

INFORMATION AND RESILIENCE IN ENSURING THE SUSTAINABILITY OF INSTITUTIONAL SYSTEM

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Abstract: *At present, mankind, at the beginning of the era of knowledge, crosses rapidly the era of the fourth industrial revolution. Changes are so rapid and profound that, with reference to the whole of human history, there has never been a moment characterized by such great expectations or potential danger. All new developments and technologies have a key feature in common: they exploit the generalized power of digitization and information technology. The accumulation of information available today, the speed of their processing and the acceleration of innovation are difficult to understand or anticipate, constituting a source of constant surprise. Decision makers, often trapped in traditional, linear thinking clichés, are too absorbed by the immediate preoccupations to think strategically in relation to the forces that induce disruptions in institutional systems and which tend to shape our future. Technological competition implies the resilience of the activity and the ability of the institutional system to quickly reconfigure and adapt its purpose in accordance with changes of any kind: political-economic, national and international, climate etc. Resilience is given by safety, efficiency, quality, high productivity, adaptability, success, modern management, superior products, optimal costs. Thus, the creative factor must be supported and promoted by empowered institutions and policy-makers by supporting research and innovation, promoting sound policies to reduce the budget deficit, better spending orientation (improving infrastructure, investing in human capital), and sustainability tax.*

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JEL Classification: *H00, O10, P00.*

1. Introduction

Fundamental changes over the last decades have transformed human society from an industrial one into a knowledge base where knowledge accumulation plays a decisive role in technological, economic and social growth and development. Expressions such as the "Fourth Industrial Revolution" or "Industry 4.0" are increasingly being heard in public space, creating anxiety even among the scientific elites of mankind.

Scientists everywhere claim unanimously that humanity will be transformed by the accelerated rate of progress into four converging technologies: genetics, robotics, nanotechnology, and artificial intelligence. The Fourth Industrial Revolution is obviously one of knowledge, accelerating innovation, digitization, and generalization of advanced technology penetration into everyday life.

2. The Theory of Knowledge-Based Society

The World Economic Forum in Davos (Switzerland), held from 20 to 23 January 2016, attended by 40 heads of state and over 1,500 businessmen from all over the world, had the main theme of discussion The Fourth Industrial Revolution. In the 4 days of the forum, global economic leaders discussed the challenges and opportunities of the new industrial revolution that has just begun and will show its full effects from the next decade.

The rapidly evolving evolution of IT & C technologies will soon lead to profound changes in the labor market. The Fourth Industrial Revolution will lead, due to the wider implementation of robot and automated production lines, to the disappearance of poorly paid manufacturing professions that still exist today. On the other hand, it will lead to the

emergence of new highly specialized professions, especially in education, research, engineering and IT & C, which in turn will provide jobs for millions of people.

Daniel Bell used metaphorically the phrase "evolution as the laying of the leaves of an onion", understanding that every type of civilization (agricultural, industrial, post-industrial - based on knowledge) relies on the previous one, overcoming it. The theory of knowledge-based society is due to Daniel Bell who, since 1964, has emphasized that post-industrial society is a society in which the predominant element is no longer the enterprise, but something in which the intellect is predominant [...] most of the institutions of society will be a vast device of conglomerates of universities, research institutions, research corporations etc.

The new industry will mark the shift from activities based on traditional factors of production (land, labor, capital) to a new structure that can be described as innovative production based on knowledge and capital (European Commission, 2004, p.13).

Until recently, the institutional system of the industrial society had as its core the enterprise, which dominates specialized and unifunctional institutions (education produces specialists and research produces knowledge). The new institutional system will have to have at its core the R & D units, education, collecting - processing - disseminating information and linking multifunctional and multidisciplinary institutions through clusters, heterogeneous cooperation networks, strategic alliances etc.

3. From Information to Knowledge Deposit

Both the concepts of "information society" and "knowledge society" are based on the notions of information, knowledge and, implicitly, knowledge deposits. We can define the information by going through the entire logical and psychological chain of signal - sign - date - information, as that time that reduces uncertainty.

An information becomes knowledge when it verifies the following predicates of sufficiency:

- there must be a cognitive subject to receive the information;
- the subject's cognitive background must be compatible with that information (it must contain information of the same type);
- the information must be integrated in a structural way.

Information can be structurally integrated into the cognitive background of the subject only when it meets similar knowledge of the same nature, being thus transformed into knowledge. The set of cognitive domains that have cognitive deposits formed in a subject form knowledge.

Information can be structurally integrated into the cognitive background of the subject only when it meets there similar knowledge of the same nature. In this case, the information is transformed into knowledge. The set of cognitive domains that have cognitive deposits formed in a subject form the knowledge deposit.

Knowledge is that information which, once received, finds in the pre-existing cognitive "deposit" of the receiving subject an informational base (and knowledge) that allows it to be structurally integrated. This is not just the logical sum of cognitive deposits taken individually, to this contributing fully the synergistic effect produced by the connections between them, manifested by causal action.

4. Competitiveness and Institutional Sustainability

Enhancing competitiveness has become, in recent decades, a key coordinate of sustainable socio-economic development strategies. Sustainable development is based on access to information and involves a continuous increase in capacity to drive economic and

social development processes so that the environment can sustain both the present and the future of new generations.

Institutional competitiveness is the capacity of an institution to generate performance in a sustainable and competitive manner. From the theoretical point of view, the concept of competitiveness is based on two sub-concepts - comparative advantage and competitive advantage.

The competitive advantage is maintained thanks to the improvement and development of resources. Michael E. Porter (2008) states that the factors that determine the dynamics are more important in achieving success than the factors that determine constant advantages. It is in the interest of each organization to identify the best solutions to gain competitive advantages over competition, using effective analysis tools such as the Porter model.



Figure no. 1. Porter's Five Forces

Source: Porter, M.E., 2008. The Five Competitive Forces That Shape Strategy. *Harvard Business Review*, 86(1), pp.57-71.

The evolution of the vision of treating competitiveness at any of the above mentioned levels is strongly marked by the contemporary phenomenon of globalization.

However, unwanted and unforeseen events can trigger crises, can cause natural disasters, emotional trauma and material damage at individual, institutional and social levels, thus affecting the competitiveness and sustainability of institutional systems.

In the absence of precision of predictions about the occurrence of unforeseen events, institutions need to make a risk assessment that requires consistent reasoning, professionalism and experience. Risk is that random event that damages the institution by

affecting technical, human, financial resources, preventing it from reaching its established goals.

To minimize risks and make decision-making easier, decision-makers need to analyze all unknown factors, transform "uncertainty" into "risk", assume and manage it. In the current context of change, globalization of business and the internationalization of companies, risk management is another connotation.

The economic science of sustainability has in its composition the economic resilience that has the ability to stop the negative effects of shocks, to find solutions to various problems arising both from the inside and from the outside.

Accidental factors determine the temporary deviation of the market from the trend. These factors occur in an unpredictable way and easily alter the state of the conjuncture. This group of factors include conflicts between states, natural disasters, drought, strikes, some political measures of states etc. The capitalization of these conjunctural conditions largely depends on the adaptability extent of the enterprise.

Building the resilience of an organization / institution involves:

- developing a specific legislative framework;
- the allocation of necessary equipment and funds;
- designing a portfolio of procedures and working rules;
- socio-economic development of the perception of the importance of building resilience and social synergy between state and private institutions, local authorities, NGOs, citizens' associations, professional organizations, etc.;
- promoting and implementing at socio-economic level the culture of anticipation, prevention and risk preparedness;
- development of post-crisis plans and return to normality etc.

The redundancy structure can be implemented within an institution by:

- well-established goals by the management team;
- communication of objectives at all levels of the institution
- pursuing the activity in conditions of efficiency and efficacy of operation;
- the safety of obtaining quality financial information;
- compliance with laws and regulations;
- protecting goods and information;
- preventing and detecting fraud and mistakes through a well-organized internal control system;
- ensuring that public funds are managed economically, efficiently and effectively.

Knowledge of anti-fragility mechanisms is a systematic guide in the process of adopting non-predictive decisions in conditions of uncertainty in business, politics, medicine, and generally, in life. Black swans can be both positive and negative. In scientific research black swans are positive.

Nassim Nicholas Taleb (2007) presents in his works the social science that dominates the laws of power. Thus, he states that there is a similarity between the natural processes and the behavior of the social groups.

By various methods, system sustainability attempts to control externalities. Actions to control externalities take the form of government bans, isolations and regulations. Over time, modest damage causes a small anti-fragility error, but as time passes brings other errors, other challenges that ultimately help in gaining robustness and anti-fragility.

5. Conclusions

In a forward-looking remark, Winston Churchill once said that "the empires of the future are empires of the mind" (Churchill, 1943). Today, this observation has come true,

as we are witnessing a rapid breakthrough in IT & C technologies, progress that produces paradigm shifts in all areas of social life, in the competitiveness and sustainability of institutional systems.

Competitiveness suggests safety, efficiency, quality, high productivity, adaptability, success, modern management, superior products with optimal costs.

At institution level, the ultimate goal is to gain benefits and well-being. This can be achieved by using: research and innovation programs; modern technology; new products and services launched on the market, in other words, by using technological competitiveness; involvement of all decision makers.

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