Entropy and Education Market of Georgia

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In theory of management, the entropy shows the disorder of system size. In the modern stage of society development when globalization puts the form of an informal society on the agenda, there is a deep and systematic study of information entropy. This is more problematic for countries that represent young states on the path of independence. It is difficult for them to manage crises with old methods, crises which are of organizational, managerial, financial-economic, and systemic characters. In recent times, the uncertainty, imbalance, and disorganization of the global financial and economic system have sharply increased. The latter is also an acute problem at the corporate level. In the study, on the example of educational market research there is explained the impact of entropy on the nature of change management in the corporate context; there are also identified main factors that make influence on the reduction of entropy phenomena in higher education institutions and their disciplined behavior under the conditions of competition.

Keywords: entropy, natural entropy, artificial entropy, regulated behavior

Introduction

Before describing entropy in the economic system we want to explain the phenomenon of entropy and its influence on public life.

Entropy by Greek terminology means transformation, turn. It was first used in science by the German physicist Rudolf Clausius in 1865. Later he laid the foundation for the thermodynamics and the molecular-kinetic thermal theory.

The aim of Clausius was to determine the conformity between the temperature provided to the system and the change in the temperature of the system (object) itself. Testing has detected additional features concerning attitudes between the transferred heat and the “internal regulation” level of the system.

This is the basis for the introduction of the entropy as a new phenomenon in science, which is later reflected in all directions of science, for example, the entropy in the theory of information is the rate characterized by the uncertainties of the system.

In systems theory it represents the turnaround rate of system level. Statistical physics I considers it as a measure of probability of the system existence in the given condition (Boltzmann principle). Entropy has different explanations in the economy. The part of the scholars explains it as a quantitative indicator of unregulation; excessive work measure or a share of adverse processes or side effects that have some activity. In

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general, the entropy in economy has a vague explanation.

However, in our opinion the theory of Professor I. Promojin who won the Nobel Prize as the founder of the theory of irreversible processes of structures as one dispersion, is adequate to the explanation of entropy in economy. The inequality is the nature of the structure and the nature of entropy (disorganization) in the nature and the society.

The goal of the research is:

- Explaining the nature of entropy in the era of digital society;
- Identification of entropy and change management features in the activities of the companies;
- Explaining the influence of entropy on the nature of change management in the corporate context.

Researcher in his work, "Entropy and Economics" (Darda, 2017) asserts that entropy is a universal theoretical concept that can be used in all areas. In the theory of management, the entropy shows the size of system disorder. In the modern stage of society development, when globalization puts the form of an informal society on the agenda, there is a deep and systematic study of information entropy. This is more problematic for countries that represent young states on the path of independence.

It is difficult for them to manage crises with old methods, crises which are of organizational, managerial, financial-economic, and systemic characters. In recent times, the uncertainty, imbalance, and disorganization of the global financial and economic system have sharply increased. The latter is also an acute problem at the corporate level.

The innovative epoch puts new competition conditions, and it is the possession of information-network economy management tools, without which it is impossible to manage future and gain competitive advantages at global level.

Globalization and Natural Entropy

The modern world is characterized by large volumes of information, the management and use of which determines the entropy size, competitive level, and sustainability of operating structures.

An analysis made in the historic context of globalization of globalization shows that globalization cycles are characterized by a short period of time compared to each of the forerunners.

The first triad (triple) of the international market evolution (VII-XIII century): I cycle: 637-661 (TI); 661-769 (WSH); 769-793 (IMRCH); 793-889 (SCR). II cycle: 889-913 (TI); 913-1009 (WSH); 1009-1033 (MRCH); 1033-1117 (SCR). III cycle: 1117-1141 (TI); 141-1225 (WSH); 1225-1249 (IMRCH); 1249-1321 (SCR).

The second triad (XIV-XVIII century): I: 1321-1345 (TI); 1345-1417 (WSH); 1417-1441 (IMRCH); 1441-1501 (SCR). II: 1501-1525 (TI); 1525-1585 (WSH); 1585-1609 (IMRCH); 1609-1657 (STCR). III: 1657-1681 (SCR); 1681- (TI); 1681-1729 (WSH); 1729-1753 (IMRCH); 1753-1789 (SCR).

The third triad of the international market evolution (XIX-XXI centuries): I cycle: 1789-1813 (TI); 1813-1849 (WSH); 1849-1873 (IMRCH); 1873-1897 (SCR). II cycle: 1897-1921 (TI); 1921-1945 (WSH); 1945-1969 (IMRCH); 1969-1981 (SCR). III cycle: 1981-2005 (TI); 2005-2017 (WSH); 2017-2041 (IMRCH).

As evidenced by the evolution of the international market, its first and second trinity is related to the world shifts (WSH), as well as technology innovations (TI), and market revolutionary changes (IMRCH).

The 21st century up to mid period is characterized by a revolutionary shift in the global market and structural crisis (SCR). As a result of observation of this material and ongoing processes of globalization, we

can note that in the future, as the result of innovative competition, the duration of the above cycles will be further reduced, which will be connected with serious reforms in the field of manufacturing service as well as in management.

Competition of the future will be the competition of information-networking competition, which certainly comes with natural (logical) entropy. In this case the management of the system is simple if the manager of the subjects knows the competitive advantage at its disposal and will correctly conduct management of entropy. In a word, it could transform a system from the information chaos (unregulated) into a systematic (informative synergy). In other case, the winner will be the one who will be better able to manage the future and realize their competitive advantages.

Artificial Entropy, Myth, or Reality

Despite the fact that the entropy economy is a relatively new way of science, there are a lot of scholarly ideas about it (S. A. Ditlov, M. A. Binkin, M. P. Pkkov, M. Talcachev, G. A. Masasago, V. Kappek, etc.). In the general context, we can demonstrate it as following: Who owns and uses information—network economics instruments and entropy logic, future management is in his/her hand, successfully succeeds in realizing his competitive advantages, and becomes winner under the condition of enhanced competition.

Such argumentation raises the question whether it is possible that entropy has an artificial character and when we see it. Moreover for the developing world, where the result still is not separated from information chaos, management of subjects is often caused by inertia.

S. A. Dialatov and O. Kovalenko in their work “Entropy Economics and Global Innovative Hyper Controversy” (year) describe algorithm of such a competitive policy as follows: The governing entity deliberately creates chaos that is primarily targeted on the old system. Abovementioned causes disorder of a system, after which the new order is made with new features created in advance, that responds to the interests of the ruling entity and its specific goals. Today money does not matter but management of the future. To confirm above mentioned the authors note the words of the world’s largest corporation “Microsoft” founder Bill Gates. The use of entropy theory does not lose actuality when making decisions in company management, especially at the modern stage of globalization, under the condition of enhanced competition.

At the same time, with the diverse possibilities of development, factors such as contradictory, indeterminacy, varied and large volume information are focused, which is often inadequate or incomplete. Conflicts and risks are determined by the entropy approach, along with the various governance approaches.

During the transformation of the economy, reconstruction, and modernization, it is noted that it is characterized by evolutionary changes. Based on the study of the theoretical methodological issues of entropy, we can note that evolutionary changes may be contradictory, which may lead to an increase in entropy and cause the increase of chaos instead of the systematic discipline. The reason for this argument lies on the existed approaches in the change management. Specifically, the researchers found that 50 percent of the organizations (mostly German) take on themselves to declare that they have a culture of changes. 20% of the organizations are trying to implement it; 30% is not going to do it today or in the nearest future.

Along with the emotional aspects associated with the changes, 70% of the factors that influence the implementation of the changes are those enterprises where there is no practice of coworkers’ independence; 40% of enterprises do not value the structural orientation of the customer, and 70% of the enterprises are limited for inflexible hierarchy.

Based on the research, there occurred classification of companies adapted to changes that were grouped in the following way:

- “Complacent”,
- “Chaotic”,
- “Problems managers”,
- “Pseudo-innovative”.

What is happening in this market of Georgia? How they cope with the system regulation and decrease of entropy on today's database?

At the first stage of the research, we have selected 30 high schools in the field of education (their anonymity is preserved in the interests of HEI). The survey found that only 8 HEIs have a culture of changes, which is approximately 27% of the target segment; 60% (18 HEIs) seek to make changes and the rest 13% (4 HEIs) work with minor changes. According to the above classification, 60% of the HEIs belong to “pseudo-innovators”; 20% belong to “chaotic”; 15 percent are “satisfied”; and 5% are of “problem management managers”.

At the second stage of the research, it was interesting to study the factors that were acting on the basis of the global competition, in the form of HEIs. It is noteworthy that the majority of research facilities emphasize the development and growth of intensive factors, where making changes by existing assets takes a significant place. Minimum cost saving strategies are being worked out and adjusted to achieve a goal (profit).

The most important factors for the management of the changes to regulate the structure (on the basis of incorrect, incomplete information) and minimize the entropy are out of attention. At the right time there exists no purposeful use of the human factor, obtaining new knowledge and preparing them for innovations. This is directly proportionate to quality management. Increasing growth of profit is not characteristic for education. In the century of information revolution and evolution, changes in the field of education rapidly take place (changes of needs; changes of the values) which requires substantial investments. They should first be directed to research, implementation of innovations, to transfer the knowledge and control mechanism (quality management). Only in this way will the rapidly changing requirements of the market be satisfied. This cannot be done on the basis of minimal cost strategy.

The study also revealed that only 12% of the HEIs spend money on marketing activities. If we do not consider state higher education institutions, minimal amounts are spent on the personnel development. In our opinion, these are the right features for realizing correct changes and the basic features of entropy reduction.

The study revealed two more factors that could help to enhance entropy and synergy. These are the improper (often wrong) reorganization of the management structure and the non-systematic approach to operation management.

Exactly, defined management-organizational structure and inadequate management of operations are due to the enlargement of entropy, and the structure cannot be transferred to the phase of order, which finally results in competition and falling of its rating. With a long-term strategy, it cannot be a guarantee of the profit.

Conclusion

Based on the research, the logical union of entropy reduction and change management has been identified. The main factors that have been identified are the reduction of entropy phenomena in the HEIs and their regulated behavior in competition conditions.

80 percent of higher education institutions do not have a separate worked out chain of value and it is usually identified with the organization strategy, which is, of course unacceptable. In value chain there should be reflected the important elements that are on the center of attention by organization, and the elements of which right realization (management) is a guarantee for the growth of revenue.

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