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and business development and attempts to publish high quality research focusing on the role of institutions and public policy, within both a national and international context. *REBE* encourages cross-disciplinary research work of Romanian and foreign scholars.

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# ROMANIAN ECONOMIC AND BUSINESS REVIEW

## CONTENTS

<b>LILIANA NICOLETA GRIGORE CAMELIA CANDIDATU LAURA BENCHEA</b>	<i>APPLYING THE QUADRUPLE HELIX MODEL TO HIGHLIGHT THE RELATIONSHIP BETWEEN ACADEMIC RESEARCH AND THE INNOVATION PROCESS</i>	7
<b>ALEXANDRA-ANDREEA MIRONESCU GRIGORESCU IOANA GABRIELA IORDACHE ANA MARIA MIHAELA</b>	<i>USING DATA ANALYSIS TECHNIQUES TO CLASSIFY COUNTIES FROM ROMANIA IN TERMS OF EDUCATION, ACCORDING TO INDEXES FROM ECONOMIC AND SOCIAL FIELDS</i>	15
<b>VLAD CÂRSTEA</b>	<i>CRISES IN THE AUTOMOTIVE INDUSTRY</i>	34
<b>GYONGYVER MÁDUŢA</b>	<i>USE OF GOOGLE TRENDS IN DETERMINING ROMANIAN PUBLIC OPINION TOWARDS ENGLISH LANGUAGE COURSES</i>	41
<b>TORU TAKAHASHI KURTZ LAW COSMIN DOBRIN ALEXANDRA DUTESCU DORIN MARCHIS</b>	<i>UNDERSTANDING FAMILIAL CONFLICT ISSUES OF WORKING FROM HOME ON JAPANESE WHITE- COLLAR WORKERS IN CENTRAL TOKYO</i>	47
<b>MARIO BOGDANOVIĆ</b>	<i>DESTRUCTIVE ORGANIZATIONAL COMMUNICATION AND MANIPULATION: EMERGENT FORMS, CONSEQUENCES AND COPING IN THE FUNCTION OF SMARTER ORGANIZATIONAL SOLUTIONS</i>	65



# APPLYING THE QUADRUPLE HELIX MODEL TO HIGHLIGHT THE RELATIONSHIP BETWEEN ACADEMIC RESEARCH AND THE INNOVATION PROCESS

Liliana Nicoleta Grigore

Camelia Candidatu

Laura Benchea\*

## Abstract

*The 21<sup>st</sup> century, characterized by the VUCA concept (acronym coined out in 1987 to describe the volatile, uncertain, complex, and ambiguous world we live in), is a reflection of the technological disruption and its related social, economic and cultural impact, as well as a consequence of the rapidly changing business and organizational environment, which became our "new normal". These challenges cannot be addressed from an unilateral perspective, therefore the new paradigm implies a stronger cooperation between a society's most important pillars to provide the necessary infrastructure for innovation and economic development. In this context, the innovation process implies a new framework of interactions and interdependences between the four fundamental elements which constitute the Quadruple Helix (QH) model: universities – industries/companies – government – civil society. The purpose of this paper is to examine the relationship between the elements of the QH model and their potential synergy, as well as to highlight the prominent role universities undertake within this model. Universities are considered to be innovative laboratories of ideas, endowed with specialized human resource capable of improving the research and development (R&D) activities by capitalizing the knowledge obtained through research, teaching and learning, and to convert the scientific discoveries into innovations which, in turn, will support long term economic growth.*

**Keywords:** *Quadruple Helix model, Research, Innovation, Higher Education*

**JEL Classification:** A22, O30, I230

## 1. Introduction

In the contemporary global economy characterized by high dynamism and complexity, the academic educational system (considered to play a major role in each national innovation and development network) has become increasingly relevant for the knowledge society. More specific, universities play an active role in producing and transferring the results (in terms of knowledge) at individual and community level

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through strong interaction among different scientific areas, and between the research endeavours and the economic impact on society at large. The importance of Higher Education institutions depends on their capacity to contribute to the knowledge society and on their ability to deliver proper answers to the influences of internal and external factors that configure the environment they activate in. Moreover, all these elements depend on how universities define their strategic mission.

Within this framework, we emphasize the role of Higher Education in the innovation process of the knowledge economy. The objectives of this study are to present the Quadruple Helix model of innovation, to point out the interconnections between the elements that compose it and their synergic effect, as well to highlight the prominent role universities play within this model. Universities are considered to be innovative laboratories of ideas endowed with skilled human resource capable of improving the research and development (R&D) activities by capitalizing the knowledge obtained through teaching and research, and to convert the research output into practice in order to contribute to the overall economic development. The current study brings value added to the literature on academic research and innovation by highlighting the importance of the Quadruple Helix model in emphasizing the relationship between Higher Education and the innovation process within the knowledge-based economy.

## **2. Research methodology**

This article is based on the critical analysis of the relevant literature in the field of innovation, with a focus on the Quadruple Helix model. As a qualitative study, the paper involved the collection and selection of the relevant literature in the field (scientific journals, documents, online resources.), their analytical inquiry and interpretation. The aim was to understand and explain the theoretical framework, and to add some statistical data in order to defend the argument.

## **3. Theoretical background. From Triple to Quadruple Helix Model**

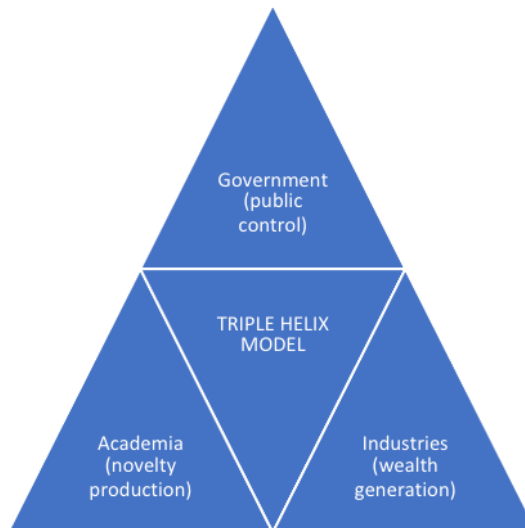
The Quadruple Helix is a metaphor used in the literature to reflect an innovation model in which four components (universities, companies, government and the civil society) interact in order to produce effective innovations for all the stakeholders/partners involved. These four core components should be analyzed from above, form a larger perspective, as they "are not involved in unidirectional push-pull relationships, but rather in multi-layered, dynamic, bi-directional interactions" (Schültz, Heidingsfelder and Schraudner, 2019). These innovations may be beneficial to any field, from goods and services sector, to technology and trade (Arknil et al., 2010). For example, education for research is essential for delivering students the impetus to develop their creativity, to gain skills and confidence in order to acquire practical abilities needed in the innovation process. The philosophy behind the innovative universities is that Higher Education (teaching and research) has a significant contribution to innovation in the knowledge economy (Rebernik, 2009).

In order to understand the Quadruple Helix as an innovation model, it should be placed, first of all, in the literature on innovation research and policy. The concept emerged in the mid-1990's, a period when universities and companies were urged by the policy makers to cooperate more intensely for the benefit of the society (Smith and



Leydesdorff, 2014) through the production and transfer of knowledge and new technologies. In 1995, Etzkowitz and Leydesdorff identified three major components of the innovation process: the academia, the industry and the government (Figure no.1). This model was called the Triple Helix (TH) model, in which the academic environment (universities), the industries (firms), and the government represent the three helices which cooperate in order to discover new ideas, insights, knowledge, as well as new products or services. The TH concept highlights that the potential for innovation in the knowledge economy relies on the prominent role of universities and technologies developed in this science-based environment.

**Figure 1.** The Triple Helix Model



Source: Adapted by the authors after Smith and Leydesdorff (2014)

The TH model has evolved through different stages: in the first phase, the helices were defined institutionally, in the second phase more attention was given to the communication dimension within the system, and the third stage focused on the “hybrid organizations of academia, government and industries” (Tokkeli, 2007 cited in Arknil et.al., 2010). The Triple Helix model which intended to explain “the structural developments in knowledge-based economies” built on the university-industry-government relations (Leydesdorff, 2012), faced some limitations and critiques. Some scholars (Etzkowitz and Klofsten, 2005; Yawson, 2009 cited in Arknil et.al, 2010) considered that an essential element was missing, that is the public (the civil society). The inclusion of this new helix has become critical since scientific knowledge has been evaluated in terms of “social robustness and inclusion”. This new helix, the civil society, pointed out “new discoveries and innovations that improve social welfare”, such as eco-innovation.

The Quadruple Helix model, as a user-oriented innovation model, is not yet a “very well-established concept in the innovation research and policy”, but it is an explanatory model for analyzing the knowledge-based economy. The civil society has

been added as the fourth element of the model due to the fact that innovation is generated by the need of the users/citizens and it may be perceived as a “shift from technical to social innovation” (European Union, 2016).

According to Arnkil et.al (2010), the QH model can be defined as “an innovation cooperation model or an innovation environment in which users, firms, universities and public authorities cooperate in order to produce innovations” in any field useful for the stakeholders or partners, from technological to commercial or for products and services (Figure no. 2).

**Figure 2.** The Quadruple Helix Model



Source: Adapted by the authors after Arnkil et al. (2010)

In compliance with the report issued by the European Union in 2016, the fourth helix is defined as “a collective entity formed by individual users living on a territory and interacting with university, industry and government as customers, citizens and members of a community in order to contribute to build new innovation paths which are able to promote the socio-economic growth of the territory”. Moreover, civil society requests that innovations should be made according to its needs, provides feedback on products and services, and brings its own “contribution in terms of knowledge, inventiveness and creativity” (EU, 2016).

#### **4. The role of Higher Education within the Quadruple Helix model, with focus on the academic research**

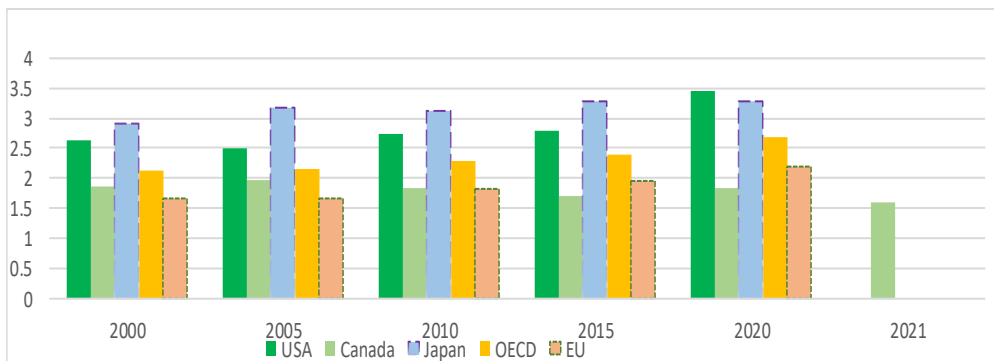
Over the past decade, the development of intellectual capital through R&D has been of great relevance. This is the reason why it is imperative for a country to rely on its own capabilities in research in order to be independent in tracking its own route in a

globalized and competitive world. From this perspective, the developed economies support the creation of dynamic research environments (universities, research institutions etc.) in which actors involved cooperate to generate new ideas and knowledge essential in the innovation process. In addition, developed countries are the most important contributors to R&D projects, financing this sector with substantial funds each year (Table no.1, Figure no.3 respectively).

**Table 1.** Gross domestic spending on R&D, % of GDP, 2000-2020/21

Year	USA	Canada	Japan	OECD	EU
2000	2.62	1.86	2.9	2.12	1.67
2005	2.5	1.97	3.18	2.14	1.66
2010	2.74	1.83	3.13	2.28	1.83
2015	2.78	1.7	3.28	2.38	1.95
2020	3.45	1.84	3.28	2.67	2.19
2021	-	1.6	-	-	-

**Figure 3.** Gross domestic spending on R&D Total, % of GDP, 2000-2021

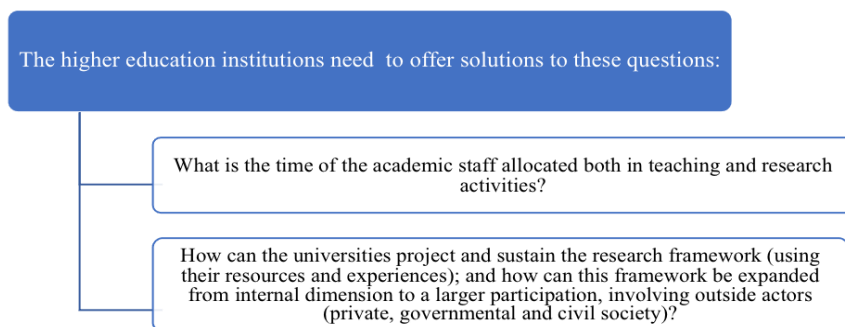


Source: Realized by the authors using the OECD Statistics

Academic research is considered to bring a great contribution to education as it involves scientific development and implies the innovation-driven factor to foster the innovation process. In general, the academic research is essential from several perspectives: firstly, for accomplishing the universities' strategic mission to offer a scientific environment for the accumulation of knowledge, improving the learning methods and developing research capacities (even though in the new complex socio-economic context there are many difficulties in adopting policies, practices and strategies that would not affect their traditional role related to teaching process); secondly, the academic research represents one of the fundamental conditions to sustain and develop an adequate environment for better inter-generational transmission of knowledge and experience. Thirdly, the academic research (with its contribution to the innovative process) generates connections with other High Education institutions, with specialists from different areas, creating an interdisciplinary flow of information. In addition, the academic research has demonstrated the capacity to attract and

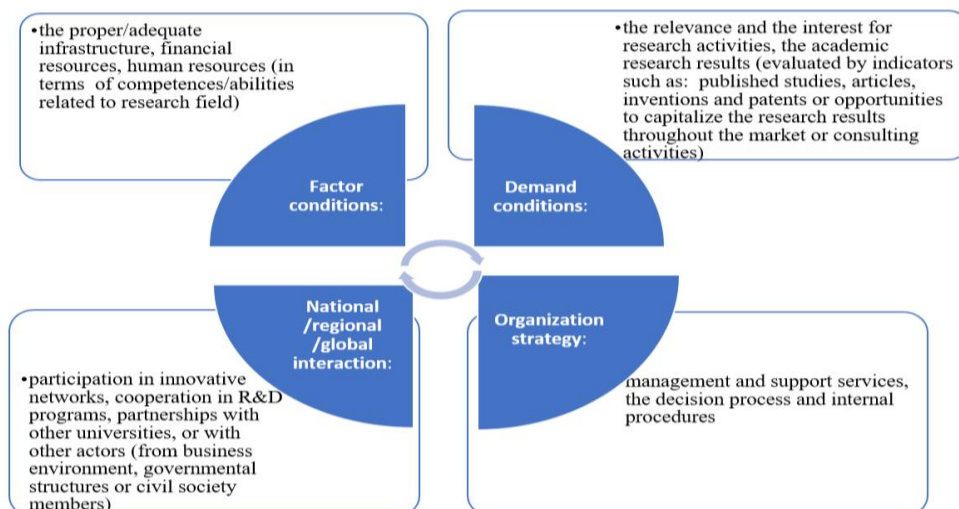
maintain the university staff of high professional quality as well as the best students. Moreover, the universities' classification systems, when they establish a certain hierarchy, rank them by taking into account a lot of criteria, among which the innovative contribution (throughout research activity) and research results, are considered to be extremely relevant (RAE, 2009).

In order to create an educational environment that stimulates the interest, the participation/implication and serious dedication toward the effective research activity of teachers and students, universities must solve key aspects that configure the academic framework and give them proper answers. As a consequence of this procedure, first of all, the Higher Education institutions need to offer solutions to the following questions:



Taking into account **Michael Porter's competitiveness analysis model** (Miron, 2003), the Higher Education institutions may concentrate their efforts on 4 forces/strengths, adapted to the research area, in order to accentuate the competitiveness and the innovative behavior :

**Figure no. 4 Porter's competitiveness analysis model**



Source: Realized by the authors after D. Miron (2003)

In this context, universities have an important role in increasing their participation to the production and the transfer of knowledge, providing solutions to social problems (the fourth helices of the Quadruple Helix model) such as those related to training the active population and supporting the insertion in the labor market. Moreover, they must develop partnerships with the other helices of the model, respectively the industry (the business environment) by creating business incubators, and the government.

## 5. Conclusion

*The aim of this paper was to we emphasize the role of Higher Education within the innovation process in the knowledge economy. In conclusion, in the knowledge economy characterized by high dynamism and complexity, the academic educational system (considered to be an important part of each national innovation and development network) has become increasingly important for the knowledge society. Nowadays, universities play an active role in producing and transferring the results (in terms of knowledge) at individual or community level, through strong interaction between different scientific areas, as well as between the research activities and the economic environment. In addition, of great importance is the development of strong partnerships with the other helices of the Quadruple Helix model in order to have a an effective and sustainable impact on society.*

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# USING DATA ANALYSIS TECHNIQUES TO CLASSIFY COUNTIES FROM ROMANIA IN TERMS OF EDUCATION, ACCORDING TO INDEXES FROM ECONOMIC AND SOCIAL FIELDS

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Iordache Ana Maria Mihaela\**

## **Abstract**

*The level of development of a community is closely related to the level of development of the existing education system in that region. In this article we performed an analysis of the education system in Romania from economic and social points of view. We chose indicators that show movement, birth rate, integration into a form of education and population gains, but also the degree of use of modern computing techniques in the education process. The classification of the counties was performed with the help of a neural network trained in the SAS and several scenarios were developed with immediate applicability.*

**Keywords:** *educational, economic development, efficiency, school choice, backpropagation, data analysis*

**JEL Classification:** C19, C45, C89, I25, I21, C87, I21

## **1. Introduction**

The education system is an important factor that underlies the good development of any community, whether we are discussing at the microeconomic level like regions, county, and others or at the macroeconomic level like country, macro-region or continent. In general, the education system consists of all units and educational institutions with state or private capital, of various types, levels, and forms of organization of training and education.

For a more efficient organization, an education system is structured on educational levels, this ensuring a coherence of the training of the school age population, according to the age and individual characteristics of the pupils and students and in close connection with the requirements of contemporary society. [1]

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The education system, both in Romania and in any country in the world can be seen as a cybernetic system which has inputs, outputs and processes or feedback functions that ensure its balance. [2] From the point of view of the inputs, we can identify the social and economic exigencies of the contemporary society, the available financial resources, but also the human resources represented mainly by the teachers. The exits from this system are the future specialists from various fields, specialists who through their accumulated level of training are able to meet the requirements of the society at that moment. Feedback processes or functions are represented by policies approached at the macroeconomic level. Each element of these policies has a greater or lesser influence, in direct or indirect manner, on the education system. Being a system in which time plays an important role, policies at the level of a country must be adopted in the medium and long term so as to create as few shocks as possible, and return to equilibrium to occur as soon as possible, without having significant repercussions in the future.

Thus, the current education system in Romania is characterized by openness and dynamism to the new, operating in accordance with economic and social requirements, scientific and cultural progress, the aspirations of the Romanian people in the conditions of civil society and the rule of law, democratic. The structure of the education system in Romania includes: preschool education, primary education, lower secondary education, compulsory general education, upper secondary education, arts and crafts schools, apprenticeship schools, post-secondary education and higher education.

In the education system, any disturbance on the input can lead to the destabilization of the entire system and the point of balance to be reached again by adopting the correct policies. But in order to reach the adoption of those measures, studies are carried out in various aspects in order to identify possible vulnerabilities and to propose solutions in time to minimize the effect of noise.

The theory confirmed that a system can be analyzed in relation to other systems, components of a whole, but every component can also be analyzed as a system too. In the literature, the education system has been studied in connection with possible factors that can destabilize it. Thus, a study was analyzed the education systems in various countries and proposed solutions to avoid labor migration. [3] Also, it was studied the impact of the education system on the development of the national economy, the solutions found related to the decentralization of education, the intensification of adult education and the establishment of public-private partnerships. [4] Reference [5] showed how artificial intelligence influences the next generation, both teachers and students in their work. Artificial intelligence and especially neural networks have been successfully applied in other studies too [6-11]. Reference [12] presents an algorithm which trains a neural network that allows the choice of courses by university students in the e-learning system.

## **2. Methodology and datasets used in analysis**

The problem studied in this article is the analysis of the education system in Romania, at the level of each county, from an economic-social point of view. Thus, we chose indicators that show movement, birth rate, integration into a form of education and population gains, but also the degree of use of modern computing techniques in the



education process, in order to have a more accurate analysis of existing reality. Also, out of the desire to evolve for the betterment of any larger or smaller community, several scenarios were developed with immediate applicability, but the effects were visible in the medium term, being known that any change in the education system has no immediate effects.

The methodology used in the application has the next steps:

- transforming the primary data into percentages in order to be able to compare more easily the values of the indicators with each other, for the same county. This is usually used due to the large intervals in which the initial data are contained.
- using the SAS Enterprise Guide software to classify the counties in Romania into distinct classes
- using the SAS Enterprise Miner program to train a multilayer perceptron neural network. The input data set for the neural network consists of both the initial data transformed into percentages and the belonging of each county in a distinct class.
- based on the trained neural network, we presented some scenarios regarding the future evolution of the educational system in Romania.

The primary data that formed the basis of the application were registered from the website of the National Institute of Statistics (NIS), for the year 2019 [13]. The chosen indicators were selected so as to best reflect both the education system in each county and the economic system too. Thus, social aspects were taken into account, such as the migration of able-bodied persons, the number of children enrolled in a form of education and unemployment. From economic point of view we took into account the indicators such as the number of unemployed people in each county and related to the IT&C field we chose the total number of computers intended for education.

The indicators used in the application are: the total school units, the number of live births, the average monthly net nominal earnings, the number of computers used for education, the number of permanent emigrants, the number of temporary emigrants (at least 12 months), the number of children enrolled in the pre-university education system and the total number of unemployed. In the application, each indicator has been assigned a code in order to work more easily. Table 1 shows the coding of the indicators.

**Table 1. Initial values for the data sample for 2019**

<b>Crt. No.</b>	<b>Code of indicator</b>	<b>Full name of the indicator</b>
1	I_1	Total school units
2	I_2	Number of children born alive in 2019
3	I_3	Average monthly net nominal earnings
4	I_4	Total number of computers intended for education
5	I_5	Definitive number of emigrants
6	I_6	Number of temporary emigrants (at least 12 months)
7	I_7	Number of children enrolled in the pre-university system
8	I_8	Total number of unemployed people

The indicator I\_1, the total school units, counts the totality of the administrative education units with legal personality, registered in the National Nomenclature SIRUES, in which one or more educational levels function, having a unique management. Thus, the following units are included in this indicator: nurseries, kindergartens, primary and secondary schools, special primary and secondary schools, high schools, school groups within which several levels of education operate, arts and crafts schools (professional), foremen, post-secondary, university education institutions.

The indicator I\_2, the number of children born alive in 2019, represents the social basin in which the other studied indicators have their roots, directly or indirectly. Thus, the school units numbers depend mainly on the number of students, the number of students depends in time on the number of children born alive.

The monthly net nominal earnings represent the amount of money remaining after deducting taxes and duties, such as: tax, social security contribution due by employees and social health insurance contribution due by employees. Indicator I\_3, the average monthly net nominal earnings, represents the ratio between the net amounts paid to employees by economic agents in the reference month, regardless of the period for which they are due, and the average number of employees.

Indicator I\_4, the total number of computers intended for education, counts the total number of electronic computing devices of the PC or laptop type included in the educational process. This indicator is strongly correlated with I\_1, but also to a lesser extent with the other indicators used in the analysis.

Indicator I\_5, the number of definitive emigrants, refers to persons who emigrate abroad and who give up their domicile in Romania, thus establishing their domicile on the territory of another state. Temporary emigrants (see I\_6 indicator from the table 1) are people who no longer have their habitual residence in Romania for a period of at least 12 months. The habitual residence is represented by the place where a person spends his daily rest period, excluding temporary absences such as visits for various purposes such like holidays, delegations, medical treatments, religious pilgrimages, and others. Indicator I\_7, the number of children enrolled in the pre-university system has in its component the whole number of the children from kindergartens, nurseries and students included in the pre-university training and education system from a school year, regardless of the form of education attend, the program studies and age.

The indicator of the total number of unemployed people includes the number of people who are looking for a job from the age of 16 until retirement, the number of people who do not earn income or earn less than the value of the reference social indicator of unemployment insurance and employment stimulation in force, graduates of educational institutions and graduates of special schools for people with disabilities, aged at least 16 years, who, within 60 days of graduation, failed to be employed according to professional training and others.

## **2. Results and discussions**

After we chose the indicators and expressed them in percentages in order to be able to compare the counties with each other, we will further perform a first classification. For starters, we will choose the SAS Enterprise Guide program to obtain classes that are as homogeneous as possible on the inside, but as different as possible on the outside. Furthermore, using the results from this step as input data for the next

point in the proposed methodology, we will apply specific algorithms, implemented in the SAS Enterprise Miner software which will train a neural network. The purposes of training the neural network are trying to improve the initial classification and the reusability of the already trained network to another study. So, once trained the network, it can be used at a later date, without going through the whole algorithm presented in this research paper.

The initial data were recorded from NIS and were transformed into percentages (see table 2), so that the indicators can be comparable with each other and for a better reflection of reality.

**Table 2.** Initial values for indicators

County	I_1	I_2	I_3	I_4	I_5	I_6	I_7	I_8
Alba	2.01	1.57	2.39	1.65	1.4	1.71	1.65	2.02
Arad	2.23	2.14	2.34	1.83	2.08	2.16	2.06	1.01
Arges	3.06	2.81	2.6	2.58	1.63	2.98	3.08	3.01
Bacau	2.69	3.07	2.33	2.58	4.38	3.06	3.15	4.27
Bihor	2.91	3.06	2.14	2.93	1.46	2.86	3.03	1.43
Bistrita-Nasaud	1.59	1.72	2.15	1.17	1.38	1.44	1.58	1.29
Botosani	1.91	1.99	2.24	1.38	1.77	2.03	2.16	1.38
Brasov	2.66	3.21	2.17	3.24	1.5	2.67	2.94	2.03
Braila	1.51	1.24	2.61	1.02	3.85	1.56	1.44	1.68
Buzau	2.11	1.87	2.19	1.73	1.35	2.28	2.12	4.38
Caras-Severin	1.74	1.09	2.27	0.98	2.36	1.53	1.27	1.3
Calarasi	1.36	1.34	2.2	0.98	1.12	1.59	1.35	1.26
Constanta	3.26	3.41	2.37	3.26	3.6	3.51	3.71	2.9
Covasna	1.14	1.11	2.13	0.82	0.45	1.08	1.1	1.11
Dambovita	2.23	2.28	2.25	1.9	1.8	2.61	2.31	2.57
Dolj	3.09	2.97	2.48	2.95	1.94	3.38	3.12	6.96
Galati	2.67	2.46	2.33	2.5	4.26	2.65	2.59	4.1
Giurgiu	1.24	1.17	2.39	0.8	0.62	1.46	1.13	0.64
Gorj	1.66	1.36	2.38	1.3	0.76	1.71	1.68	1.84
Harghita	1.84	1.67	2.1	1.52	0.39	1.62	1.69	2
Hunedoara	1.59	1.63	2.17	1.72	2.13	1.99	1.83	2
Ialomita	1.29	1.23	2.18	0.92	0.74	1.44	1.24	1.64
Ifov	1.89	2.47	2.83	1.05	1.19	1.99	1.77	0.3
Maramures	2.67	2.35	2.18	2.1	1.67	2.42	2.4	2.01
Mehedinti	1.53	1.09	2.22	0.89	0.8	1.34	1.22	2.69
Mures	2.69	2.88	2.45	2.76	1.69	2.82	2.85	2.47
Neamt	1.97	2.27	2.14	1.91	2.88	2.44	2.35	2.85
Olt	2.3	1.68	2.4	1.24	1.08	2.23	1.98	3.43
Prahova	3.31	3.15	2.52	2.81	2.49	3.81	3.54	2.76
Satu Mare	1.87	1.73	2.28	1.3	1.86	1.77	1.21	1.41
Salaj	1.59	1.31	2.25	1.02	0.57	1.11	1.77	1.68
Sibiu	2.56	2.25	2.66	3.12	2.72	1.94	2.17	1.34
Suceava	3.19	4.13	2.19	3.46	2.58	3.16	3.83	4.28
Teleorman	1.99	1.31	2.11	1.01	1.55	1.96	1.41	3.42
Timis	3.44	3.79	2.96	5.18	5.33	3.42	3.31	1.08

Tulcea	1.16	0.83	2.32	0.88	1.17	1.1	0.99	1.13
Vaslui	2.11	2.21	2.22	1.44	3.4	1.98	2.12	3.89
Valcea	1.84	1.41	2.16	1.22	1.02	1.83	1.71	1.77
Vrancea	1.71	1.53	2.14	1.19	1.43	1.76	1.66	1.92
Cluj	3.89	3.77	3.09	9.59	3.11	3.4	3.41	1.74
Iasi	3.73	4.97	2.8	5.08	7.19	3.8	4.41	3.12
Bucuresti	8.8	10.49	3.64	12.96	15.28	8.36	9.67	5.91

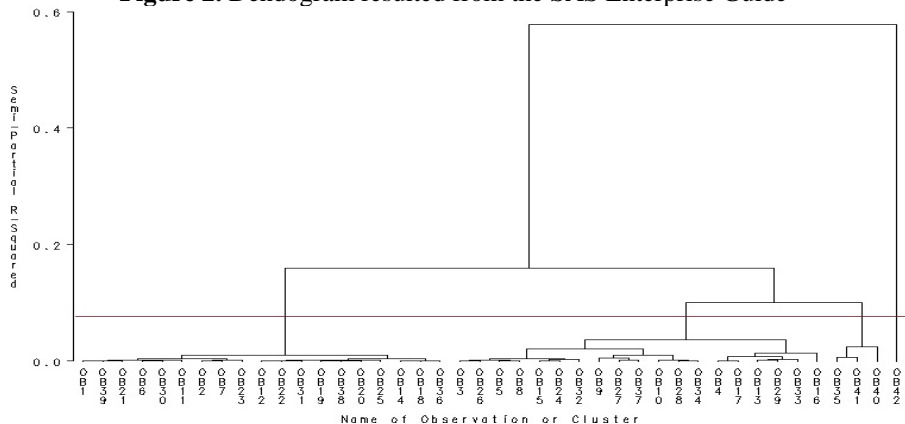
A first problem of the values of the indicators registered in table 2 is the identification of those of them that do not bring additional information in the model. Thus, after calculating eigenvalues it can be seen in Figure 1 that after the first seven indicators the amount of information has a maximum input. However, even if the amount of information brought in addition by indicator 8 is very small, we will keep it in the analysis for better reflection of reality.

Figure 1. Eigenvalues of the covariance matrix

Eigenvalues of the Covariance Matrix				
	Eigenvalue	Difference	Proportion	Cumulative
1	21.0956972	19.4663176	0.8839	0.8839
2	1.6293795	0.7544661	0.0683	0.9521
3	0.8749134	0.7409718	0.0367	0.9888
4	0.1339416	0.0754420	0.0056	0.9944
5	0.0584996	0.0269391	0.0025	0.9968
6	0.0315605	0.0063008	0.0013	0.9982
7	0.0252597	0.0067386	0.0011	0.9992
8	0.0185210		0.0008	1.0000

Following the application of the data clustering techniques in the SAS Enterprise Guide program, the dendrogram described in Figure 2 resulted. In the SAS Enterprise Guide program, we chose the Ward method as the county classification method. This involves minimizing the sum of the squares of the errors from an object to the center of its cluster. [14], [15] In other words, the Ward method divides the data set into classes that are as homogeneous as possible inside and as far apart as possible. [16], [17].

Figure 2. Dendrogram resulted from the SAS Enterprise Guide



From the dendrogram presented in Figure 2 results the classification method of the counties, coded as Ob1, Ob2 and so on until Ob42. We chose the distance between the clusters to be closer to level 0 than to 0.2, so that we have three classes for dividing the counties. If we had chosen as the cut-off point above, then two fairly similar classes would have resulted, meaning that the distance between them would have been smaller than in the first case. [18] From the point of view of the socio-economic reality, it was not true. The reasoning is similar for choosing a single class. Even if the two classes were very different, having a very large distance between them, the economic reality would not have allowed such a thing. From the graph presented in figure 2, observation 42, for example Bucharest is an outlier and will be eliminated further from future analyzes.

The resulting classes are as follows:

- first class (c1) formed by the counties: Alba, Arad, Bacau, Bistrita-Nasaud, Botosani, Buzau, Caras-Severin, Calarasi, Giurgiu, Gorj, Harghita, Hunedoara, Ialomita, Ilfov, Mehedinti, Salaj, Tulcea, Valcea, Vrancea;
- second class (c2) formed by the counties: Arges, Bihor, Brasov, Braila, Constanta, Covasna, Dambovita, Dolj, Galati, Maramures, Mures, Neamt, Olt, Prahova, Satu Mare, Sibiu, Suceava, Teleorman, Vaslui;
- third class (c3) formed by the counties: Timis, Cluj, Iasi.

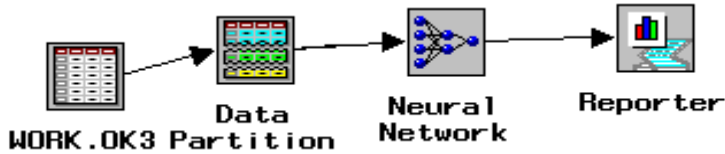
Furthermore, a neural network of the multilayer perceptron type was associated. [19-22] The matrix with the initial data for the neural network consisted of the data that formed the basis of the classification of the counties (table 2), and in addition we added three columns with the class where each county is (table 3). Thus, if a county is for example in the first class, in the column corresponding to c1 it will be written the number 1, and the other columns, c2 and c3 will contain the number 0. As we wrote above, from the data matrix initials for the neural network will be eliminated outliers, in our case the outlier being Bucharest.

**Table 3.** Matrix with initial data for the neural network

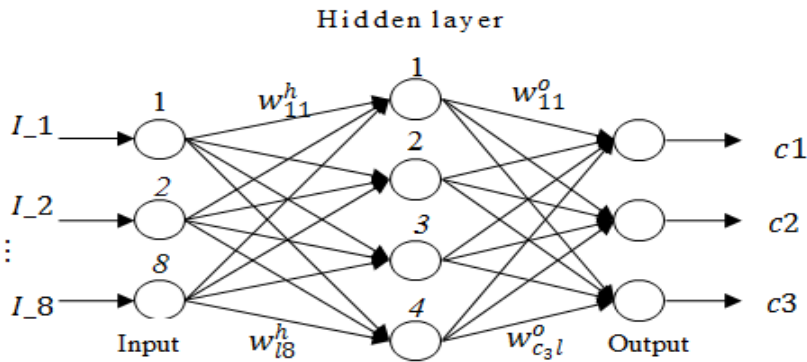
County	I_1	I_2	I_3	I_4	I_5	I_6	I_7	I_8	class_1	class_2	class_3
Alba	2.01	1.57	2.39	1.65	1.4	1.71	1.65	2.02	1	0	0
Arad	2.23	2.14	2.34	1.83	2.08	2.16	2.06	1.01	1	0	0
Arges	3.06	2.81	2.6	2.58	1.63	2.98	3.08	3.01	0	1	0
Bacau	2.69	3.07	2.33	2.58	4.38	3.06	3.15	4.27	1	0	0
Bihor	2.91	3.06	2.14	2.93	1.46	2.86	3.03	1.43	0	1	0
Bistrita-Nasaud	1.59	1.72	2.15	1.17	1.38	1.44	1.58	1.29	1	0	0
Botosani	1.91	1.99	2.24	1.38	1.77	2.03	2.16	1.38	1	0	0
Cluj	3.89	3.77	3.09	9.59	3.11	3.4	3.41	1.74	0	0	1
Brasov	2.66	3.21	2.17	3.24	1.5	2.67	2.94	2.03	0	1	0
Timis	3.44	3.79	2.96	5.18	5.33	3.42	3.31	1.08	0	0	1
Braila	1.51	1.24	2.61	1.02	3.85	1.56	1.44	1.68	0	1	0

Buzau	2.11	1.87	2.19	1.73	1.35	2.28	2.12	4.38	1	0	0
Suceava	3.19	4.13	2.19	3.46	2.58	3.16	3.83	4.28	0	1	0
Caras-Severin	1.74	1.09	2.27	0.98	2.36	1.53	1.27	1.3	1	0	0
Iasi	3.73	4.97	2.8	5.08	7.19	3.8	4.41	3.12	0	0	1
Calarasi	1.36	1.34	2.2	0.98	1.12	1.59	1.35	1.26	1	0	0
Constanta	3.26	3.41	2.37	3.26	3.6	3.51	3.71	2.9	0	1	0
Covasna	1.14	1.11	2.13	0.82	0.45	1.08	1.1	1.11	0	1	0
Dambovita	2.23	2.28	2.25	1.9	1.8	2.61	2.31	2.57	0	1	0
Dolj	3.09	2.97	2.48	2.95	1.94	3.38	3.12	6.96	0	1	0
Galati	2.67	2.46	2.33	2.5	4.26	2.65	2.59	4.1	0	1	0
Giurgiu	1.24	1.17	2.39	0.8	0.62	1.46	1.13	0.64	1	0	0
Gorj	1.66	1.36	2.38	1.3	0.76	1.71	1.68	1.84	1	0	0
Harghita	1.84	1.67	2.1	1.52	0.39	1.62	1.69	2	1	0	0
Hunedoara	1.59	1.63	2.17	1.72	2.13	1.99	1.83	2	1	0	0
Ialomita	1.29	1.23	2.18	0.92	0.74	1.44	1.24	1.64	1	0	0
Vaslui	2.11	2.21	2.22	1.44	3.4	1.98	2.12	3.89	0	1	0
Ifov	1.89	2.47	2.83	1.05	1.19	1.99	1.77	0.3	1	0	0
Maramures	2.67	2.35	2.18	2.1	1.67	2.42	2.4	2.01	0	1	0
Mehedinti	1.53	1.09	2.22	0.89	0.8	1.34	1.22	2.69	1	0	0
Mures	2.69	2.88	2.45	2.76	1.69	2.82	2.85	2.47	0	1	0
Neamt	1.97	2.27	2.14	1.91	2.88	2.44	2.35	2.85	0	1	0
Olt	2.3	1.68	2.4	1.24	1.08	2.23	1.98	3.43	0	1	0
Prahova	3.31	3.15	2.52	2.81	2.49	3.81	3.54	2.76	0	1	0
Satu Mare	1.87	1.73	2.28	1.3	1.86	1.77	1.21	1.41	0	1	0
Salaj	1.59	1.31	2.25	1.02	0.57	1.11	1.77	1.68	1	0	0
Sibiu	2.56	2.25	2.66	3.12	2.72	1.94	2.17	1.34	0	1	0
Teleorman	1.99	1.31	2.11	1.01	1.55	1.96	1.41	3.42	0	1	0
Tulcea	1.16	0.83	2.32	0.88	1.17	1.1	0.99	1.13	1	0	0
Valcea	1.84	1.41	2.16	1.22	1.02	1.83	1.71	1.77	1	0	0
Vrancea	1.71	1.53	2.14	1.19	1.43	1.76	1.66	1.92	1	0	0

In SAS Enterprise Miner the initial data were imported into the work.ok3 file (Figure 3), then the data partition module was called and after that we will associate the module for neural network. Most of the initial data were used to train the network, and 10% was used to verify the results. After the neural network was trained, we called the Reporter module to retain in a report as a web page the main output information about the studied problem.

**Figure 3.** The work diagram resulted from SAS Enterprise Miner

In SAS Enterprise Miner the initial variables were divided into two categories: input type variables containing the indicators from  $I_1$  to  $I_8$  described in table 1 and target type variables, being represented by the classes found after performing the cluster analysis (Figure 4).

**Figure 4.** Multilayer perceptron neural network with a hidden layer of neurons

The input data have values within a well-established range, and the target data are binary with two values: 1 or 0. No data processing will be performed in the input layer, this being done in the intermediate and output layer. At the level of each neuron in the intermediate and final layers there are two types of processing: linear processing (neuron activation) and nonlinear processing (neuron output). [23], [24]

For any neuron from the hidden layer it can be defined the activation function as in equation (1) when the set  $x$  is applied to the input  $x^m$ . [25]

$$net_j^h = \sum_{i=0}^8 w_{ji}^h \cdot I_{-i}, j=1..4 \quad (1)$$

The vector  $\{w_{ji}^h\}, j=1..4, i=1..8$  from the equation (1) represents the set of weights of the intermediate layer (Figure 4) and  $I^m = (I_{-1}, I_{-2}, I_{-3}, I_{-4}, I_{-5}, I_{-6}, I_{-7}, I_{-8})^m$  is the input set and the index  $h$  comes from *hidden*. The output values (noted with  $i^j$ ) are calculated according to equation (2).

$$i_j = f_j^h(net_j^h), j=1..4 \quad (2)$$

The function  $f_j^h$  is hyperbolic tangent,  $f: R \rightarrow R, f(x) = th(x)$ .

The neural network will have a single output parameter called belonging to a class and will be studied in depending on the classes initially chosen in the analysis: c1, c2 and c3 (Figure 4). For a k neuron in the output layer activation function can be calculated when applying vector I to the input as in formula (3). [26]

$$net_k^o = \sum_{j=1}^4 w_{kj}^o \cdot I_j, k=1,2,3 \quad (3)$$

The values  $\{w_{kj}^o\}, k=1,2,3; j=1...4$  represent the weights of the output layer. The output value of the output neuron k is determined by the activation  $net_k^o$  and is expressed by the formula (4).

$$y_k^m = f_k^o(net_k^o), k=1,2,3 \quad (4)$$

The function  $f_k^o$  is hyperbolic tangent, a nonlinear function.

The training algorithm of the multilayer perceptron network has as main objective the minimization of the error on the training set (5).

$$E = \frac{1}{K} \sum_{p=1}^K E_p \quad (5)$$

K is the number of training sets and the error of the training set p is defined in formula (6).

$$E_p = \frac{1}{2} \sum_{k=1}^M (y_k^p - y_k^m)^2 \quad (6)$$

The objective function is deviance, which involves calculating the difference between the current probability of the neural network and the probability for a saturated model. This function cannot be negative, the value of zero reaches only for a data set without noise in other words when the network is fully trained. The data selection criterion is average error, this indicates the average error of assigning a county to a class, and the neural network entrainment algorithm was standard backpropagation.

The backpropagation algorithm involves performing the next steps [25], [27], [28]:

1. The first set is chosen from the training matrix of the neural network. We have the input  $I^m = (I_1^m, I_2^m \dots I_8^m)$  for which the ideal output is known as  $c^m = (c1^m, c2^m, c3^m)$ . The set of weights is randomly generated in the interval [-1,1], both the weights of the intermediate layer ( $\{w_{ji}^h\}, j=1...4, i=1...8$ ) and the weights of the output layer ( $\{w_{kj}^o\}, k=1,2,3; j=1...4$ ).



2. The values of the activation and output functions of the neurons in the intermediate layer must be calculated according to formula (7).

$$net_j^h = \sum_{i=1}^8 w_{ji}^h \cdot i^m, j=1...4 \quad i_j = f_j^h(net_j^h), j=1...4 \quad (7)$$

3. Next it should be calculated the values of the activation and output functions of the neurons in the output layer as is presented in formula (8).

$$net_k^o = \sum_{j=1}^4 w_{kj}^o \cdot i_j \quad c_k^m = f_k^o(net_k^o), k=1,2,3. \quad (8)$$

4. We will calculate the error for the output layer is presented in equation (9).

$$\delta_k^o = (ck - ck^m) \cdot f_k^o \cdot \dot{f}_k^o(net_k^o), k=1,2,3 \quad (9)$$

The error for the intermediate layer is calculated too in this step (10).

$$\delta_j^h = \dot{f}_j^h(net_j^h) \cdot \sum_{k=1}^3 \delta_k^o \cdot w_{kj}^o, j=1...4. \quad (10)$$

5. We adjust the weights in the output layer after formulas (11) and (12) where  $\eta, 0 < \eta < 1$  is the learning rate.

$$w_{kj}^o(t+1) = w_{kj}^o(t) - \eta \cdot \frac{\partial E}{\partial w_{kj}^o}, k=1...3, j=1...4 \quad (11)$$

$$\frac{\partial E}{\partial w_{kj}^o} = (ck - ck^m) \cdot \frac{\partial f_k^o}{\partial w_{kj}^o} = -(ck - ck^m) \cdot \frac{\partial f_k^o}{\partial (net_k^o)} \cdot \frac{\partial (net_k^o)}{\partial w_{kj}^o} = (ck - ck^m) \cdot \frac{\partial f_k^o}{\partial (net_k^o)} \cdot \frac{\partial}{\partial w_{kj}^o} \cdot \sum_{j=1}^4 w_{kj}^o \cdot i_j = (ck - ck^m) \cdot \dot{f}_k^o(net_k^o) \cdot i_j = -\delta_k^o \cdot i_j \quad (12)$$

The formula for adjusting the weights related to the output layer is (13).

$$w_{kj}^o(t+1) = w_{kj}^o(t) - \eta \cdot \delta_k^o \cdot i_j, k=1...3, j=1...4. \quad (13)$$

6. We will adjust the weights of the intermediate layer after the formula (14), having the learning rate 0.2.

$$w_{ji}^h(t+1) = w_{ji}^h(t) - \eta \cdot \frac{\partial E}{\partial w_{ji}^h} = w_{ji}^h(t) + \eta \cdot \delta_j^h \cdot i_j, j=1...4, i=1...8. \quad (14)$$

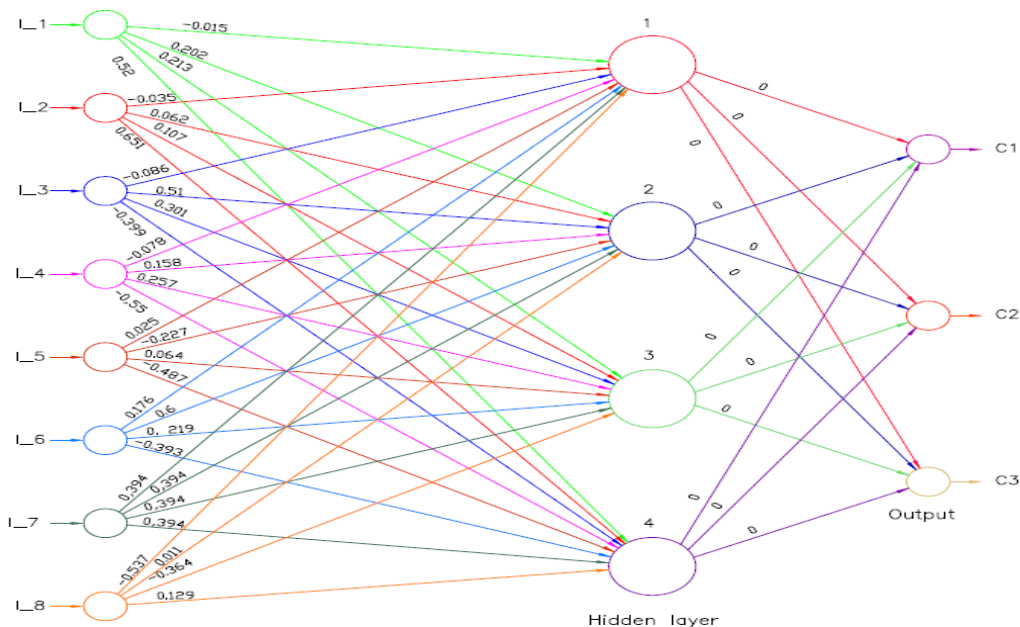
7. The error of the training vector is calculated as in equation (15).

$$E = \frac{1}{2} \sum_{k=1}^M (ck - ck^m)^2 \quad (15)$$

The error is propagated in the opposite direction, backwards, thus the weights will be adjusted in turn from the intermediate layer to the output layer and from the input layer to the intermediate layer.

8. If there are more items in the training set, we will resume the algorithm for a new item. Finally, the error corresponding to an epoch is calculated as the simple arithmetic mean of the errors due to each element in the training set. In general, the algorithm stops either when the value of the error has reached the minimum level, or when the maximum number of training epochs set by the user has been reached.

**Figure 5.** The neural network before training



The specific indicators before the training of the neural network with four neurons on the intermediate layer have the following values (Figure 5):

1. Weights from the input layer to the intermediate layer of neurons:

- the weights from the input layer to neuron 1 from the intermediate layer are: -0.015, -0.035, -0.086, -0.078, 0.025, 0.176, -0.537, 0.279;
- the weights from the input layer to neuron 2 from the intermediate layer are: -0.202, 0.062, -0.51, 0.158, -0.227, 0.6, 0.011, 0.34;
- the weights from the input layer to neuron 3 from the intermediate layer are: -0.213, 0.107, 0.301, 0.257, 0.064, 0.219, -0.364, 0.173; and
- the weights from the input layer to neuron 4 from the intermediate layer are: -0.52, 0.651, -0.399, -0.55, -0.487, -0.393, 0.129, -0.394.

2. The weights from the intermediate layer of neurons to the initial layer (consisting of classes) are initially equal to 0.

3. Activation thresholds of neurons in the intermediate and final layers are: for the intermediate layer the thresholds are: 1,878, -383.862, -1.484, 1.422; and for the final layer the thresholds have the following values: -0.154, -0.15, -2.484.

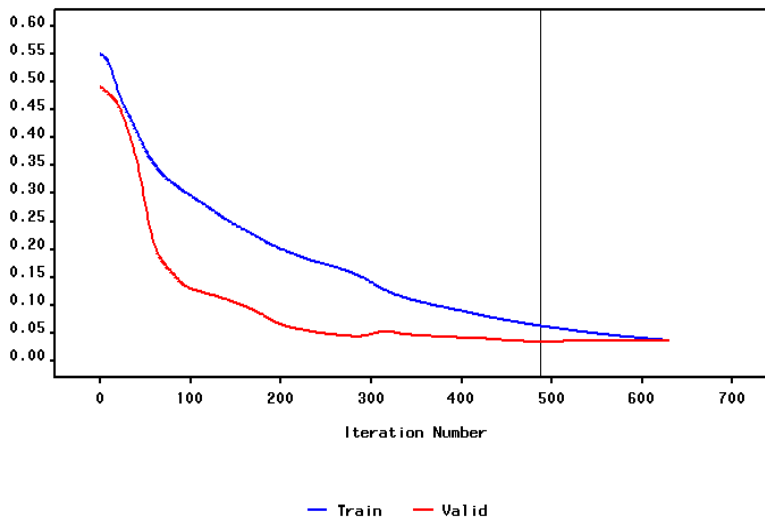
4. The value of the objective function is equal to 0.55.

Table 4. Initial settings for applying the Standard Backpropagation algorithm

Minimum Iterations	0
Maximum Iterations	630
Maximum Function Calls	2147483647
Maximum CPU Time	604800
ABSGCONV Gradient Criterion	0,00001
GCONV Gradient Criterion	1E-8
ABSFCONV Function Criterion	0
FCONV Function Criterion	0,0001
FCONV2 Function Criterion	0
FSIZE Parameter	0
ABSXCONV Parameter Change Criterion	0
XSIZE Parameter	0
ABSCONV Function Criterion	-1.34078
Singularity Tolerance (SINGULAR)	1E-8
Prop_learn	0.2
Prop_momentum	0

After completing the process of training the neural network with four neurons in the intermediate layer, there were 630 iterations until the desired result was reached (meeting the convergence criterion, variable ABSGCONV) and successful training of the network. Both the objective function and the gradient function were activated by 630 times, and the last value of the objective function was 0.0136.

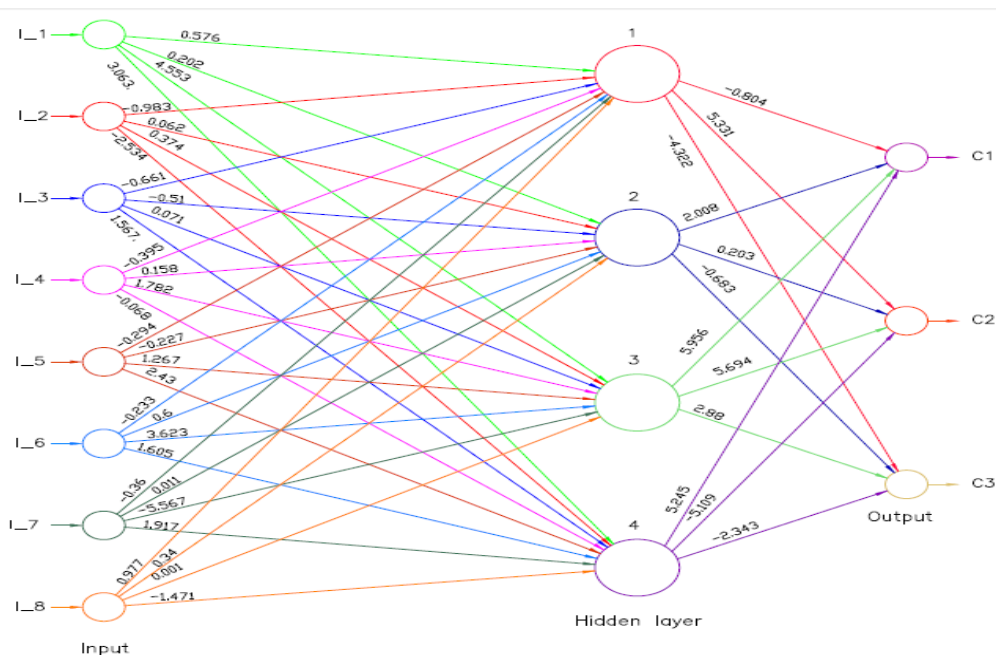
Figure 6. The evolution of the average error for the neural network during the training epochs



If at the first iterations the graphs made for the average drive error and the average validation error have similar evolutions (Figure 6), the errors being somewhat with similar values, after iteration 100 it can be seen that the average validation error decreases suddenly and remains on a slightly descending slope until after iteration 600, when the two errors have approximately equal values. The average training error of the

neural network has a constantly decreasing evolution, having a steeper slope up to iteration 150. At the end of the training cycle, respectively validation of the neural network, the two errors have values close to zero, which was desirable, network training ending successfully.

**Figure 7.** The trained neural network



The indicators specific to the neural modeling of the network with four neurons in the intermediate layer have the following values (Figure 7):

1. weights from the input layer to the intermediate layer of neurons:

- the weights from the input layer to the first neuron from the intermediate layer are: 0.576, -0.983, -0.661, -0.395, -0.294, -0.233, -0.36, 0.977;
- the weights from the input layer to the second neuron from the intermediate layer are: 0.202, 0.062, -0.510, 0.158, -0.227, 0.6, 0.011, 0.34;
- the weights from the input layer to the third neuron from the intermediate layer are: 4.553, 0.374, 0.071, 1.782, -1.267, 3.623, -5.567, 0.001; and
- the weights from the input layer to the fourth neuron from the intermediate layer are: 3.063, -2.534, 1.567, -0.068, -2.433, 1.605, 1.917, -1.471.

2. the weights from the intermediate layer of neurons to the final layer, consisting of classes are: -0.804, 2.008, 5.956, 5.245 (for c1); 5.331, 0.203, 5.694, -5.109 (for c2); -4.322, -0.683, 2.88, -2.343 (for c3).

3. the activation thresholds of neurons in the intermediate and final layers: for the intermediate layer the values of these thresholds are: 3.249, -383.862, -0.582 and for the final layer the thresholds have the following values: -2.162, -0.358, -1.801.

4. the value of the objective function is 0.036.

In order to be able to use the already trained neural network in the future, the program SAS Enterprise Miner offers the user the network transfer functions, as follows:

1. For the hidden layer of neurons (H1, H2, H3 and H4) the transfer functions together with the related scores are presented in equations (20)-(24).

$$H1 = 0.539 \cdot S_{I_1} - 0.953 \cdot S_{I_2} - 0.652 \cdot S_{I_3} - 0.357 \cdot S_{I_4} - 0.26 \cdot S_{I_5} - 0.236 \cdot S_{I_6} - 0.388 \cdot S_{I_7} + 0.96 \cdot S_{I_8}; \quad (20)$$

$$H2 = 0.202 \cdot S_{I_1} + 0.062 \cdot S_{I_2} - 0.51 \cdot S_{I_3} + 0.158 \cdot S_{I_4} - 0.227 \cdot S_{I_5} + 0.6 \cdot S_{I_6} + 0.011 \cdot S_{I_7} + 0.34 \cdot S_{I_8}; \quad (21)$$

$$H3 = 4.411 \cdot S_{I_1} + 0.253 \cdot S_{I_2} + 0.023 \cdot S_{I_3} + 1.574 \cdot S_{I_4} - 1.287 \cdot S_{I_5} + 3.233 \cdot S_{I_6} - 4.989 \cdot S_{I_7} - 0.038 \cdot S_{I_8}; \quad (22)$$

$$H4 = 2.342 \cdot S_{I_1} - 1.958 \cdot S_{I_2} + 1.215 \cdot S_{I_3} - 1.018 \cdot S_{I_4} - 2.007 \cdot S_{I_5} + 1.563 \cdot S_{I_6} + 1.563 \cdot S_{I_7} - 0.989 \cdot S_{I_8}; \quad (23)$$

$$\begin{aligned} H1 &= 3.146 + H1; & H2 &= -383.862 + H2; \\ H3 &= -0.583 + H3; & H4 &= 2.417 + H4. \end{aligned} \quad (24)$$

2. For the nodes in the output layer of the neural network (c1, c2 and c3) the software SAS Enterprise Miner has the functions and with their corresponding weights presented in equations (25)-(27).

$$Pc1 = -0.749 \cdot H1 + 1.64 \cdot H2 - 5.353 \cdot H3 + 4.325 \cdot H4; Pc1 = -1.794 + Pc1; \quad (25)$$

$$Pc2 = 5.009 \cdot H1 + 0.453 \cdot H2 + 5.049 \cdot H3 - 4.098 \cdot H4; Pc2 = -0.607 + Pc2; \quad (26)$$

$$Pc3 = -3.8 \cdot H1 - 0.662 \cdot H2 + 2.789 \cdot H3 - 2.405 \cdot H4; Pc3 = -1.822 + Pc3. \quad (27)$$

After the training of the neural network, it can be seen that the groups of counties remained approximately the same as those resulting from the cluster analysis. The advantage of using neural networks is that once trained and, as a result, found the transfer functions and those that calculate the scores, they can be used in the future, without needed to resume the whole algorithm.

The classes resulting from the analysis can be characterized as follows:

1. First class (c1) which has counties with low economic and social development, in the sense that the average net earnings are low, emigration is high, the number of unemployed is high and, implicitly, the number of schools is small;

2. Second class (c2) is characterized by an average economic and social development. The values of the growth indicators used in the analysis are higher than in the previous class. Thus, in the counties that are in this class we can also find

independent higher education units or branches of large universities in large cities. The unemployment rate, permanent and temporary emigration levels are lower than the values of the same indicators found in class 1; and

3. Third class (c3) is made up of counties with large urban agglomerations, with strong university centers. As a consequence of the urban agglomeration, the number of live births is high, so it can be said that in the future these counties also tend to keep their place in this class. This class is also characterized by the small number of temporary and permanent emigration, the average net earnings is higher in Romania, the number of schools is high, as well as the number of computers used in education.

Regarding the outlier found at the beginning of the analysis, being Bucharest, at a closer analysis of the values of the indicators chosen for the application, we can be seen that they have much higher values compared to other counties. From the point of view of the economic and social reality, Bucharest can be associated with the third class (c3) which contains counties with above average development.

The transition of a county from one lower class to another upper one can be done through medium and long term economic and social policies. Thus, in order to pass a county from first class (c1) to second class (c2), it must increase the values of the following indicators: average net earnings through policies to attract new investments at the local level, the number of school units and the number of computers for education. From ancient times the people went to the places where they were well. So, as a consequence of the firm investments made in a certain county, immediately the number of unemployed will decrease because labor is needed, and any investor prefers local labor because it involves less transportation costs and others. Over time, the number of temporary emigrants will also decrease, and in the long run the final emigration will also decrease. Thus, people returning to their native counties, automatically and the number of children born alive will increase this ensures the preservation of that county in the desired class in the long run.

All locally adopted policies have consequences in the cascade. Even if the model allows the transition from one class to another to be done exclusively by changing a single indicator, from the point of view of economic reality it is almost impossible to achieve this because a measure adopted has greater or lesser implications on all indicators.

#### **4. Conclusion**

With the change of technology, the increase of computing speed and the automation of many activities with the help of computers, education and implicitly the education system change too. [29-31] The transmission of information, knowledge, skills is a challenge in the current conditions of technological progress. [32] Every person, whether he is a student from the pre-university system, a student in the university system or an adult enrolled in various training courses, has a unique way of learning, accumulating and applying knowledge. Through the policies adopted at the level of Romania, region, county, local community, the education system represented by educational institutions must adapt and respond to these requirements, the development of complex thinking and different skills being prerequisites for long-term development. The policies adopted at the level of the education system must be in

agreement both with the other policies adopted at the level of a country, but also with those adopted at the level of the European Union. Even if in the short term it seems that the education system is a big consumer of resources, in the medium and long term, the degree of development of a country is measured in overwhelming proportion by the level of training of its specialists. [33] The more refined know-how skills the specialists have, the more the amortization of the costs with their education will be achieved in a shorter time and, implicitly, the added value they will bring will be higher.

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# CRISES IN THE AUTOMOTIVE INDUSTRY

Vlad Cârstea\*

## Abstract

*The COVID-19 pandemic and the war in Ukraine have changed the global automotive industry in an unprecedented way. The pandemic with its lockdown measures meant that the manufacturers also had to close their production facilities for days on end and when they did reopen, there were a lot of precautionary measures that had to be taken. On the other hand, the war in Ukraine and the imposed economic sanctions on Russia, violently affected the supply chain as, a large quantity of raw materials was sourced from these economies. The result is unheard delays in delivering automobiles for the customers and an upward trend in prices, both for new and used cars.*

**Keywords:** *Ukrainian war, semi-conductors, COVID-19, automotive industry*

**JEL Codes:** F01, F15, F18, F23

## Introduction

The past few years, the last four, in particular, have been quite interesting for the automotive industry due to highly oscillating sales volumes of new cars, a pandemic outbreak, a supply-chain crisis, and recently, the Russian-Ukrainian war. But, fortunately, this industrial sector managed to surpass part of these shortcomings and its recovery is highly expected both by the stakeholders and the customers, as well.

The global automotive industry was on a slightly downward trend in 2019, as manufacturers recorded a 4.1% drop in sales, compared with 2018. Of course, not all regions “behaved” in the same way, meaning that in some parts of the world, 2019 was a better year in sales than 2018. For instance, in Europe and in Brazil, the sales were on an upward trend with a 1.2% and 7.7%, respectively. Unfortunately, these regions were the only ones that ended the year on a positive note, as in all the other regions of the world car manufacturers recorded losses. The biggest reduction in sales volumes manifested in India with a 12.7% contraction, followed closely by China with a 9.5%. The Chinese economy had recorded, in 2019, the second year of slow sales and the worst year for the automotive industry since 2015, but that didn’t affect in any way its status of the biggest market in terms of car sales.

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**Table 1.** Worldwide car sales in 2019<sup>1</sup>

Region	2019	2018	18/19%
Europe (EU+EFTA)	15,805,800	15,624,500	1.2
Russia*	1,759,500	1,800,600	-2.3
USA*	16,965,200	17,215,200	-1.4
Japan	4,301,100	4,391,200	-2.1
Brazil*	2,665,600	2,475,400	7.7
India	2,962,100	3,394,700	-12.7
China	21,045,000	23,256,300	-9.5
*Light vehicles			
Combined:	65,504,300	68,157,900	-3.9

Continuing the analysis on Asia, one can see that Japan, another important player, had a bad year, as well. The new light vehicles recorded a 2% reduction which in absolute figures translates into 4.3 million cars. This was the biggest drop in sales in three years, but somewhat justified by the introduction of a new sales tax.

Within the United States of America the car sales also manifested a reduction in sales compared with 2018. Granted, the difference of 1.4% is falling into the oscillating pattern from the previous years, but the interesting fact is that only the light passenger cars suffered, as the light trucks continued to gain market share to an all-time record of 75% out of all new passenger vehicles.

### The COVID-19 pandemic

According to specialists the automotive sector is “the largest and one of the most complex industries in the world...”<sup>2</sup> That being said, it is also extremely responsive to all external factors and any disruption in one part of the world will have effects at the global level.

After a year with low sales throughout the entire world, 2020 delivered the challenge in the modern era: the outbreak of COVID-19 pandemic. It was expected that 2020 will be the comeback year in terms of sales, and according to a study performed by KPMG<sup>3</sup>, digitalization and connectivity were the key words that would define the future of the automotive industry. Moreover, the study respondents considered that industry will go through a fundamental change in the following years. Unfortunately those predictions did not come true, as all the vehicle manufacturers throughout the world had to close down their production facilities during the lockdown.

As such, in terms of sales, 2020 was, of course, a disaster, as globally, there were almost 17% less cars sold compared with 2019, which was already a bad year for the sector. It was said that the first year of the pandemic was the worst year in a very long time. So the manufacturers and dealers had to come up with innovative solutions that will allow them to cut their losses. And since showrooms were closed and all the buyers were locked down into their homes, the solution was simple, effective and cutting edge, all in the same time as during the pandemic the cars were sold online.

<sup>1</sup> Source: Car sales statistics.

<sup>2</sup> Richard Bartlett-Rawlings, Graham Bushby – The Road to Recovery: How the automotive industry can come back from COVID-19.

<sup>3</sup> KPMG – Global Automotive Executive Survey, 20<sup>th</sup> edition, 2019.

Most of the manufacturers and dealers shifted from the offline face-to-face interaction with the prospective clients to an online interaction where the car was presented online through a series of pictures and videos with live online negotiations. Even paperwork and the payments were conducted online. This method appealed mostly to the younger buyers, who were the predominant buyers during the pandemic. The reason was that they felt more protected from the virus inside their own car compared to the public transportation or ride sharing services.

The fact that the automotive industry had to shut down its activity for a limited period of time has impacted other industrial sectors, which, in the end, led to another crisis. Very affected by this temporary shutdown were the companies that produce semiconductors or popularly known as chips. As consumers desired more and more gadgets and functions in their personal vehicles, the manufacturers were more than happy to oblige, as that is a good way to increase revenues. As a result, the modern car contains a large number of such semi-conductors, anywhere from 300 to 3000 for every car, depending on the car type (electric, hybrid or conventional) and all the amenities that the vehicle incorporates. So, when the demand for new cars ground to halt, during the pandemic, of course the manufacturers closed the production lines in order to prevent stocking up. So they had to cancel the orders to all their suppliers, including the companies that produce the all-important chips. These suppliers, saw themselves in a difficult situation as they also had to survive, so they re-oriented their production towards a sector that was basically booming: electronics and information technology. Due to the COVID-19 outbreak and the fact that all the national governments issued lockdown regulations, a lot of companies had to convert their activities from working onsite to working remote or from home. A big part of these companies' budgets went into electronic devices that could help the workers perform their duties (laptops, tablets, web cams etc.). The educational system also had to shift from the traditional style of teaching and learning to a more cutting edge online process where a whole new range of devices had to be used in order to accomplish the learning goals. Moreover, since all the outdoor activities and travelling had been limited by the lockdown, the demand for new TVs, monitors, gaming consoles, smartphones and so on, skyrocketed. Since all these devices uses semiconductors, it was only natural that the manufacturers shifted from the automotive business to electronics and IT. This strategic move ensured the sector's success during the pandemic.

In 2021, when the pandemic seemed to lose steam and people tried getting back to their regular, day-to-day activities, the automotive industry tried to recover two years of bad sales. So the car manufacturers found themselves in another critical situation: the semiconductors they needed to build the cars were quite scarce as the producing companies were supplying the electronics and IT sector. That lead to a logistical nightmare as the manufacturers and dealers could not deliver the cars to their paying customers. At first, the delays in 2021 were from one to three months, to six months in June-July '21, to one year at the end of 2021. This year, 2022, the delays are even worse as some manufacturers do not offer an estimate delivery date to their customers that had already paid for their vehicles.

The solution that the countries came up with is to limit the dependence on these chip manufacturers that are mostly clustered in Taiwan (92% of the high end chips are produced here, while the rest of 8% is covered by South Korea) by creating more

factories that are closer to the factories where they are used. But creating new factories that are is going to take up years (five to ten years in the best case scenario) as the manufacturers in the automotive sector need a solution as fast as possible in order to prevent bankruptcy.

**Table 1.** Worldwide car sales in 2020<sup>4</sup>

Region	2021	2020	% 20/21
Europe (EU+UK+EFTA)	11,774,900	11,961,200	-1.5
Russia*	1,666,800	1,598,800	4.3
USA*	14,913,700	14,450,800	3.1
Japan	3,675,700	3,810,000	-3.5
Brazil*	1,977,100	1,954,800	1.1
India	3,082,400	2,435,100	26.7
China	21,090,200	19,790,000	6.6
*Light vehicles			
Combined:	58,180,800	56,000,700	3.9

### The war in Ukraine

As if the COVID-19 pandemic and the chip shortage were not enough, the war between Russia and Ukraine represents another crisis for the automotive industry. Ukraine and Russia are important suppliers for car manufacturing industry. They provide raw materials for the automotive industry like palladium, nickel, lithium and neon gas. Palladium is used in the catalytic converters and the Russian mines provide almost 40% of the global palladium production. The situation is similar for nickel (which is refined and then combined with lithium to produce lithium-ion batteries), as the Russian economy is the fourth nickel producer in the world. Last but not least, neon which is a noble gas used in manufacturing different types of bulbs for the automotive lightning systems. However it is used in copious quantities for producing semiconductors. This gas is actually a byproduct in the Russian steel factories, but in order to be used in the chip industry, it is processed in Ukraine. Between the two countries the production of neon totals for about 80-90% of the global production.

Aside from the provided raw materials for the global automotive industry, Ukraine supplies components and sub-assemblies, as well. Wiring harnesses that are considered the communication highways between the cars' different electric or electronic modules are manufactured by Ukraine for the majority of the European car manufacturers, like BMW, or the Volkswagen Auto Group. Since the factories were destroyed by the Russian bombing, the car manufacturers, especially the European ones were highly affected and their production was delayed if not stopped entirely. S&P Global Mobility (a research and rating company) estimated that the global production of light vehicles will be reduced by millions of units. Moreover, they assessed that the global production for 2022 and 2023 will be 2.3 million smaller than the original estimate.

<sup>4</sup> Source: Car sales statistics.

Although the war is another crisis that adds up to the existing ones, the European manufacturers announced after the beginning of the war, that they will start the production at full capacity. BMW officials said that their main factory in Germany will resume production and their estimates for production volumes will surpass the 2021 values. However, the Mini production plant located in the United Kingdom will remain closed, as it is affected by the war. The solution that the company had found was to work “with suppliers to duplicate, not relocate, the wire harnessing production to attempt to keep jobs in the country”<sup>5</sup>. Volkswagen has decided also to start and increase the production in the homeland, in order to recuperate the losses from the pandemic, but the factories that manufacture electric vehicles will remain closed, as they rely on Ukrainian raw materials. Porsche, one of the Volkswagen Auto Group’s division, also stopped the production within the Leipzig power plant, for the same reason, the war.

### **Conclusions**

The COVID-19 pandemic can be considered one of the triggers for the current automotive crisis. The lockdown affected the car manufacturers and the dealers as fewer people wanted to buy a new car. As a result, the manufacturers had to reduce and restructure their activity in order to better cope with the new situations. That often meant that capital had to be redirected from different compartments, namely R&D, towards the daily operations, in order to keep their business going.

The semi-conductor shortage, the second trigger for the current automotive crisis, influenced the prices, making the new vehicles pricey as they were, even more out of reach for more consumers. Another negative effect of the chip shortages, was the delivery deadlines for the new cars that from a point were quite absurd. For instance, there are consumers that ordered and paid for a new car in June 2021 they haven’t receive it in 2022. Even more so, there are situations when customers bought a certain model of a car, but due to large delays in deliveries, they ended up with the newer version of that particular car and they had to pay for the difference.

The war in Ukraine and the economic sanctions for Russia are the newest factors of impact for the automotive market. Their influence on this economic sector is similar with semi-conductor shortage as the prices and the delivery deadlines will increase. Subsequently, this lead to an increase of prices for the second-hand vehicles as the demand for cars cannot be satisfied by the car manufacturers. Another negative effect generated by the war is the increased costs of transportation. Since the railroad and the maritime transportation costs were already on an upward trend after the pandemic started, nowadays due to the fact that shipping companies have to use alternative routes the prices have gone up 15-20 times.

The increased prices for oil on the international markets and the high levels of inflation have also resulted in more highly priced cars. As a result of this profoundly negative context, the new car prices have skyrocketed, as there are markets that have recorded 30-38% increase. The situation, unfortunately, is similar for the second-hand market. Since the consumers cannot buy a new car within a reasonable time frame and

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<sup>5</sup> Michael Wayland - *Russia’s invasion of Ukraine will lower car production by millions of units over two years*, S&P says.

budget, they will try to buy a used one. And this demand for cars was 11% higher on some markets. In the end, the increased demand for second-hand cars drove the prices up, just like the new car markets. The prices went up so much, that cars that are three or four years old are bought at the same price that they had been bought when new.

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# USE OF GOOGLE TRENDS IN DETERMINING ROMANIAN PUBLIC OPINION TOWARDS ENGLISH LANGUAGE COURSES

*Gyongyver Măduța\**

## **Abstract**

*Public interest towards foreign language courses is a major factor in influencing consumer behaviour, university policy and even public policy towards a more educated population. By using a “big data” approach, freely available through the Google Trends service, an assessment was made with regards to Romanian public interest towards English language courses available on the market, as well as the regions with the highest demand for English as a second language over the past five years. The results are relevant to academia, language centres, cultural centres, English schools and Universities with English- taught programmes.*

**Keywords:** *Consumer behaviour, Google Trends, English language, public interest, language courses*

**JEL Classification:** D83, P36, P46, Z11

## **1. Introduction**

The present research involves an interpretive approach to a current issue, respectively Romanian public interest towards foreign language courses by using the Google Trends service. There are two types of Google Trends data that can be accessed: the first type consists of real-time data over the last seven days of queries, and the second type consists of non-real-time data starting in 2004 and leading up to the past 72 hours before the data inquiry. The sample is representative because although the Google Trends service only uses a sample of Google user searches, Google features billions of searches daily. The full data set is even too great for any artificial intelligence to access and process it quickly. To this end, data sampling is used to analyze a representative set of Google searches and obtain reliable statistics which are also actionable even within minutes of the occurrence of a real-world event. For easy comparisons between terms, search data is normalized based on the time and location of a query.

It is worth mentioning that Google Trends data differs from Google AdWords Search Terms report which is built for monthly searches and features average search volume statistics which are specifically designed for advertisers, while Google Trends focuses on real-time data.

Ginsberg et al. (2009) were among the first to include Google Trends in research studies, where they demonstrated Google Trends tracking and possibility of prediction

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for the spread of influenza even earlier than Centers for Disease Control and Prevention (CDC).

As consumers act in their information seeking stage to reduce uncertainties and avoid risks in the purchase process, be they psychological or financial, the trend is to adopt information seeking behaviors by searching the web, causing increases of Internet accessibility. Online searches will inevitably lead to online purchases, hence the positive correlation between a user's willingness to search online and purchase a language service online [Goel et al., (2010)]. Search is thus an act that accompanies a purchase or the acceptance of an innovation. Statistics on search activities are thus useful resources for monitoring activities, analysis and even predictions on acceptance of a service or a new technology by consumers or the general public [Jun et al., (2019)], hence the proliferation of studies using search engine data even before the appearance of the Google Trends service.

Web data sources, such as search engine terms' traffic, web traffic, and customer feedback oWith the increase in availability of 'big data' sources, they are naturally used for various demand predictions and public interest evaluations towards given topics.

English has remained the working language of many companies with foreign capital in Romania and, moreover, in the company jargon, whether it is banking, retail or especially IT, many English terms abound.

## 2. Methods

The purpose of the study is to identify the public interest towards English language learning in Romania by using the Google Trends service as a research tool.

The Google Trends data is available as a time series for each individual keyword starting from 2004. Each individual value is proportional to the frequency of the search term. Google normalizes each time series between 0 and 100, with 100 corresponding to the maximum of the time series. Up to 5 multiple search keywords can be selected; in this case all series are normalized with respect to the maximum value of the multiple keywords. While Google makes available only normalized data, which makes the frequency data immune to changes in total search volume, other effects are not taken into consideration. One of the most important factors which can affect the data is the change in Romanian speaking Google users, as a fraction of total search data. In order to account for this variable, the Google search data frequency for "este" ("it is") and "are"("it has") were used as a baseline.

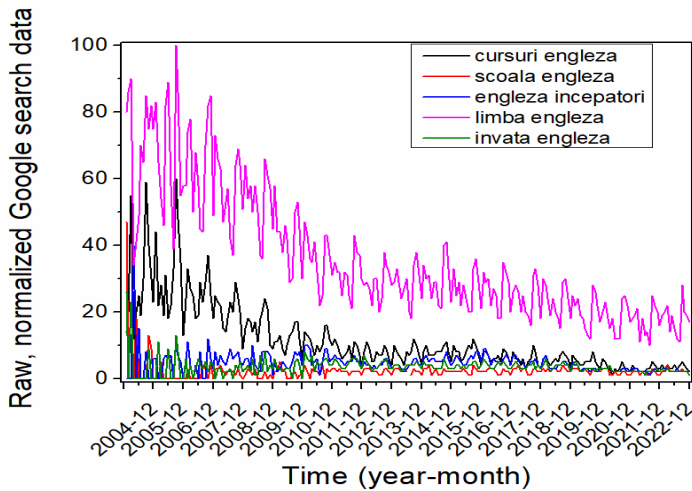
The specific objectives of the current study were stated as follows:

- Identifying the changes occurring on language learning searches in Romania up to the end of 2022.
- Identifying the potential need to adapt the offer and subjects taught in order to facilitate an efficient allocation of language learning resources.
- Identifying the main changes in the evolution of demand for English language courses as a result of digitization.

## 3. Results

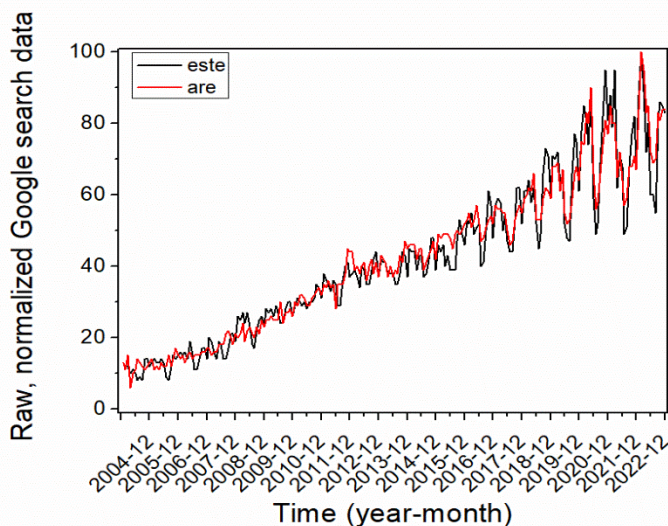
The raw data provided by Google Trends for 5 keywords related to English language ("cursuri engleza" translated as English courses, "scoala engleza" translated as English school, "engleza incepatori" translated as beginner English, "limba engleza"

translated as English language, “invata engleza” translated as learn English) is presented in Figure 1. The “cursuri engleza” and “limba engleza” keywords show a period of maximum use during 2004 -2007 time range, followed by a gradual decline in search frequency. The other keywords show increased use after 2008.



**Figure 1.** Raw, normalized Google search data frequency for the 5 keywords presented as monthly data

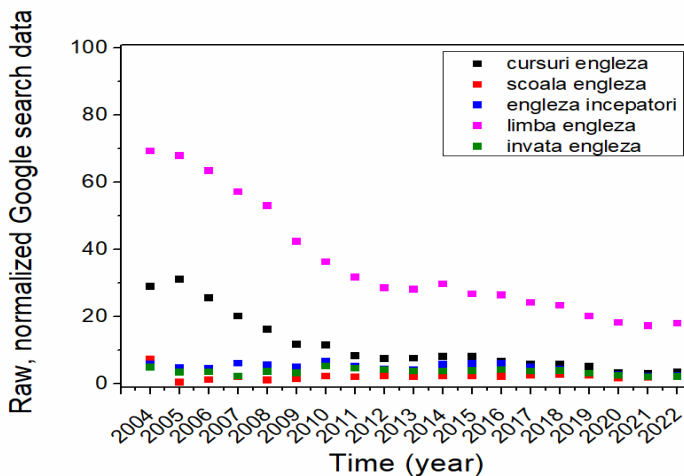
The baseline data shows an increasing trend over the considered time range (Figure no. 2). This indicates an increased use of Google searches using the Romanian language, not necessarily an increase in total user counts.



**Figure 2.** Raw, normalized Google search data frequency for the 2 baseline keywords presented as monthly data

Both the 5 keywords as well as the baseline data exhibit significant month-by-month variation. The average monthly search frequency values were computed for each year starting from 2004 and presented in Figure no 3.

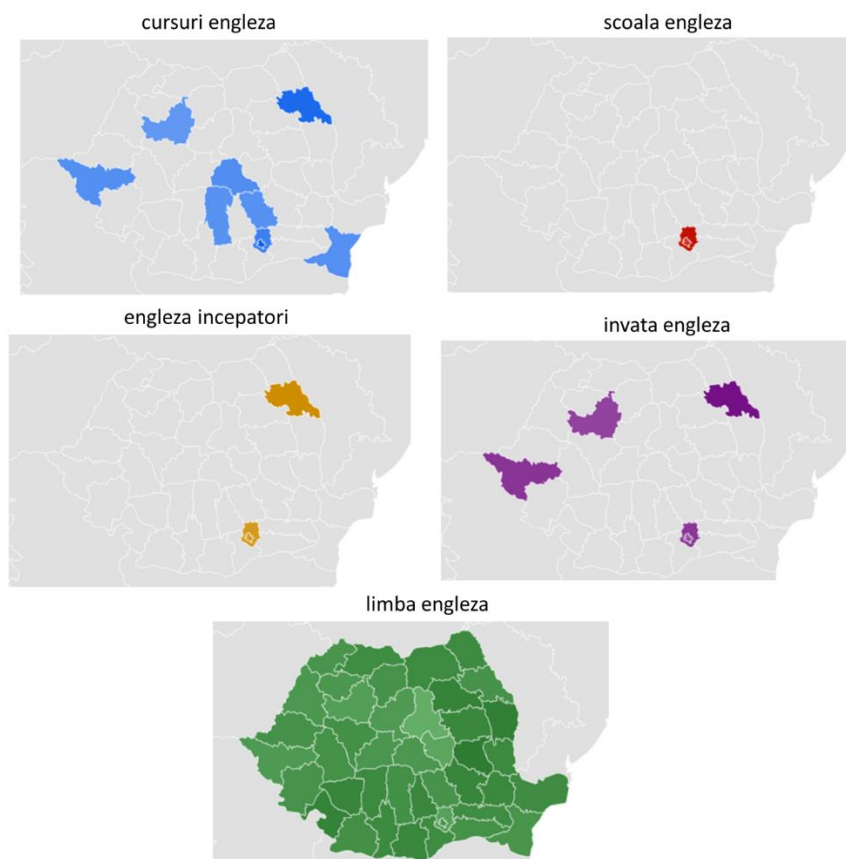
The current language training market is evolving by adapting to technological progress, learning methods are becoming more flexible, personalized and more participatory with the involvement of the learner himself in managing his own training. The current offers of the foreign language centers that are also active in Romania are oriented towards the comfort of the learner, by overcoming the impediments regarding the place, the schedule, the learning activities. In addition to these, it is worth noting offers of foreign language learning services focused on training projects that emphasize the learner's acquisition of learning objectives, contents, tasks and activities, as well as exclusively online offers, through the possibilities offered by applications for distance learning, e-learning, multimedia, etc. that open new perspectives for the development of innovative formulas for training credits or internationally recognized accreditations.



**Figure 3.** Google search data frequency for the 5 keywords presented as the yearly average frequency data

Google Trends also offers regional query search data. The regional breakdown of the 5 investigated keywords is presented in Figure no. 4. Interestingly, only the “limba engleza” keyword has been searched for in all of Romanian counties. The other 4 keywords only appear in significant numbers in the most urban regions of the country: Bucharest-Ilfov, Cluj County, Timiș County and Iași County. These regions correspond to the capital and the 3 largest cities in Romania.

According to the evaluation, English remains at the top of students' preferences, occupying around 80% of the search terms on the foreign language courses market. The demand remained constant in this segment, especially due to a need for better defined courses, specialized in business and negotiations.



**Figure 4.** Regional distribution of the keyword search frequency.  
Darker colours indicate higher frequency

Note from Figure no. 4 that English is everywhere in the country, probably because of the subject being taught in school. The rest of the keywords have a large spread only in Bucharest, Cluj, Iasi and Timisoara. Another key word that is also used in Arges and Prahova counties – likely because these regions also feature the Dacia factories, the oil refineries Arpechim and Petrobrazi, and due to the intense tourism specific to the Prahova Valley. It is worth mentioning that in Romania, the oldest native foreign language centers (Fides, Lexis) were established in 1993. The 90s are the decade when the privatization of state enterprises in Romania began, with the possibility of being bought by foreign investors, however, in lack of a legislative framework conducive to foreign investments, this was achieved hesitantly. In addition, economic, legislative and political play an important role in learning foreign languages.

#### 4. Conclusion

Our work provides extensions to previous research featuring Google Trends data by methodology improvement and focus on country-specific search queries on language learning data, where such analyses have not been previously performed. By use of previously determined search queries, the analysis was extended by using

search terms specific for national regions of interest. The most relevant queries which would suggest strong relevancy for language learning queries and related terms were also compared to baseline terms, for a more accurate representation. The search query volume that was geographically restricted to Romania shows the possibility of improvements in predictions of demand occurrences in Romania and the existing supply.

The present study's results support the value of indirect sources use for the forecasting of demand for language courses in Romania. Such studies constitute an added benefit for Romanian public officials as they can anticipate changes in demand occurrence, indicating when action could be applied for better public and private education and a better prepared Romanian labor force. Hence, this research has created a novel tool for improving current education policies in Romania.

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# UNDERSTANDING FAMILIAL CONFLICT ISSUES OF WORKING FROM HOME ON JAPANESE WHITE-COLLAR WORKERS IN CENTRAL TOKYO

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## **Abstract**

*The Japanese living situation in urban areas such as central Tokyo, is a relatively unfamiliar condition for many people in the West to understand. And, the impact that working from home has had on them has been high not just in terms of convenience, or lack of it, but also as a fundamental change to occupational health and wellbeing. With depopulation and ageing society being critical causes of labour shortage in Japan, it is important to determine how remote working has affected its workers. This study utilizes data gathered from focus groups of white-collar workers in Japanese companies and investigates causes of familial conflict impacted by working from home since 2019. This article explores the shifting effects of working from home for Japanese workers in terms of familial conflict, and the burden of cost from a social perspective.*

**Keywords:** *Wellbeing, work from home, remote work, family conflict, labour productivity*

**JEL Classification:** I12, O15, M14

## **1. Introduction**

This study examines the connection between habitable space in standard Tokyo residences, family relationships and work-family conflict in Tokyo Japan caused by working from home by white-collar workers since 2019. The COVID-19 pandemic acted as a catalyst to changes in work-style in Japanese organizations especially for the Small and Medium Sized Enterprises (SMEs) of which according to the OECD (2021) the SMEs employed 60% of all employees in the business economy in Japan.

As of 2020, Japan's population census showed 55.7 million households excluding institutional households such as dormitories, of which 38.1% were single-person households and 54.2% were nuclear-family households (Statistics Bureau of Japan, 2022). In Tokyo, the population in 2020 was reported to be a little over 14 million with a population density of 6,410 persons per square kilometer (Tokyo

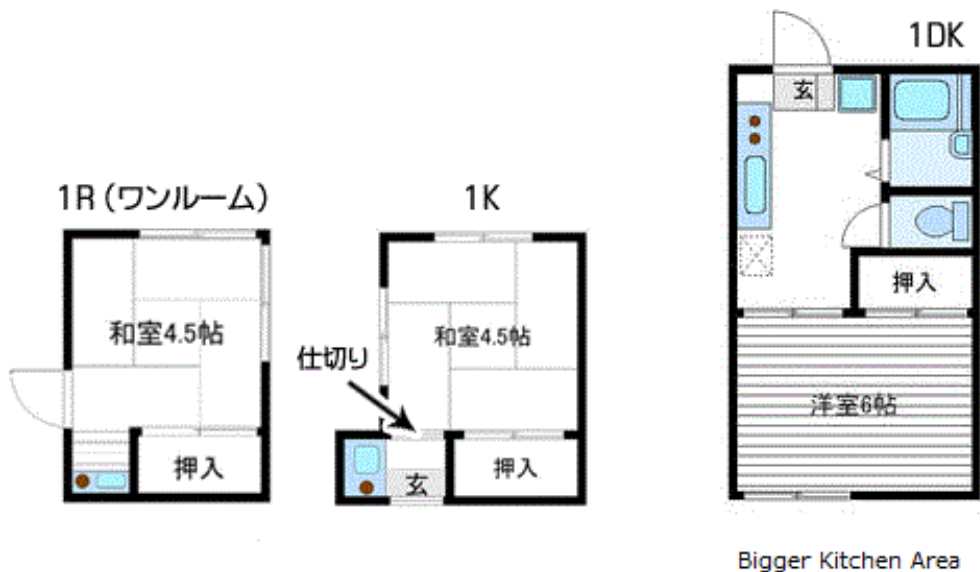
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Metropolitan Government, 2022). According to Savills in-house surveys (2022), there were approximately 2.5 million households in the Tokyo Metropolitan Area, of which 2.1 million were rented. Based on the House and Land Survey of Japan, approximately 70% of the renters were single households and 20% were two-person households. (Aveline-Dubach, 2020) supports this standpoint stating that Tokyo is a densely populated city with the larger majority of rented domiciles comprising mainly of small apartments targeted at unmarried adults.

To put things into context, in Japan, apartments are categorized by the number of rooms they have. For example, the smallest might be a 1R which represents a generic room which could serve as a bedroom, living room, dining room and have a typically very small adjoining kitchen as shown in figure 1. Virtually all residences have a bathroom and separate toilet. Although a 1R could be compared to a Western studio, according to Realestate Japan (2022), the average size of a 1R in Tokyo is between 13 and 20 sqm. Urban Renaissance (UR), an independent administrative corporation formed by the Japanese national government demonstrates typical layouts and sizes of apartments for the configurations of 1R, 1K and 1DK in Tokyo as shown in figure 1. 4.5 denotes 4.5 tatami mats and is the standard method identifying size. A tatami mat is approximately 1.6 sqm (UR Housing, 2023).

**Figure 1.** Typical layout of a Japanese 1R, 1K and 1DK apartment.



Source: UR Housing (2023)

On the other hand, a 3LDK would represent a significantly larger apartment consisting of three generic rooms, a living room, dining room and kitchen. According to the Japanese government's Housing and Land survey of 2018, the average size of a 3LDK is 78 sqm (Statistics Bureau of Japan, 2019). What is important to note is the contextual fundamental difference in interpretation of functional living space. In the West, many people think of residences in terms of number of bedrooms. However, in



Japan, a room might be a bedroom at night, and the living room by day. Therefore, in many cases for occupants of Japanese apartments, fixed furniture such as a bed is undesirable, and futons which may be put into the closet during the day are preferred.

Ono (2018) identified that pre-COVID, many workers struggled to balance long workdays with leisure and family needs. These long work days in Japanese companies have arguably been the byproduct of traditional workstyles such as respecting seniors, and the appearance of diligent working. Examples of which include, workers who feel that they cannot leave the office until their managers do, or having the desire to be seen as hard working, feel compelled to remain at the office longer than their contractual work hours. Additionally, Ono suggests that these feelings fall under the concepts of self-sacrifice and work devotion which are rooted in the Japanese psyche. Therefore, it might be thought that these traditional mindsets maybe offset by a shift to working from home, and remote working.

Ibrahim and Kumar (2022) suggest that the effects of remote working, or working from home can allow for an increased opportunity for married couples or cohabiting partners to enjoy time together thereby improving the balance between work and family life. Holdsworth (2003) also identified that work activities which decreases time spent in the office enables workers to improve their home and work life balance by being able to deal with various domestic crises, as well as reducing stress caused by commuting. Nonetheless, many adverse issues were reflected in the comments by the focus group participants of this study.

## 2. Literature Review

The conventional sense and meaning of ‘family’ as an institution in Japan has changed dramatically since the Meiji period (1867-1912). However, many conventional perspectives of ‘wife’ and ‘mother’ are still undergoing a gradual evolution in response to ongoing shifts in social, cultural and economic conditions (Nocedo, 2012; Sekiguchi, 2010). Sasagawa, et al. (2016), however suggests that since the 1980s, roles and obligations of husbands and wives have changed little. For example, many Japanese men still perceive household tasks as a wife role and working long hours as a husband’s role.

Social changes in the perceptions for the employment of women have been necessary to adapt to issues such as the shrinking population (Statistics Bureau of Japan, 2022) and decreasing disposable income due to increasing taxes, and low wage inflation (Toyoaki, 2022). Such economic uncertainties for families have promoted an increase in dual-income earners. Additionally recent changes in the law regarding distinctions between ‘regular employee’ and ‘part-time worker’ have enabled previously classified part-time workers to gain the protection of regular employees such as long-term job security and pensions (Ono and Kanamaru, 2022). However, Blau, et al. (1998) suggest that as the number of dual-earning couples increase, the occurrence of work family conflict also increases.

Emphasis can be placed on women as ‘good wives’ or ‘wise mothers’ under the concept of *ryosai kenbo* (家) (Sakamoto, 2014). Good wives are seen as those who pursue efficient, economical running of the home, and promote hygienic lifestyles. On the other hand, wise mothers may be perceived as those who raise obedient and educated children (Yamamoto and Watanabe, 2016; Killen and Sueyoshi, 2010).

Filial piety (*koukou* 孝行) in Japan is derived from Confucianism and encompasses several key areas such as taking care of parents in their seniority and obeying them while they live (Poskaite, 2014; Nichols, 2013). These aspects of family culture remain mainstream in Japan today (Koyano, 1996). Another aspect from *koukou* is the responsibility to have children to carry on the family line. However, perceived duties to prioritise their company's or organization's well-being before personal well-being, has led to a culture of long working hours, reported as well as unreported overtime and irregular work schedules (Yamauchi, et al., 2017; Fursman, 2009). It may be inferred therefore that these factors have contributed to the difficulty for workers to find time to meet and date prospective life partners.

Interestingly, according to the 15<sup>th</sup> Japanese National Fertility Survey (National Institute of Population and Social Security Research, 2015), the number of men who never intend to marry has continued to increase, representing 4.5% in 1987, 7.7% in 2002 and 12.0% in 2015. Additionally, the number of women never intending to marry also increased from 4.6%, 5% and 8.0% respectively. The survey trend over the last 25 years has been relatively consistent for men and women for perceived merits of marriage. Both men and women in the 2015 survey placed stronger emphasis on marriage for procreation reasons (35.8% men, 49.8% women) and psychological relief (31.1% men, 28.1% women). Additionally, only 13.3% of men and 14.0% of women selected 'living with the person they feel affection for' as a merit of marriage. And 1.6% of men and 0.2% of women selected sexual satisfaction. On the other hand, while 5.9% of the men selected financial stability as a merit of marriage, 20.4% of the women felt that marriage provided financial stability. This suggests that mindsets of marriage during the survey are predominantly focused on childbearing and responsibilities related to raising children.

In terms of work-related family conflict, Netermeyer, et al. (1996), suggests that work family conflict can occur due to perceived stress over issues relating to time issues, such as working long hours. Additionally, Cooklin, et al. (2014) identified that role-conflicts between mothers' responsibilities such as family-functioning and work-roles, can have negative effects on children's social, emotional and cognitive behaviour.

A study by Huffman, et al. (2013) investigated the relationship between fathers whose work hours related to work-family conflict, as well as the number of hours fathers cared for their family. The results of the study indicated that fathers spending time at work or caring for family did not necessarily relate to strain-based work family conflict. Huffman, et al. (2013) suggest that the perception of work hours can be associated positively, such as contributing to the positive concept of being the breadwinner or providing opportunities for his family through increased salary. On the other hand, people who perceive long work hours negatively, are more likely to feel associated stress, and may attribute blame to the family for forcing them to work longer hours.

Various studies have been carried out internationally on the effect of marital disharmony on worker performance. For example, a study by Fellows, et al. (2016), determined a negative relationship between work-family conflict and couple relationship quality. And Falola, et al. (2016) determined that employees who had marital problems had a higher tendency to experience factors of low performance, low morale, a lack of concentration and absenteeism. Additionally, a study by Waite, et al.

(2002) determined that unhappily married adults who divorced or separated were on average no happier than those who had stayed married. Of which, the researchers highlighted that the results were true regardless of race, gender, age or income.

### 3. Research Objectives

This research aimed to investigate the effects of remote working in Japan on white-collar workers' family lives. To this end, there were 3 primary research questions.

1. Is the home office a suitable work environment for e-work?
2. What types of familial conflicts arose as a consequence to working from home?
3. Is e-work a suitable and sustainable work environment for Japanese white-collar workers?

### 4. Research Methodology

This study makes use of focus group data from five groups consisting of between 6-8 participants for a total of 36 participants. Volunteers were requested through a shared network from a Japanese University and Business School. The groups were hosted on different days through the Zoom application, and the data collected was not shared between participants. This was to help facilitate triangulation of themes while reducing the risk of contamination of ideas through external influence.

The focus groups were carried out in November of 2022 in Tokyo, Japan. Participant demography were white-collar workers employed in organizations in Japan who could be at either the management or staff level. The male to female ratio was 56% and 44% respectively, and the age range was between 27 and 57. 72% of the participants stated that they were married of which 88% had one or more children. 35% of the married participants reported that their children were over the age of 20, were unmarried, and living with their parents.

Since COVID-19 commenced, 67% of the participants reported that they had had the COVID-19 virus and 100% of the workers had experience of working remotely during the pandemic. Since the end of 2022, approximately 22% of the participants were still fully working remotely, 33% had a hybrid workstyle of e-work and office work and the remainder had returned to the workstyle that they had experienced pre-COVID-19. This workstyle primarily meant office-based work, which included site-to-site travel.

The interviewer had a list of four questions covering four topics to guide the flow of the conversation. While tangents were expected, the interviewer's task was to allow free discussion of the topics, while guiding the conversation back to the main topics under investigation as seen in figure 2. Each focus group was monitored by the same interviewer, and the same topic sheet was used.

**Figure 2:** Interviewer's Question Topic list

1	<b>How has working from home affected (your) home life?</b>
2	How do you think about combining living space and workspace?
3	Were there any difficulties in performing work tasks from home?
4	How has working from home affected family relationships if at all?

Source: Authors' Own Materials

A time allotment of 30 minutes was given to each question with additional optional extra time slots of 15 minutes per question. Use of the extra time was at the discretion of the interviewer and depended on the participants' level of engagement with the subject. Each focus group's audio was recorded by computer with an external microphone, and the subsequent audio was transcribed to text. The text was then thematically analyzed.

In this article, participants are anonymized and referred to by P-XX, where P denotes 'participant', and XX denotes the initials of their name.

## 5. Data Analysis and Findings

### 5.1. *How has working from home affected your home life?*

Several themes emerged from the first question, firstly the discussion of 'home' as an owned residence compared to that of a rented one, and also the types of 'house' versus 'apartment'. The participants also explained that English words such as 'apartment' have a fundamentally different meaning than that of standard English. For example, P-MS a Japanese worker, explained that in Japan, "the term apartment is a cheaper (type), normally the structure is made of wood" and P-AM from the UK and living in Japan stated, "in my country apartments are not separated in definition by construction materials. But, in Japan, the Japanese have mansion apartments and regular apartments and the size is usually dependent on location and price". Participant RI elaborated, "mansion overseas describes a massive home with many bedrooms, tennis courts and swimming pools. In Japan, the word 'mansion' means an apartment located in an apartment complex made from concrete". She further added, "living in a Japanese mansion is not necessarily an indication of size, more (to do with) the quality of the construction, and have simple features such as a front lobby, a nice waiting area, security cameras and so on".

The participants discussed the size of residences especially in relation to a single occupant contrasting with people living with family members. This led to the topic of 'need' such as how much space a single occupant needs compared to families with children? As well as how many rooms each participant had.

Secondly, the participants grappled with defining and clarifying the meaning of "home life" compared to "work life", as some had experience with working from home, while others had not. Additionally, some participants had traditional Japanese rooms, while others had more Western layouts. For example, the use of a Japanese tatami room with floor cushions, legless chairs and low tables (*kotatsu*), as well as general purpose rooms that used *futon* (floor mattress) at night which could be put away during the day to allow for living room and dining space. On the other hand, more Western style residences had hard floors, more typical Western style beds, dining tables and chairs. Therefore, the data showed that workers who lived more traditional Japanese life-styles tended to have smaller apartments, and it was suggested that the need to have larger space was low, since money could be saved from the purchase or rent cost.

P-MM commented on the theme of work-life separation, "I think e-work can cause people to work too much. Work is rarely straight-forward and even when one work task is completed, another replaces it immediately. At least when we worked at the office, we knew we had to work, and when we arrived home, we could switch off.

With remote working”. P-DT on the other hand stated, “I agree with P-MM, for me, my work is my life, and my life is work. I enjoy working, the sense of responsibility and being depended on. And I enjoy the recognition for my efforts. When I’m at the office, I work. When I come home, I sleep. With working from home, I can work throughout the day and night if I want, and sometimes I do”. On the other hand, P-SO commented, “As a new worker, I sometimes have no idea what I’m supposed to be doing. It can be demotivating when I can’t get support, and I end up doing nothing”.

### 5.2. Definitions of ‘Home’

Many participants had different ideas of what “home” was, for example, “a place to sleep and rest”, “somewhere to keep (one’s) property”, “a place to communicate and interact with family members”. Single worker P-KT explained that before the pandemic, she “spent little time in the apartment except to sleep, shower, and change clothes”. This was because during the week, she “would leave home at 6am, arrive at work by 8:30am and work until 9pm or later”.

P-SI, a single male worker agreed with P-KT and further mentioned that he rented an apartment in central Tokyo. He had chosen that location because of its close proximity to his office. However, the price of Tokyo residences is much higher than that of less central locations. As a result, the size of the apartment was less important. “I only need a single room that doubles as a bedroom during the night, and living space during the day. I think many single people feel the same way”. P-SI’s further explained that his apartment had a shower room, separate toilet and closet space for his clothing. He commented that “apart from my work computer which is a laptop, I had no other PC before being ordered to work from home”. Instead, “I use my smart phone and iPad for non-work email and web browsing”. Additionally, he commented, “I don’t have a dining table or desk, and of course no chairs except *zabuton*, because they take up a lot of space and are damaging to tatami floors”. Comments such as those given by P-SI and P-KT describe their homes as functional and practical spaces, and due to space constraints, meant that smaller apartments tended to have less furniture and equipment. For many single workers, it was suggested that they prioritized proximity to the office for shorter commute times, and smaller apartments to offset the significantly higher rent cost in central locations such as in central Tokyo.

P-TS, a married male worker stated, “When I was in my 20s and early 30s, home was also mainly a place to sleep. I couldn’t leave the office until my manager did, so I usually didn’t get home until late even though I lived quite close to the office. When I got married it was more important to have space and I had to compromise on the commute from my home to the office, and my wife’s commute to her office”. P-SH, another married male worker agreed saying, “This is very common, but one advantage is that larger residences can be rented at a much cheaper rent cost”. P-TS further commented, “When the children came along, home became a place where they could play in safety, and a place where we could interact as a family. Suddenly it became important to have a dining table, high chairs, a big TV with a sound bar, and so on”. P-MI a married female worker contributed, “Young children see the home as their kingdom. They are the kings, and parents are the servants. When I started to work from home, they had no concept that I would refuse their requests, or that at certain times in the day, they must not make noise or cause interruptions. Married female worker

P-MM added, “When children enter junior-high or high school, home-life changes again, I think. It’s important to make more money to pay for *juku* (private tuition) and save for future university cost. So, parents need to work more, or get higher paid salaries through promotions. This means that parents spend even less time at home”. P-MM further related, “Children spend more time studying even late into the night, which means they need a desk, chair, lamp, book shelves and so on in their rooms, and silence to concentrate”. P-SH commented, “When parents work from home, it must be an annoyance for the children. Video conferencing can get quite heated, especially when we have different opinions, or we are excited about a new idea”. Therefore, until COVID-19 forced people to work from home, many Japanese children perceived home as a quiet place to study and do homework, after which they had to share their space with parents whose work activities were noisy and distracting.

### *5.3. How do you think about combining living space and work space?*

Many participants felt that working from home drastically altered their living space. People who lived in small compact apartments did not originally have much in terms of furniture or equipment. For example, P-SI explained, “when space is small, there’s no desire to fill space with unnecessary clutter. If remote work means working at home, then we must have desks and chairs, monitors, speakers, printers and so on”. P-KT added, “I miss not being able to have conversations with coworkers in the hallways. If I need to know something, it is convenient to simply get up and walk to the relevant colleague’s desk and ask my question, also if I need some paperwork, I could walk to the cabinet and retrieve it”. P-SH elaborated stating, “Although digitizing paperwork is something everyone is talking about, many companies have not completed the process of making all paper available digitally”. P-KT further commented, “On the other hand, I sometimes feel the need to print out my data and spread it on the floor so that I can see it more clearly. In the office I could perform this function by using multiple displays. This has a few problems. Firstly, the massive amount of paper and ink that I have to buy and use. Then, my apartment becomes cluttered with piles of paper sitting in various places. And finally, when I’m done, I have to shred it all because of security reasons”. None of the participants commented positively about combining work space and living space and each participant mentioned that having a home-office meant the purchasing of many items which their companies did not reimburse. In some cases, this meant large items such as tables, chairs and printers. In other cases, they referred to office supplies such as paper and ink toner.

Some participants expressed that remote working in Japan should not limit them to working from home since companies were renting shared spaces on an hourly basis or allowing workers to use them for free. P-MH commented, “My colleagues and I sometimes go to Yahoo Lodge in Nagatacho, it has meeting spaces, with desks, whiteboards and free wi-fi. There’s a shared kitchen space with microwave and water kettle. There are also rest spaces with hammocks and pillows. Sometimes it can be very busy and noisy, and other days it will be completely empty”. On the question of company security, P-MH added, “The space is relatively open plan, so some care needs to be taken about security”. Other participants such as P-RM argued, “If I had a choice between working at a public shared space and my office, I would rather work at my office for convenience reasons, and if I wanted to take a rest, I’d rather do so at my home”.

Another issue was the question of what to do with their home office once they returned to on-site, office-based work. Several participants stated that after the lock down had ended, they had sold items to second hand shops for less than 20% of the original purchase price.

#### *5.4. Were there any difficulties in performing work tasks from home?*

Participants reported that there were many initial difficulties with working from home such as lack of furniture and lack of equipment as explained earlier. Noise levels either from family members, or outdoor noise was also widely commented upon. P-DI explained, “at the office, there is a general background noise but at home, there are many sounds that are distracting such as children and outdoor traffic”. And, P-SI commented, “unexpected noises are more annoying for me, and interrupts my train of thought. It hinders the amount of work that I can ordinarily do”.

New workers commented on the difficulty to get adequate direction from management. For example, P-YM said, “As a new worker in my company, I have low confidence in self-directing my workload. Working from home, and remote working is time wasting because I cannot immediately connect to supervisors and colleagues to instruct me on what I should be doing”. Other comments from new workers included the feeling of being socially isolated. P-RW explained, “I envisioned working in a company to be very team oriented with a lot of dialogue between team members. But during the COVID-19 lockdown, I felt both disconnected and isolated”. P-SH suggested, “I think it was because managers were not experienced with remote-working styles either so there was a lack of established protocol for supporting new workers using web-based platforms”. Hence, limited experience in digital platforms for supervisors to adequately manage new workers working from home created inefficiency in work productivity, as well as contributed to a perception of social isolation among new workers.

#### *5.5. How has working from home affected family relationships?*

Married couples raised issues of young children’s needs, children intruding on work space, and demanding time from working mothers. For example, young children associated parents at home, to family time. They had had no experience of parents at home working. During the COVID-19 pandemic, nurseries and kindergartens closed meaning that children spent more time at home.

Increased conflict arose due to husbands not pulling their weight with house chores, increased burden on working wives to provide meals, as well as doing other chores. Although many men stated that they had increased the number of chores they normally did.

Work conflicts arose due to noise levels caused by having video conferences at the same time, or slow network when having conferences at the same time. Causes of concern included the need to have high security due to their partner working at a competitor. Designated work spaces such as using the bathroom, or bedroom as an office, while the partner worked in the living room, and interruptions when needing to use those facilities by the other partner.

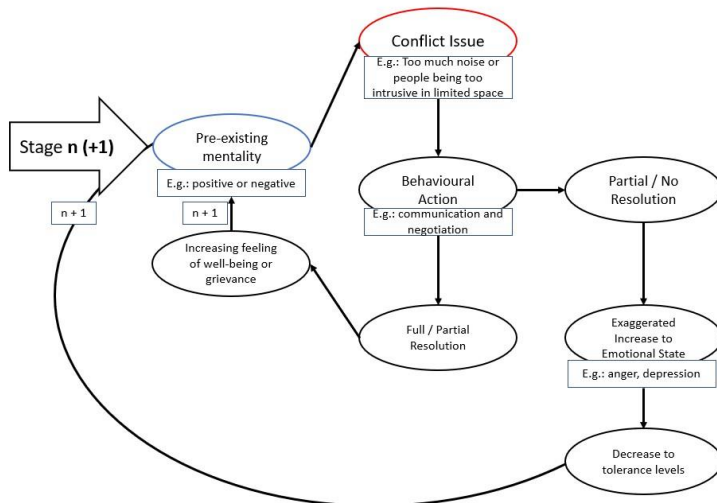
Some participants introduced comments on the topic of family disharmony. For example, P-KI explained, “I’ve been married for over 25 years. My children are now in

university, and my wife views our marriage more as a financial arrangement. About 15 years ago, my company stationed me in Turkey for 7 years, while my family continued to live in Japan”. P-KI continued, “When I returned to Japan, my office site was over 3 hours from home one way, so I rented an apartment during the week and returned home about twice a month. Nonetheless, the relationship with my wife was strained. When the pandemic occurred, I was ordered to work from home. It became very hard for us to live together, strangers forced to live together in a limited space. It was impossible for us to avoid each other”. He further added, “To make things worse, she considered the apartment as her space, even though I pay for it. I was an intruder, and many times she told me to leave. But of course, we were in lockdown. I had nowhere to go”. Iwao, (1993:119) describes the phenomena as a “divorce within the house”, whereby unhappy couples divorce emotionally while remaining legally married. P-KI was asked by another participant if fighting led to violence, to which he commented, “sometimes we raised our voices into a shouting match. She might throw something sometimes”. Other participants empathized with P-KI, P-AE commented, “I have a similar experience. Japanese couples tend not to divorce when they have children, but rather endure through avoidance. I have my hobbies, she has hers”. And, P-TF commented, “as a mother, I must ensure that my children can live comfortably, go to *juku* (private tuition), go to university and so on. My husband and I work hard, (we) leave for work at different times, come home late. We are polite to each other, but there is no romance in our marriage. We have separate *futons* (beds) but sleep in the same room. After he started to work from home, suddenly I was aware that he was everywhere”. P-KI asked whether her husband might have been having an extramarital affair, to which P-TF mentioned, “it is possible, but I don’t mind, as long as he is civil and takes care of the bills”.

P-AF mentioned, “I’m single so I have no experience of such conflict but I had heard the term ‘corona-divorce’ from television. Apparently, many relationships are being impacted hard by forced proximity to partners who remain married for financial security rather than emotional happiness”. P-SG further added, “I also saw on television that the number of domestic violence has risen. People have a limit to their tolerance. Especially if they are at stress from work, there is nowhere for them to release their stress except at home. It’s like a time bomb. Eventually pent-up stress is released in aggression”. And, P-AG commented, “I really understand this conversation topic. Pre-COVID, I let go of my stress through *nomikai* (drinking parties) and *kabakura* (hostess bars) with my friends and colleagues. I am a heavy smoker but my wife and children hate the smell. So, I have to go outside to enjoy a cigarette even if it is raining. They complain (that) when I come close, I smell of smoke or alcohol. It is painful to hear. After we started working from home, and many drinking establishments temporarily closed, life became very hard for me. I think I became a tyrant at home. Always irritable and short tempered and my wife responded by treating me with disdain”. P-AG represents male workers who experienced a form of intra-family bullying by wife and children, which caused an emotional reaction to respond aggressively. This type of behaviour reflects a cycle of behavioural reaction to conflict issues which is demonstrated in figure 3.



**Figure 3.** Cycle of Behavioural Reaction to Conflict Issues for Japanese while Working from Home.



Source: Authors' Own Material

The following 3 cases demonstrate the model shown. For example, in each case, white-collar workers in Japan stated that they exhibit a pre-existing mental state either positive or negative leading to an encounter with a conflict issue, such as represented by a negative circumstance. Subsequently, workers react with a behavioural action such as through communication or negotiation. Either the issue is resolved fully, partially or is unresolved. Where the resolution is satisfactory, the worker experiences an increase to positive well-being, however, where the resolution is unsatisfactory, the worker experiences an increase to negative feelings of grievance.

Furthermore, the focus group data suggested that workers who experience unsatisfactory partial or no resolution also experience a decrease to their tolerance levels. Tolerance levels seem to be completely arbitrary depending on each individual. For example, some participants of similar age and job role, had different statements about the impacts of these circumstances on their perceptions of well-being. However, participants who experienced unsatisfactory resolution of conflict issues commented that the next conflict issue they encountered might be the same conflict issue as before. Continuous failure to resolve problems can lead to a cycle of frustration and irritation which compounds into increasing levels of aggression, depression and frustration ultimately resulting in some form of emotional breakdown.

The following cases represent examples given by participants that follow the cycle of behavioural action as shown in figure 2 and contribute to the understanding of Japanese white-collar workers' mindset regarding familial conflict and associated work-stress.

### **Case 1: Decreasing Mental State Leads to Ongoing Decline in Mental State Pre-existing Mentality**

*“I live in a 1DK mansion apartment in Naka Meguro about 3 minutes from the train station by foot. Naka Meguro is about 20 minutes to the center of Tokyo, so it’s super convenient but the rent is about half my monthly salary at 150,000 JPY which I think is quite high. It’s about 40 sqm in total and is a comfortable space for ordinary living. I have a futon not a bed, which I put away each morning and it’s a good way to save space. I have a living-room which doubles as a dining-room. I eat from a low table while sitting on my sofa and watching TV.”*

P-NI explained that he was relatively happy living in his apartment despite the high rent cost of 150,000 JPY representing half of his salary. According to the OECD (2022), average rent to salary ratio is typically around 20%. Therefore, such high rent cost may be considered a disproportionate expenditure, contributing to an inability to save. P-NI mentioned his satisfaction in the nearby availability of shops, bars and entertainment. He also expressed that the neighbourhood was both safe and quiet. Therefore, at stage 1 of the cycle of behaviors to conflict, the pre-existing mentality of P-NI is considered to be positive. A positive pre-existing mentality suggests a higher tolerance level, open mindedness and motivation for working (Tenney, et al., 2016; Kirkegaard-Weston, 2005).

### **Conflict Issue and Behavioural Action**

*“However, when I was ordered to work remotely, I suddenly had to buy a desk and chair. My living room had a sofa, so the only available space was the bedroom. But because at night I need to put out the futon, I could only buy a folding desk and chair. These were not ideal because the folding desk has limited space and weight load, and the chair has no lumbar support. I also needed to buy a printer with fax machine, because people often sent me faxes, and expected faxes in return. These, I had to pay for from my own salary, there was no budget from the company for personal items.”*

The conflict issue relates to a problem which P-NI felt that he must overcome in order to do his regular work activities from home. The issues related were of space availability, functional capability and burden of cost. Partial resolution of space availability was achieved by buying a folding desk and chair, at the detriment to functional capability. Therefore, we can say that P-NI was not satisfied with the furniture that he bought. Additionally, he expressed dissatisfaction at having to carry the burden of cost, and no resolution of this issue was made. Therefore, not only did his emotional state decline with regards to his satisfaction of living and working space, but also toward his company for placing him into the circumstance with a lack of financial support.

### **Decrease to Tolerance Levels**

*“One day my manager told me that it was hard to hear me during our video conferencing and said that I should buy an external microphone. I said that I would, but I felt annoyed. I asked him if there was a budget for this, and he told me that there wasn’t because it wasn’t an order from the company, just advice. I thought that it was unreasonable because of course, I can’t say “no”. So, I have to pay for work equipment with my own salary.”*

P-NI related his circumstance whereby the act of retelling the story exhibited irritation and annoyance which could be heard from his voice. While he accepted the advice of his manager to buy an external microphone, he was clearly unhappy with the unresolved issue relating to burden of cost. Ongoing demands to buy office equipment had the effect of decreasing his mental state for working from home. This carries over to additional conflict issues and decreases tolerance for further burdens.

### **Case 2: Decreasing Mental State Leads to Emotional Breakdown Pre-existing Mentality**

*“Before the pandemic, I had been married for more than 15 years, and my son was in junior high school and was preparing for high school entrance exams. He studies a lot in his room from his desk. Except for weekends, I rarely see my husband because we both have long working days, and we now work in different companies. On the weekends, we have our own hobbies and ways to enjoy free time. We own an apartment in Yokohama and before working from home I commuted to Tokyo every day. It takes about an hour door-to-door each way. Every day I arrived at the office feeling tired, and arrived at home at night (feeling) exhausted. I thought that working from home would improve my life but I was wrong.”*

P-KM’s pre-existing mentality pre-COVID-19 may be considered negative due to her long commuting times which caused her to feel exhausted. Additionally, she expressed her marriage in negative terms, such as having reduced communication due to irregular work schedules and less contact due to different free time activities.

### **Conflict Issue and Behavioural Action**

*“When we both started working from home, we suddenly had to find places to work from. We needed to find space where we couldn’t accidentally see or hear each other’s work. Our companies were competitors and it would be inappropriate for us to listen in on video meetings or read sensitive information. My husband was more relaxed about this matter. He said, that it couldn’t be helped and was not considerate to my concerns. This meant that I would have to be the one to move my computer to the less desirable space. He thought my concerns were senseless so he ignored my requests.”*

P-KM related the conflict issue of workplace security and data privacy between husband and wife working at competing companies while working from home. The inability to communicate due to an incompatibility of opinions meant that P-KM felt that she was always compromising in a one-way dialog.

### **Emotional Breakdown**

*“Of course, I felt angry when he ignored me, or told me to relax. I thought he was being selfish. I would raise my voice, and we would fight. My son would complain only to me that he couldn’t study well because of the noise and emotional distress. So, I tried to internalize my own unhappiness of having to work with my husband at home, and gradually felt that I was going mad. Secretly I wished to end this cycle of depression. Honestly, if we hadn’t returned to office work, we would probably have divorced. I was at my limit after just a year of us both working from home.”*

P-KM's tolerance levels continued to decline as continued dissatisfaction over a lack of conflict resolution persisted. The desire to vent her stress led to verbal arguments with her spouse were also unsatisfied due to her son's needs to study. Therefore, ongoing negative circumstances over the course of a year led to an ever-growing sense of unhappiness and depression which she relates would have eventually led to divorce.

### **Case 3: Increasing Mental State Leads to Improved Sense of Well-being Pre-existing Mentality**

*"I work for an overseas company which has a branch office in Tokyo. I was enjoying a hybrid type work-style before (the) Corona(virus pandemic). So, some days I would work remotely, and other days we would have meetings in person at the office. Being able to work from different work environments such as the coffee shop, or at home helps to refresh the mind. There's also more freedom to control our own schedules and work pace. I do agree that the home office requires a lot of initial investment, but I find that my home equipment is more superior to my office's ones. I can multitask with multiple displays, and listen to loud music from stereo speakers."*

P-RI expresses remote-working in a positive way, focusing on themes of comfort and convenience. Comfort is related in terms of an emotional sense of well-being, and the ability to control both his work environment, work schedule and work pace. Additionally, while he comments on the cost factor of buying home office equipment, he focuses on the benefits of having superior equipment. At stage 1, his pre-existing mentality before encountering conflict issues is positive.

### **Conflict Issue and Behavioural Action**

*"One big issue with full-time e-working is the ability for some workers to hide their status in applications such as Slack. I mean, in app, it says they are busy for long periods of time, and are unresponsive to requests. This can be quite frustrating but it's kind of shoganai (can't be helped). I try to connect to other members of the team, maybe contact a manager to request assistance, or get on with other work. There's usually no shortage of work."*

While P-RI expresses annoyance at the inability to receive work or answers to queries, his mentality remains relatively positive adopting a "can't be helped" attitude. Rather than complaining, he decides to pursue other work.

### **Improved Mental State**

*"Usually by the next day, I'll receive an apology for the late reply and the data I requested. If not, then I'll send a message to their supervisor, and they'll push from their side. It's more effective to get management to apply pressure, than send angry messages and stir trouble. I want to be seen as a team player, not a trouble maker."*

At this stage, P-RI demonstrates an ability to remain objective despite other workers obstructing his work activities. Because his actions lead to full or partial resolutions, subsequently, an increasing sense of well-being can be felt as his actions are justified by increased perceptions of being a team player rather than being a trouble maker by his peers.

## **6. Conclusion**

The data suggests that for white-collar workers in rented and owned apartments located in central Tokyo, the space available is not suitable for working from home for the majority of white-collar workers. For some single occupants, the original issues were the lack of furnishings suitable for long time working, and while may be resolved by purchasing a desk or chair, the limited availability of space meant that often, ideal furniture could not be obtained. This had the consequence of decreasing work productivity, work comfort levels and contributing to physical pain such as repetitive strain disorders. Workers living in apartments outside of Tokyo reported having more available space, as purchase and rent cost is less.

For workers with partners, and adult children living at home, problems with noise levels and lack of space to do work, were large issues. Using all available space at home including the bathroom, bedroom or balcony are not suitable for long-term sustainable working due to noise issues, interruptions and seasonal weather conditions. Some workers chose to work from their cars. But, while alleviating some issues such as family conflict or interruptions such as active noise (people talking) and passive noise (washing machines, plumbing etc.), led in many cases to ongoing physical health problems such as back pain, stiff shoulders and eye pain.

Workers with young children initially struggled to establish a line between “work-time” and “home-time”. However, as time went on, children began to understand when their parents were available or busy, and these disruptions decreased. After COVID-19 restrictions were lifted, child caring services reopened and the related disruptions returned to pre-COVID levels. Therefore, working from home for workers with young children with adequate child care services is feasible.

Working from home during the COVID-19 pandemic increased visibility of many familial troubles stemming from long-standing personal work habits, traditional conflict avoidance mindsets, and pre-existing marital problems. Japanese company workers who had not adhered to fixed schedules before the pandemic, enjoyed flexible living however, it is restricted by the need to be considerate to other people occupying the same or nearby space. For example, the desire to have a video-conference at a time when others wish to relax leads to elevated levels of stress. Stress levels increased while tolerance levels decreased could eventually lead to increased aggression, depression and conflict. The ability to leave the home to avoid conflict is therefore necessary to make remote working viable.

The limitations of this study are the relatively small sample size and the method in which participants were selected from a similar business network. As graduates of a Master’s degree in Business Administration, it suggests that the participants were either in a higher financial bracket, or had financial support from their companies. It is important to note, that white-collar workers in low financial brackets and not supported by their companies might not be represented by this study. The researchers plan to investigate white-collar workers in lower financial brackets to determine a holistic understanding of how working from home has affected white-collar workers in Japan.

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# DESTRUCTIVE ORGANIZATIONAL COMMUNICATION AND MANIPULATION: EMERGENT FORMS, CONSEQUENCES AND COPING IN THE FUNCTION OF SMARTER ORGANIZATIONAL SOLUTIONS

Mario Bogdanović<sup>1</sup>

*Woe unto you, scribes and Pharisees, hypocrites!  
(Jesus, Mt 23)*

## **Abstract**

*The aim of this paper is to list and explain the manifestations of destructive organizational communication (N=24) and manipulation (N=26) as important communication phenomena in the area of dark side management/black art of management/dark managerial skills. For that purpose it is used the method of description, synthesis and insight.*

*From an organizational/social point of view, it is important to identify, recognize and deal with destructive/deviant communication phenomena that occur and manifest in many forms in order to minimize organizational/social damage (e.g. functional organizational stupidity/stupidity management). Techniques of destructive organizational manipulation were collected through insight into sources and life experience. Total of N=50 known/unknown techniques are connected with functional organizational stupidity and stupidity management as regular consequences of successful use of explicit destructive and manipulative techniques.*

*As features of coping with the mentioned „dark“ communication techniques, preventive and reactive measures are listed and explicated. This is done in order to control destructive communication tendencies and create/maintain the desired productive (smart) organizational communication climate.*

**Keywords:** *destructive communication, manipulation, functional organizational stupidity, stupidity management, moral management and moral maximization, productive (smart) communication climate, organizational communication, organizational behavior*

**JEL Classification:** D23, M21, M53, M59, O15.

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## 1. Introduction

The true choice of competitive advantage, organizational success should be sought in the right places, and most managers seek success in the wrong places (Baker, 2003 according to Jeffrey Pfeffer-Stanford Business School). The right place in this paper is ethical organizational communication (moral management)<sup>2</sup> that acts synergistically in the function of achieving organizational goals. This also means eliminating/minimizing destructive and manipulative organizational patterns of thought, feeling and behavior. Communication here is essential because it is precondition/key ingredient of every human activity. But by means of communication, besides positive, there are initiated also negative/deviant/destructive organizational behaviors. Negative organizational behaviors can be broken down into *interpersonal deviance* (creating emotional or physical discomfort/harm to others in the organization) and *organizational deviance* (behaviors that harm organizational interests) (Mount, Iliés & Johnson, 2006). In deviant/destructive organizational behavior, destructive and manipulative communication is the main mediating factor.

Although the fundamental factors of business success have changed throughout management history (scientific management, organizational structure, organizational strategy, organizational culture, systematic approach, strategic alliances, organizational learning, business process management, stupidity management...) the common denominator of all these factors is the way people manage business leadership/direction of organizational behavior and human resources (human resource management) in accordance with the organizational strategy (real goals and ways to achieve them). Communication is always basic ingredient of any human activity, therefore a condition without which it is impossible to achieve any organizational goal.<sup>3</sup> In all business situations, the ethical factor (ethical thinking, feeling and behavior) is crucial because it mediates the virtues (spirituality) without which perceived reality turns into hypocrisy with antagonistic effect on achieving organizational goals. A glaring example is the management of stupidity with the internalization of functional organizational stupidity (Alvesson & Spicer, 2012).

If the dominant organizational culture/climate is to hide real intentions and goals, hypocrisy appears as a fake behavior. The aim of deception and fraud has visible consequences/manifestations in destructive/deviant forms of communication and

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<sup>2</sup> Human moral and ethical research/study are the keys to the development of better theories of motivated human behaviour (Sikula, 1996, p. 51). Human resources as most valuable organizational asset should be developed in ethical/moral sense, because of evident lack/absence of moral management and moral maximization (Sikula, 1996, p. 60-62 and p. 66). Moral management mission can be defined as moral maximization in organizational settings. To attain such a goal (moral maximization) the first step is to know moral wrong and bad (evil) organizational behavior with moral minimization consequences. Knowing forms of destructive organizational communication and manipulation is a good step in resolving this huge communication and therefore organizational problem as well.

<sup>3</sup> It should be noted that organizational goals can also be hidden (from most actors), so they are known only to a narrow dominant stakeholder group (Pastuović, 1999). Thus, there is created a conflict of special and general interests in the function of achieving special interests. Then, as a rule, some of the manifestations of destructive communication and manipulation occur.

manipulation that often result in generating functional organizational stupidity with stupidity management. Given the growing awareness of destructive factors that negatively/antagonistically/conflictually affect organizational success in the context of creating a unproductive/destructive organizational culture and climate (Bogdanović, 2021; Bogdanović, Vetrakova and Filip, 2018; Bogdanović, 2016; Bogdanović, 2015; Bogdanović, 2014; Bogdanović, 2003), for organizations it is becoming increasingly important to know, recognize and deal with destructive organizational communication patterns and manipulative techniques that are contraindications to productive organizational climate and synergistic teamwork.

Wrong and bad organizational behavior (regardless of organizational perpetrators, their organizational roles such as managerial/operational or direction of communication, for example from the top of the hierarchy to the bottom/vice versa or horizontally/diagonally) interfere, slow down, cause harm, therefore it is important to prevent and react on such destructive phenomena. Successful organizations as well as individuals need to successfully solve various intellectual problems (to be cognitively intelligent) and various emotional problems (to be emotionally intelligent) especially in teamwork, but destructive forms of communication and manipulation (with their intellectual, emotional and behavioral components), usually bring to stupidity which can destroy everything.<sup>4</sup> In the context of achieving organizational goals, it is clear that such destructive forms of manipulation and communication, break the internal and external organizational harmony, so they have antagonistic (negative synergy)<sup>5</sup> instead a synergistic effect.

As far as the author is aware, the sources on management/government<sup>6</sup> lack a systematic list of destructive organizational patterns of communication and manipulative organizational behaviors/techniques. The first step in this attempt is to collect, explain and present them as part of organizational knowledge to the general and interested academic/ professional public in order to enable productive communication about the topic and in organizational application to give boost to the achievement of productive organizational communication climate by preventing destructive/deviant communication climate.<sup>7</sup>

Also in the conditions of increasingly present media methods of influence (media manipulation) it is important to recognize them, and theoretical knowledge is a

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<sup>4</sup> Analogue are known wise sentences: a) „Harmonious brothers are building a house, and in discord/quarrel are ruining everything!“, b) „Against stupidity God himself is helpless!“.

<sup>5</sup> Synergies can be positive, negative and neutral (Jonek Kowalska, 2012). Smart solutions by the logic of things should be situated where positive synergies are possible and likely.

<sup>6</sup> Organizations can be divided into *functional organizations* (which meet a specific need), and for their drive it uses the term management (etymologically: manago+ment = management of human hands that happens through mind management), and *territorial organizations* (which facilitate satisfaction of different common needs of people living in a certain territory), and for their drive/management it is used the term government (etymologically: govern+ment = management of the human mind) (cf. Pastuović, 1999., p. 526).

<sup>7</sup> A supportive/productive communication climate is characterized by openness, support, inclusiveness and reward. Such a climate allows the expression of different ideas, agreements and disagreements. Where such a climate prevails, members of the organization have a strong sense of involvement, commitment, pride and trust. The negative communication climate is defensive, closed, alienating, accusing, discouraging, punishing, and reflects power relations (Levi, 2014).

prerequisite for practical doing. Namely people (citizens or organization member) should realize the fundamental human values of truth, freedom, justice<sup>8</sup> (exercise and achieve their inherent human rights) and be as little as possible influenced by various types of manipulative techniques and destructive communications. It is a way to reduce/mitigate violence (organizational, economic, social, state, civilizational...) in a way to reduce tolerance (perception of unacceptability) towards all forms of destructive communication and manipulative behavior.

Recognizing destructive communication and manipulation is, of course, the first step in that direction. Namely in order that these techniques can be recognized by people of average intelligence which are in the majority (not just the smartest ones — who are statistically always in the minority)<sup>9</sup>, it should be exhaustively stated and explained in order to enable learning for organization and people protection. This is the meaning and goal of this paper.

## 2. Techniques of destructive organizational communication

At the core of all techniques of destructive and manipulative organizational communication is the violation of the principles of true communication: empathy, honesty/integrity, trust (cf. Borg, 2010, p. 7 & p. 263).

Without going into the causes of such communication, which can basically be situated in personality traits and situational/environmental factors, the observed techniques are listed and explained below. Techniques are divided into:

- a) *destructive organizational communication techniques*,
- b) *manipulative organizational communication techniques*.

Such division is made according to perceived visibility - which is more direct. Namely destructive communication techniques are easier to notice, and manipulative techniques are more indirect and therefore more difficult to notice and easier to replace with something else.

This taxonomy and division is not final because it is a newer field of management (dark managerial skills/deviant management) which, according to the author is in the initial stage of development.

2.1. HYPOCRISY (greek: Hypocrisis = acting not only on the stage but also in life). It consists in communicating socially desirable characteristics (virtues), which in fact the person/organization as a communicator does not have, in order to fake in front

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<sup>8</sup> For the purposes of this paper, it may be easiest to operate with 5 fundamental virtues: right action, truth, freedom, peace, nonviolence (cf. Bogdanović, 2021).

<sup>9</sup> If the data that the average IQ in the world in 2019 (Richard Lynn and David Becker from the Ulster Institute in the UK) is taken as credible, then the measured average IQ of adults varies from IQ=43 (Nepal) to IQ=106.5 (Japan) with a world average of IQ=82. Source: <https://worldpopulationreview.com/country-rankings/average-iq-by-country> (18. 01. 2022.). These data mean that in a significant number of countries (countries from ordinal number 58 to 199) 50% and more % of people are below average level of intelligence (IQ<90), so this fact makes it difficult to recognize destructive communication and manipulation. It is all the more important to acquaint the general public with the manifestations of these phenomena in order not to be their victims. Amoral/antimoral more intelligent individuals often take advantage of such a general cognitive situation to the detriment of the less intelligent, more powerful/dominant at the expense of the powerless/subdominant.

of others a quality/virtue that does not exist or is exaggerated (e.g. pretending achievement /superiority). An important part of hypocrisy is the silence of facts that serves not to establish a sincere dialogue with people, about moral dilemmas, moral deficits, mistakes, imperfections, untruths, freedoms, injustices. Hypocrisy has existed since ancient times, it is also present in intelligent primates (e.g. pretending that no food was found), it is present everywhere (although with different levels of tolerance). Even Jesus saw it as a very negative phenomenon: „*Woe unto you, scribes and Pharisees, hypocrites!*“<sup>10</sup> If the concealment of important, true information is established, the structure of hypocrisy (pretense) is born. Truth is a counterpoint to hypocrisy. Words (verbal statements) are false if they are contrary to deeds/reality, deeds are dead, if they are manifested only in words (deeds do not exist or are truncated). Acts prove the authenticity of words, the essence is manifested even without words/verbal statements, but to understand it you need to interpret it correctly. Hypocritical communication is destructive because it creates a "culture of lies". Some organizational theorists claim that the main organizational problem is the "culture of lies" and when a "culture of truth" is established, all organizational problems are solved practically on their own (Bogdanović, 2015). It is also hypocrisy to speak about the truth, but not to use true speech, as well as to use the authority argument instead of the authority of arguments.

2.2. INTIMIDATION TO THE BODY INTEGRITY. This means threat, intimidation by physical punishment, threat by strength/body size/aggressive behavior. In some organizations there is a culture of physical intimidation with physical punishment of employees/members by superiors or colleagues (military and sometimes even business organizations). It has been very effective in shaping behavior and has been used since ancient times, although in Europe corporal punishment at work (with some exception in penalty, military or police organizations) is ethically and morally inappropriate and legally forbidden today. The principles and effectiveness of punishment or only intimidation with punishment are today well known and part of scientific/applied psychology (Čudina-Obradović, 1989).

2.3. LYING/DECEPTION is the direct communication of incorrect information, facts, false knowledge (untruths). The goal is to distort accurate information and known facts (by lie) in order to confuse the recipient and achieve the target behavior (e.g. decision(s) as desired, or unconsciously communicate untruths (unverified/manipulative) informations/messages. False testimony according to the Bible is a grave sin, and degradation of fundamental moral law: "You shall not bear false witness!" This is one of the 10 fundamental commandments of Biblical God. Some legislatures punish lies (USA) - especially in court. Unfortunately, in the "culture of lies", lying becomes a general pattern of behavior that destroys trust, productive communication and organizational climate. This category of deception and lying includes false/inaccurate record keeping and forgery of all written records from reports,

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<sup>10</sup> It may be less clear to whom this biblical proverb attributed to Jesus refers in today's social situation, but translated into today's context, "scribes" could be educated civil servants, especially lawyers, commissioned writers/trolls, dependant intellectuals/scientists and addicted professors on the budget. The Pharisees could be unethical politicians manipulators, quasi-moralists, pseudo-theologians, and all those who widely use hypocrisy and manipulation (so-called notorious liars) as a strategy of deceiving others in the function of their success.

professional/scientific works to entire books (so-called falsification of reality in desired direction).

2.4. CHEATING BY SUGGESTIVE QUESTIONS (asking suggestive false questions). The question of false suggestive questions that already contain an answer. For example: "So you outwitted/cheated a client? You testified falsely against xy? You are this Flat earthen boy?"

This gives the impression that the person to whom the question is addressed is lying, and not the questioner (manipulator). Also, asking questions that already have the desired answer (suggesting answers, i.e. "putting desired words/sentences/verbal statements in someone else's mouth" and interpreting other people's statements that are not in line with the essence of what was said) represents a violation of freedoms and rights to speech. E.g., labeling with "Hate speech"; "Conspiracy theorist"; "Flat earthen" of any communicator with a undesirable statement that nobody reasonable does not want to be heard /that is unfavorable to someone, and can be part of a factual substrate or a legitimate attitude. E.g. a legitimate attitude is to be for the family and against same-sex marriage, against euthanasia, against Covid vaccination, and such an attitude can be discredited by asking suggestive questions as well as labeling it with something highly undesirable. Also, on the contrary, something really very undesirable can be made very desirable through the "Overton window" and declared as a (legitimate) policy.<sup>11</sup>

2.5. GUILTY FOCUSED QUESTIONS. Asking questions that already have a built-in presumption of someone's guilt (e.g. Are you lying again?; Stealing again?; Explain to me that scam you committed?). In this way, the manipulator shifts the blame to the manipulated person. By suggesting a fabrication of guilt (without any evidence), the manipulated person is led to a defensive attitude and proving his innocence (because whoever defends himself gives the impression that he is guilty and therefore defends himself). Thus manipulator is creating the impression that the manipulated person did something wrong, and in fact it has not, but has been brought into such position by such destructive communication.

2.6. REPETITION OF LIES WITH SOMEONE'S NAME. In this way, something negative is communicated about the person, with the intention by repeating the „fact“ in one's consciousness become common, and thus becoming "true" (other people begin to believe that person xy is as it appears in repeated communication). So, e.g. "X was in jail for killing his mother". This is about intentionally negatively creating the image of an person which is target to manipulator. This technique is similar to Overton's window, where the constant repetition of the abnormal seeks to achieve the normal (to make lies and unacceptable in the minds of other people true and acceptable).

2.7. REPETITION OF SOMEONE'S NAME IN NEGATIVE CONTEXT. Frequent hearing of one's name in negatively connoted context, (e.g. "X was known as a petty thief and extortioner for his gang before he becomes manager"), increases the

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<sup>11</sup> Overton window is a model for policy change. It can dramatically change public opinion i.e. from firstly inappropriate idea, behavior can be normalized to the normal even desired idea, behavior (e.g. homosexuality, hypocrisy, etc). This is process how from unthinkable idea, gradually through radically, acceptable, reasonably, popular idea, finally becomes policy on default. (<https://www.mackinac.org/OvertonWindow>)

likelihood that the victim/person himself begins to believe it (although it has nothing to do with the truth). Here is used classic conditioning (paired name and negatively connoted content), which connects the name/person with bad traits, and repetition fixes such a content in memory. Repetition of untruth/semi-truth/asymmetric truth<sup>12</sup> especially in a highly stressful situation (e.g. life-threatening/torture) is an auxiliary technique that contributes to the emergence of the so-called Stockholm syndrome.<sup>13</sup>

2.8. LABELING. By labeling, someone is forcibly placed in a category with a negative connotation, which will place them in a socially undesirable group of people, according to which a negative attitude and discriminatory behavior is expected. For example: "He is an anti-vaxer!"; "He is an flath-earthling!"; "He is an anarchist/communist/terrorist!".

2.9. SHOUTING/YELLING. In paralinguistic communication, the volume of the voice communicates emotional states. In an amplified tone, one wants to force behavior when it is not possible/desirable with the power of arguments. The manipulator wants to create feelings of discomfort, fear, humiliation in order to let the victim know who is in charge (who has the power). By yelling at the victim, the manipulator restores feelings of superiority and feelings of control. Often used, as variation of this destructive communicative technique is narcissistic rage at the victim where yelling is usual behavior.

2.10. AVOIDING COMMUNICATION. Avoiding communicating about problems to be solved (on a personal or organizational level) puts the unwanted people with questions on hold. It is a way of creating tensions and a bad interpersonal climate. Delaying communication, for example by waiting (people waiting for a manager to receive them in the office, even though he has no important job, lets people know that they are waiting to be less valuable and in a subordinate position). Avoiding communication can also be treated as a destructive communication/manipulation technique in situations where, e.g., communicating a problem is avoided by removing an undesirable item from the agenda or not putting an important item on the agenda at all. Thus, communication is actually communicated only in those frameworks in which it is convenient for the manipulator (it can also be on group level e.g. an interest group, a political party, a commission...). This technique is sometimes called "frame definition", which limits the discussion to "appropriate" topics and dilemmas (often trivial). The same technique can be observed when an agenda item is strongly postponed or placed on the agenda at an unfavorable time (when there is no quorum, when opposition is not present or "awkward" discussants are present, etc.). Also, avoiding communicating inappropriate/unethical behavior of manipulators (especially

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<sup>12</sup> Similar is the campaign Beechnut Packing company in 1920-ies because of low bacon purchase. It was engaged „father of PR Edward Bernays“, so it was arranged that medical doctor suggest (in mass media) that strong and plentiful breakfast (so called „american breakfast“) e.g. with bacon and eggs is good for health (Bernays, 2004 according Bernays, 1928). The campaign was very successful, so until this day, the conditioning remains, so in the consciousness of many people remain that such an American breakfast is the right thing to do.

<sup>13</sup> In Stockholm syndrome victim perception is changed, i.e. the perpetrator becomes a benefactor and the conditioned untruth become true in the victim's mind. Also variation of this techniques are described in the Orwells antiutopistic novel „1984“ (Orvell, 1983) where we should have in mind the new terms of new speak, double thought and evil thought. There become obvious that the greatest enemy of normal human expression/communication is lie (Orvell, 1983).

manipulative and illegal) destroys relationships of trust. Where there is no trust there is no productive communication, productive organizational climate and positive organizational results are difficult to achieve.<sup>14</sup> This manipulative technique is often applied by people of power (directors/managers and officials of all levels when communicating with those less powerful than themselves).

2.11. DENIAL OF THE GIVEN PROMISE/AGREEMENT. It is about disputing an agreement, a promise or justifying certain inappropriate behavior (which deviates from expectations based on an agreement/given word/promise). The manipulator hereby reserves the right to withdraw any verbal (and written) promise whenever it suits him. A milder variant is that written testimonies that do not suit the manipulator (e.g. in the form of a contract, certificate, decision) are not seen/there is no will to be seen, are ignored. Such behavior is particularly effective in undermining trust and interpersonal relationships.

2.12. INVENTING A PROMISE THAT NEVER WAS MADE. This is a variant of occasional lying in order to gain time, or shift the blame to the other side. Communicating with others from the position of promises that are not really given, but are conveniently invented. This is a variant of lying, but such as to make sure that there was an agreement, an agreement on an issue, and in fact there was none. This manipulation is particularly effective in undermining trust and interpersonal relationships.

2.13. JOKES/MOCKING ON OTHER PEOPLE'S ACCOUNT. This is joke with someone to belittle him, humiliate him. By such destructive communication technique is telling stories in which someone is portrayed in a very unfavorable, undesirable light, which implies incompetence, inappropriateness, inefficiency. For example: "Even my underage son from the 3rd grade of elementary school would do better, but he is a minor so he can't replace a colleague XY."

2.14. OFFENSE AND DISCREDITIVE ATTACK ON OTHERS. This technique often use destructive verbal attack that have or have nothing to do with the victim, they may be fictional, as well as different levels of insult (verbal attacks with vulgar expression). Insults as threats to dignity are legally subject to lawsuits, although it is not an easy path to their realization, especially if the superior i.e. "strong boss" in the organizational context commits such a verbal offense.<sup>15</sup>

2.15. USE OF SARCASM AND/OR IRONY. Although it essentially serves as a natural defense against stupidity (by expressing oneself in a witty way), it can also be used destructively in a way that belittles, diminishes, humiliates. E.g.: "I'm firing you because you bring more problem than you solve it in this company", "I'm sorry I hurt your feelings when I called you stupid, I really thought you already knew."

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<sup>14</sup> A special practical problem within the issue of avoiding communication is not responding to e-mails, such as: "a) How to deal with people who do not respond to arguments, how to deal with illogical, irrational people who after their illogical/unargued/uncritic monologue do not respond to emails?, b) How to treat people who simply become deaf when something does not suit them? c) How to deal with those who turn a deaf ear after a given promise/given word, an agreement reached?" These are present communication behaviors conditioned by the manipulative selfish attitude: "What does not suit to me, I do not react to it!"

<sup>15</sup> In some organization is normal behavior (such climate/culture) that boss has „right“ to undermine or offend his employees in an „ugly way“. In such situations the victim has unformal „right“ only to „be quiet“ or „cry“ (if e.g. victim is a women). It is obvious that this is destructive communication.



(Cf. <https://hr.gottamentor.com/feeling-witty-these-200-sarcastic-quotes-ensure-you-always-have-comeback>).

2.16. COMMUNICATION THAT CORRUPT REPUTATION, PRIDE, DIGNITY. This is a communication of belittling (lowering) which seeks to diminish the value and self-esteem of the recipient. E.g.: "I know you, at school we called you drooling/dumb/silly XY!" Also deliberately incorrect addressing and misspelling of someone else's name and surname is part of this destructive communicative technique.<sup>16</sup>

2.17. EXAGGERATION IN STATEMENT AND DESCRIPTION OF HIS OWN PROBLEMS. Here is used the power of the powerless. One's own problem is exaggerated in order to create sympathy in others. It can also be used as a technique to reject an applicant (e.g., for a job or a service).

2.18. ARGUMENTATION OF THE "DEVIL'S LAWYER" TYPE. By means of this technique every idea, suggestion, observation, text is subjected to relentless criticism so that those for whom such communication is intended doubt themselves (e.g. that they are less smart, capable, that their arguments do not stand or partially do not stand), to distort their sense of security in their attitudes and beliefs. It is the nature of all things to have characteristics that can be evaluated in either a positive or negative light. Emphasizing only negative side/characteristics, and keeping silent about positive ones can easily create the impression/belief of inappropriateness, especially for people who cannot/have not permission to defend themselves and repel such attacks. Here the argumentation can be completely false and wrong, which is not important, the goal is important (negative impression that someone or someone wants to create). This technique is very similar to condemnation/judgment in a predominantly negative context where the recipient wants to cause uncertainty about the decision, to create great suspicion so that people lose faith in their own attitudes, opinions, ideas, values, or themselves.

2.19. GIVING FALSE/WRONG ADVICE, INSTRUCTIONS, SUGGESTIONS. Communicating advice, instructions, suggestions that only harm/hinder is a form of destructive communication (actually lying about the purpose of manipulating the recipient of the message) which seeks to disable/slow down the well-being, goal, task of victim(s).

2.20. DESTRUCTIVE CRITICISM WITH EXAGGERATION. This is such criticism that humiliates a person, creates a feeling of insecurity, turns a trifle into a huge mistake, a failure, a fateful event. Some magicians, lawyers, politicians are masters of this technique when they make a story of great importance out of insignificant, minor, unimportant things, i.e. "they make an elephant from a fly". In the media, for example, there are texts and comments on variations of this technique, such as what someone has occasionally dressed from politicians or pop artists, so as to create a negative impression of the person.<sup>17</sup>

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<sup>16</sup> E.g. famous croatian writer Miroslav Krleža was sometimes incorrectly addressed as: Dr. Krlježa, Krležo, Krešo Miroslav, etc., regardless of the fact that he was the director of the Lexicographic Institute in Zagreb and a top world writer with huge legacy (Čengić, 1987).

<sup>17</sup> E.g. Croatian Del Boy, Nino Raspudić (Member of the Croatian Parliament of the opposition party) <https://www.index.hr/magazin/clanak/hrvatski-del-boy-nino-raspudic/2326767.aspx> (19. 12. 2021.). Comment: "Nino Raspudić on the set of „Only Fool and Horses“ Nino Boy, in the episode in which, together with his wife (Marija Selak Raspudić also member of the Croatian Parliament of the opposition

2.21. COMMUNICATION OF GUILT, REJECTION, REPRESENTATION. The goal of such a communication is to embarrass and evoke feelings of shame in the victim.

2.22. MONOLOGUE/TAKING OVER THE COMMUNICATION. It is about constantly talking about himself, self-attitudes, self-views, self-topics, and not allowing others to say something. Complete inability to listen to others is one of the destructive communication patterns because it effectively destroys the communication relationship.

2.23. GOSSIP/POISONING RELATIONSHIPS. Expressing a bad opinion of someone, in their absence. Sometimes the person being gossiped is not even known, nor has been ever met.

2.24. COMMUNICATION INTERRUPTION IN THE WAY OF SURROUNDING A WALL OF SILENCE. This destructive communication technique means interruption of communication before someone was able to express their desires, needs. This technique informs the interlocutor that he has no interest in continuing communication (most often it is an effort to prevent statements about someone's needs or desires). Also this type of communication is done in tactless (rough) way.

### 3. Techniques of organizational manipulation

Manipulative techniques are often more deeply elaborated and designed because their purpose is not being directly noticeable and recognizable. For their observation, recognition and cognition are needed cognitive ability, critical thinking and deeper analysis of the phenomenon also a certain temporal commitment ("dealing with") with this „dark“ communication phenomenon. This section lists the basic manipulative techniques observed, which are not final due to the initial situation in this area of management (dark managerial skills/deviant management).

3.1. IDOLATRY. Worship of concepts, notions, images, institutions instead of evaluation according to its contents (e.g. trees, humans, institutions, concepts should be evaluated according to their fruits, i.e. manifestations/results). The goal of idolatry is to create an idol that will be uncritically worshiped. This can be e.g. "race", but also concepts that should not be questioned (with taboo characteristics, e.g. Aryan/non-Aryan race; group 1-privileged/ group 2-deprived), because otherwise it is characterized as blasphemia. Today, generalizations are widely used to generalize polarizations (e.g. globes/flat earth concepts; vaccinated/unvaccinated; rich/poor; leaders/followers, Church (human institution)/God (ideal institution), employees/employers, believers/unbelievers, wolfs/sheeps, etc.

3.2. PROPAGANDA. The term represents thoughtful dissemination of targeted information/misinformation, ideas for one's purposes/achievement of organizational goals. In this way, various ideologies that promote certain idolatry are effectively spread through the media and communication (either public or organizational).<sup>18</sup>

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party), he procures used, "lovely- jobly" coffins, so he starts collecting signatures for the referendum against covid-certificates.

<sup>18</sup> E.g. fascism promoted the idolatry of Aryan superiority and racial purity, communism the idolatry of the working class, and more recently we face ideological manipulation of Overton's window or normalization of the abnormal (<https://hr.sainte-anastasie.org/articles/psicologia/la-ventana-de-overton.html> 08. 12. 2021.). Opposing and disabling the propaganda window of Overton is figuratively called "breaking the Overton window".

3.3. **GAME CONTROL.** The manipulator seeks to get others (victims) to fit into his reality and see things from the manipulator's perspective (how he wants others to see, believe and behave). In this way manipulator controls social interactions and interpersonal relationships, people (victims) play by its rules thinking of the manipulator in a desirable way. This produce obedience to an authority that has some power (expert, legitimate, referential, power of the powerless), e.g. obedience of worker to management, obedience of believers to church dignitaries, obedience of patients to doctors, obedience of subjects to authority, obedience of students to professors, compliance to socially disadvantaged/in bad health, material and psychological situation. The manipulative technique of establishing control of the game has the greatest potential for adapting and modifying behavior.<sup>19</sup>

3.4. **MICROMANAGEMENT.** This manipulative technique is an attempt to completely control (employed) people/victims throughout the day (both working and non-working part of the day) so that the victim is employed not only during their working hours at work, but also in their free private time.<sup>20</sup> The purpose of micromanagement is to create such work pressure that the victim does not have time for anything else but to perform the tasks and orders of his boss manipulator. Victims are occupied with duties all of their free time, and tasks arrive constantly via "online" and "offline" modes. The purpose of this technique is total control of subordinates.

3.5. **SABOTAGE/PEST.** This is manipulative technique that prevents someone from achieving success or (self) satisfaction that could jeopardize the power of the manipulator over the manipulated ones. Sabotage can manifest itself in various forms, from creating unfavorable conditions (deprivation, negative discrimination) to directly doing various damages (banning, threatening, inciting others to harm an undesirable/notorious individual, engaging other people, institutions, technology, children, animals)<sup>21</sup> in order to make victim weak and so keep control over them.

3.6. **SOCIAL PRESSURE/CONFORMIST PRESSURE.** The manipulator uses the social pressure of colleagues to shape the victim's behavior. The rationalized view/opinion is that one should work as everyone does (majority, crowd). Although social pressure is normally present in some extent as a socializing mediator (e.g. organizational socialization), can also be a facilitator of unethical and criminal acts.

3.7. **"HOT-COLD" TECHNIQUE / VICTIM IDEALIZATION-DEPRIVILEGATION.** The manipulator first praises/exalts the victim, portrays him as a positive example, privileges him with petty privileges, and then abruptly deprives him. The goal of this technique is to control the victim in such a way that the victim

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<sup>19</sup> Powerful people like to use this technique, so in the application of this manipulative technique it can be heard that workers/citizens are indulged, that they have to high expectations, that they live (to) well, that if bread is expensive, they should cut it into thinner slices, to adjust their current needs and wishes for the betterment of the future, as well as combined with arrogance and arrogant statements, e.g.: "Who does not like to live here (in his home- country) let him stay where he likes (abroad)", etc.

<sup>20</sup> The known proverb of manipulator here is: „Trust is good, but control is always much better!“

<sup>21</sup> Poisoning (spraying the workplace with poisons), use of radiation (placing employees under an antenna or other radiation source), bioterrorism (use of contagion), instructing institutions to harm/cripple (e.g. on public competition), as well as banally feeding a victim to a dog. Here is important to note that someone could have only in his mind the various violent act of against him and this is than most possibly paranoia. Paranoia exist if it is only present in the mind of the victim, but it is not if something like mentioned is objectively present in reality and can be proved, no matter how amazing it seems.

should regain the manipulator's mercy and approval. It induces culture: "When you are in grace you have everything, when you are not you have nothing!" (Similar to the devil's temptation of Jesus in the desert).<sup>22</sup>

3.8. INDUCTION/MANAGEMENT OF FEAR. This techniques direct the victim to work in a specific way, with often control and intimidation/punishing. The victim in order to avoid embarrassment/punishment (from investigation, dismissal to death threat) feel constant fear not to do anything wrong.

3.9. INDUCTION OF GUILT. This technique consist of creating the condition that the victim can be blamed for something. This is achieved by giving many demanding work tasks in an inappropriately short time, and then as the tasks are not performed within the given time and quality, using the victim's guilt to make the manipulator achieve the mental control over the victim. Namely, the victim is induced to think how incompetent (s)he is and to achive self-blame for the unenviable situation.

3.10. OSTRACISM (exile/ quarantine). Origin of ostracism is from ancient Greek (fighting technique which eliminate political opponents), in organizational context this technique depicts ignoring the victim's person, not talking, not responding to their words, feelings, inquiries. This is an organizationally very effective technique because people are social beings who find this difficult, especially if it is programmed that the manipulator "incites" the entire social environment against the victim. (cf. Wu, Yim, Kwan & Zhang, 2012).

3.11. REFUSAL OF APPROVALS. This technique depicts induction of such situation where any normal functioning of the organization requires some approval/application/completed form/prescribed procedure from the manipulator. Victims thus need the usual and/or special approval of the manipulator. Thus, the manipulator prevents the victim from any work that is beyond the dictates of the manipulator. So by strong work formalization is enabled this type of manipulation.

3.12. EXTORTION OF FAST REACTION is technique using artificial shortening of the deadline. It is a manipulative technique of giving a very short time so that the victim reacts quickly without thorough consideration. It is often used in sales, signing employment/credit agreements, mobbing strategies (with the aim of making the victim make a mistake and continuing the abuse based on that mistake), a very short appeal period in a complex case, etc.

3.13. THE ILLUSION OF CHOICE. Here is a technique by which the victim is putting in front of a finished act of choice that will illusionally resolve an important problem by victim choice. This violates distributive justice (for example, lottery decision-making and so-called democratic decision-making on important issues of work and life, without essential knowledge/information on the subject of decision-making), because the victim thinks (s)he made the decision, but in fact decision-making is imposed by the manipulator. This produce a paradox in which the victim is asked to make a choice that has already been decided, and the victim is induced with the illusion (cheated) that (s)he has made that choice.

3.14. BULLYING/MOBING (physical, psychological, economic abuse). It is about aggressive or subtle intimidation/bringing to a finished act, in order to force certain psychological states and behaviors (fear, humility, material impoverishment).

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<sup>22</sup> „If you obey me you will have everything you want, if you don't you will suffer“.

Mobbing can be not only on personal but also on organizational/state level than it is called strategic mobbing.<sup>23</sup>

3.15. **BLURRING/CONCEALING THE TRUE TRUTH** (colloquial "SLUDGE"). The goal is to gain approval, in a way that confuses one's reason, judgment, perception, memory. This is possible if the manipulator is skilled and intelligent, and „tell stories" to less intelligent and/or subordinates according to the principle of the popular proverb: "It is easy to confuse any shallow mind!"

3.16. **OFFERING „FREE LUNCH“/FREE LITTLE BENEFIT.** This is technique of winning a person for his aim, e.g. with lunch/dinner, a gift, great kindness and extraordinary reception/praise, in order to psychologically commit the victim and get something much more valuable.

3.17. **PREPOTENCY/ARROGANCE.** This manipulation is characterised by looking at others "from above", letting others know that they are "below/less valued in comparison with arrogant" and "worse than arrogant". This manipulative technique seems to take "mental" control over other people and create the illusion of their subordination, and for the arrogant the illusion of their "natural" superiority and "natural" leadership. Pretending to be "above" or "better" is a technique of selling imaginary and non-existent values or existing but significantly lower values, and is also part of impression management techniques.<sup>24</sup> The intention is to obtain a higher status/value, and then take a leading (control) role within that and such a status. This technique is often used when there is no real coverage for the power that someone formally has and appropriates (especially with legitimate, expert, reference power). Arrogant people create an unproductive organizational climate, because they often demand privileges/special rights that do not belong to them due to their qualities ("checks without cover").

3.18. **THEFT OF OTHER PEOPLE'S IDEAS, ACHIEVEMENTS, IDENTITY.** This manipulation technique describes folk proverb: "Decorating with other beards feathers". Good parts of other people's achievements and characteristics are stolen from manipulator. This can take on pathological proportions when the boss attributes all the achievements of his team to himself, pretending to be a versatile genius, and treats others as if they were poor and weak-minded.

3.19. **THREATENING GAZE/LOOK.** This is a technique of intimidation with the aim of frightening others, with intention they give up from their claims, attitudes, problem view.

3.20. **PASSIVE AGGRESSION.** Here it is a case of transferring a psychological defense mechanism when frustration is shown not directly on the cause of frustration but indirectly on someone around (usually people of lower status/power who cannot retaliate, take revenge, oppose authority). Using of sarcasm/irony often is a sign of passive aggression, and it can be also used as manipulator tactic to deminish victims.

3.21. **OBLIGATION OF THE VICTIM AT A JOINT MEETING.** The goal is to psychologically force someone to do something (e.g. to an activity that no one

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<sup>23</sup> Generating paper money inflation at the macro-organizational level (reducing the value of money) also falls into this category of manipulative abuse, i.e. the subcategory of strategic economic violence by which target group(s) of manipulated people are forcibly impoverished.

<sup>24</sup> Impression management uses techniques/strategies: 1) self-promotion, 2) cringe/sycopancy, 3) self-sacrifice, 4) intimidation, and 5) humble request (using the power of the powerless) (cf. Bolino & Turnley, 1999).

wants, that is awkward, has only costs, and mostly no benefit to the executor) in a way that is done publicly. In public/meeting at the explicit request of the leader (boss), the victim has less opportunity to refuse/think about it, and is thus manipulated into consent, even though he or she does not really want to.

3.22. PUTTING ITEMS ON LONG WAIT/DISPOSAL AFTER A LONG TIME PASS. This is simple manipulation technique in which an important issue is put aside (on hold) in order to humiliate those interested in resolving that issue and so feel worthless. By not resolving something that is important to people (especially by putting it on a long wait), it humiliates people and puts them in a subordinate position. It is also a corrupt technique to motivate people on hold to shorten the wait and speed up the resolution of their case by motivating the manipulator (corruption tool).

3.23. TARGET DESIGN OF A HEAVY/NON-COOPERATIVE PERSON. Behavior that intentionally deprives attention, pretends to be noncooperative in order to model the behavior of others. It is also corruptive tool because this motivate other people to stimulate/motivate such persons to engage in solving their problems.

3.24. IGNORING AND PUTTING COMMUNICATION ON WAITING. This means not paying attention to someone, not responding against other people's attempts to communicate. Targeted ignoring is a manipulative technique to discipline the behavior of another. A variation of this tactic is the so-called a promise but not intended to be fulfilled. In fact, it is about "swinging" or creating false hope and inducing expectations: "Now it will, but it is not", "It should happen, first this, then that", "We are not yet in that phase!", "Wait, wait, "Slowly!", "The case is in the process (court and other)!" Putting on hold is a known form of manipulation. People on hold are actually in a state of manipulation because they expect something positive to happen, and in fact nothing is happening or things are really going badly for them. To the privileged and people of power, things are resolved immediately or very quickly.

3.25. RECRUITING ALLIES FOR "DIRTY JOBS". The goal of this technique is to keep the manipulator from being detected, so that dirty work for him is done by other individuals or groups (e.g. commissions or specially selected people for such purposes). This is a common technique of manipulators in higher hierarchical and positions of power ("Heads do not get their hands dirty but plan, organize and give orders to get dirty jobs done!").

3.26. PLAYING/ACTING THE VICTIM, WEAKNESSES/DISABILITIES. The manipulator plays the victim, in order to provoke a feeling of regret/pity, the so-called using the power of the powerless (Bolino&Turnley, 1999; Bogdanović, 2003).

#### **4. Destructive organizational communication and manipulation in the function of functional organizational stupidity and stupidity management**

Destructive organizational communication and manipulation aims to reduce the resources of growth and development as well as people's resistance to the goals of manipulators. Often the consequences are manifested in functional stupidity, which is further aided by the management of stupidity. Inability or lack of motivation to use intellectual resources or intelligence is often the result of manipulation and destructive organizational communications (people become functionally stupid and less motivated/unmotivated to respond to manipulation and destructive communication). Lack of thinking, thorough thinking and finding the reasons why it works the way it is

done helps maintain the existing organizational (social) order, and is often exacerbated by manipulative untruths, wrongdoing, promotes existing power and relations of domination and emphasizes conformism (Alvesson & Spicer, 2012). At the same time, the difference between rhetorical publicly proclaimed norms and real but secret counter-norms (valid) creates a sense of hypocrisy (hypocrisy), especially in organizations that are information- and knowledge-intensive. A brief overview of proclaimed norms and secret counter-norms is presented in Table 1.

**Table 1.** Organizational norms and counter-norms as a cause of hypocrisy and organizational stupidity

<b>Organizational norms (proclaimed) -so-called. public norms (BRIGHT SIDE NORMS)</b>	<b>Organizational counter-norms (actually used) - the so-called secret norms (DARK SIDE NORMS)</b>
Be open and honest	Be secretive and deceitful
Always follow the rules	Use whatever it takes to get the job done
Be profitable	Use available resources or lose them
Take responsibility	Transfer responsibility to another
Be a team player	Take credit for your own activities, publicly promote your credit
Be loyal to your organization	Tell/say bad things about your organization

Source: Sims&Sauser Jr. (2014), p. 45-56 according Jansen&Von Glinow, 1985.

A great example of maintaining functional stupidity is when leadership/government says only desirable and good things about the organization/society/state. Functional stupidity is often created on the basis of irrational belief in complex economic and financial models as well as on the basis of inadequacy of leadership practices (derived from misconceptions, general wisdom, often without any empirical data or fictitious empirical data). When partial knowledge or pseudo-scientific leadership becomes "the way it works", it happens organizational/social stupidity. Leadership also becomes stupid if it is completely abstract, unrelated to reality (it functions in its "imaginary mental bubble"), and e.g. accepts only pure macroeconomic science (as an uncritical mainstream) as the main choice/input resource. Functional stupidity promotes stupidity management that has the following characteristics (Alvesson & Spicer, 2012):

1. Lack of thinking about rules, beliefs, expectations (acceptance of following the orders/orders of the hierarchy regardless of the meaning and content of the order/orders).
2. Lack of reasonable explanation based on arguments, lack of explanation for actions taken, refraining from questions, refraining from seeking explanations in administrative regulations, tradition and fashion (key aspect in the formation of functional stupidity).
3. Lack of independent thorough thinking in such a way that short-sightedness (ill-conceived/partial solutions) are applied to effectively achieve the goal, without knowledge of the broader aspects of the problem. There are no independent questions about what the ultimate goal is, whether the goal is

right and whether the goal makes sense, and what are the appropriate means to achieve the goal. The lack of answers to these questions creates stupidity.

4. Lack of motivation, such as lack of curiosity, lack of openness, personality of the "organizational man" type ("I think and do as it is ordered!") who uncritically obeys, or a professional worker who considers the organizational paradigm unquestionable, because because that's how it should be.
5. Emotional lack due to fear, insecurity, mechanisms of power, domination and coercion (threat of punishment and violence) in the organization.

The main mechanisms of stupidity management are marginalization of doubts, blocking information about doubts, structuring organizational communication in a way that facilitates and encourages positive and easily understood stories, negative and ambiguous stories are marginalized or even banned.

Stupidity management deals with limiting the inappropriate "smart", limiting people in the intellectual or motivational-emotional field. The main supporting factors are (Alvesson and Spicer, 2012):

1. Limitation of rationality (due to lack of time, information, intellectual capacity, lack of knowledge about the problem, etc.).
2. Competences from one area are uncritically extend to competencies in another area (for example, an aircraft manufacturing expert cannot be a neurosurgeon expert and vice versa - stupidity inevitably happens here).
3. Recklessness (acting before thorough thinking and systematic decision-making).
4. Lack of intellect (primary decision-making based on strong emotions and passions - often present in emotionally demanding situations).
5. Denial of one's own ignorance (reliance on incomplete knowledge or pseudo-knowledge where the mediating factor is managerial/political vanity).
6. Fear and anxiety.
7. Insecurity (existential or psychological).
8. Refusal to disturb organizational harmony and the existing way of functioning.
9. Power and policy mechanisms (regulations requiring non-use of intellectual resources).

From this brief overview, it is apparent that all of these factors promote functional stupidity. If the leadership is actively working for its own benefit and promotion, using various manipulations and destructive communication patterns, optimal smart solutions cannot be expected, and the organization easy arrive in a state of organizational stupidity. Organizational stupidity is very present in modern organizational, social and political life, so it is not true to say that organizations/societies/states are getting smarter, because it is a huge empirical substrate about reduced intelligence and organizational stupidity.<sup>25</sup>

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<sup>25</sup> In a time of rapid technical and technological progress, the saying can be heard: "Everything is getting smarter except people!".



Stupidity is a very dangerous phenomenon (practically it has *unlimited power to destroy everything!*), which is very difficult to fight, especially if it is programmed (by manipulation and destructive organizational communication), and if it is not noticed and reacted in time (preventively or reactively), there is potential to create confusion, stagnation and chaos.

### **5. Measures to reduce destructive organizational communication and manipulation and promote organizational smartness**

Basic measures concerning any psycho-social phenomenon can basically be divided into two basic parts: (a) *preventive* measures and (b) *reactive* measures. Prevention is a successful strategy because it is often better to "prevent than cure", but prevention also has certain costs. A reactive strategy is necessary to respond to unwanted communication and manipulation and thus thwart in creating greater organizational damage. So it can be recommended:

#### (a) Preventive organizational measures:

a1) Improving HRM practices in recruitment and selection of employees. Employees who are prone to destructive communication and manipulation (psychopathic or sociopathic profile) can be detected before engaging in the organization, but this requires additional training of staff engaged in professional selection (psychodiagnostics) in recognizing discrete, malignant phenomena and behaviors to prevent possible negative effects of manipulative and communicatively destructive people.

a2) Improving psychosocial working conditions. Organizational conditions such as the struggle for resources between departments, unequal treatment (discrimination), lack of structure and rules, misunderstanding of organizational values, non-response to hypocrisy, lead to the fact that manipulations and destructive organizational communications are encouraged, especially if they have neutral or even rewarding consequences.

a3) Ethical education with the promotion of spiritual values and management. E.g. moral management/management maximization (Sikula, 1996), service management with the promotion and living of original human values: right treatment, truth, peace, love and non-violence through organizational socialization can help prevent negative/destructive communication/manipulation and behavioral phenomena.

#### (b) Reactive organizational measures:

b1) Prompt response of management to emerging forms of destructive organizational communication and manipulation in order to timely eliminate the destructive communication effects of human resources and crises, such as disturbed interpersonal relationships, job dissatisfaction, poor work motivation/engagement, engaging in organizational intrigues, political behaviors, are not organizational features that create value. Managerial awareness of the problem of destructive communication and manipulation is crucial to be able to respond to it in a timely manner.

b2) Prompt response of employees to emerging forms of destructive organizational communication and manipulation. Open, unambiguous and effective communication reduces the psychological space for manipulative behaviors. Honesty,

a culture of right behavior and truth is important not only as a preventive but also a reactive measure in recognizing and dealing with destructive communication and manipulative organizational patterns.

b3) Control reactive mechanisms for spotting and dealing with functional organizational stupidity and stupidity management and punishing destructive communication and manipulation. The best way to extinguish certain unwanted behavior, and then destructive-manipulative communications/behavior, proved to be a large and time-fast punishment after the offense/unwanted behavior (Čudina-Obradović, 1991). An important reactive control mechanism are the so-called „deviant organizational members“ who may have the role of internal organizational whistleblower (Bogdanović & Filip, 2018). Therefore, it is suggested to have the so-called. "Deviant" member<sup>26</sup> (Cotu, 2009), that is, such a man who does not think like others and questions himself and others, e.g.: “And why do we do that at all?“, „Why do we do it that way?“ Such a member should ideally exist in the organization or be a consultant to the organization with the authority and responsibility to warn of "problematic/bad deeds". The "deviant" member of the organization is extremely important, because through critical thinking it encourages creativity (new original ideas) and learning. In teamwork, the empirical fact is that a team with a "deviant" member achieves superior performance than teams without such a member, and in many cases "deviant thinkers" are a source of great innovation, and the loss of a "deviant" team member usually means whole team becomes average (Cotu, 2009).

## 6. Conclusion

Destructive forms of communication and manipulation are becoming part of the scientific branch of organization and management, more precisely the specialist field of dark management skills (black art of management) and the dark side of management (dark/deviant side of management). Since there is no organization in which there is no deviant behavior, different manifestations of destructive communication and manipulation of different frequency and intensity of occurrence occur in each organization.

In the context of dealing with these phenomena and the growing problems in times of crisis, this paper listed and explained some of the observed forms of destructive organizational communication and manipulation (N=50) with the aim of their timely detection, prevention (preventive measures) and therapy. The fact is that destructive organizational communication and manipulation is a phenomenon that can result in a dangerous state of functional organizational stupidity and stupidity management, so it is very important to recognize the phenomenon, react to it as a negative organizational phenomenon by preventing and/or reactively shutting down or reshaping.

To deal with destructive organizational communication and manipulation, *preventive* measures (improving the quality of professional selection professionals, improving psychosocial working conditions, ethical education) and *reactive* measures (prompt response of managers and employees to manifestations of destructive

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<sup>26</sup> A typical "deviant" thinker was, for example, the Croatian writer Miroslav Krleža (1893-1981). His statement is well-known: "I think wrong since I think, I never thought right, I always have something to answer for - for the wrong way of thinking or looking" (Krleža, M., July 6, 1981 according to Čengić, 1987).

organizational communication and manipulation, where punishment occurs as good reactive measure) are proposed. The phenomenon of stupidity management and targeted creation of functional organizational stupidity should also be raised, so that the management itself would not use manipulation and destructive organizational communication to achieve its partial goals according to the "make stupid and rule!" concept. Therefore it is important to conclude that explicated destructive and manipulation technique with coping measures are the way to the smarter organizational solutions by means of smarter organizational communication.

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