Econophysics and sociophysics replace conventional ways, with the new and broader views of physics' thinking. Could be Quantum Physics a different direction of a new and modern applied physics' way of thinking? What means Quantum Economics in this new context?

Classical economics had always a first option for particle (unit, entity, individual, person, family, household, agent, financial or non financial corporation and agency, labour market or other market, territory, region, country etc.). The continuous aggregation inside the economic phenomenon makes finally from some micro entities only one economic macro attitude called macro realism. Classical economics deals only with a certain aspect of reality, the macro realism of this sort of "economic reality", in which man employs scarce resources, and thus it has encouraged the application of quantitative and formal methods, to gain intellectual legitimacy associated with the virtues of precision and objectivity. The absence of scenarios was also a characteristic option for classical economics. Even the economic aggregate subjects are somehow made from the same simple units that are individuals: entity, person, family, household, agent, financial or non financial corporation and agency, labor market or other market, territory, region, country, etc.), economic systems are increasing day by day, in the human and natural environments like physical, biological and social types.

The contemporary capitalism trend becomes more and more one of the individual level. That means a multiplication of the firms' number on economic reality and also on internet (10^{10} and perhaps more than 10^{20} specific products and services, during the next 50 years).

Thus economic reality could be more adequate for quantum physics' models and methods. In the nowadays economic world, this effect still does not exist, but the macroscopic world cannot however explain in the next future its own behaviour without it.

But what has this to do with quantum economics? First let us try to define the specificity of quantum physics' way of thinking.

Quantum physics remains the powerful science for studying subatomic particles. Very small particles at very high velocities behave differently from billiard balls and solar system planets and there are some non-intuitive effects of trying to observe and pinpoint features of individual particles. Quantum physics emerge from classical statistical physics or classical statistics[14]. A typical quantum system describes an isolated subsystem of a classical statistical ensemble with infinitely many classical states. The state of this subsystem can be characterized by only a few probabilistic variables. Their expectation values define a density matrix if they obey a "purity constraint". Then all the usual laws of quantum follow, including Heisenberg's uncertainty relation, entanglement and a violation of inequalities. No concepts beyond classical statistics are needed for quantum physics - the differences are only apparent and result from the particularities of those classical statistical systems which admit a quantum mechanical description. The rule for quantum probabilities follows from the probability concept for a classical statistical ensemble. In particular, the non-commuting properties of quantum operators are associated to the use of conditional probabilities within the classical system, and a unitary time evolution reflects the isolation of the subsystem.

But first of all, despite the scientific character of quantum physics, this incredible way of thinking offers and takes a spiritual perspective in which there are no separate parts, in which everything is fluid and always changing, from particle or atom to wave or energy, from material to spiritual, from macro realism to micro idealism, etc.

It is through our thoughts that we transform this ever-changing energy into observable reality. Therefore, we can create our reality with our thoughts. With quantum physics, science is leaving behind the notion that human beings are powerless victims and moving toward an understanding that we are fully empowered creators of our lives and of our world. Quantum physics shows that what's happening on the inside determines what's happening on the outside. It says that our world is shaped by our thoughts. Quantum physics' way of thinking is the nearest thought to the universe, and even beyond universe.

The original connection between quantum physics and thought was made by David Bohm in 1951. The human brain is no Turing Machine. Roger Penrose tries to prove that our consciousness is non-algorithmic, and that we seem - to our conscious selves - able to make decisions in a flash. He finds that this could be explained only by quantum physical thought processes that proceed in sub-graviton parallelism until they reach graviton level, when they collapse and produce a conscious thought. [15]

[14] Wetterich,C. (2009), *Quantum mechanics from classical statistics,* Submitted on 26 Jun (v2), http://EzineArticles.com/
[15] Roger Penrose, (1989), *The Emperor's New Mind, Concerning computers, Minds, and the Law of Physics*, Oxford; New York: Oxford, University Press.

Both Roger Penrose and Amit Goswami note that where quantum physics seems mystical, it is because it is not complete, stable, or a finished theory. Since quantum theory cannot explain the collapse of wave functions adequately we should not try to use to explain more complex phenomena either. We need better tools. Obviously, the brain is composed of particles obeying quantum laws (a notable case is that the retina accepts photons, which are small enough to behave strangely in terms of classical physics). Quantum physics is strange. So is consciousness. Maybe there is something in common between the two. The indeterminism in quantum physics is commonly modelled in a wave function - which is a combination function of possible outcomes, and determining the outcome is commonly termed "collapse of a wave function".

Penrose says that consciousness as a side effect of running an algorithm is not possible. Amit Goswami completes this idea, and reconciling macro realism with micro idealism is possible in quantum physics' way of thinking because of six main reasons[16,17]

- quantum state of a system is determined by the Schrodinger equation, but the solution of Schrodinger equation, the wave function is not directly related to anything that can be seen by someone;

- quantum objects are governed by the Heisenberg uncertainty principle: it is impossible to measure simultaneously and with certainty pairs of conjugate variables such as position and momentum;

- the paradox of wave-particle duality consist of quantum objects, needing for a solution which involves interpretation and philosophy;

- discontinuity and quantum leaps are truly fundamental features of quantum systems behaviour

- physical reality could be or not a coherent superposition;

- under certain conditions (for example, when energy levels of atoms are separated by very small spaces), quantum mechanical predictions could be reduced to those of classical mechanics.

Realism arises whenever economics appear, but difficulties are more and more significant because of the quantum nature of reality,

Very much as the measuring process gets us acquainted with quantum thinking, the concepts of statistical collective and ensemble, being tantamount to a number of sequences of probabilities and mean values of the variables of quantum physics, allow the mental associations among molecules or particles, and economic agents, or subjects. The world of physics thinking can impose to economical thought the probabilistic character of its forecasts, even in the case of a pure statistical collective, gradually eliminating the exclusively deterministic models of prognosis specific to classical economics.

The thinking of quantum physics does not exclude, through generalization, the macroscopic world, to which reference is made, in economics and economic statistics as well, under the name of populations or economies. The laws of quantum physics are the most general laws of nature also for the reason that they start from the wave equation (function). The wave represents, in physics, the propagation of a perturbation that comes from a point-shaped (punctual) source, in an ideal, linear, homogeneous, isotropic, conservative medium. [18]

A wave is described by a function $f(x,y,z;t)$, which can be a scalar or a vector function. Whatever the nature of that function, it satisfies the following equation:

$$\frac{\partial^2 f(x,y,z,t)}{\partial x^2}+\frac{\partial^2 f(x,y,z,t)}{\partial y^2}+\frac{\partial^2 f(x,y,z,t)}{\partial z^2}-\frac{1}{v^2}\frac{\partial^2 f(x,y,z,t)}{\partial t^2}=0$$

or $\quad \frac{\partial^2 \psi}{\partial x^2}+\frac{\partial^2 \psi}{\partial y^2}+\frac{\partial^2 \psi}{\partial z^2}-\frac{1}{v^2}\frac{\partial^2 \psi}{\partial t^2}=0$ (1)

The value v is a material constant having the dimension of velocity, and it has been demonstrated that it is the speed wave front. That is the equation called the equation of wave. In the simplest of cases, the function only depends on x and t, f(x, t). In that case, the equation of the waves becomes:

$$\frac{\partial^2 f(x,t)}{\partial x^2}-\frac{1}{v^2}\frac{\partial^2 f(x,t)}{\partial t^2}=0 \qquad (2)$$

That equation actually describes the probability distribution of the particle with respect to space and time. The application of this hypothesis of the quantum theory implies the fact that the total sum of the information concerning a certain particle must be contained in the wave function which is associated to it, as the formalism of the wave functions is considered adequate because their predictions are in keeping with the experiments. The basic laws of quantum physics and mechanics describe the physics of the sub-atom world, but the macroscopic world is itself a final case of that science of the greatest generality. In the thinking of quantum mechanics, an entity of a sub-atom particle, such as the electron, could behave not only as a particle, but also as a wave. That odd quantum effect is supposed to disappear, in accordance with the thinking of quantum physics, when the entities become bigger. In the normal world, this effect does not exist, but the macroscopic world cannot however explain its own behaviour without it. The whole quantum theory centres on the wave equation, the mathematical formalization of which was discovered by Schrödinger, starting from the Klein–Gordon equation:

$$\frac{1}{c^2}\frac{\partial^2}{\partial t^2}\psi\left(x,t;\overline{p}\right)-\nabla^2\psi\left(x,t;p\right)=-\left(\frac{mc^2}{\hbar}\right)\psi\left(x,t;p\right) \quad (3)$$

where ∇^2 represents the Laplace operator defined through the relation:

[16] Goswami, Amit, Deepak Chopra (2000), *The Visionary Window: A Quantum Physicisl's Guide to Enlightenment,* Quest Books, Hampton Roads, Publishing company.
[17] Goswami, Amit, (2000), *Universul conştient de sine. Conştiinţa Creează Lumea Materială*, Ed. Orfeu, Bucharest

[18] Săvoiu G., 2008), *The Scientific Way of Thinking in Statistics, Statistical Physics and Quantum Mechanics,* Romanian Statistical Review no 11/ 2008, pp. S XIII pp. 1- 10

$$\nabla^2 \equiv \frac{\partial^2}{\partial x_1^2} + \frac{\partial^2}{\partial x_2^2} + \frac{\partial^2}{\partial x_3^2} \qquad (4)$$

and which he reformulated for a free particle as follows:

$$i\hbar \frac{\partial}{\partial t} \psi(x,t) = -\frac{\hbar^2}{2m} \nabla^2 \psi(x,t) \qquad (5)$$

Schröedinger's equation allows studying the time evolution of the wave function that characterizes a system of micro-particles. If the energy E of the system is constant with respect to time, Schröedinger's equation acquires the following forma: $H\psi = E\psi$, which allows to find the own wave functions and the energy spectre for the system considered. The probability of finding a particle is given by a function having conformity with the principles of wave mechanics. Thus, the particle is dissipated in space, and it is only the probability of finding it in a certain location can be calculated, until it is noticed in a practical way. The thinking of quantum statistics leads to the conclusion that using the probabilistic scenario with alternative state variants (very much as the particle–wave, in the quantum model), stands the best chances of coming near the description of the macroscopic, macroeconomic, macro-financial world, and, of course, to understand and anticipate their future also…

Probabilistic density will thus generate previsional models based on the probabilistic thinking structured in distinct scenarios. The merit of the quantum physics is that of acknowledging its limits in foreseeing future events, centred on the principle of uncertainty, and becoming familiar to future economics, as well. Economical thinking will also take over, in future, the simultaneity of the states of particle or wave, from quantum statistics, in an alternative approach to the various specific units defined through binary states.

Finally, the quantum economics is the scientific compromise between the economic vision and quantum physics' thought. Quantum economics means also the coalition and the equilibrium between the two sciences.[19] This coalition has three steps:

- the coalition must have "positive measure" (the coalition "matters", in the general sense);
- the both sciences (economics and quantum physics) prefer the new allocations of the common sense of thinking;
- the total endowment of the coalition must be sufficient for them to conduct to a better understanding of the economic world (more atomized and thus continuum).

The major idea of the new quantum economics could be that any modern company, even when she is "financially dead" still produces energy. Thus we must evaluate the results in the future in a quantum physics manner not in a vulgate classical economic one…

There is an essential contemporary difference between quantum physics and quantum economics. The uncertainty of observation in the quantum physics quantities relates not only ever changing realities but also the ways of observations.

The main issue is measuring and observing in the quantum economics is putting parameters after analyzing of the information when the difference between economical quantities and final observations are even greater hence the measurements start from the same or even totally opposite points so the relevance between and among these measurements is based on their directions, length and the angles of their projections (in fact these are more and more scientific bias of the economics).

7. SOME FUTURE ALTERNATIVE CONCLUSIONS IN THE QUANTUM ECONOMICS' WAY OF THINKING

The idealism of Quantum economics' approach changes the classical conclusions described in the first part of this paper. Quantum economy is a quantum economic model of a finite economic system that consists of an economic subsystem (or simply economy) with a certain number of buyers and sellers (economy agents) and its external environment (institutions) with certain interactions between economy agents, and between the economy agents and institutions. All quantum models that describe finite economic systems are based on using quantum physical models of the corresponding abstract or virtual finite physical systems consisting of point bodies with different parameters and different interactions among them. Quantum economy in the large sense is a field of science about physical modeling of finite economic systems by means of corresponding finite physical systems and studying of such economic models with the help of quantum mechanics methods. In this sense it can be called also quantum economics. Quantum economy can also be seen as a new subsection of econophysics which gives quantum physical models for finite economic systems. The traditional econophysics subsections give physical models for infinite economic systems, and the statistical physics methods can be used for their description.[20]

The principal aspect in developing a physical model is a selection of function which helps us to describe economy dynamics, like movement of buyers and sellers in price space. As such a function in classical economy the economists can chose the agent's trajectory in a price space supposing implicitly that behavior or movement of the market agent comes to establishing a price for goods and commodities at every point of time by negotiations or information exchange both between economic agents and agents with external environment. It looks like economic agents adjust their trajectories to each other based on their principal concerns for their own and common profit that leads to some determination in their behavior or movement in price space. This must be a better description of a restructuring process… The evolution of the economic processes could be given only by "parameters of expansion, contraction or sometimes the both" so they can develop in "certain areas" to "certain extend" and then changed or adjusted, it may be done in a way to disperse accumulating energy so instead of big wave: the ways

[19] Weintraub E.R.,(1985), *General Equilibrium Analysis: Studies in appraisal*, Cambridge,UK:Cambridge University Press.

[20]Maslov, S. (2002).*Econophysics and quantum statistics*, 72(5-6),811-818.

energies are accumulated and create big waves is the example of each market appreciation: which is positive for the economy to the extend of providing additional capital and equity thus expanding individual capitalization and investing. Quantum physics and quantum economics can also imagine a better solution of these three economic situations. Quantum physics is compatible with three distinct metaphysical "packages", one in which the agents (particles) are regarded as individuals, one in which they are regarded as energy (wave) and one where the both possibilities are accepted… This approach could be a better for measuring organizational structure of a company in the very next future, in a quantum economics way of thinking.

The first classical and realistic conclusion underlines the necessity of a standard model for restructuring a company. Hence the conclusion of a special quantum thought appears: the future of standardization is from the quantum physics essence and extraction (particles are more and more standardized in modern quantum economics)…

The second important realistic conclusion is the possibility of comparing various parameters of organizational structure, either at the particular organizational level, in particular organization or in business system that consists of multiple organizations.

Quantum economics could do a better job in this situation, using the scenarios of multiple structures, but finally with the same results as benefits parameters…

The third major classical conclusion was that the implementation of such concise view of simplifying the model and the structure becomes clearer, it is very important during the analysis phase. The simple version may be developed in detailed, classical model of the organizational structure if there is a need for it. It is obvious that quantum economics models of the organizational structure for a company is the most synthetic of all kinds of scientific models, too.

8. SOME FINAL REMARKS

This paper tries to underline the future superiority of quantum economics thinking. Physics, in general, can work with real market data, can also derive empirical laws and construct phenomenological theories, and statistical physics has useful approaches to economic systems, composed of many interacting parts. Quantum physics can change the entire way of economics' thinking, due to interacting units in economics are thinking agents with adaptive strategies and they are not so far from the "mindless" particles obeying simple microscopic laws. Thus, finally quantum economics could be the best solution for understanding economic process and phenomena. This idea is related to the significance of the integration of the thinking of quantum physics into the economic and statistical thinking of the future. The thinking of quantum physics does not exclude, through generalization, the macroscopic world, to which reference is made, in economics or statistics as well, under the name of populations and economies. The laws of quantum physics are the most general laws of nature, also for the reason that they start from the wave equation (function),

and the new science of quantum economics will inherit all these qualities...

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