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EDITORIAL

A New Paradigm: Industry 4.0

The efforts of people to develop science and technology have been continuous, but in the history of science and technology, some revolutionary moments can be distinguished. We do not discuss the Neolithic revolution represented by the transition from migratory people (hunters, gatherers), to sedentary people (plant cultivators and animal breeders), nor the changes in the production mode, where six revolutions are likely to be distinguished. For example, after 1100, the revolution in agriculture appeared by the use of metal grommets and tools; towards 1400, a commercial revolution takes place through the emergence of banks and new types of contracts; after 1600 a scientific revolution takes place; towards 1800 there is an industrial revolution based on the use of steam and the emergence of the division of labour; after 1925 a managerial revolution took place, through separation between business owners and business leaders, and after 1960 a revolution in services took place, which led to the industrialization of services.

Regarding industrial revolutions, W. Taylor Thom (Science and Engineering and the Future of the Man – 1961) identified six such revolutions: first – wheel discovery; the sec-ond – or smelting; third – the use of steam power; fourth – the production of chemicals; fifth – electricity; sixth – transport; seventh – electronics.

J. Gimpel (Industrial Revolution in the Middle Ages – 1975), noticed that between 1050-1350 throughout Europe there was a change in creativity, an „industrial revolution" as he called it. The monastic orders had a contribution during this period, the church has not yet imposed its dogmas on us. But after 1300 a decline in creativity is observed, it is less and less innovating desire, this because the economic and social need has disappeared. The Renaissance Era was a time of revitalization of science, but less of technique.

But most researchers believe that industrial rev--olutions occurred after 1780. John Bernal (Science in History – 1954) identified three revolutions: the first revolution – the emergence of the steam engine (at the end of the 18th century); the second revolution – internal combustion en-gines (at the end of the 19th century); the third revolu-tion – electronics (mid-20th century). But Pro-fes-sor Mihai Drăgănescu (The Second Industrial Revolution – 1980) considers that only two industrial revolutions took place; the first was based on the steam engine (1780), and the second was after 1970 with the advent of microelectronics.

After 2012 we can speak of the fourth industrial revolution leading to Industry 4.0. In the fourth revolution, cyber-physical systems (computer-controlled coordination systems) are created, for example, have appeared the autopilot, automatic medical monitoring, driverless

cars, autonomous robots, etc. The fourth revolution is based on cybernetics, mechatronics, artificial intelligence, genetic algorithms. And as a consequence now we talk about Marketing 4.0 Quality 4.0 Communication 4.0 and who knows what other areas will become 4.0.
But as the signals of an industrial revolution ap-peared about 50 years before the actual revolution (the steam engine appeared before the first industrial revolution, the electric battery before the second revolution, the electronics before 2012), it could be that we are actually witnesses of the Third industrial revolution as identified by John Bernal and probably started in 1980 as appreciated by Mihai Drãgãnescu.

Sorin Ionescu
Editor-in-Chief

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ABSTRACTS

The Sustainable University in the New Economic Context

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ABSTRACT: *Higher education institutions bears a great responsibility for the local, regional and national environment impacting them as well as the graduates and their future decisions. The concept of a sustainable university should comprise all three fields of sustainable development: a healthy environment, economic performance, and social cohesion. All things considered, the universities from Romania need to focus their attention on incorporating sustainability principles into everyday activities and structures: management performance (vision, mission, strategy), education and research (programmes, curricula, teaching methods), operations, forming networks and reporting to stakeholders (sustainability indicators). This research proposes a methodology to translate how the theoretical concept of a sustainable university is translated into practical tools for coordinating continuous improvement efforts put into sustainability. The methodology is based on the PDCA cycle. Moreover, this paper encourages universities from Romania to improve their strategic objectives through the integration of sustainable de-velopment principles within their academic activities and strategies. Therefore, a new approach and tool for continuous improvement and assessment of sustainability can be implemented in higher education, in Romania, in total compliance with the requirements of European and international sustainability standards. In order to improve the quality of Romanian higher education and administration, several conclusions and recommendations have been suggested for the implementation of this new approach.*

KEYWORDS: sustainability, higher education, sustainable university

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Blockchain Ecosystem in the Financial Services Industry

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ABSTRACT: *The emergence of disruptive technologies such as blockchain in the financial services industry is causing „high tension" among systemic market players. Leading financial institutions are experiencing increasing discomfort with the entry of new high-tech competitors into niches that they have traditionally dominated for centuries. The advent of blockchain as a new high-tech ecosystem could not only change the institutional profile of the financial industry but also alter the nature of financial deals, reshape the trading patterns and relationships between counterparties. The research focus of this paper includes questions such as: is the blockchain ecosystem capable of dramatically disrupting the financial services industry, which segments are likely to be affected, and what is the expected nature of the changes. The methodological toolkit used is based on literature review and use cases analysis that examines the expected positioning of blockchain in selected segments of the financial industry. The interaction between the distributed ledger and smart contracts as components of the blockchain ecosystem provides good opportunities for optimizing financial market trading. The results of the study show that blockchain technology application is expected to lead to automation of key processes, increased security, transparency, speed in transaction execution and elimination of unnecessary financial intermediation. The analysis also shows that blockchain's application is facing technological, legal, regulatory and ethical challenges and barriers.*

KEYWORDS: blockchain, distributed ledger, smart contract, financial services, disruptive technology

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Risk of the New Control Systems

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ABSTRACT: *The aim of the paper is to provide the fundamental notions on the methods and tools of risk analysis aimed at ensuring, developing and guaranteeing trust in any organisation and on any project. International standards for quality, environmental, health and safety management, risk management, decision analysis, and gaining synergies are thoroughly analysed.*

KEYWORDS: risk, risk analysis, risk management, risk identification, quality management, decision analysis, reliability

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Factors Affecting the Use of Smartwatches

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ABSTRACT: *The world of electronics is constantly in the state of evolution, a world where smartwatch devices have already begun to work quickly and have already replaced much of the classic watches. In Romania, smartwatches have become a basic accessory for young people or businesspeople, but they also began to arouse the interest of other categories of people. The goal of this paper is to determine the factors affecting the intention to use smartwatches, focusing attention on young people's perceptions of the functions or advantages of using smartwatch devices. The authors started from the original TAM model and added some external variables to test which of them largely influences the intention to use and buy a smartwatch. The results of this study highlighted that for young people, enjoyment is one of the key variables that strongly influence the perceived usefulness, the intention to use a smartwatch, and also the attitude toward using the smartwatches. The variable that least influences the adoption of these smart devices turns out to be social conformity.*

KEYWORDS: smartwatches, wearables, technology adoption, technology, technology acceptance model (TAM)

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The Effect of Technological Changes in Education

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ABSTRACT: *The purpose of this article is to highlight the profound global changes in the use of technology and the nature of work have urgent implications for how we educate young people and prepare them for the labour market. Employers are increasingly looking for youth who are flexible, adaptable, proactive, creative and collaborative, able to cope with industrialization. The Youth Employment Funders Group uses the term „soft skills" to describe a mix of skills (both non-cognitive and cognitive), attitudes, behaviours and mindsets, especially when referring to youth workforce and employment outcomes. In this article, we will look at how to adapt young people to learn the language of a particular job, industry or role is directly related to how smart they will sound and how well they will work in an environment and dramatically improve the chances of finding jobs because companies will first choose someone who needs less time to get them to speed.*

KEYWORDS: global changes, soft skills, teaching, technology, industrialization

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The European Union and Changes in Technology

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ABSTRACT: *The statistics of the European Union in the field of science, technology and innovation cover a sufficiently important range. In this respect, the development of innovation, science and technology also implies a better and more consistent use of human resources. Science is part of the development of society. Only by developing science, that is, innovation, inventions, in all fields, is the foundation for the economic progress of each country ensured. Europe has a long tradition in the field of research and innovation, with numerous prestigious and highly efficient economic projects in the industrial, biological, pharmaceutical, telecommunications or aerospace fields. The extension of the influence of the research in the field of the economic sphere ensures protection of the environment, of the international business environment, of the improvement of the quality of the products realized in all the fields. In October 2010, the European Union launched the development program by 2020, the program being called the Innovative Union, which aims to develop the research climate in the field of energy, food security, health and quality of life of the population. In the European Union, innovations are monitored and implemented through this innovative Union. In this area, countries that are not members of the European Union have also been attracted, considering the attraction of other specialists for research and innovation projects.*

KEYWORDS: technology, innovation, research, development, patent