

## CONTRADICTIONS IN RELATION TO DIGITALIZATION OF THE ECONOMIC ENVIRONMENT AND TRAINING SPECIALTY STAFF

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### **Abstract**

*We are currently witnessing an ongoing process of technological and digital development which contributes to re-defining the economic environment and training specialty staff in this field. In the present economic context, the managers operate with an open social and economic system with one or several sub-systems created on the basis of the structural criterion or the functional criterion. The objectives of this research are: i) to provide arguments towards validation of the statements according to which the system of human activity is a holon to which all optimizations of the other holonic systems relate; ii) to present the impact of the digital technologies on the development of modern society, which have to integrate the informational technology, in line with limitation of and compromising human autonomy. The results of this research maintain the fact that the rapid progress of the 21st century have brought both benefits and threats to the economic activity, to the health of the individuals and, last but not least, to the sustainable development of the environment.*

**Keywords:** digitalization, diversity, technologies, competences, economic environment.

**Clasificare JEL :** O33, Z13

### **1. Introduction**

The revolution of the digital technologies and digitalization has significantly impacted the growth of the economic environment over the past years, in particular as a response to the COVID-19 pandemic. At present, digitalization has seen a rapid evolution in the business sector, and more and more companies from various lines of work adopt it in order to remain competitive on the market. The business environment is based on complex, operational and structural production systems. Two of these, i.e. intelligent production systems and holonic production systems, have recently been granted a large amount of attention in the economic and educational environment. The holonic concept originates in the works of the Hungarian author and philosopher Arthur Koestler, who attempted to capture the behaviour of the complex systems, considering that their constitutive entities are simultaneously wholes as well as parts of such wholes [1].

Usual dictionaries do not include the term of holonic system. However, it means integration of two or several autonomous systems, using precise criteria and objectives towards forming a new system which functions superiorly, whereas the results in relation to the systems incorporated are optimal. To describe a basic organization unit in the biological and social systems, Koestler invented the word “holon” coined from the combination between the Greek word “holos” (whole) and the suffix “on” which means a part or a particle.

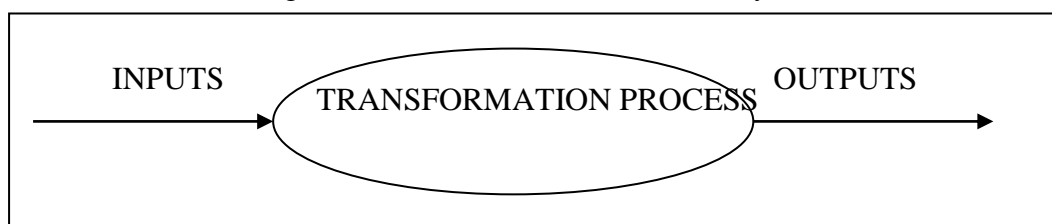
The present article is structured into four parts. The first part of the paper presents the essence of the management applied in holonic companies, highlighting the two sub-systems: decision-making processes and computer technology. The second part analyzes the evolution of the holonic company towards the managerial decisions assisted and rigorously argued with the help of the artificial intelligence techniques (AI). The third section is intended to present both the benefits and the disadvantages of the use of AI in the business management as well as the effort of the European Union to set a set of harmonized norms which take account of the use of the AI benefits, on the one side, and human rights, on the other side. The final part of this paper highlights the role of the AI in relation to training future economists for the digital society, including by learning two or three languages widely spoken on the global market. Consequently, the paper raises the profile

of the characteristics of different cultures which will be used in designing and promoting some products and services that will be as close as possible to usual practices and demands of the future consumers.

## 2. Literature review: holonic company in contemporary management

Management activities involve most often the term “system”. There are numerous definitions of the concept of system. Nevertheless, this is mainly an ensemble of elements (parts) organized to achieve a certain goal [2]. There are various perspectives used to classify systems. Additionally, there are numerous criteria taken into consideration in this respect. In this paper, we take into consideration the social and economic systems which, according to how they connect to their environment, may be: open systems or closed systems. A closed system is “Isolated”. It is not intertwined to the environment, i.e. the “entries” at a given time are not dependent to the previous “exits”. (Figure 1).

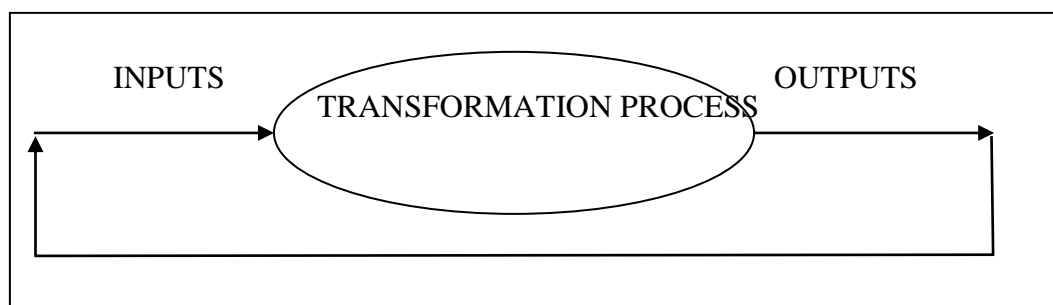
Figure No. 1. Base model of a closed system



Source: [3]

An open system is connected to the environment in which it functions and the feedback is the prerequisite for such system to exist and be used (Figure 2).

Figure No. 2. Base model of an open system

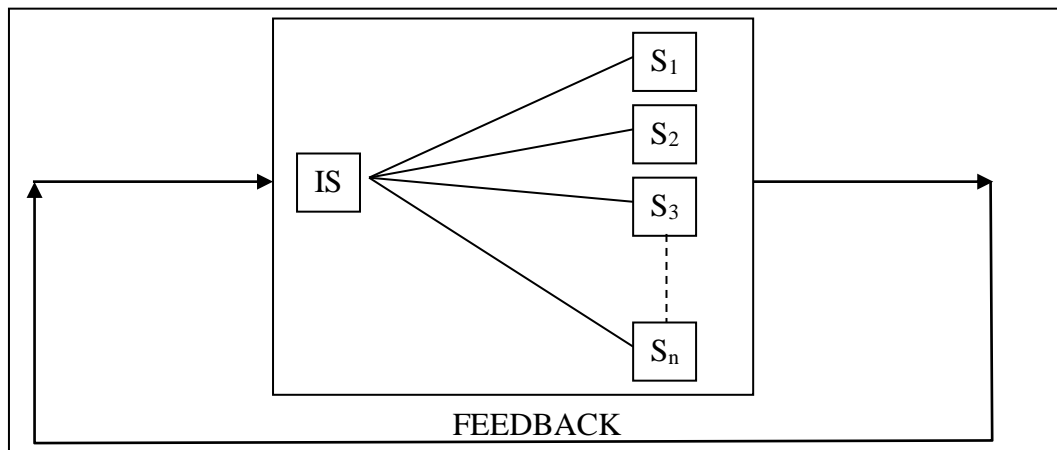


Source: [3]

The field of economics operates with dynamic open social and economic systems of which variables always change in terms of number and nature. The company (organization) is a general system with component sub-systems defined either according to the structural criterion (sub-systems: technological, organizational, informational, decision-making, human relations) or the functional criterion (sub-systems: research - development, production, commercial, financial-accounting, personnel) [3]. The software systems – base structure in Artificial Intelligence, and holonic conception of such systems, have constantly developed since the 1980s. The holonic system integrates two or several autonomous systems of which “detachment” and “attachment” may occur on an abstract level as well as an actual plan, which does not apply to classical systems.

Any optimization applies simultaneously to component systems and the integrative process, which does not mandatorily exist as part of the classical system (Figure 3).

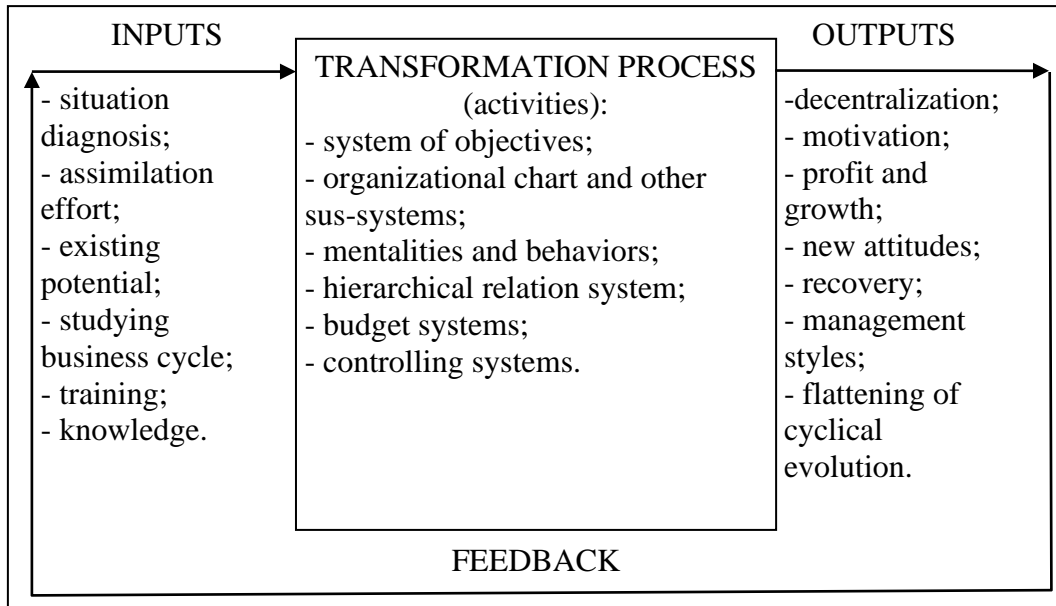
Figure No. 3. Base model of an open holonic system



Note: -  $SI = Integrating\ System$   
 -  $S_1, S_2, \dots S_n = Autonomous\ Systems$   
 Source: Tacu et al. [14:64]

The basic philosophy is the Management by Objectives (MBO) which functions as a holonic system in which objectives established by the company partially include the desires of the members of the organization, motivating therefore the employees concerned and setting the budgets by profit centers of the organization (Figure 4).

Figure No. 4. MBO, holonic system



Source: [4]

Profitable operation of a holonic company is solely ensured by information technology as a resource of the future [5]. 4G technologie is gradually becoming history, while the field of

communication is nowadays meeting with the worldwide-spreading 5G euphoria, including in the economic sector.

### 3. Use of digital technologies in managerial decisions

On the global market today, traders of products and services need a very large amount of highly accurate data in a very short time. The competition towards gaining or selecting some business partners relies on the dynamics and the abilities to know the financial situation on the market, the reputation, the organizational culture and the behavioral traits in market relations. With the innovative advances in technology as early as the 1990s, the companies started to invest more and more in digitalization. In terms of technological advances, digitalization meant at that time a website, various equipment and programs. Three decades later, in 2020, digitalization acquired new meanings and the companies failing to keep up with technological progress risked to leave the market and never return [6]. The Artificial intelligence detects the actual background of the current or potential partners. As a consequence, the risk of late deliveries as well as purchasing poor quality products or dealing with insolvent companies, etc. is therefore removed. Very useful in the managerial decision-making process are the AI-computed information gained in relation to issues and gaps of one's own company in relation to their business partners. Digital technology is impartial and rapid in processing information, and enables managers to adopt the best solutions to solve problems signaled or, at least, to decide on termination of partnerships which proved to have been ineffective for the company. Managers may associate digital technologies to business communication applications, such as collaboration within a team and unified communication in order to improve employees' productivity, save time and permanently perfect the quality of their business [7]. Managers use artificial intelligence on a daily basis as it provides virtual support, image analysis computer programs, search engines, vocal and facial recognition systems, translation machines etc.

Due to the fact that the Artificial Intelligence is not a mere soft/program, managers' challenges are nonetheless at least as big as the opportunities brought along by such intelligence. It is an intelligent digital system which creates search and learning programs on its own. AI independently develops its neuronal artificial networks; it possesses decision-making power and anticipates the consequences of its own actions which mean that it no longer depends on a human command. Moreover, it may have its own language impossible for human beings to understand. This means replacement of human beings, including managers. In January 2018 at Davos, the World Economic Forum stated that “the fourth industrial revolution will eliminate millions of jobs. A revolution in training and education, encouragement of innovation and capacity to adapt, are imminent” [8]. A Socialnomics survey (Georgescu, 2018) reveals that 61% of top managers use Artificial Intelligence towards identification of innovative business strategies, whereas 58% have stated that they use AI for predictive analyses in their business [8]. In Romania, integration of digital technology is an extremely slow process. Our country comes last of all EU countries as only 22% of the companies use the electronic exchange of information. However, we take an honorable 7<sup>th</sup> place in terms of using e-government solutions - 84%, significantly over the EU average - 58% [9]. In an increasingly unstable and uncertain environment, the only option of the economic entities is to perform economic activities which are effective and sustainable from an economic and technological standpoint. Given the fact that the goal of all and any business is to make profit, we consider that the 5G technology should not affect the financial situation of such economic entities [10].

#### 4. Benefits and disadvantages of the use of ai in management in correlation with human rights

The new technologies may be adopted in the management and conduct of economic activities only with a steady effort to re-train, re-align the analytical thinking skills, use, monitor and control technology [11]. The popular opinion is that we are heading towards an unprecedented society in which highly intelligent systems will release us from the burden of repetitive work, heavy traffic, pollution, diseases nowadays incurable. The world will be controlled by artificial intelligence systems which will raise above any human intelligence. In this sense, AI should be able to take responsibility towards ruling the destiny of a lower species, i.e. human species [12]. One of the reasons of the “dehumanization” of the information society is the fetishization, sacralization of the mathematical algorithm. The programmer-mathematician is a modern demiurge who pursues some economic objectives seen as achievable without human intervention. Possible elimination of some dangerous jobs (working in toxic environments, underground work, working at high altitudes etc.) or disappearance of some routine jobs (all jobs involving vehicle driving, maintenance of and cleaning public roads, transportation inside and outside warehouses and placing products on shelves in the supermarkets) should not be mistaken for the perfect programming which guarantees the quality of the programming of processes by machines [13]. The programmer, the mathematician is a HUMAN BEING and their products may be prone to errors or subjectivity. As a consequence, human assistance may not be removed as the process is likely to get out of the beneficiaries’ control – companies or human individuals which/who do not know and cannot manipulate internal logic of programming. The euphoria of digital technologies leads to the idea of the ideal transformation of the world protected against the hazardous actions of man. Both such euphoria and the fear of digitalization are extremes of the human society imposing legislative acts regarding AI at European and global level. In 2021, the European Commission put forward a bill “underpinned by the fundamental UE values and rights, which aims to make people confident that they can adopt digitalization-based solutions and to encourage companies to develop such solutions. The emphasis of such legislative acts lays on the protection of personal data” [14]. The management of companies should create a clear strategy intended for the use of Artificial Intelligence, harmonized with the business plan because the creation of one’s own AI systems or purchase of such systems involve major investments. Training and personnel re-training strategies should also be taken into consideration. In Romania, there are already initiatives encouraging use of digital technologies in trading organizations and in public services. Furthermore, there are AI systems for legal assistance intended for company managers.

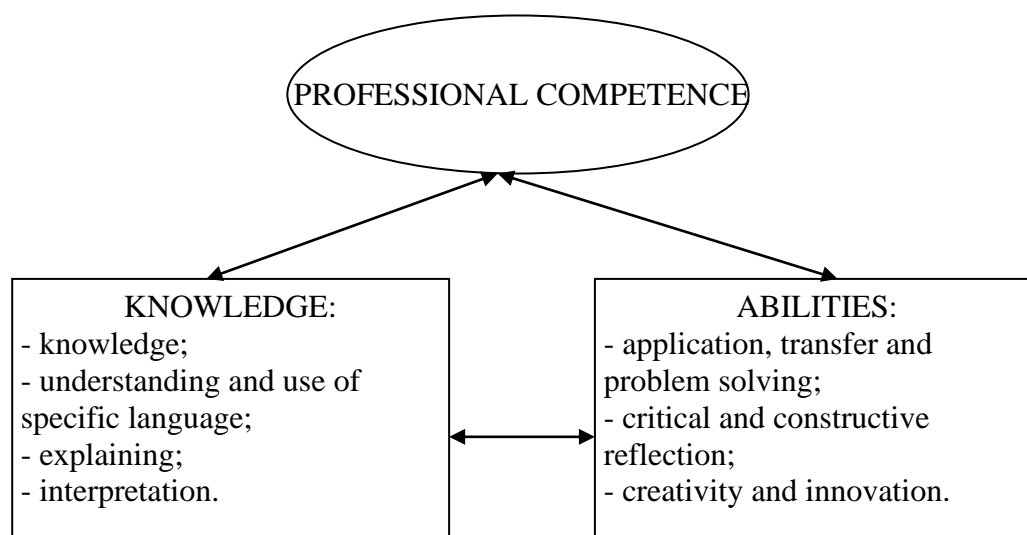
With regards to business digitalization, Romania is far behind companies in the northern and western Europe. Most SMEs have no amounts budgeted for digitalization. The expansion of SMEs in today's environment is increasingly influenced by the use of digital networks [15]. In Romania, it was only in 2020 that the Authority for the Digitalisation of Romania was established. At present, this authority draws up plans and projects for the Romanian government. The European Parliament established a digital finance package for the Europa Digitala Program for 2021-2027 timeframe. The funds are distributed through European Digital Innovation Hubs which provide support in training workers and organizing internships for undergraduates. They are access points equipped with the state of the art digital capacities, including Artificial Intelligence [16].

## 5. Use of digital technologies in training future economists

In the teaching process conducted in higher education institutions, use of digital technologies facilitates the integration of concepts of modern education such as: i) focus on student/undergraduate; ii) focus on digital competences; iii) collaborative learning.

The professional competence represents the integrated ensemble of knowledge and abilities [17].

Figure No. 5. Professional Competence Model



Source:[17]

There is a determination relation between current technologies and education. The technological progress is the consequence of educational development, while education benefits from such progress. Digital technologies determine the need for new competences which the economic higher education should generate. On the other hand, the tendency of the young generations to study and work at the same time is more and more visible, triggering the idea of a higher demand for distance education (*e-learning*). Our century will basically mean the explosion of e-learning, the form of education popular among students/undergraduates. This aspect was confirmed during the Covid-19 pandemic. The new information and communication technologies are enthusiastically integrated into education among the representatives of Generation Z (18-25 of age). Two professors from the Technological University in Delft – the Netherlands, Win Veen and Ben Vrakking, launched the “Homo Zappiens” theory according to which the natively digital young people are used to operating with discontinuous flows of information. They find no difficulty in simultaneously following an interesting piece of news on television and talking with their friends on messenger or making a phone call, etc. It is obvious that the representatives of the generation Z know more of and use technological innovations more intensively. They are headed towards changing the world and, in case they fail, it will be the generation Alpha who will. Nevertheless, there are also downsides associated to integration of digital technologies into educational processes. For instance, shorter patience span, isolation in the virtual world, impact on the social skills due to lack of face-face communication, refusal to accept vertical-career-growth jobs, job-free time balance tipping in favor of free time, overload of the left hemisphere which all lead to lower empathy levels, etc. [18].

As a consequence, next in line comes this question: *What should teachers/professors do to reduce these limitations in relation to the educational process?* They may compensate the negative effects by conducting activities which involve the right hemisphere of the brain. These activities are intended to develop emotional intelligence (EQ) among students/undergraduates, contribute to improvement of self-confidence and self-control, increase motivation, empathy and social skills.

In this context, teaching staff are no longer unique authorities of the content provided. They continue to play their own role. Yet, it is a role that reshapes, that guides the learning process towards facilitating new experiences, alongside with the students/undergraduates who generate learning situations. Within the framework of the emotional intelligence matter, we will further refer to aspects concerning learning of foreign languages and integration of AI into this process. The universe of foreign languages is a universe of cultures, a source of spirituality and emotions which globalization tends to impoverish by standardization, by use of a limited number of languages which have become universal as they are largely used in business, territorial conquests, and interactions. However, we strongly believe that the artificial intelligence opens the era of reviving these cultural treasures by genuinely supporting all languages existing around the world so that they should be turned into good account by all those persons who are not native speakers of such languages, yet who acknowledge the informational treasure in terms of their genesis and life of different nations.

English language (Lingua franca) is the main language spoken in all international businesses. It is the main native language spoken in the United States of America, Canada, the United Kingdom of Great Britain, Ireland, Nigeria, Australia, Namibia, a.o., amounting to 480 million of native speakers. The popularity of the English language is rising steadily as a result of globalization and enthusiasm of the generation Z. Over 1.39 billion people worldwide use English language in various ways. Chinese language comes second. Originating in China, it is spoken on a large scale in Asia (mainly in Taiwan, Singapore, and Malaysia). There are 1.15 billion speakers around the world. Spanish language is next with 661 million speakers worldwide. Spain, Argentina, El Salvador, Chile, Mexico, Guatemala, Costa Rica speak it as their native language.

Why is learning foreign languages important to economists? The experts claim that they improve cognitive skills (creativity, attention, critical thinking); neuronal networks are shaped for better processing of information and effective problem solving; they increase the capacity to store cultural traits, etc.

Globalization of business tends to standardize the economic language, having, for instance, English language as a core. This phenomenon apparently favors economic exchanges. Minute analyses of the evolution of imports and exports of goods and services will indicate, even to less experienced researchers, that originality, regional or local specificity of products and the cognitive-cultural messages they attempt to convey, have gone down dramatically, this being a consequence of the fact that the markets as well as the purchase and consumption features are not known in depth. In addition, the voice of the buyer is also ignored.

## 6. Conclusions

The year 2000 confirms the debut of a revolutionary stage in the economic world, which is, at present, experiencing a globalization process. This stage demonstrates the competitiveness and functionality of the holonic companies based on integrating two or several autonomous systems and thus creating a new system. This is an open system which interacts with soft systems under Artificial Intelligence. On a planetary scale, human activity is a holon which operates in the best possible manner with the help of Artificial Intelligence, which should not limit or compromise the autonomy of the human being. Business management based on digital technologies adjusts to the requirements of the external environment of the organizations. Nonetheless, this does not mean that each economic agent is free to choose how to use AI technologies. The keyword of the 21<sup>st</sup> century

is regulation so that the global market may operate under conditions of loyalty and in compliance with human rights. The social and economic, legal, educational etc. revolution is in full swing. The scientific research identifies in all fields of activity new opportunities brought about by the use of digital technologies. In addition, it also outlines the challenges, obstacles, negative effects of inappropriate use of such technologies, affecting therefore collaboration between people. In the present context, young people learn new professions, assimilate and capitalize interculturalism and cooperation by acquisition of two or three foreign languages, increase efficiency of their work by superior distributive attention, team work, interconnection to any point of interest worldwide and this is all performed with enthusiasm, great competencies and reason.

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