

# Management & Marketing

## *Challenges for the Knowledge Society*

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## **PREFACE**

The topic regarding the quality of life and the influence of the environment on the quality of life has preoccupied the researchers, the governments of the country and the society as well.

This special edition of the Journal of Management & Marketing was dedicated to the researchers of the thematic area “Environment and quality of life” of the postdoctoral program “Performance and excellence in postdoctoral research in Romanian economics science domain” and it gives an overview over the main aspects which influence the quality of life of the society and of the population. It covers several aspects which contribute to the quality of life both on a macroeconomic level such as the occupation on the labor market, the education system, the health system, the development of the rural areas and also on a microeconomic level such as the lifestyle and the behavior of the consumer, related to several aspects like the quality of the food the consumers eat, their perception towards ecological products and their willingness to do sport.

The quality of life is a complex topic which covers a diversity of areas and which can be achieved only by establishing a certain balance among the development of these. Actually to achieve a high level of the quality of life of the society, a combination of all these factors should be done, in which all participants of the economic process should be involved such as governments, companies, organizations and the population.

The articles presented in this edition are the result of the research of the participants of the postdoctoral program “Performance and excellence in postdoctoral research in Romanian economics science domain” and they try to cover all above mentioned aspects. The first article of this edition presents the concepts of the quality of life and the methodological instruments which allow researchers to study this field. It also sets the basis for the rest of the articles which present several aspects which contribute to the quality of life.

One of the elements which contribute to the quality of life is the occupation rate on the labor market. The balance on the labor market has an influence on the quality of life both from the perspective of the government and the companies and also from the consumers. From the perspective of the companies, having an optimum amount of qualified employees can assure the economic development of it. This contributes indirectly to the quality of life, because only a functional, developing economy can finance the measures taken by the government for it. Besides this a company can contribute to the welfare of the society by developing several corporate social responsibility programs. From the perspective of the government a good occupation rate means on one hand wealthy population which contribute to the state by taxes, but also reduced opportunity costs by having less unemployment costs. From the perspective of the individuals, a good occupation rate assures them a good job which means for them both a financial security and also a psychological satisfaction of the recognition at the job. Besides this a good financial situation can assure a more qualitative consume which also contributes to the welfare and satisfaction of the consumer. All these aspects are taken in consideration in the articles regarding the occupation rate, the migration of the labor force and the imbalances on the labor market.

The education and the health system are other elements which contribute in a significant way to the quality of life of a society. Only a healthy, educated population

can contribute to the development of an economy by being the qualified labor force mentioned above. On one hand healthy population works as mentioned more efficient and contributes by this to the economic development of companies and consequently of the economy. On the other hand a healthy population means opportunity costs for the government, for it means less people to cure. The education system has also an essential role in the development of the society both on the personal level of the individuals and also at a macroeconomic level. Also in the case of the education there are several perspectives, which should be taken in consideration. From the perspective of the companies, educated people can contribute significantly to the development and creation of innovations, which have a high impact on the development of the economy. Besides this good educated and trained people work more efficiently. From the perspective of the consumer, better educated people can take better care of their own life and health which has also an impact on the overall welfare of the society. On one hand educated people take more care about the quality of the food they eat, about their lifestyle, which influences their health, their abordation towards the protection of the environment and so on. All these aspects are reflected in fewer costs and less involvement of the government of a country for these aspects. These aspects are presented in this edition in the articles about the educations system and the health system.

The consumer behavior is another aspect which reflects the quality of life. The analysis of the behavior and the lifestyle of the consumer provide information about the types of needs which are covered and besides this it provides information about the quality of the nutrition and the sportive activity of the consumer. As a general rule, the more elevate the needs of the consumer are, the higher is its quality of life. Besides this the analysis of the consumer provides information about the quality of the food the consumers eat, the tendencies of the lifestyle of the consumer and also the impact on the strategies of the companies. One aspect which can be deduced is the type and quality of the food of the consumers and the diversity of food, which has an impact on their health. In order to analyze the quality of the food of the consumer, it is not enough to analyze the type of food, but also to track this back to the producers and its production means in the rural areas. Regarding the lifestyle, it is important to analyze the perception of the consumer regarding the protection of the environment and his willingness to act according to the protection of the environment. Another aspect which has to be analyzed is the attitude of the consumer towards sport, because it has an important influence on the health of the consumer.

All these aspects are taken in consideration in this special edition of the Journal of Management & Marketing dedicated to environment and quality of life. By this we would like to thank the editors for making the publication of this volume possible.

Prof. univ. dr. **Coralia ANGELESCU**  
Prof. univ. dr. **Nicolae ISTUDOR**

**Abstract.** *The complexity and diversity of current social phenomena are pressing against traditional economic theories which, by themselves, are unable to give a proper explanation to the continuous changes our society is facing. In this context, the need for multi- and inter-disciplinary appears to be particularly intense when one tries to explain and assess the quality of today human life. Thus, economics cannot afford to be an isolate or an “autistic” science solely preoccupied by the efficient allocation of scarce resources. Nevertheless, the new social science, in spite its multi- and inter- disciplinary character should also pay serious attention to its conceptual hypothesis and methodological foundations. Following this line of thought, the present paper aims to analyze the recent studies in quality of life in order to find out and synthesize the most important conceptual and methodological foundations of this new field of research.*

**Keywords:** quality of life, observation, methodology, inductivism, empiricism, well-being.

## **METHODOLOGICAL FOUNDATIONS ON QUALITY OF LIFE RESEARCH**

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### 1. Quality of life between reality and perception. The direct vs. indirect observation

From an epistemological perspective, one could argue that, especially in social sciences such as economics where the data used in theories are no more than the result of intuitive reactions to more or less conjectural situations, the economist is constrained to develop artificial situations designed to remove details which can be considered irrelevant for a particular theory. As Seabright argues (Nussbaum and Sen, 1993, p.397), a social theory, in this particular case an economic theory, deploys a variety of moral concepts in accordance with our intuitions about their application. On the other hand, the simple individual is not a scientist. He has no reason to abstract away some details and focus only to issues considered to be relevant for a theory which he does not even know. Every individual possess his own intuition scale which is different from any other individual scale. Hence, the divergences between theoretical statements and empirical observations are very common. More than that, there are not only different perceptions between individuals and scientists but between different individuals. Following this argument, two options are possible: 1) it appears that the removed details from a theory are as important as its statements or 2) direct observation is not a reliable method to test a theory because data are biased by particular perceptions. The consequences of the first conclusion are paramount for the methodology of social sciences because it implies that there are no universal statements or general theories. Of course, this hypothesis attracted and still attracts a number of scientists to a line of thought usually called epistemological anarchy. Nevertheless, as intriguing this hypothesis might be, it far exceeds the purpose of this paper.

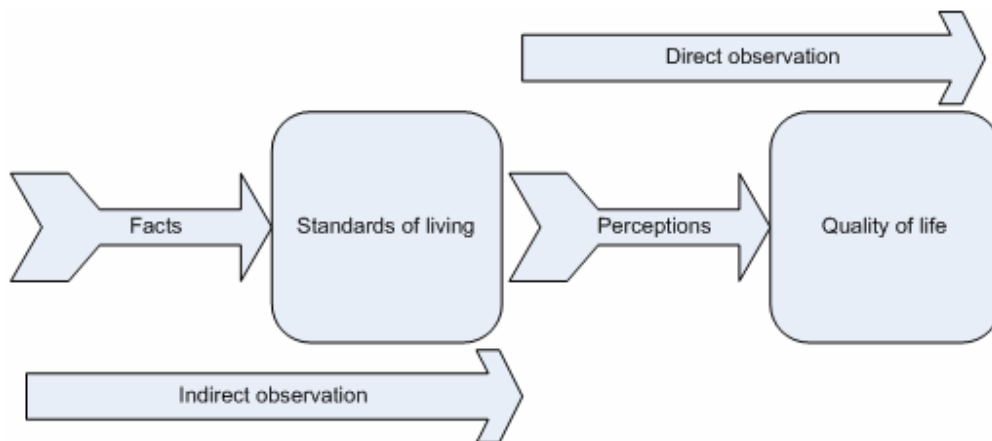


Figure 1. Standards of living vs. quality of life

We should further continue with the second conclusion consequences on measuring quality of life. In this context, it appears that one of the most important issues in directly assessing quality of life using the traditional statistical tools such as

interview polls and empirical studies in raised by the fact that people perceive their well-being in a very relative manner. Individuals tend to focus on theoretical irrelevant details and to form their opinion on very subjective and conjectural facts. According to Van Praag (Nussbaum and Sen, 1993, p. 323) perceptions are highly relative to surrounding social issues. In fact, one might add that these perceptions are also very sensitive to cultural issues. In this context, it is obvious that measuring quality of life using, let say, a satisfaction scale could be a very daunting task which can produce hardly relevant results. Consistent with the above argument, one of the most important problems in quality of life research consists in an increasing gap between the results of statistical reporting and individual perceptions of welfare. Although real income has risen in many countries throughout the last decades, self-reported well-being of the population has not increased in step (CAE/SVR – Report, 2011, p. 3). This inconsistency may be partially explained through a differentiation between living standards and quality of life. While the standard of living of individuals is represented by the command that they have over scarce resources, quality of life consist in the outcomes that result. Following this argument, one may argue that the individual disposition is irrelevant for his standard of living but very relevant for his life quality.

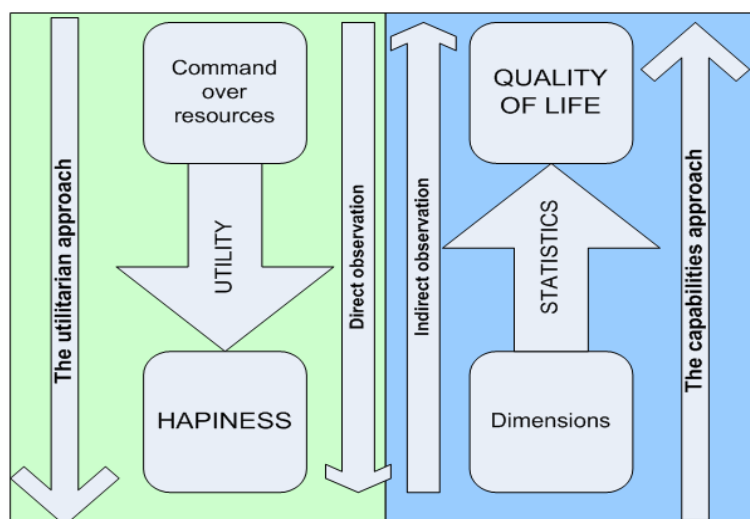


Figure 2. The utilitarian vs. capabilities approach

In consequence, the issue of individual preferences and perceptions which cannot be directly observed is another difficulty of empirical nature. In this context, the researcher may have to apply indirect observation methods through which a series of complementary data can be extracted and interpreted in favor of the study. The use of indirect observation method raises two problems. On the one hand, the alternative use of direct and indirect methods may lead to inconsistency and incompatibility between the data obtained. On the other hand, processing indirect data in order to extract conclusive information is subject to the risk of different theoretical

interpretations. Nevertheless, as recent studies reveal, indirect observation seems to be the favorite tool in assessing quality of life dimensions.

## **2. Subjective well-being and quality of life dimensions.**

### ***The up to bottom vs. bottom to up approach***

The subjectivity and complexity of social phenomenon require particular approaches in order to obtain relevant empirical observation which can be used in assessing the quality of life of an individual. A brief literature review offers at least two possible approaches. The first one is directly derived from the, so called, utilitarian doctrine initiated by Jeremy Bentham and perfected by John Stuart Mill and which resisted as the dominant approach in the philosophy of science for almost two centuries. According to the utilitarian approach, quality of life essentially depends on the level of welfare of the individual, where welfare is defined as the pleasure or desire satisfaction one obtains from using goods or, in broader terms, resources. This simple definition succeeds to elegantly solve two apparently incompatible methodological problems for any social science: the universality of a scientific theory, on the one hand, and individualism which is specific to human behavior, on the other hand. (Șerban-Oprescu, 2011, p. 175). The clear and simple result of the utilitarian approach is that welfare is in a relation of direct proportionality with the capacity of the individual to acquire goods. As long as an individual is able to acquire and command resources he found the path towards better individual welfare. Nevertheless, welfare is not similar for two different individuals because in the case of the two, the utility of consumption of the same type of goods may differ substantially. In this context, by the identification of a common feature of a quantifiable financial instrument by means of income and consumption, the utilitarian approach succeeds to provide a basic measure unit for assessing welfare. On the other hand, by only highlighting aggregate welfare, the utilitarian approach fell into the trap of holism and gradually loses its ability to capture the non-material aspects which are decisive for assessing quality of life. The traditional utilitarian approach, unfortunately reduces the quality of life phenomenon to a simple problem of distribution of resources and monetary calculus of income and expenses. Nevertheless, the task identifying a global indicator for measuring subjective well-being from which can be derived other relevant indicators is still tempting and the researches published by Bruno S. Frey are very relevant for this matter. But, the difficulty of finding an accurate direct method for measurement of subjective well-being still remains. Once this difficulty could be overcome, such an observation method might be used in constructing an aggregate indicator of quality of life that could even replace the classical economic indicators. Although extremely tempting, this approach encounters a methodological problem: for the time being there are no observation tools able to directly gather data on a person's happiness level. Due to the complexity of the phenomenon and the discrepancy between reality and perception an independent scientific observer cannot be free from any bias and fully capable of objective comparison.



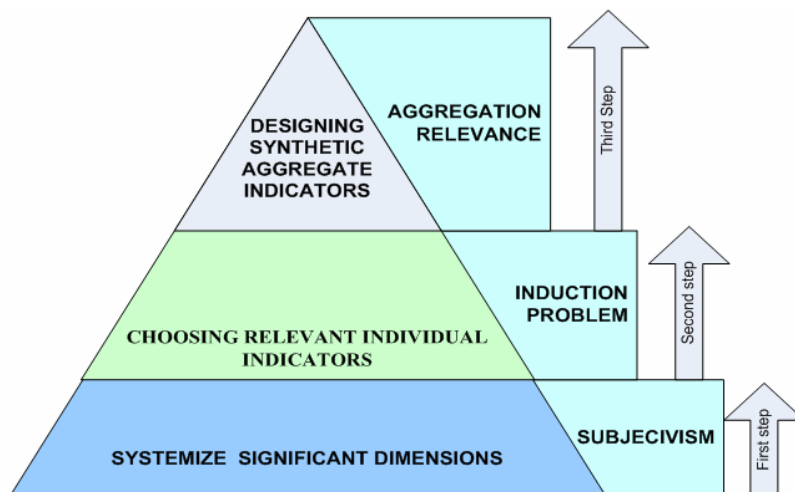


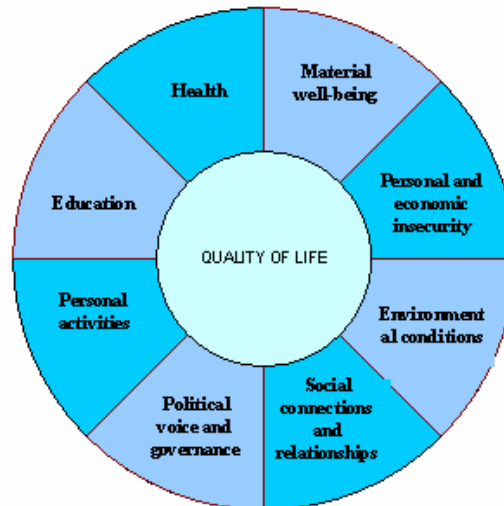
Figure 3. The bottom up methodology

The second approach for assessing quality of life is rooted in recent researches on functioning and capabilities made by Amartya Sen and his followers. According to this approach the individual must not track welfare in the classical sense which can be financially measured, but a superior condition opposed to the current one, which is given neither by the quantity of owned goods, nor by the level of welfare and hence cannot be limited to the evaluation through resources (Şerban-Oprescu, 2011, p. 175). In other words, quality of life derives from emotional states and these states are not limited to material means (Alkire, 2009, p. 3). This approach is based on the premise that there are various factors affecting quality of life and only some of which can be assessed monetary and also suggests an indirect welfare assessment based on observation of individual aspects of human existence. Following this approach an observation methodology in three steps was created and also applied (CAE/SVR – Report, 2011, pp. 17-18). First step consists in organizing the various aspects that influence quality of life in several relevant dimensions, the second implies the identification of relevant indicators for every dimension and third step is the condensation of each dimension to one significant indicator.

According to this methodology, the first challenge is to systematize the various dimensions that can be significant for the quality of life. The most daunting and sensitive task on this particular level of analysis is to determine the relevant dimensions for quality of life. In any case, selection is always subjective and will always endanger the study results to the risk of being considered irrelevant because certain variables were excluded from the start.

The second step consists in choosing individual indicators relevant to a certain quality of life dimension and raises the question significance due to its inductivist character. The key question on this level is: How many observations are needed to

obtain a “large number”? or, in other words, when accumulated observations are sufficient to be relevant to the circumstances? Unfortunately, there is no single answer to these questions and any response may present vulnerability in a certain context.



*Figure 4. Quality of life dimensions according to SSF Commission Report*

In the third step the epistemological problem of aggregation and relevance is raised: as the primary observation data are processed in increasingly more complex statements, the significance of these statements tend to fall. A simple way to avoid this problem is to design not just a single but a series of indicator of quality of life. Thus the aggregation problem is solved, but there still remains the issue of significance.

To synthesize, we should highlight the fact that the capabilities approach confronts itself with two evaluation shortcomings: one at the level of the element aggregation which composes the living standard and another regarding the tangible assessment of these elements. (Șerban-Oprescu, 2011, p.176). But according to Alkire these problems are easily to overcome when the results are very important: “Rather, the capability approach is applied differently depending on the purpose of the measure, the place and situation (or, if comparability is required, the places to be compared), the level(s) of analysis, the data available, the institutions it will guide, and the kind of analyses that the measure will catalyze or inform. The methods by which it is applied are, similarly, plural. The concrete purpose of the application provides necessary definition.” (Alkire, 2009, p. 7).

### **3. Quality of life dimensions and indicators**

Following the observation and research methodology resulted from the capabilities approach, recent studies, such as Report of Commission on the Measurement of Economic Performance and Social Progress which was released to

public in 2009, identifies eight relevant dimensions of quality of life as presented in the figure 4.

The SSF Commission Report goes even further by launching a series of recommendation which should be taken into consideration when assessing quality of life. In brief, these recommendations are: 1) assessment of material welfare through indicators that measure the consumption and income rather than production itself; 2) analysis should be focused on household perspective; 3) study of income and consumption jointly with wealth; 4) increased attention on how income, consumption and wealth are distributed; 5) extension on non-market activities; 6) identification of indicators able to assess the quality of life through objective capabilities available to individuals, 7) focusing on measuring inequalities, 8) design of observation methods which ensure the relevance for the quality of life of each people and, secondly, satisfy the need for methodological comparability; 9) these data should also permit aggregation into relevant synthetic indicators; 10) observation data must take into account the personal perceptions of individuals who tend to assess their priorities and experiences in a hedonistic manner; 11) the sustainability indicators set should be extended to other social issues than the purely economic; 12) the need to assess the environmental sustainability should generate thorough researches (SSF Commission Report, 2009, pp. 14-15).

Even though material well-being may be considered as a particular quality of life dimension recent studies tend to emphasize the limits of traditional methods of measurement of well-being based on GDP which should be considered as an excessive aggregate indicator. In this respect, traditional statistical methods and current macroeconomic indicators do not reflect the real distribution of significant data such as wealth (CAE / SVR-Report, 2011: p. 14).

### 4. Conclusions

Assessing quality of life is, first of all, an empirical task and, from this perspective, the most important aspects of any such research consist in applying the proper methodological rules specific to data observation and interpretation. First of all, we can notice that direct observation, which should be the simplest method for data gathering, can be misleading in the particular field of quality of life. The clear inconsistency between real statistical data and individual perception is a serious reason which casts doubts on direct observations. As Franco-German Report argues even though the rapid growth of a number of objective indicators can be interpreted as a significant improvement in the level of countries, many individuals do not aware of or do not perceive that the quality of life has improved in recent decades (CAE/SVR-Report, 2011: p.3). These are only just a few arguments that show why indirect observation method should be chosen over the direct method. Nevertheless the indirect method is not flawless but prone to subjective interpretations inconsistent with reality. For this reason, statistical indicators which synthetize indirect observation data should follow three simple criteria: relevance, consistency and measurability. The necessity of complying with the above rules derives from the fact that individual perceptions

and preferences differ and therefore, there are certain limitations in applying the concept of happiness and especially to make interpersonal comparisons of well-being.

In the second row, the indirect observation requires a bottom-to-up research methodology. Even though, finding a single aggregate, complete and consistent indicator for quality of life is a tempting task we do not yet possess the necessary means in achieving this objective. In this context, the three step methodology released by the SSF Commission is, for now, the most appropriate way to analyze the quality of life phenomena. Nevertheless, there are some epistemological risks in applying this methodology. First, choosing the relevant dimensions for quality of life could be considered subjective by other researchers; second there is always the problem of induction consisting in choosing the relevant number of observations for a general conclusion and, third, indirect observation does not allow a proper comparison of data.

Finally, is worth to mention that in spite of its epistemological difficulties, this methodology can be applied and was applied with very promising results. From this perspective, the next research step should consist in applying this methodology in order to find the appropriate solutions to its shortcomings.

### Acknowledgements

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**Abstract.** *This article is a compact and relevant analysis of quality of life in the European Union during 2000-2010, throughout the duration of the “Lisbon Strategy 2000”. This analysis includes data and research findings on an essential area of quality of life in the context of the current global economic recession: indicators of employment in direct correlation with job satisfaction and working conditions.*

*The objective of this paper is to create a more complete image on how the EU population is reported to different components of quality of life, but mainly to those components directly or indirectly related to specific quantitative indicators of employment.*

**Keywords:** quality of life, employment and unemployment, work organization, discretionary learning, flexicurity, qualitative indicators of employment.

## **SIGNIFICANT INDICATORS FOR EMPLOYMENT – SYSTEM COMPONENT FOR QUALITY OF LIFE INDICATORS**

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## **1. Introduction**

Starting from the intuitive dependence between the specific quality of life and qualitative indicators of employment – achieving a comprehensive and meaningful image of them, in the EU-27, in the period 2000-2010 is required. An analysis of these indicators – with direct and strong influence on the perception of the concept of quality of life – is realized in the context of an original approach of typical forms of labor organization present in the analyzed geopolitical area. An analysis of these forms of labor organization – studied at a macroeconomic level, along with human resources management – reveals an intimate connection between them and all indicators of employment, statistically unquantifiable at a EU-27 Member State level but assessed as a result of a social survey conducted by the competent European forums in the field. The result of the research is quite clear and convincing, in the sense of highlighting the net superiority of the form of labor organization „discretionary learning” – based on high professional training, continuous specialized training throughout life – in correlation with the principles of the concept of „flexicurity” and providing a large work autonomy on the basis of a minimum hierarchy within economic organizations. Finally – in addition to the findings, conclusions and direct implications presented on the above mentioned theme – the connections between labor organization and its results are filled in, with a graphical presentation of the positioning of each EU-27 Member State, across the two highly relevant index: innovation index in labor and onerous labor index – type of work, which in turn decisively influences employment and actual work conditions of the employees.

## **2. Interconnections between the concept of quality of life and qualitative indicators of employment**

The material conditions represent the essential pillar of a quality life. In any society, people must benefit from material circumstances – resources obtained through personal effort, and ultimately through the intervention of the state – that enables them to live a good life, according to social norms. Also, material conditions have a strong influence on other areas of life such as education, health, profession, leisure or subjective well-being.

Using this axiomatic truth, we will examine a series of socio-economic, organizational and administrative aspects of employment – directly resulting in an effective functioning of state economies, so that these material conditions should follow an upward trajectory over time – with favorable repercussions on improving quality of life of the individual and also, a general wellbeing of economic organizations and governments.

### **3. Conditions of employment in the European Union EU-27 – work organization at a macroeconomic level**

The European environment is characterized by considerable diversity of forms of labor organization. These differences have important implications for the quality of human life – considering the significant links that have emerged between the types of labor organization and various dimensions of quality of work and employment. Such a correlation increases the need for a better understanding of the main forms of labor organization and their different impact on working life in Europe.

The four main types-classes of labor organization that exist in Europe – are symbolically defined as organization with “discretionary learning”, organization with “lean production”, “taylorist” organization and organization on “traditional or simple structure”. The characteristics that differentiate these forms of labor organization may be of sectorial, professional and demographic type. Their prevalence, in a cross-country perspective, must be understood in the context of differences based on the size and orientation of the company or the market. Also, links between certain human resource management policies and how they complement forms of labor organization must be taken into consideration.

A key aspect of this review is to explore and understand how these forms of labor organization have a direct impact on certain dimensions of quality of work and employment, such as physical risk factors, working hours, work intensity and job satisfaction of the individual.

This analysis can provide a comprehensive view on the various forms of labor organization that exist in Europe, highlighting some elements that are favorable to better quality of work and work satisfaction and could eventually help lead to European political debates with concrete initiatives in this area.

#### **Defining types-classes of work organization**

- “Discretionary learning” labor organization – suggestively summarized as “autonomy and training” – is characterized in particular by a high level of autonomy at work, methods of operational learning and solving problems, complex tasks, self assessment of quality of work and, to a smaller extent, autonomous teamwork.

- “Lean production” labor organization – meaning it has a “lean production” – is defined mainly by a higher level of team rotation of jobs, self assessment of quality of work and imposing quality standards, in conjunction with various constraining factors and, firstly, the imposition of a heavy work rate.

- “Taylorist” labor organization corresponds to low autonomy at work, especially in working methods, a low dynamics of learning, reduced complexity of tasks and an over-representation of variables measuring constraints on: the work pace, the repetitive nature and monotony of tasks and quality standards. Strictly by definition, “taylorism” is a method of labor organization in which labor standards are

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set at the highest level workers and are based on performance and improvements in labor by eliminating unnecessary movements, applying more efficient methods for records and controls, thereby increasing work efficiency.

- “Simple or traditional structure” labor organization, means that all variables of labor organization are under-represented and the methods are largely informal and non-coded.

Table 1

### Work organization variables across the classes (% of employees)

		Work organisation classes				Total
		Discretionary learning	Lean production	Taylorist	Traditional or simple	
Autonomy in work	Methods of work	88.9	65.5	10.5	43.0	60.1
	Speed or rate of work	88.1	65.1	21.6	51.5	63.2
	Order of tasks	79.8	60.7	14.6	43.0	56.2
Cognitive dimensions of work	Learning new things	86.7	90.2	38.1	27.7	68.5
	Problem-solving activities	95.8	94.0	53.6	45.7	78.9
	Complexity of tasks	78.5	85.5	34.9	16.8	61.7
Quality	Self-assessment	80.1	92.1	58.0	24.1	69.7
	Quality norms	75.7	96.6	91.6	36.8	77.8
Task rotation		40.9	79.1	42.4	26.3	48.6
Teamwork	With control over task division	33.8	47.3	14.4	16.4	30.6
	Without control over task division	23.8	42.2	45.5	18.5	31.9
Monotony of tasks		23.8	59.2	75.4	36.9	45.1
Repetitiveness of tasks		11.6	39.1	41.2	16.7	25.3
Work pace constraints	Automatic	4.1	46.6	60.6	5.7	26.3
	Norm-based	41.1	76.3	73.9	15.7	52.4
	Hierarchical	25.7	67.0	69.4	30.9	45.7
	Horizontal	36.0	85.0	64.9	25.0	52.4
	Demand-driven without direct customer contact (or almost never)	15.2	24.2	25.9	11.4	19.0
Assistance	From colleagues	74.2	81.6	62.4	62.4	71.9
	From hierarchy	66.4	63.9	48.4	49.7	59.5
Sample		38.4	25.7	19.5	16.4	100.0

**Source:** EWCS (European Working Conditions Survey), 2010.

The forms of labor organization adopted in the 27 EU member states (EU27) depend on the sector of economic activity or occupational category. For example,



### Significant indicators for employment – system component for quality of life indicators

forms of work organization of “discretionary learning” are highly developed in service sectors, although they are more popular among senior managers, professionals and technicians, while “lean production” and “taylorist” forms are most common in manufacturing industries. “Simple and traditional structures” are characteristic among service and sales workers as well as unqualified workers, while forms of “discretionary learning” are more prevalent among senior managers, professionals and technicians.

Table 2

**Distribution of work organization classes, by sector (%)**

	Work organisation classes				Total
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Food, beverages and tobacco	24.8	25.4	31.1	18.8	100.0
Textiles, clothing and leather	19.6	27.1	47.1	6.2	100.0
Wood, paper, publishing and printing	30.0	32.5	30.2	7.4	100.0
Chemicals, plastics and minerals	31.0	32.7	27.7	8.5	100.0
Metallurgy and metal products	26.0	35.0	30.0	9.0	100.0
Machinery and equipment	44.4	32.2	17.0	6.5	100.0
Electrical, electronic and optical equipment	35.7	31.1	18.7	14.6	100.0
Transport equipment	35.4	31.4	27.8	5.5	100.0
Mining and quarrying, and other manufacturing	29.0	29.2	26.4	15.4	100.0
Electricity, gas and water supply	56.3	23.4	8.7	11.6	100.0
Construction	29.1	35.7	23.0	12.2	100.0
Wholesale and retail trade, repairs	39.6	20.4	14.6	25.5	100.0
Hotels and restaurants	32.5	20.8	26.0	20.8	100.0
Transport	33.2	22.0	18.2	26.6	100.0
Post and telecommunications	42.0	22.2	21.7	14.1	100.0
Financial intermediation	63.2	18.9	5.6	12.4	100.0
Real estate, renting and business activities	50.5	20.5	10.8	18.3	100.0
Community, social and personal service activities	48.9	21.3	7.7	22.2	100.0
Average	38.4	25.7	19.5	16.4	100.0

**Source:** EWCS (European Working Conditions Survey),2010.

Demographic characteristics of employees also play an important role: for example, forms of “discretionary learning” are more common among older employees, while “taylorist” forms mainly target young people. At the same time, forms of “lean production” are characterized by an over-representation of men, while forms of “traditional or simple structure” are characterized by a greater presence of women.

Table 3

Distribution of work organization classes, by occupational category (%)

	Work organisation classes				Total
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Senior managers	52.0	37.0	5.6	5.4	100.0
Professionals	59.7	26.8	5.2	8.4	100.0
Technicians	56.7	23.7	9.6	10.0	100.0
Clerical workers	43.8	20.0	14.2	22.1	100.0
Service and sales workers	38.9	17.0	12.2	31.9	100.0
Skilled workers	28.9	34.6	28.6	8.0	100.0
Machine operators	15.3	24.8	40.5	19.4	100.0
Unskilled workers	24.4	21.5	27.0	27.0	100.0
Average	38.4	25.7	19.5	16.4	100.0

**Note:** Occupational categories are based on the International Standard Classification of Occupations (ISCO).

**Source:** EWCS (European Working Conditions Survey), 2010.

Table 4

Distribution of work organization classes, by age and sex (%)

		Work organisation classes				Total
		Discretionary learning	Lean production	Taylorist	Traditional or simple	
Age	<25 years	26.6	22.7	30.4	20.3	100.0
	25–39 years	38.4	28.7	18.3	14.6	100.0
	40–54 years	41.3	25.0	18.3	15.4	100.0
	55 years or more	42.1	20.4	15.0	22.5	100.0
Sex	Men	37.9	29.2	19.1	13.9	100.0
	Women	39.4	19.5	20.3	20.8	100.0
Average		38.4	25.7	19.5	16.4	100.0

**Source:** EWCS (European Working Conditions Survey), 2010.

On a cross-country perspective also appear large differences in the importance of the four forms of labor organization in the EU-27. "Discretionary learning", as forms of labor organization are highly developed in Denmark, Sweden and the Netherlands, while "lean macro-production" forms are more evident in north-western European countries of Ireland and the United Kingdom (UK), together with many Eastern countries and Finland, Luxembourg, Malta and Portugal. "Taylorist" forms of labor organization are strongly represented in south-eastern Europe and in some Eastern countries, while forms of "traditional or simple structures" are most evident in some Eastern or Southern European countries.

Table 5

Distribution of work organization classes, by country (%)

		Work organisation classes				Total
		Discretionary learning	Lean production	Taylorist	Traditional or simple	
Continental countries	AT	47.3	22.4	18.3	12.0	100.0
	BE	43.3	24.6	16.3	15.8	100.0
	DE	44.3	19.9	18.4	17.4	100.0
	FR	47.7	23.8	17.5	11.0	100.0
	LU	42.7	29.6	13.9	13.8	100.0
Eastern countries	BG	20.6	27.2	32.7	19.5	100.0
	CZ	28.0	26.7	22.5	22.9	100.0
	EE	40.7	33.4	11.2	14.7	100.0
	HU	38.3	18.2	23.4	20.1	100.0
	LT	23.5	31.1	22.0	23.4	100.0
	LV	33.4	34.5	17.1	15.0	100.0
	PL	33.3	32.6	18.9	15.2	100.0
	RO	24.0	33.4	27.6	14.9	100.0
	SI	34.9	32.1	16.7	16.3	100.0
	SK	27.2	21.0	33.8	18.1	100.0
Nordic countries and the Netherlands	DK	55.2	27.1	8.5	9.2	100.0
	FI	44.9	29.9	12.6	12.7	100.0
	NL	51.6	24.3	11.4	12.7	100.0
	SE	67.5	16.0	6.9	9.6	100.0
Northwest countries	IE	39.0	29.2	11.3	20.5	100.0
	UK	31.7	32.4	17.7	18.2	100.0
Southern countries	CY	26.4	27.0	21.2	25.4	100.0
	EL	24.0	29.1	22.6	24.3	100.0
	ES	20.6	24.6	27.5	27.3	100.0
	IT	36.8	24.1	24.6	14.6	100.0
	MT	45.6	34.2	12.1	8.2	100.0
	PT	24.9	30.3	32.5	12.3	100.0
EU27		38.4	25.7	19.5	16.4	100.0

Source: EWCS (European Working Conditions Survey), 2010.

Significant national differences seem to be evident in the forms of labor organization in the EU-27. A large difference can be observed between the EU-15 countries, on one hand, and the new Member States (NMS), on the other hand. Substantial differences also appear to address all forms of labor organization and between the components of the EU-15.

Regarding the EU-15, four groups of countries can be differentiated by forms of labor organization: the Netherlands and Scandinavian countries, North-Western and Southern countries. This is not surprising, given that various forms of labor organization are divided into different types of coordination and division of labor in companies that are generally incorporated in many types of economic and social regulations.

Differences between the new Member States are also very important. Many countries in the east, as well as Malta, belong to the group characterized by an over-representation of forms of "lean production", along with the north-west of the EU-15 countries. Bulgaria and Slovakia are characterized by an over-representation of "taylorist" forms, while Romania joins Portugal in the EU-15 to form a group characterized by over-representation of both "lean production" and "taylorist" forms.

Cyprus, Czech Republic and Lithuania are part of the group characterized by an over-representation of both “taylorist” and “traditional” forms, along with the Mediterranean countries in the EU-15. Despite a less contrasting organizational situation, Hungary is, however, characterized by a slight over-representation of “taylorist” forms.

### **4. Conditions of employment in the European Union EU-27 – human resources management**

A significant section of the specialized economic literature focuses on the effects, nature and performance of HRM – Human Resource Management. In support of certain forms of labor organization, this literature suggests the basic idea that forms of labor organization that require considerable assessment and problem-solving activities of the employees are more likely to be effective if they are supported by policies, especially in regard to payment of training and planning human resource. For example, labor in the form of organization of “discretionary learning” is characterized by high levels of learning, employees must exercise discretion in the methods they use to solve complex problems. In the forms of “lean production”, the labor requires similar skills and also involves the use of lifelong learning. However, in “lean production”, this dynamic is incorporated into a more formal structure based on codified protocols, such as teamwork and the practice of job rotation, often closely associated with quantitative standards of production. Compared with the forms of organization of “discretionary learning”, management discretion is relatively low and, in particular, the work pace of employees in the forms of “lean production” is severely constrained by hierarchy.

Since learning abilities and solving problems are essential for both models, it can be expected that companies that adopt these forms of labor organization will invest more in training their employees than those using “traditional” or even “taylorist” methods, characterized by low complexity and repetitive tasks. In addition, it can be justified that investment in training is more likely to be effective if complemented by possession of relatively secure employment, in order to extend the time horizon of the employees, thereby increasing their commitment to the objectives of the company.

This chapter examines the complementarity between the forms of labor organization and HRM – Human Resource Management – practices in terms of training, employment contracts, payment systems, formal assessment, and work-related discussions and consultation.

The data in Table 6 supports the idea that there are important complementarities between the forms of labor organization and investments in training, showing the percentage for each class of labor organization or groups that have benefited from training paid by the employer, or by themselves. Thus, 37.1% of employees grouped in the “discretionary learning” forms received training paid by the employer. The training program includes external courses and on-site training provided outside

### **Significant indicators for employment – system component for quality of life indicators**

working hours and is, therefore, designed to develop more general and transferable skills.

*Table 6*

#### **Type of further training, by work organization class (%)**

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Training paid for by employer	37.1	35.7	16.6	15.7	29.2
On-the-job training	35.0	38.7	24.2	17.3	30.9
Training paid for by oneself	4.2	4.4	2.7	2.6	3.7

**Source:** EWCS (European Working Conditions Survey), 2010.

In general, the data supports the theoretical idea of complementarity of training, because they show a clear tendency for employees grouped in the forms of labor organization of “discretionary learning” and “lean macro-production” to receive more information in the workplace and the provision of training courses offered by the employer compared to the “taylorist” or “traditional” forms of organization. In conclusion, continuous professional education in the form of external and internal courses paid by the employer is an important mechanism for the renewal and modernization of the formal elements of individual knowledge, thus increasing the value of human resources available in the economic organization.

### **5. Conditions of employment in the European Union EU-27 – quality of labor and employment**

In much of the specialized literature, it is assumed that both the quality of labor and employment are positively influenced by new forms of labor organization, supporting the idea that intrinsic rewards associated with specific practices, such as workforce flexibility, teamwork, group problem solving and minimal hierarchical status leads directly to greater satisfaction of employees and even employers.

This chapter examines the relations between each form of labor organization, labor quality and the extent of employment. Measuring the quality of labor includes the following elements: physical risk factors, work-related health risks, working time, intensity of labor, balance between labor and leisure, intrinsic rewards, the psychology of working conditions related to the integration of human or social resources at work, and hence satisfaction with working conditions.

### 5.1. Physical risk factors

Many variables of physical risk factors can be analyzed according to three main dimensions: ergonomic risks, environmental risks and risks of chemical, biological and radiation exposure. A total of five variables of ergonomic risks are defined by exposure to: painful or tiring positions during work, transporting or shifting heavy weights, standing or walking at work, repetitive movements of hands and arms; vibration from hand tools or machinery.

Table 7

Physical risk exposure, by work organization class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Ergonomic risks					
- Tiring or painful positions (half of the time or more)	18.8	36.3	47.3	23.4	29.6
- Carrying or moving heavy loads (half of the time or more)	12.0	29.8	30.4	17.8	21.1
- Standing or walking (half of the time or more)	42.4	63.5	70.3	53.2	55.0
- Repetitive hand or arm movements (half of the time or more)	39.6	62.4	75.3	47.6	53.7
- Vibrations from hand tools, machinery, etc (half of the time or more)	11.1	33.6	43.0	10.6	23.0
Ambient risks					
- Noise so loud that you would have to raise your voice to talk to people (half of the time or more)	13.6	37.4	47.3	15.9	26.7
- High temperatures which make you perspire even when not working (half of the time or more)	9.0	26.0	31.9	11.6	18.3
- Low temperatures whether indoors or outdoors (half of the time or more)	7.4	19.0	16.2	11.2	12.7
Chemical, biological and radiation risks					
- Breathing in smoke, fumes, powder or dust (quarter of the time or more)	13.6	35.4	34.9	15.4	23.6
- Breathing in vapours such as solvents and thinners (quarter of the time or more)	7.0	20.6	19.3	8.7	13.2
- Handling or being in skin contact with chemical products or substances (quarter of the time or more)	8.4	22.4	19.8	9.1	14.3
- Radiation such as X-rays, radioactive radiation, welding light, laser beams (any exposure)	12.4	24.6	14.7	8.8	15.4
- Handling or being in direct contact with materials which can be infectious (any exposure)	12.7	24.7	19.5	13.2	17.2

Source: EWCS (European Working Conditions Survey), 2010.

The most common environmental risks are: exposure to loud noise, high and low temperatures. Meanwhile, five variables for chemical, biological and radiological exposure are focused on: breathing fumes or dust, breathing steams, such as solvents or diluents, skin contact while handling chemicals or substances, radiation, such as



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X-rays, radioactive radiation, welding light or laser beams, as well as handling potentially infectious materials, such as waste, body fluids or laboratory material.

The presentation of these physical risks, depending on the type of work organization, is briefly presented in Table 7.

## **5.2. Work-related health or safety risks**

More than a quarter of employees believe that their work poses a risk to their health or safety. This perception varies considerably depending on the forms of labor organization, as shown in Table 8.

Health or safety are considered to be endangered because of work by more than one person in three in “taylorist” forms (37%) and in forms of “macro-production” (36%), while fewer employees - approximately one in five - share this fear in forms of “discretionary learning” (18%) or “simple and traditional structures” (21%), according to Table 8.

*Table 8*

**Health or safety risks, by work organization class (%)**

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Health or safety thought to be at risk because of the work	18.0	35.8	37.2	21.2	26.8

**Source:** EWCS (European Working Conditions Survey), 2010.

## **5.3. Working time**

The notion of working time is analyzed according to three main dimensions: the standard working hours, non-standard working hours and flexible working hours. Specifically, two variables of standard-long hours are defined as: for more than 48 hours per week and more than 10 hours per day, more than five days per month. In addition, the study considers five different non-standard working hours: night work, more than five times per month, evening work, more than five times per month, work on Saturday, once or several times per month, work on Sunday, once or several times per month, and work in shifts. Finally, the three variables for flexible working hours are examined as: the flexibility of daily working time, which means a different number of hours each day, flexible weekly working hours, meaning a different number of working days each week, and flexible working hours, so that the schedule does not begin or end at fixed hours.

Despite the downward tendency of working hours observed in the EU, employees still report overtime work (Table 9). The prevalence of long working hours

clearly varies by type of organization at work. Long working hours are most common in forms of work organization of "lean production" and at a medium level in forms of "discretionary learning" - although appearing less frequently in "taylorist" and "traditional or simple" forms.

Table 9

**Working time, by work organization class (%)**

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
<b>Long working hours</b>					
- Long weekly hours (> 48 hours a week)	10.9	12.6	5.6	6.8	9.6
- Long daily hours (> 5 days a month)	13.5	16.4	8.1	9.3	12.5
<b>Non-standard working hours</b>					
- Night work (> 5 nights a month)	5.7	12.6	18.5	11.3	10.9
- Evening work (> 5 evenings a month)	22.0	27.7	33.2	21.7	25.6
- Saturday work (>= 1 Saturday a month)	37.6	53.0	48.1	48.3	45.3
- Sunday work (>= 1 Sunday a month)	20.2	25.0	22.7	23.4	22.4
- Shift work	12.4	27.5	35.2	18.7	21.8
<b>Flexible working hours</b>					
- Different number of hours every day	40.7	35.6	26.3	30.0	34.8
- Different number of days every week	20.6	23.2	20.3	23.2	21.6
- Flexible working schedules	38.3	33.3	20.8	29.4	32.2

**Source:** EWCS (European Working Conditions Survey), 2010.

#### 5.4. Intensity of work

The study defines three variables of work intensity as perceived by employees: working at great speed all or most of the time, working to tight deadlines, all or most of the time, and almost never or rarely have enough time to perform their work tasks. Since the constraint variables of work rates are used to build the typology of forms of organization and work, they are related to subjective variables of labor intensity and it is not surprising to observe the relations between the forms of labor organization and the level of subjective variables related to work intensity.

Table 10 shows a high incidence of working at high speeds or tight deadlines, as well as having insufficient time to complete tasks; this experience is much more common in the forms of "lean production" and in "taylorist" forms. Here, the constraints on the work pace are higher than in the form of "discretionary learning" and "traditional or simple structure" forms. Although working at high speed is more common in "taylorist" forms than in forms of "macro-production", the opposite is observed with regard to working to tight deadlines or do not have enough time to complete their tasks.



Table 10

**Intensity of work, by work organization class (%)**

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Working at very high speed (all or almost all of the time)	18.5	39.5	46.0	16.4	28.9
Working to tight deadlines (all or almost all of the time)	26.3	47.7	45.5	17.1	34.0
Almost never or rarely enough time to get the job done	10.8	18.5	15.7	7.8	13.2

**Source:** EWCS (European Working Conditions Survey), 2010.

### 5.5. Work–life balance

The perception of employees on work-life balance differs, depending on the form of organization of the workplace. The proportion of those who say that, in general, their working hours fit very well or well the needs of their families and social commitments outside the program is particularly high in the form of organization of “discretionary learning” and “traditional or simple structure” forms. This rate is lower than the average in the forms of organization of “lean production”, however, the lowest is in the “taylorist” form - according with Table 11.

Table 11

**Work-life balance, by work organization class(%)**

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Very well perceived	36.0	30.2	21.7	31.8	31.0
Well perceived	48.5	45.6	51.3	51.5	48.8
Well or very well perceived	84.5	75.8	73.0	83.3	79.8

**Source:** EWCS (European Working Conditions Survey), 2010.

### 5.6. Intrinsic motivation

This section explores the relations between the forms of labor organization and certain job skills that are often considered to be intrinsically motivating. The basic distinction between intrinsic and extrinsic motivation in work: extrinsic motivation is driven by the goal to obtain rewards separable from the activity itself, such as income or power, while intrinsic motivation can be defined as a desire to perform an activity for its own inherent satisfaction. In this approach, it was assumed that if intrinsic motivation is maintained, an activity must enhance both the competence and autonomy of human resource on the labor market. Therefore, a considerable amount of empirical work in psychology has focused explicitly on issues of autonomy and control, in terms of motivation.

Specialized literature supports the contention that a higher satisfaction at work and a strong commitment of the employee working within the economic organization is achieved by offering intrinsic rewards associated with socio-economic practices, such as job flexibility, teamwork, problem solving groups and ensuring a minimal hierarchical status.

A number of questions that can be used to capture the intrinsic motivation for quality of work are listed in Table 12, where it shows the proportion of employees in each form of organization who answered “almost always or often” on the special quality. If the question refers to growth opportunities, the required response is “strongly agree or agree with this statement”.

However, there may be some doubt whether the indicator “intelligence-work demands” grasps an intrinsically motivating quality. If the job is too demanding intellectually – perhaps because of inadequate education or training – then it may generate stress and low sense of self.

Table 12

**Intrinsic rewards, by work organization class (%)**

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
At work, you have the opportunity to do what you do best (almost always or often)	73.1	64.7	40.2	52.8	61.2
Your job gives you the feeling of work well done (almost always or often)	85.8	83.0	61.5	66.4	77.2
You are able to apply your own ideas in your work (almost always or often)	66.1	57.4	21.8	33.9	50.0
You have the feeling of doing useful work (almost always or often)	85.6	82.5	60.3	63.2	76.2
You find your job intellectually demanding (almost always or often)	59.7	57.8	22.6	26.2	46.5
At work, you have opportunities to learn and grow (strongly agree or agree)	63.3	59.2	28.4	33.0	50.5

**Source:** EWCS (European Working Conditions Survey), 2010.

The results show that, in all cases, the percentage of employees reporting high levels of intrinsic motivation at work is higher in the form of “discretionary learning” than other forms of work organization. The lowest levels of intrinsic motivation appear in the “taylorist” form.

### **5.7. Psychological working conditions related to HRM or social integration at work**

These psychological working conditions vary in the forms of work organization. The feeling of job insecurity is more obvious in the “taylorist” forms and the forms of “lean production” than the “discretionary learning” forms. This result is

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strongly linked to the distribution of fixed-term or temporary contracts in these forms of labor organization. Likewise, the perception of poorly paid work is highest in “taylorist” forms, and lowest in “discretionary learning” forms. Poor prospects for career advancement are also highest in the “taylorist” forms and lower in “discretionary learning” forms.

The quality of social integration in the company - measured by the feeling of “being like home” within the organization - is lowest in the “taylorist” forms and greater in “discretionary learning” forms. However, when it comes to friendship in the workplace as a measure of quality of social integration, there are no significant differences between the four forms of labor organization.

### **5.8. Satisfaction with working conditions**

The impact of the form of labor organization on job satisfaction is very challenged the business and economic literature. As noted in the section on intrinsic rewards, many researchers have claimed that intrinsic rewards associated with high business performance result in higher satisfaction at work. However, the aforementioned point of view was not without its detractors, who claimed that performance gains usually come mainly from work intensification and that the dominant effect on employees is the increasing job insecurity and stress at work.

Moreover, job satisfaction is multi-dimensional, depending not only on intrinsic rewards, but also by the full range of operating conditions discussed above - including physical risk factors, health and safety factors, working hours, work-life balance, psychological balance and working conditions other than those related to intrinsic motivation. Satisfaction is also influenced by human resource management policies, as well as absolute and relative payment levels. Also, a significant differences between different forms of labor organization concerning job satisfaction appear, so the proportion of employees who are satisfied or very satisfied with working conditions in their main job vary between forms of organization, being highest in “discretionary learning” forms and higher in forms of “lean production” compared to “taylorist” forms.

“Traditional or simple structure” forms have a ranking between “discretionary learning” and “lean production” forms.

## **6. Scientific research results – findings, conclusions and implications**

*Forms of labor organization of "discretionary learning" type are clearly characterized by a higher quality of labor and employment compared to other forms of labor organization. Almost all indicators of quality of labor and employment are much more favorable for “discretionary learning” forms compared to “taylorist” forms. The reverse situation can be seen only in relation to some indicators of working time – flexible hours and daily working hours. It is true that in some areas of*

investigation, labor organization forms of “lean manufacturing” indicators are superior to organizational forms of “discretionary learning”, but overall, the superiority of the latter is quite obvious.

Thus, in the dissemination of new forms of labor organization, it is important to give greater importance to the “discretionary learning” forms in order to improve the quality of labor and employment.

In the organization level in Romania one must invest more in continuous training and in research development, based on the idea that well trained people and innovation represent the organization’s path to long term success. In Romania there is a risk of short-term action, aiming mainly at material advantages, however, organizations must be aware that only by investing in people can they cope fast with the global change and competition. The key to future company leadership is to develop an independent point of view about tomorrow's opportunities and build capabilities that exploit them. (Aceleanu Mirela Ionela, 2011)

The main political implication of this report is that more attention should be paid to economic and social impact generated by forms of labor organization.

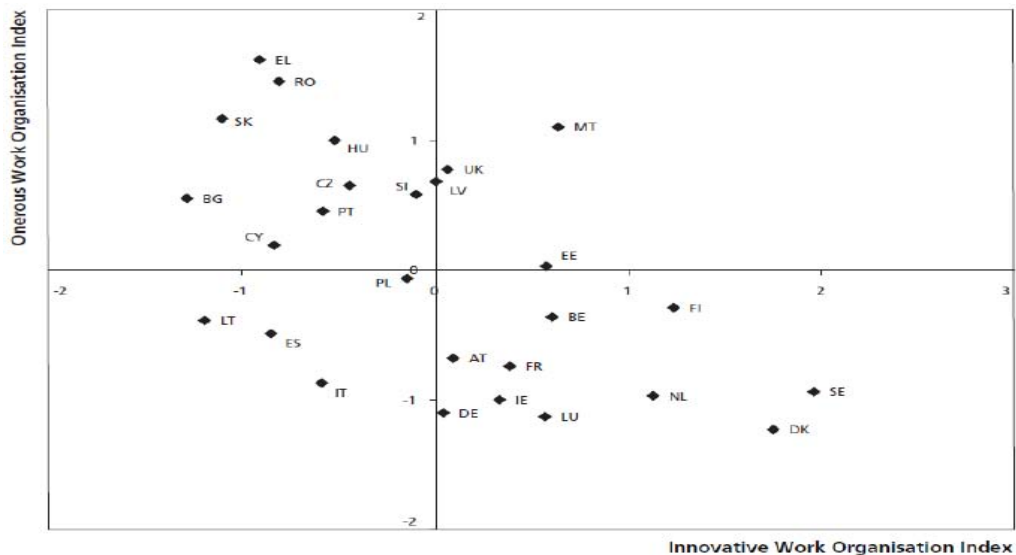
In particular, the results presented show that for the EU-27, systemic linkages occur between the forms of labor organization adopted and the quality of jobs, including working conditions, health and safety. More specifically, the results show that adopting some forms of labor organization of “discretionary learning” leads to better working conditions, meaning less intensive labor, less exposure to physical risks, less non-standard working hours, a better work-life balance and a lower level of work-related health problems. The results also indicate that forms of labor organization of “discretionary learning” are associated with greater perceived intrinsic rewards in the workplace, better working conditions, psychologically related to HRM policies, social integration at work and higher levels of employee satisfaction with working conditions. Aggregated results presented in this report demonstrate that there is a positive relation between the frequency of adopting forms of labor organization of “discretionary learning” and different indicators of job quality. The results also show that the frequency of adopting “discretionary learning” forms varies considerably between Member States.

The construction of indicators for analysis would require harmonized data at a company level that could be used to analyze the relation between adopting various forms of labor organization and the relevant characteristics of the unit structure and strategy, including strategic policies in developing new products and technological innovations. Such an exercise would be useful to explore future opportunities in order to develop a series of indicators for the various dimensions of quality of labor that could be used for political information in a complementary manner to indicators of innovative forms of labor organization.

Quality of labor and employment are not only affected by the innovation and labor organization, but also by demanding labor, in terms of pace and time. Thus, it is worth examining the relation between the innovation index and the index of onerous labor - relation proposed by Burchell et al. (2008), in the Eurofound report “Working hours and Labor intensity”. The index is constructed based on measures of labor

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intensity, standard working hours and non-standard working hours. Graphic presentation of this relation gives a current overview - highly suggestive in terms of the organization of labor in various EU-27 Member States, targeting the two key elements mentioned above.



Source: Eurofound report "Working hours and Labor intensity".

Figure 1. Innovative and Onerous Work Organization Indexes

As the results show, a variety of configurations occur in the territory of EU Member States; the following groups can be distinguished:

- Scandinavian countries, along with Denmark, the Netherlands and part of Belgium are distinguished by combining high levels of innovation in labor organization with a low level of onerous labor.
- Two groups of countries with moderate levels of innovation in labor organization can be identified by the level of onerous labor: continental countries and Ireland with a low level of onerous labor, United Kingdom, Malta and some of the new Member States with high levels of onerous labor.
- Similarly, countries with low levels of innovation in labor organization can be divided into two groups: some Mediterranean countries such as Italy and Spain, characterized by low levels of onerous labor, the majority of new Eastern European member states, as well as Greece and Portugal, characterized by high levels of onerous labor.

The variety of configurations observed in all EU Member States clearly shows that there is no necessary connection between innovative forms of organizing labor and how onerous it is. An adequate explanation for this diversity would require an

investigation of all national institutional arrangements that also includes how the labor market impacts the regulations regarding working time.

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**INDICATORS OF MIGRATION  
AND THEIR RELEVANCE  
TO EMPLOYMENT AND QUALITY  
OF LIFE ANALYSIS.  
ROMANIA'S SITUATION**

**Abstract.** *Migration is influenced by globalization and by the development of research and innovation factors. Knowledge and analysis of the indicators concerning migration are very important in terms of long-term effects on the human potential of the country on employment and quality of life.*

*This paper presents the implications of migration economically and socially, starting from the analysis of the causes of migration, of the evolution of the permanent and temporary migration and ending up with the analysis of its effects on the labour market and quality of life in Romania.*

**Keywords:** migration, quality of life, labour market, employment.

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## 1. Introduction

The labour migration problem is largely reflected in the socio-economic and political literature, including in the Romanian one.

The implications of labour migration are major at a society. Whether we talk about permanent migration, either about temporary migration, there are both economic and social effects on the long run, at an economy level.

The migration analysis assumes a special importance if analyzed in the context of the current demographic trends. The demographic aging trend recorded in our country, which causes a decrease among the working population, is completed by increased migration, which emphasizes the losses of labour. Thus, there may be imbalances through skills shortages in certain areas. Surely, we cannot say that immigration should be stopped, especially in the conditions of free movement of persons at the European level, but we have to analyze the causes of migration, especially those categories of persons who emigrate - according to age, after training, education, according to job, according to the country of destination, so that we can observe and possibly influence the reduction of labour market imbalances.

There is a close correlation between the migration analysis and the quality of life analysis, because there may be two-way effects between them. On the one hand, a low quality of life leads individuals to emigrate, temporarily or permanently. On the other hand, emigration to more developed areas can improve the quality of life for some individuals.

The relationship between migration and development is a recent and promising study area although there is no general agreement on the main conclusions of the literature. Some scholars share the view that the migration would increase the quality of life of the families or the communities involved, reducing the extent, the depth and the severity of poverty and providing opportunities for better education and health. This, it is argued, would increase the support for democracy and market economy in these countries. Others suggest that we deal here only short-term effects. The brain drain, the fiscal losses, and the lack of the internal pressure towards democratization and development would have long term negative effects on the sending countries' quality of life.

In the specialty literature, in the quality of life analysis are used both *economic indicators*, which quantify the economic conditions of welfare, *social indicators*, which quantify the social conditions of welfare, and *indicators of quality of life*, dealing with people's subjective reactions to the economic and social processes and phenomena. The migration indicators are included in the indicators concerning population, together with natural movement, demographic structure, national and ethnic groups.

Studies on the quality of working life take into account dozens of indicators on the work conditions, nature and content, working time, labour relations, organization, leadership, material rewards and other benefits, labour results and satisfaction.



Knowledge and analysis of indicators concerning migration are of particular importance for Romania in the context of the current demographic trends, with major implications for employment and quality of life. Thus, it is justified an analysis of the causes and effects of this phenomenon, taking into account the indicators calculated by the specialized agencies with the limits imposed by the lack of complete records of those who emigrate, as well as taking into account the opportunities won by Romania from the EU.

## **2. Brief history of worldwide migration**

The most significant period recorded for the population migration was the century after 1815. During this period, about 60 million people left Europe to settle in America, Southern and Eastern Africa. A number of 10 million people voluntarily migrated from Russia to Central Asia and Siberia. Almost 12 million Chinese and 6 million Japanese left their homeland and emigrated in South East Asia.

Between the two world wars, international migration declined suddenly, mainly due to the unfavourable economic conditions, but also as a result of the restrictive immigration policies imposed by the destination countries, especially by the U.S.

An increase in the international migration began in the post-war period, especially involving the USA and Europe. This was the period of relative growth of migration from the developing countries to the developed ones and of emergence of the phenomenon called “guest workers”. In the decades 1970 and 1980 the global trends favoured the controlled movements of the temporary workers, immigrants' access was limited to those highly skilled, or those whose families were already living in the country of destination.

Globalization, trade liberalization and economic integration encouraged labour mobility. Also, this trend is supported by the gap in terms of living standards between the rich and poor countries.

This new wave of emigration was partly the product of decolonization, of the emergence of new independent states and state policies that encouraged or forced people to move. The process was also the result of modernization and technological development, such as the improvement in transport and communications.

In addition, as the economic growth from the West stimulated migration in the nineteenth century, the economic development in the non-Western societies stimulated emigration in the twentieth century. Emigration becomes a process of self-wealthy.

According to World Migration Report – 2010, there are far more international migrants in the world today than ever previously recorded, and their number has increased rapidly in the last few decades. There were an estimated 214 million international migrants in the world in 2010, representing an increase of almost 40 million in the first decade of the 21st century, and over double the number of international migrants in 1980.

This globalization of international migration involves a wider diversity of ethnic and cultural groups than ever before; there is a growing proportion of women as primary migrants; more or less permanent or settlement migration has increasingly

been replaced by temporary and circular migration; and, although the economic crisis may have temporarily slowed the growth of migration outflows, the underlying causes of this globalization of migration, such as demographic, labour market and environmental factors, remain.

The anticipated accentuation of the global mismatch of labour supply and demand places pressures on destination and origin countries to develop the capacity to effectively assess foreign labour demand while protecting the domestic labour force, regulate admissions, and ensure migrant workers' rights. It will increase the need to train migrants, strengthen and implement bilateral or other labour mobility agreements, and develop capacities for return and reintegration.

Bilateral labour mobility agreements have been identified as a promising mechanism for ensuring that the potential benefits of migration accrue both to origin and destination countries, as well as to migrants themselves. There has been a significant increase in bilateral agreements in recent years. The reason that increasing numbers of countries are signing bilateral labour agreements is that they offer an effective method of regulating the recruitment and employment of foreign workers; they allow for greater state involvement in the migration process; they can be tailored to the specific supply and demand characteristics of the origin and destination countries; and they can provide effective mechanisms for protecting the migrants.

Some countries use bilateral agreements to manage migration by asking origin countries to sign, in exchange, re-admission agreements for migrants in an irregular situation. This is the case for agreements signed between Italy and Romania, and between Spain and Morocco. Some countries may wish to promote specific economic ties or wider regional economic integration, as is the case for bilateral agreements signed between Germany and some Central and Eastern European countries.

Governments are expecting an increase of labour mobility and pursue the implementation of certain policies through which to be able to reduce illegal and abusive migration. The objective of the international community in relation to migration refers to migration management so that to obtain benefits both at an individual level (migrants) and at a departure and arrival societies level.

### **3. Causes and motivations of migration**

Between the international labour market and the global capital market there are specific relationships of interdependence. As a rule, the economically developed countries export capital and labour from the less developed countries is moving towards them. Thus, the tendency to concentrate capital in the developed countries leads to a part of the labour in the underdeveloped and developing countries to emigrate to the developed ones. Of course, these flows and especially their meanings cannot be explained solely by economic reasons, but also by social and psychological causes.

*In Romania's case, the main cause of migration is the existence of economic disparities between Romania and the economically developed countries. These gaps determine individuals to seek better paid jobs in the hope of obtaining higher earnings.*

### Indicators of migration and their relevance to employment and quality

By the territorial mobility of labour, the labour market responds to the supply of more jobs in areas with higher economic growth.

On the other hand, the communication system (media, Internet) highlights the *standards and attractive ways of life for different population groups*. The development of information technologies allows the transmission of information between employer and future employee, without the need for their physical meeting. (Bădescu, 2005)

For the labour receiving countries among the causes could be the demographic imbalance explained by the changes occurring in the fragile balance between birth rate and mortality, which is closely linked to the economic development.

But, these countries aim in particular to attract *cheap workforce*, especially for heavy work, little searched by the members of their society, or a *highly trained workforce*, which is a good investment in their future.

The inclination towards moving abroad to work is influenced by the *individual features of the person who migrates*, the characteristics of the origin area, destination area and distance.

The most important individual factors to explain the availability to migrate relate to *age, marital status and education*. As a rule, young people are more likely to leave than older people, men compared to women, the married compared to unmarried persons, persons with higher qualifications compared to unskilled ones.

The characteristics of the departure and arrival area also influence the individuals' tendency towards mobility, where we may notice their attraction by rich areas with jobs and business opportunities with high salaries. The size of the area is a significant factor because those who seek a job outside the country believe that they have higher chances of employment in large urban centres.

#### Motivation for Migration

	Push factors	Pull factors
Economic and demographic	Poverty Unemployment Low wages High fertility rates Lack of basic health and education	Prospects of higher wages Potential for improved standard of living Personal or professional development
Political	Conflict, insecurity, violence Poor governance Corruption Human rights abuses	Safety and security Political freedom
Social and cultural	Discrimination based on ethnicity, gender, religion, and the like	Family reunification Ethnic (diaspora migration) homeland Freedom from discrimination

Source: World Bank, [www.worldbank.org](http://www.worldbank.org)

*Figure 1*

On the other hand, the characteristics of the departure area are also important. In Romania many *industrial restructurings* and also the existence of *subsistence agriculture* have raised unemployment and have made the restructured people to seek

a job abroad. The emergence of the current economic crisis has led to a slight decrease in migration as a result of the instability in finding a job in the countries of destination.

*The distance* is also important in deciding whether to work abroad or not. But, not necessary the *geographical distance* is important, but especially the *social distance*, this referring to the obstacles that stand in front of the person moving to work abroad, obstacles that appear in the social process of their adaptation to the new area or place. Government policy also has an important role in tax, in social protection measures for the unemployed, for the conduct of firms in terms of the policy to promote the employees.

According to World Bank studies, the motivations for migration may be stylistically described as combinations of social, ethnic and politically related push and pull factors.

Thus, Push factors are those that cause the migrations and Pull factors are the factors of attraction for immigrants.

#### **4. The analysis of some indicators relating to migration in Romania**

Issues relating to employment and effectiveness of the active population in Romania are outlined and sized, usually without taking into account that part of the workforce that worked and it is still working abroad. In fact, the indicators for the efficiency and employment of the active population of our country calculated by specialized agencies are significantly lower because they are calculated by taking into account only the persons employed within the country.

On the other hand, the information on the number of people who are in temporary migration is not well known, migration indicators refer to permanent migration.

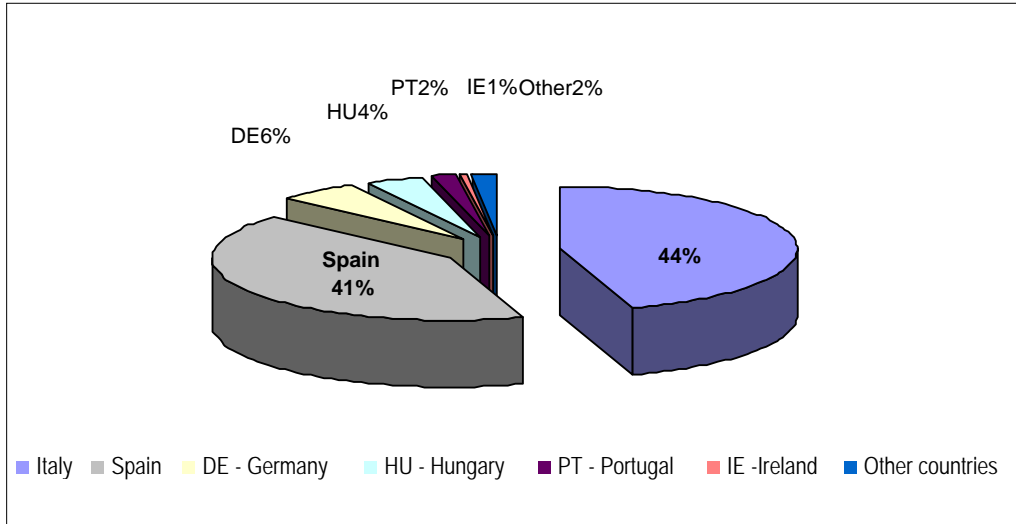
At the EU level, immigration to EU Member States down by 6 % and emigration up by 13 % in 2008. In 2008 EU Member States received nearly two million migrants of other EU nationalities.

Among them Romanians ranked first, followed by Poles and Germans (note that these migrants were not necessarily previously residing in their country of citizenship).

If returning nationals are excluded from the analysis, Romanians still rank first, followed by Poles and Bulgarians. EU Member States received 384 000 citizens of Romania, 266 000 citizens of Poland and 91 000 citizens of Bulgaria.

World Bank identified top 10 migration corridors in Europe and Central Asia. Romania appears in the last two corridors: Romania-Italy and Romania-Spain. The graph above, presenting the distribution of Romanian citizens in Europe, is also explaining this situation by the number of Romanian citizens living in Spain and Italy. Spain and Italy own more than 85% of total Romanian citizens living in other country than Romania.

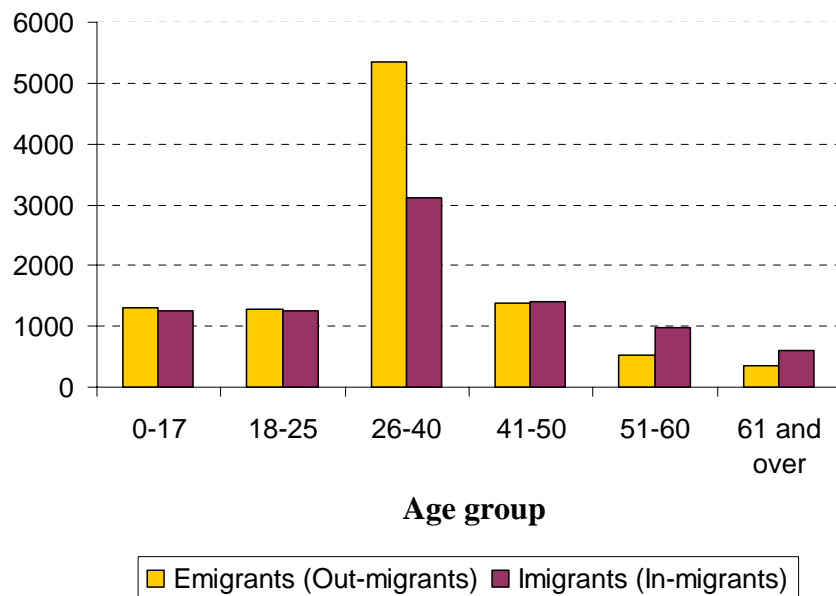
According to the National Institute of Statistics in 2009 the number of emigrants was 1.2 times greater than the number of immigrants; the external migration balance was negative.



Source: Eurostat Statistics, migr\_pop1ctz

Figure 2. Distribution of Romanian Citizens in Europe in 2010

Regarding the gender distribution, women emigrate more (63%), while men immigrate more than women (60,2%).



Source: International Migration, 2009, NIS, Romania.

Figure 3. International migration by age groups, in 2009

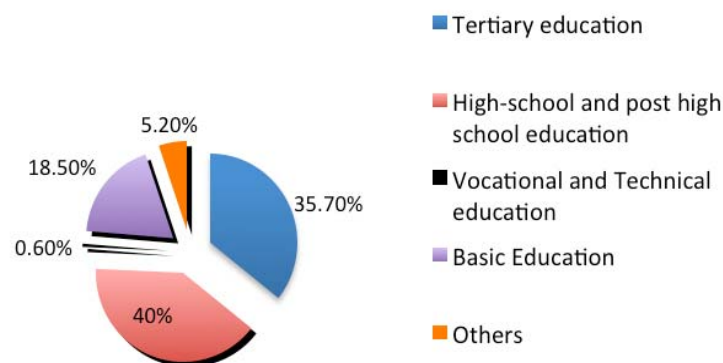
It is noted a large number of emigrants in the age category 26-40 years, since this is the final migration which highlights the imbalances created in the labour market and in education, in that the investments made in workforce training are not found in the labour market in Romania.

Most people who emigrated permanently (in 2009) belong to the working age category, especially young people and young families. Most of these are higher education graduates, mainly those aged between 30 and 40 years (31%). The destination countries are the EU countries in particular, but also Canada and the U.S.

The chart below shows the situation of the emigrants in 2009 by level of education. It is noted that the largest share of the emigration belongs to the secondary and university graduates. This aspect can create some imbalances in the labour market in Romania, on the long run, because of the deepening shortage of specialists in certain fields. (Aceleanu, 2011)

Analyzing migration on development regions it is noted that South-Muntenia Region records the lowest number of immigrants and emigrants per 1,000 inhabitants and the largest number of emigrants and immigrants are located in the Bucharest-Ilfov Region.

**Emigrants by levels of education, in 2009**



**Source:** The National Institute of Statistics, Romania, [www.insse.ro](http://www.insse.ro)

In terms of immigrants by country of destination, there is an important part of people migrating to Romania from countries such as Moldavia, Italy, China, Germany. If in the case of emigrants a high percentage have the well trained people, the highly skilled persons, in the case of immigrants there is a high percentage of low skilled persons. It is thus very important to know the ratio between emigrants – immigrants in terms of their qualifications. In Romania's case the well trained workforce leaves and especially those with low skill level come, who need training under certain conditions.

Regarding the number of Romanians who left to work abroad (temporary migration), officials do not have complete data. In fact, neither the Ministry of

Administration, the Ministry of Labor, Social Solidarity and Family nor the National Statistics Institute have developed appropriate methodologies to track the process and cannot provide general information in this area. As a result, in the Romanian media there are spread very different data on to extent of shift of Romanians in search by jobs abroad, especially in the European Union countries.

Thus, between 8% and 10% of Romanians, aged 15-64 years there are gone to work abroad, namely some 2.7 million people. In this respect, the sociologist Dumitru Sandu outlined three directions of action that must follow Romania in the field of migration, namely: policies that are focused on working abroad, on immigration and policies regarding migration and development being necessary a thinking of the problem of migration on regional development. Professor Dumitru Sandu believes that "Romania lacks the connection between migration policy and development policy. There is, in Romania, the deficit in three directions, namely normative, vision and data deficit." (Dumitru, 2010).

### **5. Effects of migration and its implications on employment and quality of life**

From an economic perspective, the difference in gross value added created, on average, by a person employed outside the country compared to the one created by a person employed in Romania expresses the short term benefit of those who go to work out and, implicitly, of their families.

This advantage, however, must be judged taking into consideration other economic, demographic, political, national - community factors and circumstances watched/seen both on short, medium and especially long time horizons.

*A particular problem of contemporary Romania*, which seems to get worse, is population aging, with its corollary of the relationship between those who work and those who have exceeded the legal age for working, the relationship between employees and pensioners. As it is known, *in 1989, there were four employees at each pensioner*, so that *at present* there is a situation where *there is less than one employee for each retired employee*.

From another point for view, in most cases *people who work abroad do not contribute to improve the situation shown above*. Those employed persons' contributions to social insurance fund, health and pensions are very small, these contributions are paid only by those left to work through the Office for Labour Migration.

In the last years the migration of young people and Romanian specialists has grown, due to imbalances in the labour market in Romania. Thus those who migrate look for better living conditions and real possibilities for professional affirmation.

The highly qualified specialists are attracted by the most developed countries. The emigration countries are the least developed countries that offer less chance for professional development for the professionals already trained in the most dynamic fields of science and technology. Thus, some specialists trained here with great

financial efforts emigrate to countries with lower per capita income although these countries have a shortage of specialists in all the fields.

The amplification of emigration of young skilled people (brain drain) has a significant impact on employment in our country. Basically, Romania invests in training these young people, but the labour market in Romania does no longer benefit from this investment because many of these young people do not return to work in Romania.

If we take into account the large number of those who leave to work abroad temporarily we observe two categories of effects. In terms of the revenue collected by the Romanians went to work abroad, this is a positive phenomenon, but in the long term negative effects can occur in terms of local development delay. As a result of the current economic crisis, the number of those went abroad and the money sent by them in the country record a decline. According to a study conducted by the Migration Policy Institute, as a result of the current crisis, the number of those leaving to work abroad has reduced. The immigrant workers are more exposed to losing their work than local workers, because they often work in industries most exposed to the consequences of recession, namely constructions and hotels. For this reason, the money sent by Romanians working abroad to their families has reduced. Most money sent by the workers abroad to their families is intended for current expenses such as rent, food, clothing, which does not contribute to investment, which would support a healthy growth and development.

In the EU, *each country faces demographic and employment problems that they seek to resolve in line with its general interests.*

Some countries have to face outside the state and extra-European immigration pressure. In all this demographic flux, the segment that most concern the authorities and the general public is that of the illegal entries of workforce, with all the consequences they imply.

Other EU countries, in particular the least developed ones, have reached the situation of losing large contingents of young and trained workforce, above the national average.

*In some cases it was a depopulation of certain geographical areas and an acute shortage of workforce, in the socio-economic sectors of great community interest and of long perspective. Romania is in this latter category of such countries.* The legal and illegal departures to work abroad amount to several million people. It is important the net loss of population plus the potential loss of population through the deficit migration. This loss of population through emigration is also a loss of potential GDP and of budget revenue with a propagation effect.

The results of the recent surveys among students in the last years of study recorded an even stronger trend of young intellectuals to leave the country. Many graduates are not attracted by jobs offered by the Romanian market, either because of low wages, but also because they are not given opportunities for career.

This may be the effect of a low correlation between the educational programs and the qualifications required on the labour market. At this time substantial information is missing about the degree of saturation in certain skills or regarding the



dynamics of certain occupations. That is why for many young people specialization almost does not matter on labour market, because very few manage to get hired in the graduated studies profile. The average job search period for young people in the area where they are trained takes about three years and it lasts more, according to the years of study. In our country jobs with few qualifications are still offered and so those with long time training hardly find a job in the graduated field.

Correlated with trends already evident in the dynamics of the demographic processes, with the prospect of Romania's population decline over the coming decades up to 16 million people, the population emigration and movement to work abroad are required to adopt a new national strategy for the management of the demographic and occupational problems in our country.

The atypical situation in Romania consists of the decrease in population reduction dimension and of the migration phenomenon, especially considering the lack of reliable statistical information about this phenomenon. In addition, the future external migration is unpredictable today, being directly dependent on Romania's economic and social development and on the immigration policies of the developed countries.

Over time the effects felt as a result of the population decline will consist of specific economic issues, on the one hand, on labour shortages and on the other hand, on insufficient economic resources necessary to support *the elderly*. A small number of children today means that in the future we will have less taxpayers and lower income or higher taxes. If a pensioner in the year 1990 was supported by 2.7 employed persons, in 2006 a pensioner is supported by only 1.30 persons, so that in 2050 an adult to pay for pensions and benefits of 9 people.

Regarding the link between migration and quality of life, the question arises if we can connect migration with the determination of the conditions of life or with the chance of personal success. In our country there is an imbalance in the individual-society balance, meaning that the individual is not reflected in the society and the society is not interested in the individual.

Therefore, in addition to the measures to increase the adaptability of labour to the market needs on the long-run - which can be achieved through investment in human resources development, on a lifelong learning strategy, but also by combating structural unemployment – by applying active measures for the persons affected by it, such as developing programs for career counselling, training by qualification and retraining, work practices and by supporting long-term unemployed persons, solutions should be sought to maintain the country's skilled labour force, by economic and financial levers and by other immaterial incentives.

In the new context of globalization and, in particular of the economic crisis, the need for recalibration occurred from institutional and legislative point of view. Thus, we should consider a new reform of economic policies, of great importance in this respect are the priorities for labor market reform. (Angelescu, Chenic, 2011)

**In conclusion**, Romania should develop a strategy aimed at improving the entire working population, which also targets people who left to work abroad. The purpose of this strategy should be to stimulate the active population (especially those

well-trained) to remain in the country or return to the country when many young people tend to leave the country. The investment in people by increasing employment training, retraining and reorientation depending on the existing and anticipated demand on the labour market has an important role in the development of our country, but it is also important the correlation of the strategies regarding migration with demographic, educational, health, social and economic policies and strategies. Certainly Romania's economic development and the improved quality of life in Romania are prerequisite for the permanent migration transformation in the temporary, return migration.

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**Abstract.** *In recent years more and more attention is paid to the labour markets efficient functioning as a key input for ensuring sustainable economic growth. Governments seek to develop competitive and adaptable labour markets capable to sustain high levels of employment and attractive conditions for setting up businesses and jobs creation. The aim of this paper is to present a methodology appropriate to be used in order to analyze the relationships established on the labour market between labour demand and labour supply, to asses the causes of imbalances, especially from the point of view of the matching process, and to present the indicators that quantify the impact of driving factors on these imbalances.*

**Keywords:** labour market, flows, imbalances, matching process, labour market indexes.

## **A QUANTITATIVE APPROACH OF THE LABOUR MARKET IMBALANCES**

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## 1. Introduction

Nowadays, it is widely recognized that facing recent economic downturn consequences involves more than ever investments in skills. This process has become more complicated in the current economic context when companies are looking not only for knowledge and skills but also for aptitudes to apply them effectively (Frey et al 2009).

At the European Union level, as a whole, active economic policies are thought in order to modernize labour market, namely to improve the quality of the workforce and increase its adaptability to the new economic and social conditions.

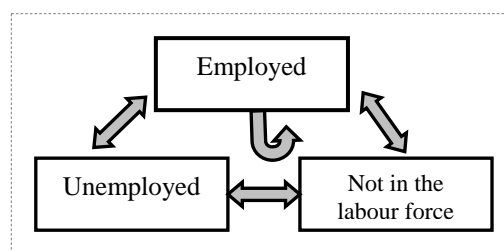
In these circumstances, researchers are called to find the most effective ways to analyze the relationships established in the labour market, to identify the causes of imbalances and quantify the impact of determinant factors, to develop tools for anticipating future trends.

The aim of this paper is to analyze the relationships established on the labour market, to assess the causes of imbalances, especially from the point of view of matching process, and to present the indicators that can be used in order to quantify the impact of driving factors on these imbalances.

The next section focuses on the relationships between supply and demand on the labour market and how matching function can be applied in order to measure the frictions that can appear between the two components. Section 3 is devoted to the presentation of the main indicators of the labour market imbalances starting from the Beveridge curve model. Sections 4 and 5 tackle the problem of specific indicators and indexes that are often used to evaluate labour market imbalances at regional or national level. Main conclusions are subject to section 6.

## 2. Matching function and key movements on the labour market

Among the three main categories of people on the labour market (employed, unemployed, not in the labour force) there can be seven types of movements (Figure 1).



Source: [www.quickmba.com/econ/macro/unemployment](http://www.quickmba.com/econ/macro/unemployment)

*Figure 1. Model of labour force movement*

The category of movements, largely documented in the literature dedicated to labour market functioning, refers to the **workers flow between employment and unemployment**. In depth analysis of these flows is justified mainly in the current

economic context as it was demonstrated that ‘recessions are typically characterized by a sharp, short-lived increase in the inflow rate of workers from employment into unemployment and a large, prolonged decline in the outflow rate of workers from unemployment into employment (Rogerson and Shimer, 2010).

Starting from the simplest version of the Mortensen and Pissarides search and matching model (which assumes fixed labour force, a recursive structure and an outflow rate depending on preferences, technology and the state of the economy and not directly on actual unemployment or employment) the authors mention above provide us with a procedure for measuring unemployment inflow and outflow<sup>1</sup>.

Following the work of Shimer (2007) they show that, under the assumption that outflow rate is constant during the period analysed (a month, in this model), in continuous time models the probability that an unemployed finds at least a job during that period is given by the formula<sup>2</sup>:

$$F_t \equiv 1 - e^{-f(t)} \quad (1)$$

Under the same assumptions, the probability that an employed loses at least one job during a month can be computed starting from a similar formula:

$$X_t \equiv 1 - e^{-x(t)} \quad (2)$$

In the paper *The definition of a job and the flow approach to the labour market; a sensitive analysis for the Netherlands*, Bruil et al (2010) tackle the same problem of labour market flows but from the point of view of labour demand, i.e. **job creation and destruction** (Figure 2).

In their model, flows of workers are represented by hires (H) and separations (S). Vacancy inflow (VI) is given by the sum of newly created vacancies (VI<sub>n</sub>) and those arising from the separation of workers (VI<sub>s</sub>):

$$VI = VI_n + VI_s \quad (3)$$

$$VI_s = \mu \times S_{\geq 1}, \quad (4)$$

---

<sup>1</sup> The inflow rate  $x(t)$  is defined as the rate at which a worker exits employment and enters unemployment category while outflow rate  $f(t)$  is the rate at which he exits unemployment through finding a job.

<sup>2</sup> The general formula for the job finding probability, i.e. the probability that a worker finds a job within the month that he starts as unemployed is:

$$F_t = 1 - \frac{u_{t+1} - u_{t+1}^{<1}}{u_t}, \text{ where } u_t \text{ and } u_{t+1} \text{ are the number of unemployed in the month } t,$$

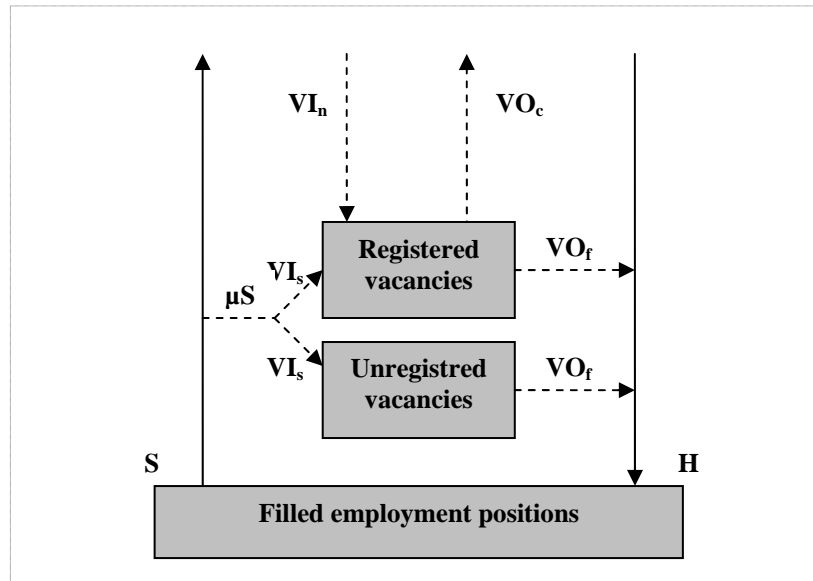
respectively  $t+1$  and  $u_{t+1}^{<1}$  is the number of workers unemployed for less than one month. The numerator gives the number of workers unemployed more than one month in month  $t+1$  and dividing it by  $u_t$  reflects the share of workers who could not find a job during the month  $t$  (Rogerson and Shimer, 2010).

where  $\mu$  is the fraction of separated workers that is been replaced and  $S_{\geq 1}$  the number of separations from jobs lasting  $\geq$  than 1 year.

$$VI_n = VI - \mu \times S_{\geq 1} . \quad (5)$$

The vacancy outflow is formed by the vacancies that are filled ( $VO_f$ ) and those cancelled ( $VO_c$ ):

$$VO = VO_f + VO_c \quad (6)$$



**Source:** Bruil A. et al (2010) The definition of a job and the flow approach to the labour market; a sensitive analysis for the Netherlands, *Discussion Paper*, Heerlen.

Figure 2. Jobs flow

As proven before, relationships that establish on the labour market between labour supply and labour demand are often very complex. On top of that, especially during recessions, movements between the main categories of participants in these relationships tend to be more intense and, as many scientists have pointed out, often, the decline in the chances to find a job is more important than the increase of the probability to exit employment (Rogerson and Shimer, 2010).

In this context, it is highly understandable way, nowadays, more and more researchers use matching functions in order to explain fluctuations in the job finding probability.

Even since 2001, Pissarides has emphasized the importance of matching function for modelling the factors that create frictions in the labour market: “a well-behaved function that gives the number of jobs formed at any moment in time in terms

### A quantitative approach of the labour market imbalances

of the number of workers looking for jobs, the number of firms looking for workers, and a small number of other variables”.

The probability for an unemployed to find a job is given by the number of new matches created during time  $t$  (which is a function of unemployment  $u_t$  and vacancies  $v_t$ ) divided by the number of unemployed:

$$F_t = \frac{m(u_t, v_t)}{u} \quad (7)$$

The ratio  $\theta_t \equiv \frac{v_t}{u_t}$  is known as “labour market tightness”, in fact the vacancies number for each unemployed. Starting from the assumption that the matching function has constant returns to scale, the probability that an unemployed finds a job into a time unit is  $F_t = f(\theta_t)$ , named transition probability or hazard rate.

The basic model for describing the relationships established in the labour market between job seekers and those who offer jobs is a Cobb-Douglas type function, which can be formalized in a log-linear form as:

$$\ln M_t = \mu + \alpha \ln J_t + \beta \ln V_t + \varepsilon_t, \quad (8)$$

where  $M_t$  is the number of vacancies that were filled during period  $t$ ,  $J_t$  the number of people seeking employment registered at the beginning of period  $t$ ,  $V_t$  the number of vacancies at beginning of period  $t$ .

Parameter  $\mu$  was interpreted as an indicator of the efficiency of the matching process in the labour market, his level indicating a greater or a less intensity of the process at a given level of those who seek for employment and job vacancies (Robson, 2006).

But different studies have included in the model a whole range of other variables available at the national or regional level. They emphasize, one more time, the complex nature of the relationships established on the labour market between labour force supply and demand and the intensity of the flows between these categories (Tabel 1).

Table 1

**Matching Model's variables**

Indicators	Explanations
<b>Dependent variable</b>	
<ul style="list-style-type: none"> <li>▪ unemployment outflow or unemployment rate</li> <li>▪ vacancy outflow or vacancy rate</li> </ul>	<p><i>Unemployment outflow</i> gives the number of unemployed that exists this state usually by finding a job during a given period of time.</p> <p><i>Unemployment rate</i> = (Number of unemployed persons<sup>3</sup>/Total number of employed and unemployed)*100</p>

<sup>3</sup>An *unemployed* person is defined by EUROSTAT, according to the guidelines of the International Labour Organization, as: 1. someone aged 15 to 74 (in Italy, Spain, the United

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Indicators	Explanations
<ul style="list-style-type: none"> <li>all new hires</li> <li>hires from unemployment</li> </ul>	<p><i>Vacancy outflow</i> gives the number of vacancies that were filled or cancelled during a certain period of time.</p> <p><i>Job vacancy rate</i><sup>4</sup> = Number of job vacancies/(Number of occupied posts + Number of job vacancies)*100</p>
<b>Independent variables</b>	
<p>1. Job seekers</p> <ul style="list-style-type: none"> <li>unemployed or unemployment rate</li> <li>short and long term unemployment<sup>5</sup></li> <li>unemployment stock or unemployment inflow</li> </ul>	<p>Long term unemployment rate = <i>Long-term unemployed</i><sup>6</sup> (12 months and more)/ Total number of active population*100</p> <p><i>Unemployment inflow</i> gives the number of workers that exit employment for unemployment. It is often computed as a product of the exogenous exit rate from employment into unemployment (separation rate) and employment.</p>
<p>2. Job vacancies</p> <ul style="list-style-type: none"> <li>vacancies or vacancy rate</li> <li>help-wanted index</li> <li>vacancy stock or vacancy inflow</li> </ul>	<p><i>Help-wanted index</i> is the U.S. job market index, published monthly by the Conference Board that monitors the number of help wanted advertisements in major newspapers across the country. The help wanted index, is an indicator of strength or weakness in the national labour markets, by providing information on how many positions need to be filled (www.investopedia.com).</p> <p><i>Vacancy inflow</i> gives the number of jobs formed during a given period of time (newly created vacancies and those arising from the separation of workers)</p>

**Source:** Author processing based on Petrongolo, B.; Pissarides, C.A. (2001) „Looking into the black box: A survey of the matching function”, *Journal of Economic Literature*, vol. 39, pp. 390-431.

Kingdom, Iceland, Norway: 16 to 74 years), without work during the reference week; 2. available to start work within the next two weeks (or has already found a job to start within the next three months); 3. actively having sought employment at some time during the last four weeks.

<sup>4</sup>EUROSTAT defines a *job vacancy* as a post, either newly created, unoccupied or about to become vacant, which the employer actively seeks to fill with a suitable candidate from outside the enterprise, including any further necessary steps, immediately or in the near future. An *occupied post* is a post within an organization to which an employee has been assigned.

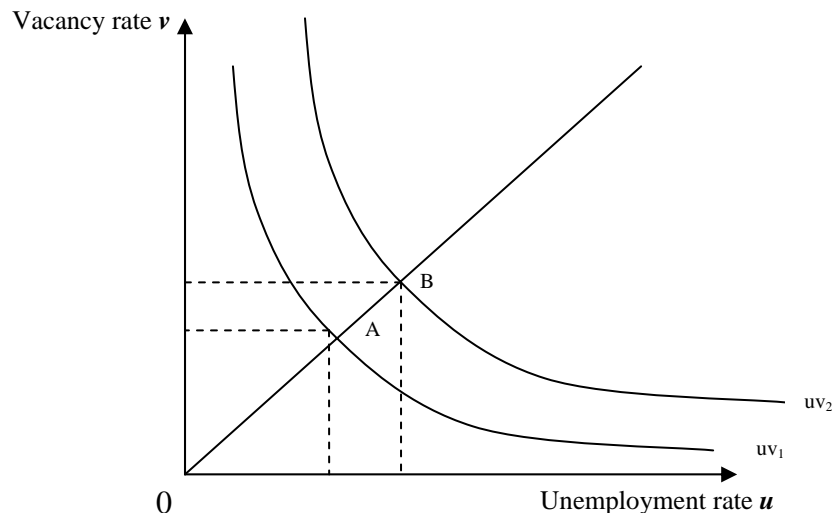
<sup>5</sup> For the EU-27 and all member states, short term unemployment refers to a duration of unemployment of less than a month, medium term unemployment to one to six months, and long term unemployment to six months and more. For the US, short term unemployment refers to a duration of up to five weeks, medium term unemployment to five to 26 weeks and long term unemployment to 27 weeks or more.

<sup>6</sup> EUROSTAT defines *long-term unemployed (12 months and more)* those persons that are aged at least 15 years not living in collective households who are without work within the next two weeks, are available to start work within the next two weeks and who are seeking work (have actively sought employment at some time during the previous four weeks or are not seeking a job because they have already found a job to start later).



### 3. Beveridge curve and main indicators explaining labour market imbalances

A steady-state condition for unemployment i.e. unemployment inflows equal unemployment outflows is known as Beveridge curve (Figure 3).



**Source:** CEDEFOP and ILO (2010) *Skills for green jobs, European synthesis report*, Luxembourg: Publications Office of the European Union, 2010.

Figure 3. **Beveridge curve**

Beveridge curve depicts the negative relationship between unemployment and vacancies and can be a useful tool for assessing the effectiveness of labour market functioning and the main factors influencing the relationships on this market.

The factors which are responsible for movements along a fixed Beveridge curve are represented by cyclical shocks in the economy, while movements to the right or to the left are the result of the structural factors which affect the compatibility between vacancies and unemployed persons.

In fact, the curve position in space may indicate the labour market imbalances. A position near to the origin indicates that there are lower unbalances and greater compatibility between the unemployed people and job vacancies while moving to the right is a sign of lack of compatibility (Table 2).

Table 2

**Variables influencing Beveridge curve position (unemployment rate)**

Name	The expected impact on the labour market (unemployment)
<i>Composition of labour force and unemployment</i>	
<ul style="list-style-type: none"> <li>▪ Employment structure by fields of activity</li> <li>▪ Female share in labour force</li> <li>▪ Young share in labour force</li> <li>▪ Part time employment</li> <li>▪ Female unemployment</li> <li>▪ Youth unemployment</li> <li>▪ Long term unemployment</li> </ul>	<p>The impact of <i>economic structure</i> differs depending on the share of each type of activity. For the most vulnerable groups of people (e.g. young) agriculture is considered a buffer against unemployment (Perugini and Signorelli, 2010 citing Boeri, 2000 and Voicu, 2002). At the same time, more specialized or high-skilled activities may coexist with high youth and long term unemployment rates.</p> <p>The <i>share of female and young people in the labour force</i> is expected to have a negative effect on the matching process, they being considered less attached to their workplaces.</p> <p><i>Part-time employment</i> is said to reduce unemployment, especially for vulnerable groups but some recent studies have emphasized the negative impact of this type of jobs in ensuring labour force with high skills by investing in activities of training.</p> <p><i>Long-term unemployment</i> is negatively related to the efficient functioning of the labour market, both because unemployed people do not longer involve themselves so heavily in seeking a job, becoming discouraged and because over time, their qualifications tend not to be suitable to the current demand.</p> <p><i>The share of the female and young people in the total number of unemployed people</i> are estimated to have an effect of increasing the efficiency of the labour market functioning, considering the willingness of these groups to accept other types of jobs (e.g. part-time or contacts on determined period).</p>
<i>Institutional factors</i>	
<ul style="list-style-type: none"> <li>▪ Expenditures in labour market policies</li> <li>▪ Employment protection legislation</li> <li>▪ Labour union density</li> <li>▪ Minimum wage law</li> <li>▪ The size of unemployment benefits</li> <li>▪ Tax wedge on labour costs<sup>7</sup></li> <li>▪</li> </ul>	<p><i>Expenditures in labour market policies</i> are expected to improve the efficiency of the labour market as they are targeted towards creating or increasing unemployed people skills in order to match the requirements of the available jobs.</p> <p><i>The strictness of employment protection legislation</i> is a factor of maintaining a high level of unemployment due to the fact that the process of firing is usually more difficult and so is the chance of unemployed to be hired.</p> <p><i>Labour union density</i> as well as the existence of a minimum wage law is expected to increase unemployment by influencing the level of wages which will be higher than in free market conditions.</p> <p><i>The unemployment benefit system</i> is expected to influence the</p>

<sup>7</sup> EUROSTAT defines tax wedge on labour costs as an indicator that provides information on the proportion of income tax on gross wage earnings plus the employee's and the employer's social security contributions compared to the total labour costs of the earner (gross earnings plus the employer's social security contributions plus payroll taxes).

### A quantitative approach of the labour market imbalances

Name	The expected impact on the labour market (unemployment)
	equilibrium level of unemployment from many perspectives: level, coverage, the length of time of their availability, eligible categories and the limits in which the system functions (Nickell, Nunziata, Ochel și Quintini, 2002). Taking into account its significance, <i>tax wedge on labour costs indicator</i> has a direct influence on labour market performances contributing to the increase in unemployment by lowering the net pays. Also, Perugini and Signorelli (2010) pointed out to the differentiated effects with respect to gender groups, females being more affected.
<i>Structural shocks</i>	
▪ Productivity growth	One of the productivity measures expected to have a positive impact on unemployment (i.e. reducing it) is <i>total factor productivity</i> (TFP). The latter expresses the impact of intangible elements that allow capital and labour force factors to increase their productivity. Increases in TFP result usually from technological innovations or other types of improvements (Bouvet, 2009).
<i>Business cycle</i>	
▪ Output gap	<i>Output gap</i> is computed as the difference between real GDP and potential GDP. A positive output gap is expected to reduce labour market imbalances by conducting to unemployment decrease as the economy is at a point when can sustain job creation.

**Source:** Author processing based on already mention empirical literature.

## 4. Measuring efficiency of matching process at regional level

Many studies on the efficiency of matching or the probability that unemployed workers find a job have focused on the particular features of this process at regions level.

It is expected, for example, that heterogeneous distribution of unemployed within a region reduce workers chances to find a job.

In addition, migration between or within regions has a complex influence on matching process: a large number of immigrants reduce local unemployed chances to find a job, but from the demand for labour force perspective it increases the efficiency of the process by which local vacancies are filled. In exchange, emigration has the reverse effects.

In some countries the main factor influencing the efficiency of matching process proved to be new entry workers on the regional labour market. They represent a very active category of people and play an important role in increasing competitiveness of the whole region.

Other factors that proved to have a significant influence especially at regional and local level are: sectoral shifts in unemployment, regional specialization, population density, spatial spillovers (Table 3).

Table 3

### Factors influencing regional matching process

Variables	Indicators	Interpretation
<ul style="list-style-type: none"> <li>Sectoral shifts in employment</li> </ul>	Lilien Index: $LILIEN_t = \left[ \sum_{i=1}^N \left( \frac{x_{it}}{X_t} \right) (\Delta \log x_{it} - \Delta \log X_t)^2 \right]^{1/2}$	The process by which unemployed people find a job is more difficult when it is made the transition from one economic sector to another because of the discrepancies that exist between offered and required skills.
<ul style="list-style-type: none"> <li>Regional specialization</li> </ul>	The coefficient of absolute regional specialization: $CARS = \frac{\left[ \sum_{i=1}^N (x_i - \bar{x}_i)^2 / (n-1) \right]^{1/2}}{\bar{x}_i}$ The coefficient of relative regional specialization: $CRRS = \frac{\left[ \sum_{i=1}^N \left\{ (x_i / x_{iT}) - \sum (x_i / x_{iT}) / N \right\}^2 / (N-1) \right]^{1/2}}{\left[ \sum (x_i / x_{iT}) / N \right]}$	Regional specialization is expected to produce a positive effect on the matching process because it encourages the formation of a workforce with a specific qualification, which is assumed to be adapted to the needs of employers in a certain region.
<ul style="list-style-type: none"> <li>Population density</li> </ul>	$DENSITY_j = \frac{population_j}{squared\_km_j}$	Population density might exert a positive impact on matching process because in dense regions (with a large number of workers and firms per squared km) search process would be easier and faster.
<ul style="list-style-type: none"> <li>Spatial spill-overs</li> </ul>	Neighbouring variables measure external effects of job seekers and vacancies in neighbouring areas:	It is expected that spill-over effects to have a negative

### A quantitative approach of the labour market imbalances

Variables	Indicators	Interpretation
	$U_{t-1}^* \equiv WU_{t-1}$ and $V_{t-1}^* \equiv WV_{t-1}$ , where $W$ is a contiguity matrix and the neighbouring variables are weighted averages of the variable values at neighbouring locations.	impact on matching process. Job seekers could produce congestion in the neighbouring labour market.

**Source:** Author processing based on: Ahtonen, S-M. (2004) *Matching across space: evidence from Finland*, 44th European Congress of the European Regional Science Association Portugal 25th -29th August and Robson M. (2006) 'Sectoral shifts, employment specialization and the efficiency of matching: an analysis using UK regional data', *Regional Studies*, vol. 40.7, pp. 743-754.

## 5. Labour market indexes

International institutions and scientists interested in benchmarking countries or regions' performances usually compute aggregate indicators. The main advantage of these indexes is the fact that they allow both the multidimensional approach of the studied phenomenon and a facile interpretation of the results.

The process of building an aggregate indicator is a complex approach, which involves going through several stages: formulating a conceptual framework, selection of indicators, initial data processing, computing and assessment of the overall index. During this process, it is recommended to consult specialists and combine several types of methods (both statistical and econometrical) in order to select the relevant indicators, determine the right weighting schemes, test the index quality and use it to guide decision-making and policy development.

An example of analyzing labour market performances through an aggregate indicator is the LMFI (Labour Market Flexibility Index) proposed by Lawson and Bierhanzl (2004). Even though, generally speaking, it can be difficult to capture in a single measure all the complexity of the relationships established in the labour market, the authors mentioned above point out to the importance of such a type of indicator. Constructing this index may be useful for several reasons:

- allows measuring the global impact of various factors related to labour market policies;
- reflects the complexity of both the labour market and labour market regulations;
- can emphasize the importance of a range of reforms in different areas;
- helps to identify broad institutional trends;
- can allow formulating broader conclusions related to the state of the economy.

LMFI was constructed for the OECD countries as a simple average of five components: top marginal tax rate, impact of minimum wage, hiring and firing practices, labour force share with wages set by centralized collective bargaining and unemployment insurance.

All the components were scored on a 0 to 10 scale and high ratings were obtained by countries with low marginal tax rates, a low minimum wage, a high degree of flexibility in hiring and firing, a small amount of centralized collective bargaining and a low unemployment benefits.

In 2000, among the 72 states for which LMFI was constructed, Hong Kong (7.7 points) and Singapore (7.3 points) proved to be the countries with the most flexible labour markets. Somehow surprisingly, Romania scored 6.8 points in this ranking, an overall index higher than United States (6.6), but without available data for unemployment insurance.

With a more complex approach of the same problem i.e. measuring labour market flexibility, David Tinsley, Berr and Vassilis Monastiriotis (2007) propose an Index of Labour Market Adaptability (ILMA) for the United Kingdom for the period 1992 to 2005.

According to the authors, ILMA seeks to quantify in a single indicator the key characteristics of a flexible and adaptable labour market and their evolutions over time.

The index was constructed starting from an outcome-oriented approach in which flexibility is measured according to three broad domains: production, labour costs and labour supply. Computing the global index was a three-stage process of aggregation:

1. Aggregation of the standardized base-indicators into sub-domains at time  $t$ :

$$S_{jt} = \frac{1}{N_i} \sum \frac{M_{it} - M_{i \min}}{M_{i \max} - M_{i \min}}, \quad (9)$$

where  $N_i$  is the number of base indicators under sub-domain  $S_{jt}$  and

$M_{it} = \frac{B_{it}}{\mu_b \times (1 - \mu_b)}$  is the standardized measure of the base-indicator  $B_{it}$  having the mean  $\mu_b$ .

2. Aggregation of the three sub-domains into domains at time  $t$ :

$$D_{kt} = \frac{1}{3} \times \sum S_{jt} \quad (10)$$

3. Aggregation of the three domains into the overall index at time  $t$ :

$$ILMA = \frac{1}{3} \times \sum D_{kt} \quad (11)$$

Even though the ILMA model as it is can not be applied in Romania's case because many of the indicators are not available, methodological approach is well documented. The authors have taken into consideration the problems that can emerge from changes in the composition of sectors and occupations. Also some of the base-indicators have been adjusted in order to control for the influence of the business cycle.

The sensitivity analysis of ILMA to the inclusion or exclusion of some relevant measures consisted in introducing in turn in each sub-domain a new elemental indicator whose values were randomly generated.

Yet, there are some limitations related to the relevance of these types of indexes concerning the factors available to be taken into consideration, methods for computing them and the weight accorded to each of the components.

## **6. Conclusions**

The aim of this paper was to investigate models and indicators that are most widely used to assess labour market imbalances.

Relationships established on the labour market between the main categories of participants are very complex and their analysis could be sometimes a difficult task. A very useful instrument that can be used to overcome these difficulties is matching function or its graphical representation, Beveridge curve.

The large body of research devoted to labour market imbalances has used these models and found a large variety of factors that can influence matching process or unemployment. Another category of studies tried to reduce the number of these factors and computed aggregate indicators, very useful for policy decisions orientation.

Each of these methods come with advantages and drawbacks, but is at scientist decision to choose between them, function of the research purpose.

## **Acknowledgement**

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- [www.investopedia.com](http://www.investopedia.com)



**Abstract.** *The quality of life is a relatively new concept emerged from the need for a better understanding the complexity of human action from the perspective of its ends: prosperity, welfare, and wellbeing, as concepts transcending mere economic meaning and define a much more complex state of the individual. We all know that nowadays, knowledge is the driving force in the rapidly changing globalised economy and society. Quantity and quality of highly specialized human resources determine their competence in the global market, thus determining even their income.*

*It is now well recognized that the growth of the global economy has increased opportunities for those countries with good levels of education and vice versa. In the same time, education seems to be one of the main issues of growing the prosperity and well-being of a nation, but also the quality of life of individuals. Starting from such aspects, this paper aims to emphasize the relation existing between education and the quality of life.*

**Keywords:** education, quality of life, prosperity, challenges.

## **THE IMPACT OF CONTEMPORARY EDUCATION ON QUALITY OF LIFE IN ROMANIA**

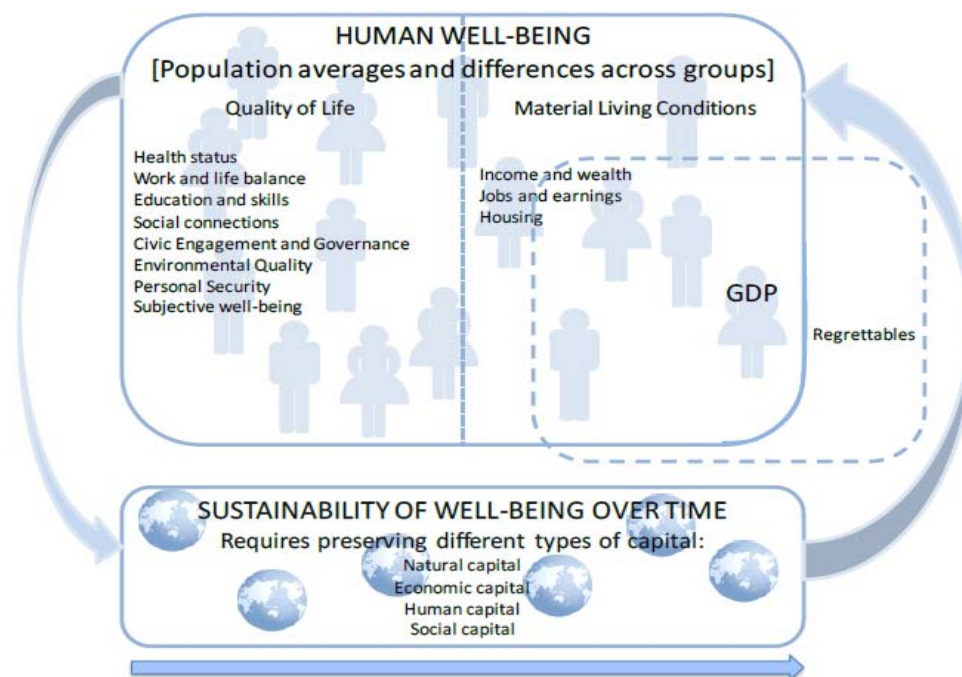
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## 1. Introduction

The global economic environment has changed dramatically in recent years. The 2008-2010 financial and economic crisis underscored the increased complexity and interconnectedness of today's world, the on-going central importance of growth and employment, as well as the need for more effective regulation of the financial sector and enhanced co-operation to address common concerns. Nowadays, the mobility of capital, technology, and people is increasing rapidly. New economic powers have emerged and integrated into the world economy, leading to global shifts in growth, wealth, and influence. Challenges related to still too high unemployment, public-sector debt levels, and generating sustainable balanced growth around the world in this new context have brought into the light the importance of studying *the human well-being*. Thus, according to OECD, the human well-being means making a clear distinction between material living conditions and quality of life, on the one hand, and the conditions required to ensure their sustainability over time, on the other (see the figure below).



Source: OECD, 2011, p.22.

Figure 1. Human well-being according to OECD

Starting from the OECD specialists' point of view, one may observe that material living conditions determine people's consumption possibilities and their command over resources. Quality of life, defined as the set of non-monetary attributes of individuals, shapes their opportunities and life chances, and has intrinsic value under different cultures and contexts (OECD, 2011, p.23). Sustainability depends on how current human activities impact on the stocks of different types of capital (natural, economic, human and social).

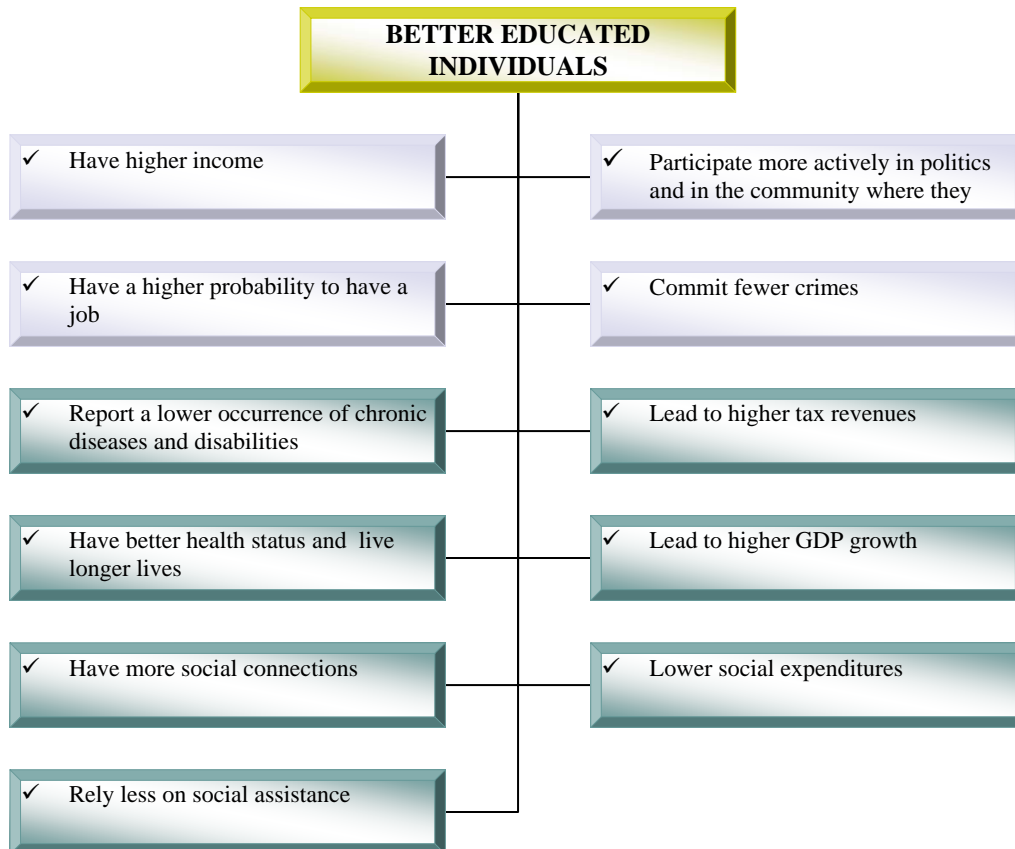
One may easily observe that among the mentioned elements, the quality of life is the most difficult area in what concerns the economic measurement. This is even the conclusion of various reports and specialists which deal with this concept. This paper is going to show the importance of education among the other factors that influence the quality of life.

A long tradition of economic research has stressed the importance of education in providing the skills and competencies that underpin economic production and not only.

As argued by Adam Smith, the father of economics, the role of education and skills acquisition for the quality of life is distinct from its contribution to economic output. This implies that the neglect of education for a boy who is put to work at an early age has important non-economic consequences: *"When he is grown up he has no ideas with which he can amuse himself."* Smith also noted that the lack of education deprives people from participating in religious activities and can lead to *"riot and debauchery"* (Stiglitz, Sen, Fitoussi, 2009, p.165).

The fact is that education itself is a major factor when talking about the past of the society, but especially when we think about its future. It is related not only to human economic well-being, but also it shows that our evolution as individuals and as a society is inextricably linked to its history: *"The main factor of evolution, as individual, or as its children on the social scale is represented by education. Ignorance leads only to hard work, uncomfortable, boring and often, to not work at all. The improvement comes once with education and only with it; there is nothing without education and the only plausible last appeal is to crime and violence. It may be possible that people on the lower social level get the best education, as they are in great need of means to allow them to climb, to get rid of ignorance"*(Galbraith, 1997, p. 67).

While the available evidence does not always allow conclusions about the directionality of causation between education and other dimensions of quality of life, there is a consensus that education brings a range of returns (monetary and non-monetary) that benefit both the person investing in the education and the community in which they live (Stiglitz, Sen, Fitoussi, 2009, p.46), as shown in the following figure.



**Source:** OECD, 2011, p.24 and Stiglitz, Sen, Fitoussi, 2009, p. 46.

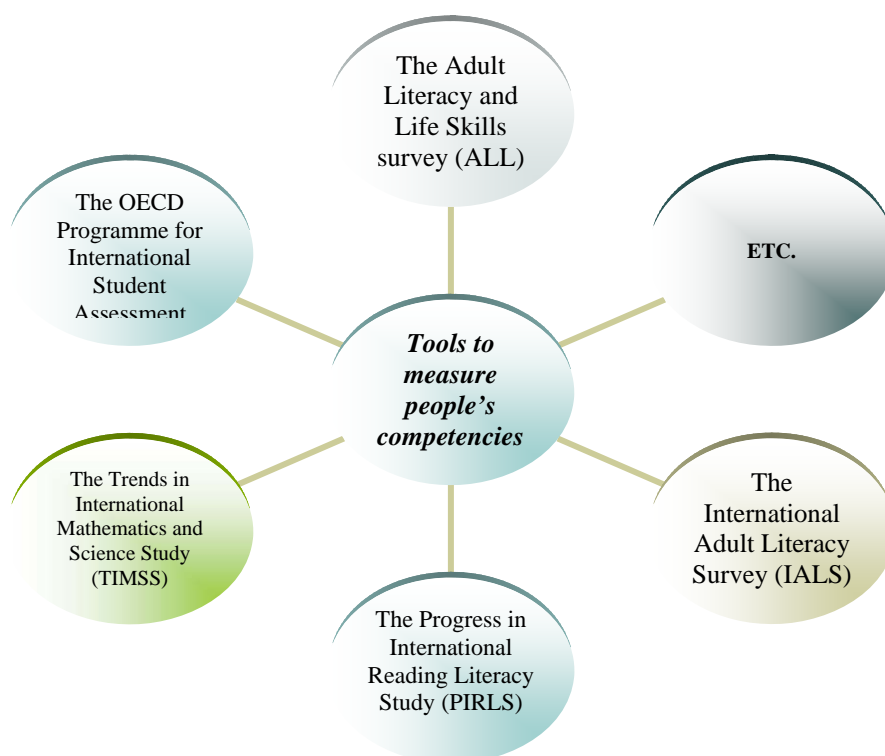
*Figure 2. Education and quality of life*

Evidence indicates that individuals who attended school for longer, or who achieved higher educational qualifications, are more likely to report greater subjective well-being, to participate more actively in society and to enjoy better health. Here is only an example in this sense: specialists discovered that in European countries, the mortality rates of less-educated men are, on average, 50% higher than those of more-educated men, while the difference is 30% for women (see Mackenbach, 2006). Education also has an important influence on the access to health care, at least for some categories of services (van Doorslaer *et al.*, 2004). Groot and Maasen van den Brink (2007) calculate the value of health improvements due to education as equivalent to between 15% and 60% of the financial returns to education (Stiglitz, Sen, Fitoussi, 2009, p. 166).

While the available research does not always allow determining whether the relation between education and the other dimensions of quality of life is “causal”, the

existence of an educational “gradient” is in itself an important finding that warrants attention.

At the global level, some institutions developed during time a series of indicators for assessing the role of education for quality of life. Usually, this kind of indicators measure people’s competencies. Among such tools that have been developed in recent years one may find several, such as:



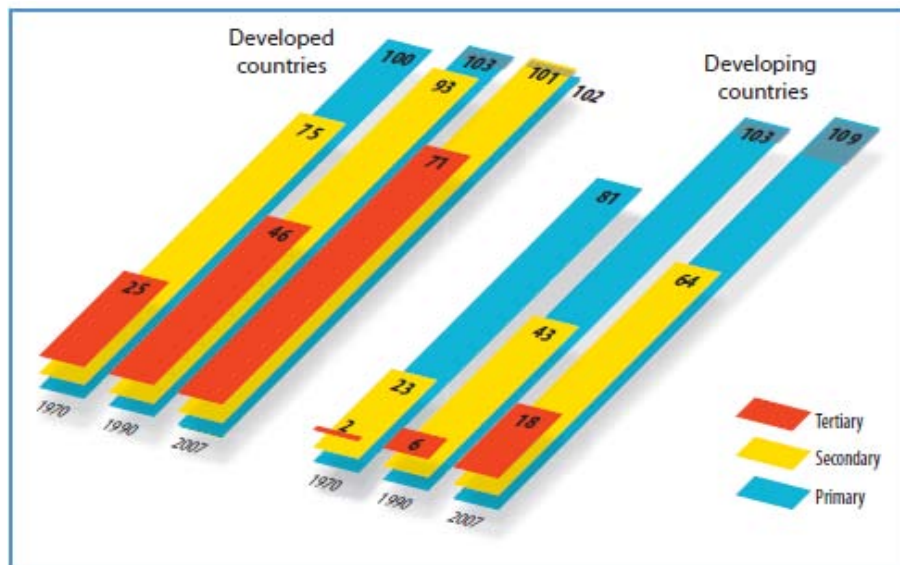
*Figure 3. Some tools to measure people’s competencies*

## **2. Education in the world**

During time, people have understood that their only mean to achieve better living conditions was expanding the educational system. Knowledge is the key driving for the development. Thus, starting from Antiquity, people were preoccupied in the way they educated the children, as the education was the one who helped in designing the future of the state. If in the Antiquity, the education was considered in some parts an attribute of the wealthy people, a luxury, in the Middle Age, it started to be considered a mean to expand the religious dogma and in the modern age, it became a

needed factor of the „industrial” man. Thus, step by step, the education became one of the most important factors of development and, of course, of the well-being of individuals.

It is now obvious that at the global level, people have much higher levels of education than ever before. For instance, an average person age 15 or older in 1960 had fewer than 4 years of schooling - by 2010 this number had doubled globally and more than tripled in developing countries (from 1.9 years to 6.4) (UNDP, 2010, p. 36). Education has been extended to many more people: since 1960 the proportion of people who attended school has risen from 57 percent to 85 percent (UNDP, 2010, p. 36).



Source: United Nations Development Programme (UNDP), 2010.

**Figure 4. Gross enrolment ratios by level of schooling around the world for 1970 – 2007**

At the global level, no matter if speaking about developed or developing countries, one may observe that even the enrolment ratios and expected years of schooling grow up. Average world enrolment ratios are now 100 percent or higher for primary education in both developed and developing countries, and both groups have made substantial strides in higher levels of education as well - though developing countries still have large gaps to close. Not only are more children going to school, but more of those who go are finishing: primary completion rates have risen from 84 percent to 94 percent since 1991. Increased enrolment is reflected in expected years of schooling, which has risen from 9 years in 1980 to 11 years today (UNDP, 2010, p. 38)

In what concerns the secondary education, in the present, the large majority of the adult population in OECD countries holds at least an upper secondary education degree. This proportion is above 90% in Czech Republic, but is below 35% in Portugal, Turkey and Mexico. The share of the adult population who has reached at least upper-secondary education has increased by around 9 percentage points in the OECD as a whole over the past ten years, with larger increases in Ireland, Spain, Hungary and Korea and small declines in Denmark (OECD, 2011).

When speaking about the higher education level, one may observe that at the global level, the number of students has increased during the years. At the level of the EU, the progress is more than visible. The pressures in higher education systems have been caused by the growth in numbers of institutions due to the inexorable increase in participation rates (and the demand for this is to continue in the context of the knowledge economy).

Since 1970 the number of students has risen from 550 million to more than 1 billion in the developed and developing countries around the World, and the number of teachers has raised even faster (UNDP, 2010, p.38). In what concerns the European Union (EU27) in 2008, the number of students in tertiary education stood at nearly 19 million. This indicator is high especially in regions such as: Praha (Czech Republic), Wien (Austria), Lisboa (Portugal), Bucureşti - Ilfov (Romania), Bratislavskykraj (Slovakia), Brussels, Brabant Wallon and Oost-Vlaanderen (Belgium), Zahodna Slovenija (Slovenia), Hovedstaden (the region surrounding the capital Kobenhavn in Denmark), Ovre Norrland (Sweden), Groningen (the Netherlands), Małopolskie (Poland), Kozep-Magyarország (Hungary), Oslo og Akershus and Trondelag (Norway), regions in the centre of Italy and most of Greece and Finland, because most of these regions are in fact around capital cities (Eurostat, 2010, p. 36). However, there is still plenty of room for improvement.

Usually, expanded schooling is associated with increased public funding. Thus, public spending on education averaged 5.1 percent of GDP in 2006, up from 3.9 percent of GDP in 1970 (UNDP, 2010, p. 39). But disparities in spending are still enormous and in the same time, we know that higher spending and enrolment do not necessarily mean better schooling. The gaps in school quality are still huge. In general, children in developing countries learn far less than children schooled for the same number of years in developed countries. Children at the same education level in developing countries as their counterparts in developed countries score on average about 20 percent lower on standardized tests - about a three-grade difference (UNDP, 2010, p. 39). Also, the educational outcomes vary significantly within each country.

Nowadays, specialists observe a curious thing if we compare this century with the eighteen or nineteen century: women are generally more educated than men. Girls have higher reading competencies but, often, lower mathematics skills. In 2008, at least nine out of every ten tertiary education graduates were women in Bermuda (100%), Estonia (94%), Armenia (94%), Croatia (94%), Lebanon (92%), Romania (92%), Serbia (90%) and the United Arab Emirates (92%) (UNESCO, 2010).

At the global level, the trend is clearly oriented towards enhancing a better level of education, but there is still enough effort to be made in order to grow the quality of life in every region, in every city, in every country of the World. Romania is one of those countries that respects the trend, but still has to improve the educational system in order to fill the gaps.

### 3. Education in Romania

After the fall of the totalitarian regime, Romania has gone through a complex process of transition towards a functioning market economy and at the same time, towards a real democracy. These processes covered all the spheres of economic, social and political life, and in this framework it has attempted to register the reforms in the education system. Concerning that, it is a well known fact that our country has inherited from the communist regime a system with high standards, meaning even stringent entrance examinations to the most coveted high schools and universities, a massive participation (albeit decreasing) and a considerable stress on science and technology, but also characterized by a lack of flexibility (SAR, 2007, p.5).

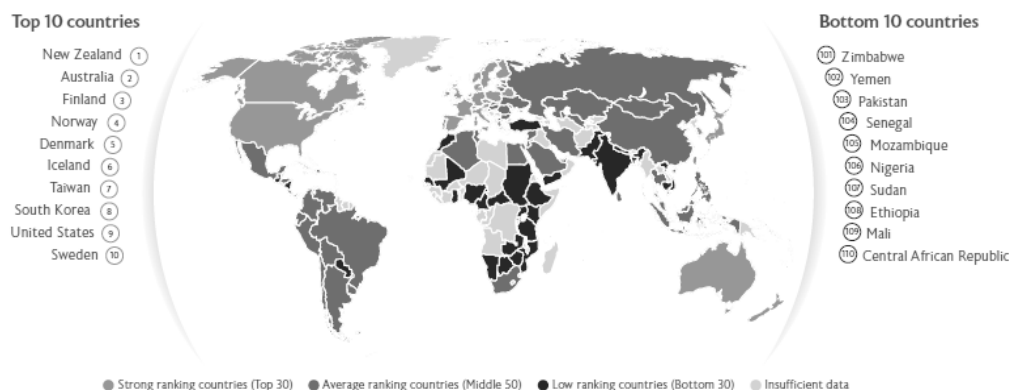
Today, we see that the order to align the Romanian education system to those existing in the EU, Romania started to implement the Bologna process, but this did not solve the problems of our system.

In our country, one may observe that the educational system needs a lot of improvements. As it can be seen in the figure below, unfortunately Romania is not situated in the first ten countries in what concerns the education level. Romania is only on the 43<sup>th</sup> place in the top realized by The Legatum Institute starting from the education sub-index. In the group of the first ten, we observe that there are developed countries such as: New Zealand, Australia, Finland, Norway, Denmark, Iceland, Taiwan, South Korea, United States and Sweden, as one may observe in the following figure.

This is not the only top regarding the education issue where Romania is placed approximately in the middle. According to the Human Development Report, Romania is situated in the 50 position (UNDP, 2010). According to The Global Competitiveness Index, for The Basic Requirements, regarding among others, health and primary education, Romania obtained a score of 5.8 (maximum was 7), occupying the 63 position from 139 countries analysed. In what concerns the 5<sup>th</sup> pillar, higher education and training, our country had a score of 4.5 and the 54<sup>th</sup> place (World Economic Forum, 2010).



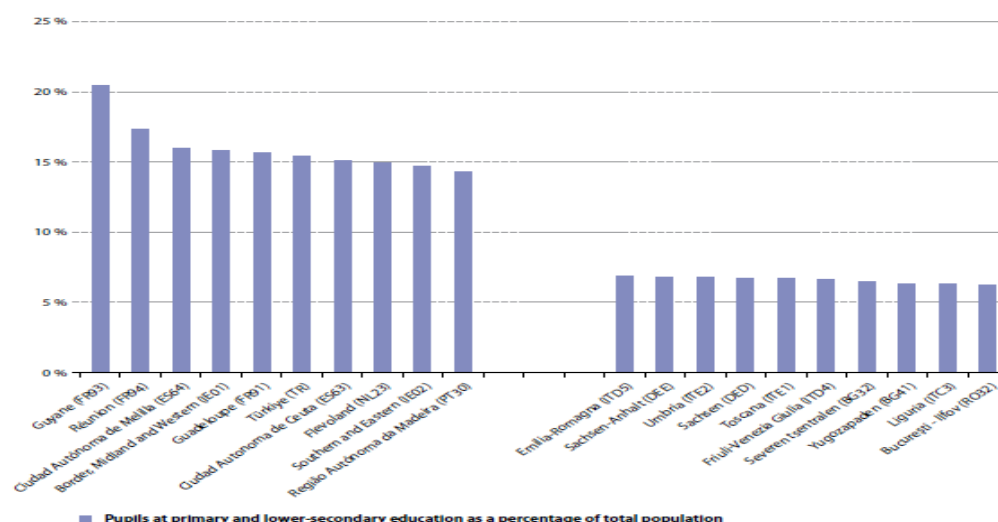
## The impact of contemporary education on quality of life in Romania



Source: Legatum Institute, 2010.

Figure 5. Top 10 and bottom 10 countries – lifelong learning

International tops show the fact that our system needs improvements. Thus, according to Legatum Institute, the access to education ranks around the international average in Romania. Enrolment rates at primary and secondary level place the country 51st and 53rd in the Index, respectively, and there is gender equality in primary and secondary education. In classrooms, there is a high ratio of 17 primary pupils per teacher (Legatum Institute, 2010). According to Eurostat, we may observe that the number of pupils at primary and lower-secondary education, as a percentage of total population, puts Romania in the ten bottom regions.



Source: Eurostat Yearbook 2010, p. 157.

Graphic 1. Pupils at primary and lower-secondary education, as a percentage of total population, top 10 regions and bottom 10 regions, 2008 (ISCED levels 1 and 2)

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Access to tertiary education is somewhat better, placing the country 31<sup>st</sup> overall. Still, Romanians are relatively dissatisfied with the education available to them, placing 69th on this variable. Moreover, the proportion of Romanians who feel that children have the opportunity to learn and grow every day is below the international average, placing the country 74th, overall. The Romanian workforce has solid basic education, with an average of 3.3 years of secondary schooling each, but little specialized knowledge, with just 0.8 years of tertiary education on average (Legatum Institute, 2010).

According to the Human Development Report, we can conclude the same thing. There are in the next table the figures, which demonstrate that there is place for a better system.

Table 1

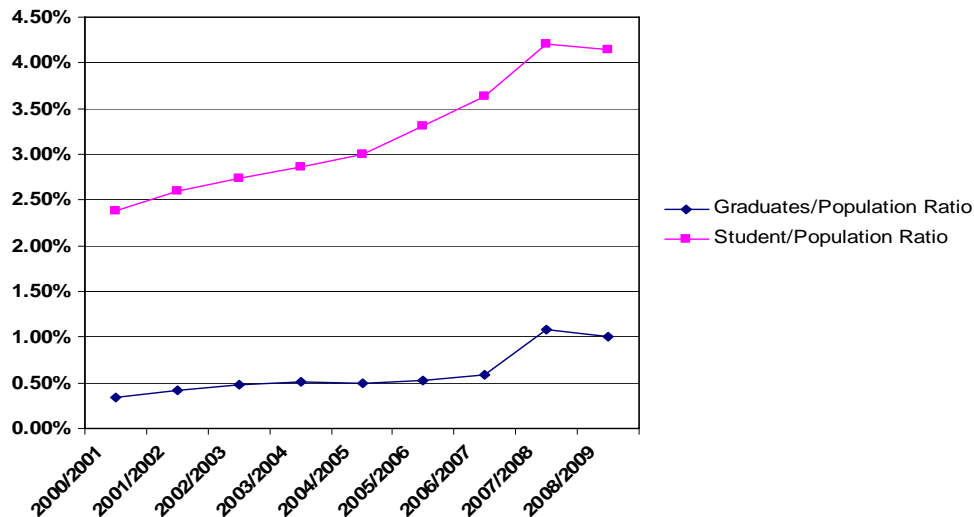
**Main indicators of the Romanian educational system**

Indicator	Period of time	Value
Adult literacy rate (% ages 15 and older)	2005-2008	97.6
Population with at least secondary education (% ages 25 and older)	2010	79,1
Net Primary enrolment ratio (% of primary school-age population)	2001-2009	93.9
Net Secondary enrolment ratio (% of secondary school-age population)	2001-2009	73
Gross Tertiary enrolment ratio (% of tertiary school-age)	2001-2009	58.3

**Source:** UNDP, 2010.

In the last two years, we note a significant decrease in the number of *enrolled students in higher education*. Considering the year of 2007/2008 as baseline, we see that the number of enrolled students in 2009/2010 dropped by 14.55%. Actually, 2007 is the year with the highest number of students enrolled (907353 students), and it was the year when the first signs of the economic and financial crisis hit Romania.

### The impact of contemporary education on quality of life in Romania

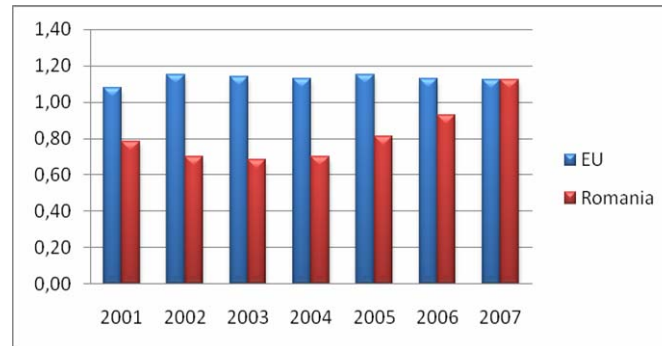


Source: author's work using data from National Statistical Institute of Romania (2010).

*Graphic 2. Evolution of student/population ratio and of graduates/population ratio*

To complete the picture one should also take into account the public expenditure on education. We all know that in any country education plays an important role for economic growth and developing. Financing the education is a major issue for the governments and for this reason in European countries the public funds allocated for education are substantial comparative with private funds. Education has always been a critical investment for the future, for individuals, for economies and for societies at large. Actually, educational expenditure refers to how much governments spend on school and universities. These costs include: instructions (ex. teaching manuals), educational goods provided by institutions (books, materials, etc), administration costs, capital expenditure and rent, student transportation, school meals, student housing and boarding, guidance, student health services, educational research and curriculum development provided by institutions, R&D for higher educational institutions. However, education systems require resources in order to function and it is important to measure how much they cost and who funds them.

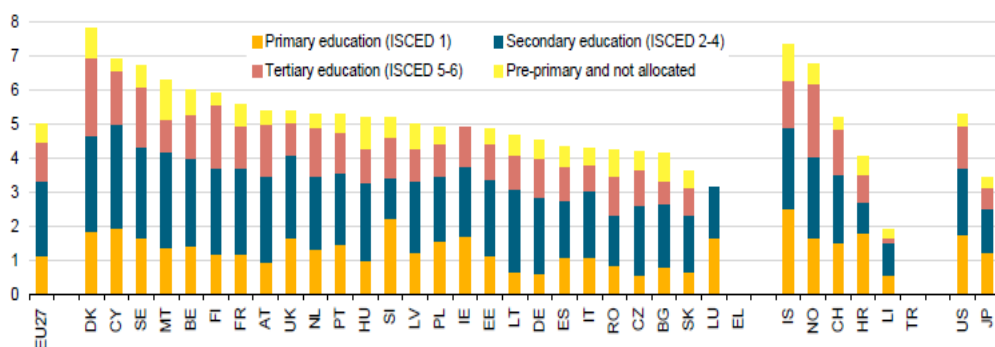
Romanians have rapidly understood that their own expenditures and time spent on education might be the proper solution for quality of life improvement. Thus, one may observe a growth of the allocated funds in the educational area.



Source: Eurostat, Education statistics, UOE data collection (educ\_figdp).

Graphic 3. Public expenditure on education (ISCED 5-6) as % of GDP

Even the trend of the public expenditure in education is an ascendant one; there are still gaps to fill. Romania is still allocating a smaller percentage of GDP to education compared to other European countries, as shown in the following graphic.



Source: Eurostat, Education statistics, UOE data collection (educ\_figdp).

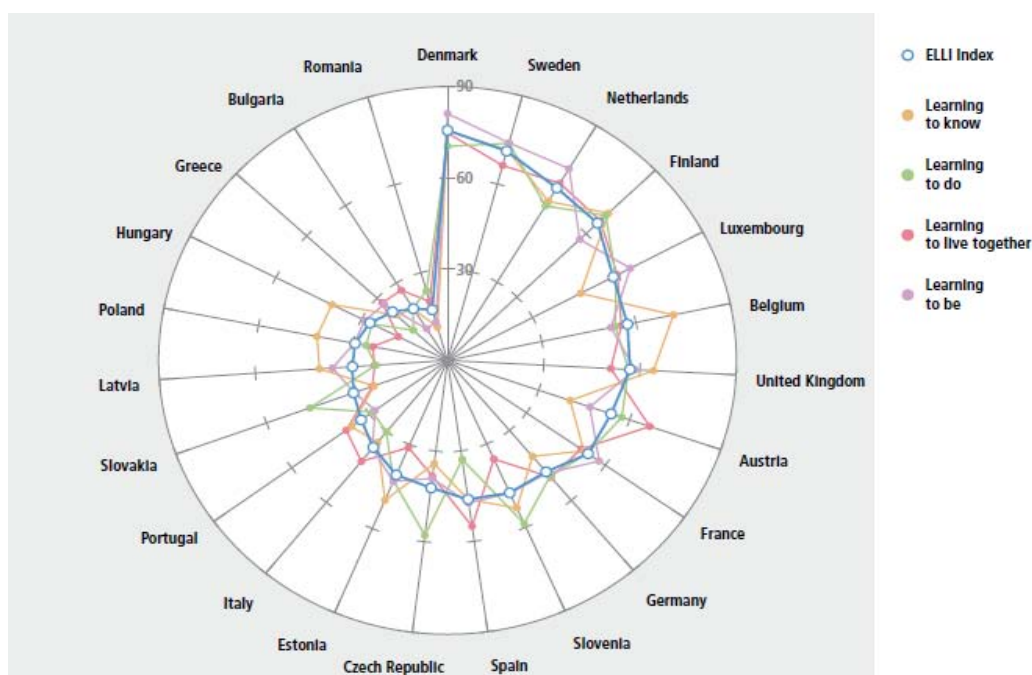
Graphic 4. Public expenditure on education as a percentage of GDP-2007

Regarding *the lifelong learning*, Romania also has some obstacles to pass (Rogojanu and Badea, 2011), as the overall results for the European Lifelong Learning Index show that the lowest performing group of countries is comprised of Southern and Eastern European countries, including Hungary, Greece, Bulgaria and Romania, while the Nordic countries Denmark, Sweden and Finland and, in addition, the Netherlands rank highest. The Nordic countries are followed by a group of countries that consist of mainly Central European and Anglo-Saxon countries (see figure 5). The next group of countries, which are below the EU average, are from Southern and Eastern Europe and range from the Czech Republic to Poland (ELLI, 2010).

### The impact of contemporary education on quality of life in Romania

The countries that perform less well tend to be poorer, with many of them having higher levels of inequality, such as Greece and Romania. Education systems in the Nordic countries, which perform well, are characterized by the following:

- Comprehensive education (no school selection or setting)
- High levels of school autonomy
- Long tradition of lifelong, non-formal and democratic education (Boli, 1989)
- Free university education (ELLI, 2010)



**Source:** *European Lifelong Learning Indicators (ELLI). Making Lifelong Learning Tangible!*, Bertelsmann Stiftung, 2010, [www.elli.org](http://www.elli.org)

*Figure 6. ELLI Index Results 2010 – Lifelong Learning in the European Union*

It is obvious the fact that in order to succeed to conduct to the growth of a country's prosperity, an educational system must not only train future workers for today's environment but also arm them with the tools and resources to continually upgrade their skills. Education is not a one-time event. Life-long learning is a necessity in today's rapidly changing world. That means providing students with both the desire and the tools to continue their education.

If we look at the indicators above, we may conclude that our system is still facing a lot of problems, such as: (1) a low rate of participation in training programs and professional development of employees, Romania being next to Bulgaria in the European rankings (1.3% versus 29.2% – Denmark, the highest recorded in Europe).

This is hardly encouraging, given that for Romania, the degree of professional employability of the population between 15-64 years was 59% in 2008 compared to the EU27 average of 65.9% (ARACIS, 2009: pp. 6-10); (2) a gap between the external national system of quality assurance, positively evaluated at the European level and the ability of universities to implement the mechanisms of providing and improving the quality in education. According ARACIS many of the Romanian universities do not have active committees for internal quality assurance and face difficulties in providing data and information for the quality certification; (3) reduced funding, compared with the EU Member States. Drastic reductions in public funding are further jeopardizing the quality and sustainability of existing programs and even the survival of entire institutions; (4) a low standard of living, which can be an obstacle to the access to a higher education; (5) poor, inaccurate, incomplete and changing law in the field of education; (6) widening the imbalance between the public and the private higher education system, manifested even by differences in the quality; (7) plagiarism in academia; (8) aging population; (9) inability to meet the criteria considered by the international bodies to highlight the quality and quantity of scientific research; (10) transparency and fairness of academia administration etc.

Today, as in the past, we need to be forward looking to adapt our educational system to the evolving needs of the economy and our changing society. We must work to provide graduates with the education needed to meet the realities of today's and tomorrow's marketplace (Plosser, 2008).

Those efforts will require the collaboration of policymakers and educators. But if such efforts are successful, we can ensure a more productive, highly skilled, technically trained workforce that will support a vibrant and robust economy in our region and the nation. The responsibility does not rest solely with government and policymakers, who clearly must do their part. It rests mostly on individuals taking the responsibility to educate and to be educated in order to grow their quality of life.

## 4. Conclusions

Starting from a short overview of the educational system in Romania, one may observe that it needs improvements. The framework of our system is not conceived so as to stimulate institutional diversity, to reward innovation and encourage social entrepreneurship. Universities attract students by an inflation of specialisations included in the reputable subject areas, but the educational offer is not really diversified and designed according to students' needs and interests (RAQAHE, 2010). In this context, education of the highest quality is crucial for building strong, innovative scientific communities and for providing high-level expertise in all areas of society. Moreover, EU 2020 proposes a benchmark for social inclusion in education and training, establishing that less than 10 % of students should fail to complete their education and that at least 40 % of the younger generation should obtain a degree or diploma, our country as a member state must adopt the same objectives (ELLI, 2010).

But there remains one question regarding the correlation between the education, quality of life and the relevance of the used indicators, as it is easy to observe that despite the variety of surveys, the existing indicators remain limited in important ways. One cannot analyze the quality of life from the educational point of view starting only from the existing indicators. Beyond their limited geographical coverage, some of these tools were developed for the purpose of assessing educational policies, which required focusing on a more narrow set of measurable competencies than those that are potentially relevant for measuring people's capabilities (Stiglitz, Sen, Fitoussi, 2009, p. 166). Moreover, until an aggregate indicator is realized for the educational field in order to show the connection with the quality of life, the availability of surveys, designed in a way that allows comparisons across countries, would permit a better understanding of the relationship between education and other dimensions of quality of life, including the pathways through which education operates and what educators and policy makers can do to enhance the role of education in promoting the well-being of individuals. With or without an aggregate indicator, with or without studies to show exactly how much (as a percent or not) education contributes to the well-being of individuals, everyone must be aware of the importance of the educational system in achieving a better quality of life. Thus, we are all responsible for the future of the society and country we live in!

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**Abstract.** *Quality of Life (QoL) can be defined as the subjective perception of an individual on the objective life conditions and well-being. QoL evaluation leads to identifying its dimensions, which does not yet have a unanimous accepted classification, due to the different indicators of analysis that determine these dimensions. The present article analyzes the relationship between practicing sports and improving the quality of life, and also identifies the analysis indicators of such a relationship. The article begins with the presentation of QoL dimensions and the way sport is found among them, both in theory and practice. From the theoretical point of view, most papers that evaluate the sport – QoL relationship are from the sociology of sport domain, focusing mostly on the utility of sport within the society. When analyzing the QoL studies, sport is most often found within the health or social inclusion dimensions. The last part of the article presents the analysis indicators of the sport-QoL relationship, this presentation been done according to the A. Maslow pyramid of need. The ground for such an approach is based on the fact that every person can practice sport for a different reason, therefore the indicators must be adapted to the individual's objectives.*

**Keywords:** quality of life, subjective approach, sports, social inclusion, analysis indicators, health.

## **QUALITY OF LIFE – SPORT RELATIONSHIP. ANALYSIS INDICATORS**

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## 1. Introduction

Although specialists speak about quality of life since the early '50 (EEA Report, 2009), when the main areas of research were level of happiness and well-being, the concept gained theoretical valences in the '70, for start in the Scandinavian countries and United States, which was followed by numerous scientific articles that debated the importance that both the society and the individuals must give to quality of life improvement.

Due to the interdisciplinarity that characterizes this concept, there is still no universally accepted definition, most of them rather focusing on Quality of Life (QoL) dimensions. This inability to give a clear definition of the concept emerges from the fact that each society, each individual can understand different things when talking about quality of life, each country can use different indicators and dimensions to define QoL (according to the national interests of the moment and future prospects). Another impediment in defining quality of life is represented by the various methods of QoL evaluation - either by reference to the needs and demands of society (objective approach) or by analyzing the individual level of satisfaction with living conditions (the subjective approach).

Trying to combine the two approaches, R. Costanza defines quality of life as “the extent to which objective human needs are fulfilled in relation to personal or group perceptions of subjective well-being” (Costanza, 2008, p. 18). While objective needs refer to subsistence, reproduction, security, affection, etc., subjective perception aims at happiness, life satisfaction and personal usefulness.

This need to make such a separation in concept of quality of life approach is found even in works from the '70s, when experts were particularly concerned with the population level of satisfaction regarding living conditions (Stagner, 1970). But a direct concern about the two QoL approaches is found in the work of S. Næss (1999) and R. Cummins (2000), joining them later on authors such as J. Vittersø (2004) or B.C. Heinz and H. Noll (2003). According to these authors there are some differences between the two approaches, differences that are shown below:

a) objective approach = evaluating quality of life mainly from economical perspective; this approach is rather a macroeconomic impact on the quality of life, taking into account that are used indicators that reflect the national standard of living, such as gross domestic product per capita, purchasing power, unemployment, inflation, price index; although through such an approach, pertinent comparisons can be made in terms of quality of life in each country, evaluation of purely economic point of view does not show the true value for the standard of living and how it is perceived by the individual; this type of approach is mostly corresponding to the Scandinavian theory, according to which material wealth is the control of available resources, which directly affects the living conditions.

b) subjective approach = evaluating the quality of life mainly from the social perspective; in such an approach, evaluation is done at the individual level, the most important factor being the personal satisfaction with life; among the indicators used in this approach we include emotional well-being, interpersonal relationships, personal

development, physical well-being, self-determination, happiness, social integration and human rights; the use of subjective indicators is based on the hypothesis that living conditions can be evaluated as being favourable or unfavourable by comparing real conditions to normative criteria such as individual values or expectations; this approach derives mostly from the American literature, specifically the health one, that considers subjective well-being as the best indicator for evaluating social development.

The most effective and relevant studies on quality of life combine the two approaches, therefore statistical indicators that describe the welfare of nations are combined with the level of satisfaction of citizens. An example in this case is The Economist Intelligence Unit quality-of-life index ([http://www.economist.com/media/pdf/quality\\_of\\_life.pdf](http://www.economist.com/media/pdf/quality_of_life.pdf)), which methodology correlates the results of subjective level of satisfaction surveys with objective determinants for QoL, within 111 countries.

Evaluation of the link between sport and quality of life falls mainly in the subjective approach, given that the research concerns how the individual perceives the impact of sport on his level of quality of life. Before presenting the place and role of sport within quality of life studies and how these can be measured, it is necessary to review the quality of life dimensions, so that sport's position should be clearly defined in relation to other sections of QoL analysis.

## **2. Quality of Life Dimensions**

To study a concept as complex as the quality of life is necessary to identify its dimensions, so that through their analysis we can outline an overall picture on the whole phenomenon. In the scientific literature we find many variations to classify these dimensions, some of which are developed by experts in the field (Fahey et al., 2003; Mărginean, 2004; Stiglitz et al., 2009), other by research organizations or institutions (The Economist Intelligence Unit, 2005; Mercer, 2010; European Commission, 2009; Eurofund, 2007).

Among the first specialists in quality of life in Romania, I Mărginean contributed greatly to shaping this thematic area through the multitude of studies conducted and theories developed. Mărginean was especially concerned about the quality of life dimensions, the very definition of this concept being based on its dimensions. Thus the author defines quality of life as all the evidence relates to physical conditions, social economic status, cultural, political, health in which people live, content and nature of activities they engage in, the characteristics of social relations and processes involving goods and services they access, models of consumption, lifestyles, circumstances and outcomes assessment of their activities, subjective states satisfaction/dissatisfaction, happiness, frustration, etc. (Mărginean, 2004a, p. 216).

According to Fahey et al. (2003), quality of life has the following dimensions: health and healthcare, employment and working conditions, economic resources, knowledge, education and training, family and household, community life and social participation, environment and local facilities, transportation, public safety and crime,

recreation and leisure, culture and identity, political resources and human rights, including the European dimension.

Stiglitz-Sen-Fitoussi Commission (2009) has identified the following dimensions of quality of life: material wealth, health, education, personal activities, policy and governance, social relationships, environmental conditions, personal and economic insecurity. Quite close to this classification is also the Mercer quality of life index (2010), which assesses the following dimensions: political and social, economic, socio-cultural environment, health and sanitation, school and education, public services and transport, recreation, consumer goods, household, natural environment.

Eurofund (2007) made one of the largest and appreciated researches on quality of life in the European countries - European Quality of Life Survey, targeting issues such as employment, income, education, household, family, health, balancing work and life, satisfaction with living conditions.

The study conducted by the Gallup Organization at the request of the European Commission – Perception survey on quality of life in European cities - was held in November 2009 with two other previous editions in 2004 and 2006, and is measuring the perceptions of individuals in 75 European cities (the EU, Croatia and Turkey) to five dimensions of quality of life: social reality, pollution and climate change, administrative services, city infrastructure, public transport (European Commission, 2010).

As can be seen from the listings made above, there are various dimensions of quality of life ratings, the experts choosing to be limited to a relatively small number of dimensions for a better analysis of their impact and synergy. But these dimensions are based on a range of analysis factors, which, through the amount they take in each country, can shape the quality of life that characterize the society and the individuals composing it.

Although not highlighted as a main dimension of quality of life, sport is present in measurements made for the concept. This article will show the place of sport in measuring quality of life, both in theory and practice.

It should be noted however that not all research that supports quality of life are taking into consideration sport activities, some of them focusing on material and financial wealth, while others did not want to overlap with area already covered by other bodies. Here we have as an example OECD (Organisation for Economic Cooperation and Development) which carries a variety of studies to identify current level of economic and social development, but also to identify new ways of cooperation between states to improve the living standards of citizens. A survey conducted by this organization is OECD Better Life Initiative (<http://www.oecdbetterlifeindex.org/>) which is assessing individual perceptions of the dimensions that contribute to the welfare of the 34 OECD countries: household, income, place of work, community, education, environment, governance, health, satisfaction with living standards, security and balancing work and family life.

One of the strengths of this index is that it is characterized by a complete transparency both in terms of results and methodology for the data collection and

analysis. Unfortunately, it covers only OECD member states, therefore that it can not be used to shape strategies in non-member states or at EU level. On the subject of this article, the index has a big disadvantage and that is that the welfare is not evaluated in relationship with sports. The reason for this exclusion relates to the decision to avoid duplication of research already conducted by the UNESCO, organization that has a subsection dedicated to sport - Physical Education and Sport (PES).

### 3. The presence of sport within the QoL literature

Given the fact that sport is not one of the main dimensions of quality of life, the theory is quite limited in terms of highlighting the relationship between sport activities and quality of life. Most works come from the sphere of *sociology of sport*, works that focus on sport's utility for the society and for the individual (J. Coakley, 2007; F. Coalter, 2007; B. Houlihan, 2008; G. Jarvie, 2006; B. McPherson et al., 1989).

The book by F. Coalter (2007) highlights the role that sport plays in government strategies. The paper begins with an overview of the history of sport and social policies and, later, develop a series of relationships such as sports and its social impact, sport and social regeneration, sport and development, sport and education, sport and crime, sports and economic impact.

A research topic that is often found in sociology of sport literature is related to the importance of sport for *social integration*. Many specialists have written papers that discuss this theme to highlight the role the sport for social inclusion and how they can promote such behavior (M. Collins and T. Kay, 2003; A. Ibbetson, B. Watson and M. Ferguson, 2003; L. Kelly, 2011; P. Velija, 2009).

The issue is important enough therefore that the International Association of Sports Sociology (ISSA) held the third congress on this subject in 2005 (<http://www.efdeportes.com/issa2005/>), with sections such as sports and community, sport and national identity, sport and human rights, sports and social theory, etc.

A second area of research for the relationship between sport and quality of life focuses on sport's impact on *health*. Most papers in this area highlight the positive effects that sport has to heal or stabilize people suffering from illnesses such as depression, intermittent claudication (a disease characterized by muscle pain), heart problems or other organ dysfunction.

In literature we find also papers that focus on a certain age segment, especially older people who should be concerned about their health in particular (Ed. McAuley et al., 2006; R.S. Mazzeo et al., 1998; W.J. Rejeski and S.L. Mihalko, 2001).

Another dimension of quality of life that can be positively influenced by sport is *education*, by printing the sport values to the character of each individual, values such as respect, fair play, teamwork, leadership qualities, ethical behavior, trust and voluntary. In this category we can mention the work of O. Weiss (2010), which highlight the benefits of including sport in university curricula.

A paper setting out the importance of sports for the welfare of individuals was written by P. Martin (2009) and treats a less discussed aspect for quality of life: living standards in the *war zones*. The paper highlight how practicing sports, especially

teamsports, may lower the tensions accumulated in these areas, leading even to games organized between enemy camps.

#### 4. The presence of sport within QoL studies

Although not all quality of life studies include sport as an analysis indicator, there are however researches linking quality of life to sport activities. Such research can be divided into two categories, depending on the sport item in question:

- studies that focus on industry-specific tangible elements - infrastructure made available to persons wishing to practice sport activities (for example, “Perception survey on quality of life in European cities”, as part of Eurobarometer)
- studies mainly focused on sporting activities undertaken by citizens and their contribution to improving quality of life (ACNielsen study on quality of life in New Zealand, Commission Stiglitz-Sen-Fitoussi, Mercer Index, Calvert-Henderson Index).

Further on, the above mentioned studies will be presented to highlight the place of sport within the quality of life indicators. Given the fact that sport is not a main dimension for quality of life, the analysis begins by identifying the section in which sport is included, followed by the identification of the specific indicators of analysis.

a) *Perception survey on quality of life in European cities*, the survey that is part of Eurobarometer, aims at assessing five areas of analysis: the perception of social reality, pollution and climate change, administrative services, satisfaction with the infrastructure, public transport satisfaction. Sport can be found in the section on *infrastructure*, respondents being asked how satisfied they are in relation to *sports facilities and opportunities for outdoor recreation* (Flash Eurobarometer, 2009).

b) Although the study conducted for ACNielsen in 2010 is covering only the *quality of life in New Zealand*, it can be taken as an example of how to assess the perception of citizens in relation to QoL dimensions. These dimensions include the section on *community, culture and social networks*, dimension that is concerning also with *membership to a sports club*. Another dimension related to sport is *health*, the correlation indicator referring to the *number of days per week in which are conducted at least 15 minutes of intense physical activity* such as running or cycling (Nielsen, 2010).

c) *Commission Stiglitz-Sen-Fitoussi* (2009) identified eight of quality of life, including *personal activities*. Within this dimension there is a subsection on recreational activities, such as sport. In this case, the measurement indicator focuses on the *degree of participation in sporting activities* compared with other personal activities (like work, food and sleep). An advantage of the Stiglitz report refers to the fact that it highlights the need of measuring the leisure activities not only in quantitative variables (number of hours), but also in qualitative ones (social component of the leisure activities).

In the same report, a second quality of life dimension where we find the sport is the one referring to the *social connections*, here the indicator focusing on *the frequency to which individuals engage in sports activities with others*.

d) **Mercer quality of life index** uses 39 indicators of analysis, grouped in 10 QoL dimensions. One of them is related to *recreation and leisure* and here we find *practicing sport activities* as an analysis indicator (<http://www.mercer.com/press-releases/quality-of-living-report-2010>).

e) **Calvert-Henderson index** has the same approach to the relationship between quality of life and sport, including this activity within the dimension referring to the *recreational activities*. Therefore, thirteen types of such activities are considered, including *practicing sports* (<http://www.calvert-henderson.com/recreat.htm>).

f) One of the first report on quality of life on a European scale – Monitoring Quality of Life in Europe, conducted by **Eurofund**, disregard the sport as a determinant for the quality of life, the only mention to it being in the recommendations, where is stated that in the future participation in sports activities should be measured in relation with the social integration (Eurofund, 2003).

As a result of this study, Eurofund conducted in 2003 the First European Quality of Life Survey. Sport is mention only one time, within the cultural or hobby courses, as a response to a question about the educational items made in the past year by respondents (<http://www.eurofound.europa.eu/publications/htmlfiles/ef0902.htm>).

Contrary to international trends, the Second European Quality of Life Survey, conducted in 2007, is not mentioning sport at all.

Besides the general quality of life studies, in the scientific literature we find also some *researches that focus directly on sport's impact on quality of life or on one of its dimensions*. From the first category is research done by R. Pisot and V. Krolej (2006), whose purpose was to identify the correlation between the quality of life perception and the sport activities. The indicators used here were the frequency and the type of sporting activity practiced.

In the second category we include the research done by M. Collins et al. (1999) on the sport's impact on social inclusion, at the request of the Great Britain's Department of Culture, Media and the Sport (DCMS). However, far more common are the researches that focus on sport's impact on health, such as the study done of D.W. Brown et al. (2004), in which are presented the combined results of five health quality of life, after having the research participants included in a sports program.

An extensive research that deserves to be mentioned because it makes a review of the literature on the benefits of sport and culture on QoL is the one carried out by the Scottish Executive Education Department (2006). The paper is divided into two sections: the first is a literature review on how this link between sport and quality of life is highlighted, and the second section represents the opinion of department's specialists on how this link should be highlighted in the future.

## 5. Analysis indicators for the sport – QoL relationship

The link between sport and quality of life can be assessed as a whole (by identifying the impact that practicing sports has on the quality of life of each individual), however it can be assessed also by a segmentation approach according to the needs for which the individual is practicing sports. We can not assume that everyone is practicing sport for the same reason, so that a meaningful analysis is the one beginning with the identification of the need for which an individual has decided to practice a sport, following by identifying the way this activity has met expectations, thus improving the quality of life.

For such an analysis we can use Maslow's pyramid of needs, which is a classification of individual needs in five categories, from primary (physiological) up to those of self-realization ([http://www.abraham-maslow.com/m\\_motivation/Hierarchy\\_of\\_Needs.asp](http://www.abraham-maslow.com/m_motivation/Hierarchy_of_Needs.asp)). For each of these categories, sport can have another meaning, another utility; therefore the measuring of the impact it has on quality of life requires different indicators, as shown in the table no. 1.

Table 1

### Analysis indicators for the sport - quality of life relationship, correlated with the category of needs and the impact that sport has on quality of life

Category of needs		Sport's impact on quality of life	Analysis indicators
<b>Physiological needs</b>	<i>Basic needs of the human body: food, water, sleep, shelter, etc.</i>	Quality of life is higher as the individual spends more time on leisure activities (like sports) than the time needed to satisfy basic needs	<ul style="list-style-type: none"> <li>- time spent practicing sport, compared to satisfying the basic needs</li> <li>- relative satisfaction with the infrastructure required for sports activities</li> <li>- satisfaction in relation to outdoor recreation opportunities</li> </ul>
<b>Safety needs</b>	<i>Stability, protection against illness, financial security, order and law, etc.</i>	Sport helps to maintain a healthy life both physically and mentally	<ul style="list-style-type: none"> <li>- number of hours of sport in relation to physical health</li> <li>- number of hours of sport in relation with mental health (depression, anxiety, stress)</li> </ul>
<b>Social needs</b>	<i>Interaction with others: affiliation, love, cooperation</i>	Sport has a positive influence on social inclusion, on building and maintaining close relationships with the others	<ul style="list-style-type: none"> <li>- type of sport: individual or team sports</li> <li>- time and frequency engagement in sports activities with the others</li> <li>- membership in a sports club</li> </ul>
<b>Esteem needs</b>	<i>Internal: self-respect, freedom, independence, power</i>	Sport contributes to increasing self-confidence	<ul style="list-style-type: none"> <li>- frequency of practicing sport in relation with their own personality assessment</li> </ul>



#### Quality of life – sport relationship. Analysis indicators

Category of needs		Sport's impact on quality of life	Analysis indicators
			- sports performance achieved
	<i>External: reputation, status, fame and glory, recognition, dignity, appreciation</i>	Sport helps to achieve public appreciation	- reasons for practicing sports - sports performance achieved
<b>Self-actualization needs</b>	<i>The desire to perform in relation with own potential</i>	The values of sport help to establish personal goals and overcome their	- reasons for practicing sports - frequency of practicing sports in relation to the level of satisfaction with the social status and personal development

**Physiological needs** are found to base of the pyramid, taking into account that their satisfaction is necessary to take in account the other categories. Practicing sport does not directly influence these needs; however balancing time spent for their satisfying with time spent for other activities (such as recreation through sport) can lead to increased quality of life. Therefore an indicator to assess the sports - QoL relationship refers to the time allocated to sport in the daily activities, but also the level of satisfaction with opportunities to practice sports.

The most common sport correlation with quality of life is that concerning health, thus within the **safety needs** we find the most researches on the subject. This correlation is mentioned since ancient times - "Mens sana in corpore sano", which makes reference to sport, physical health and further more, to mental health. There are numerous medical studies showing the contribution of sport to improve the health of patients, studies that rely on indicators of medical analysis, obtained by observing the evolution of patients' vital signs.

Marketing research, however, is predominantly measuring the individual's perception of how sport affects his health status, through indicators such as number of hours of sport in relation with physical health (taking into consideration the number of illnesses a in an year, number of medical leaves and general level of satisfaction with health status), and number of hours of sport in relation with mental health (depression, anxiety, stress).

As highlighted in this article, another correlation often found in the literature is between practicing sports and social integration. Therefore social need also influence the sport – quality of life relation, through the individual's need to integrate into the community and to be accepted by those around him. To analyze this correlation, a first indicator can be the type of sport played (individual or teamsport) and the reasons for choosing it. Another indicator, found in a series of quality of life studies, refers to the time and frequency of engagement in sports activities with others (ACNielsen, 2010; M. Collins and al., 1999; Stiglitz-Sen-Fitoussi Commission, 2009).

In the *esteem needs*, experts often speak about the transition from amateur sport to performance, the individual trying to build a athletic career and a reputation in this field. We have both an internal side for the esteem needs (which means that practicing sports and obtaining favourable results leads to increasing self-confidence) and an external side (referring to the fact that delivering results lead to obtaining public appreciation). For both cases, there are indicators that highlight how sport can help improve quality of life, all based on the performance achieved and how it positively influence the individual's level of happiness.

The last category of needs and, in fact, the highest – *self-actualization needs*, can determine the need to practice sports in order to demonstrate the ability of self-improvement, the capacity of establishing remarkable personal goals and the ability to achieve them. Within this category of needs, we equally find amateur sport (individual decision to demonstrate the possibilities of self-improvement through his physical qualities) and performance (to set levels of performance increasingly higher, modality that eliminates the banality and the monotony of the athlete's life).

## 6. Conclusions and future research

Specialized literature does not yet provide a universally accepted definition to quality of life, nor has practice yet been able to identify a range of dimensions of this concept which can be universally applied. However, a distinction can be made between the two QoL approaches – objective and subjective, the second one highlighting how sport participates to quality of life improving.

Although not all quality of life studies include sport as a factor of influence, there are however researches linking quality of life to sport activities, mostly within the health and social inclusion dimensions. Most theory that presents the sport – QoL relationship is part of the sociology of sport, the specialists being concerned with the role of sport within the society.

Have multiple links between quality of life and sport, it is normal to have several indicators to measure this relationship, the most frequently used being the type of sport practiced, the frequency of practice and the motives for choosing to do sports. As shown in the article, a single indicator can not be used in all situation, considering the fact that not every person is practicing sport for the same reason. A more pertinent analysis of these indicators must take into account the motive that determine the individual to practice sport.

A limitation of this article refers to the fact that identifying the indicators must not be a unilateral approach (using only one factor of classification, such as the category of motivation), therefore future research can focus on classifying the indicators in relation with other factors such as QoL dimensions or the life cycle of a person (represented mostly by the age category).

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**Abstract:** *Quality of life means different for each person. But quality of life may represent what a person cumulate in order to have economic security, social care, and a general welfare impression of him. The present paper is a result of documentation upon specific indicators system for quality of life. Research starts from the premises that actual conditions of Romanian rurality should be evaluated from the quality of life perspective, in order to be able to offer a suitable solution for its sustainable development. Subsequently, taking into consideration prior personal research that imposes elaboration of a conceptual model of agrifood industrial city in order for Romanian rurality to become more competitive, I propose series of indicators for quality of life measurement. The proposal is based on “OECD Better Life Index” (2011) and methodology used by Quality of Life Project in New Zealand (2011).*

**Keywords:** quality of life, rurality, quality of life indicators, economic competitiveness, agrifood industrial city, rural development.

## **SPECIFIC INDICATORS FOR QUALITY OF LIFE IN RURAL AREAS. PARTICULAR APPROACH FOR THE IMPLEMENTATION OF AGROFOOD INDUSTRIAL CITY**

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## 1. Introduction

Quality of life means different for each person. But quality of life may represent what a person cumulate in order to have economic security, social care, and a general welfare impression of him. The broad overview is that this person should feel happiness in order to be able to talk about high standards of his quality of life. The happiness belongs to the individual; still quality of life refers to a socio-economic group (Begu, L.S., 2000).

From this perspective, quality of life refers to what people really feel about the society that they belong and how they act during periods of social changes. In the same time, quality of life should allow policymakers to enterprise the best actions in order to balance the gap between social categories and to increase each person's life.

The quality of life concept is a research topic from the beginning of 60's when North-American society started to advance the people's life conditions and how they think about those. It seemed not to be enough for the individual to have the all the economic welfare. His health, access to education system, access to a clean environment began to count for quality of life.

European Foundation for the Improvement of Living and Working Conditions reports in 2006 the First European Quality of Life Survey: Quality of life in Bulgaria and Romania. They affirm, after Fahley, Nolan and Whelan (2003) that quality of life approach has three main strengths:

- it concentrates mainly on the individual level, but the authorities' actions for increasing quality of life have macro perspectives;
- it is a multi-dimensional concept and encompasses many life domains, like economic, health, social care, education, environment, alimentation, and, in the same time, confronts with their inter-actions;
- it is measured using both subjective living conditions and objective well-being, succeeding or, at least, trying to succeed in harmonizing authorities policy to individuals' expectations.

Therefore, recent studies demonstrate the differences between what authorities think about the offered quality of life and people's expectations (Stiglitz, J. and co., 2009). Starting this point, researchers gather series of indicators that may aim all the quality of life aspects. Moreover, the quality of life may be interpreted as a method to reach economic performance. Stiglitz Commission on the Measurement of Economic Performance and Social Progress (2009) in France reported three main categories of analysing and approaching progress: classical GDP issues, quality of life and sustainable development and environment.

Being a global concern, national authorities, especially from developed countries, seek for better resources' allocation in order to obtain higher life conditions for their citizens. More, the industrial production and the diversity of offered products and services damage the environment, without being able to oversee the long term impact upon Earth and each of us. This seems to be a strong reason for corrective economic actions to be undertaken (Begu, L.S., 2000).

Romania was the first socialist country that acted according to quality of life approach in the 70's (Begu, L.S., 2000). It is somehow strange to see that nowadays, national authorities seem not to care anymore about this issue, no matter the level, individual or entire society.

Being an EU member state and still involved in this ongoing difficult process of integration, Romania should consider accomplishing all public policies and all economic action taking into consideration quality of life issues.

Thus, Romania's rurality has potential for friendly environment activities both in agriculture, rural traditional activities, tourism and others.

## 2. Methodology

The present paper is a result of documentation upon specific indicators system for quality of life. Research starts from the premises that actual conditions of Romanian rurality should be evaluated from quality of life perspective, in order to be able to offer a suitable solution for its sustainable development.

An overview upon studies and reports regarding quality of life from both epistemological and statistical approach lays the base of the paper. Furthermore, analysis and synthesis of present situation of rurality presented on studies, reports, articles and other materials including empirical studies and statistics on this topic were conducted, together with comparative studies and case studies.

Subsequently, taking into consideration prior personal research that imposes elaboration of a conceptual model of agrifood industrial city in order for Romanian rurality to become more competitive, I propose series of indicators for quality of life measurement. The proposal is based on "OECD Better Life Index" (2011) and methodology used by Quality of Life Project in New Zealand (2011).

## Discussions and results

Indicators used for quality of life are so different and, yet, under ongoing improvement. New economic and social aspects require a permanent improvement of the used indicators, in order for policymakers to have a more clear vision upon these aspects and to be competent in taking the suitable and the most competitive decisions.

### *An general overview upon indicators for quality of life*

Therefore, international organizations developed over time several indicators' systems.

In 1989, the United Nations Organization elaborated *Handbook of social indicators* which indented to be a guide for nations to be able to act according to several indicators for improving life conditions, well-being and economic development.

In time, researchers involved more indicators, so that quality of life would transparently reflect the situation. Starting from the report of Stiglitz Commission on the Measurement of Economic Performance and Social Progress (2009), Organisation

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for Economic Cooperation and Development is accomplishing a new index of well-being indicators. The evolution from the Handbook for Social Indicators of United Nations Organization (1989) since new OECD indicators after Stiglitz commission is given below (Table 1).

As a result, based on OECD Compendium, the Organisation is organising the OECD Better Life Index, which represents a “pioneering, interactive tool combining OECD substance with modern technology in order to foster the debate on well-being and engage citizens into the quest for progress ...The Index allows citizens to compare well-being across 34 countries, based on 11 dimensions the OECD has identified as essential, in the areas of material living conditions and quality of life.” (<http://www.oecd.org/dataoecd/4/31/47917288.pdf>, accessed on 6<sup>th</sup> of June 2011).

Generally, the indicators intend to emphasize all aspects of each person’s life: health, social, education, culture, economic, security, leisure, family, housing etc.

*Table 1*

**The evolution: from Handbook of social indicators (1989) to OECD Compendium of well-being indicators (2011)**

UNO - Handbook of social indicators		OECD - Compendium of well-being indicators
Population composition and change		Housing
Human settlement and housing and geographical distribution of population		Income and wealth
Households and families, marital status, fertility		Jobs and earnings
Health and health services; impairment and disability; nutrition		Social connections
Learning and educational services		Education and skills
Economic activity and population non economically active		Environmental quality**
Socio economic groups and socio mobility		Civic engagements and governance
Income, consumption and wealth		Health status
Social security and welfare services		Subjective well-being
Leisure, culture and communication		Personal security
Time use		Work and life
Public order and safety		
Other fields to be consider in further work*		

**Source:** Own processing from Handbook of social indicators (1989) and OECD Compendium of well-being indicators (2011).

\* field with no follow up; \*\* new field.



### *Quality of life in rural areas*

Generally, we may say that rural areas' population is confronted with poor life conditions. Obviously, the situation differs from one country to another and from one region to another. Rural areas need special care, taking into consideration several reasons:

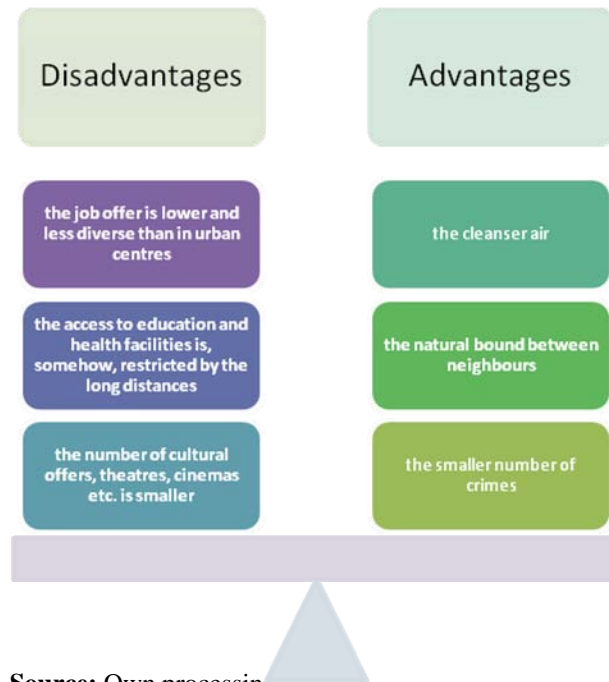


Figure 1. Some rural areas characteristics due to quality of life approach

It is difficult to affirm how the differences between rural areas and urban areas aim to have better quality of life. Diverse indicators have opposite values, and a general conclusion is not probably easy to be done.

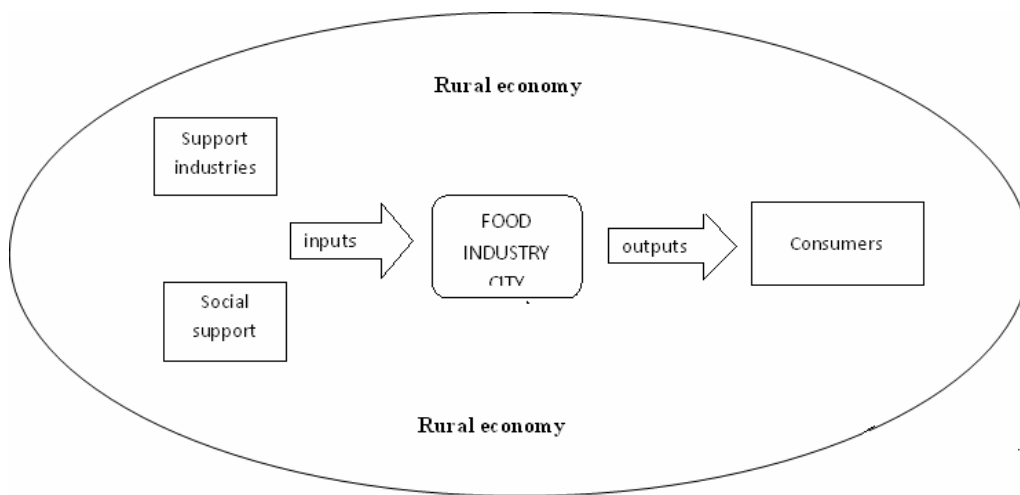
#### Romanian rural areas

The rural area takes approximately 47% of entire Romanian surface and almost 47% of Romania's population. In Romania there are 4 SMEs/1000 inhabitants and over 50% of them have trade as main objective. They are not involved in production, which is a weakness of rural activity. The unemployment rate in rural areas is 5,4% in 2010 ("Romania in cifre 2010, <http://www.insse.ro/cms/files%5Cpublicatii%5CRomania%20in%20cifre%202010.pdf>, accessed on 3rd of June, 2011).

The Romanian rural area does not gather the best values of quality of life indicators. It is obvious that innovative solutions should be taken in order for these areas to become competitive. Therefore, agriculture is the main activity for Romanian rurality.

According to the Europe 2020 and to the necessity of growing Romanian economy competitiveness, we consider requisite solution for agricultural producers adopting higher competitive behaviour. For this, we propose a conceptual model for agrifood industry: agrifood industrial city which requires all stakeholders' cooperation on a product branch in direct and immediate connection with the intention to raise economic performance.

The vision of this type of city is to concentrate within a modern centre founded with this aim all actors on an agriculture product chain in order for them to obtain higher added economic performance. This poses a vertical integration of producers and traders of a product and their physical and economic proximity. In this way, we start from the premises of growing economic performance of food processing, as this city may benefit of specific transport and utilities infrastructure and modern processing lines, as well as available labour force that could be qualified.



**Source:** Own concept.

*Figure 2. Model of Food Industrial City in rural economy*

Obviously, this project involves high costs. We propose the methodology for this city's creation and functioning, throughout an economic perspective. Also, we propose to construct the necessary elements to be able to quantify the impact on rural economy, as well as its pertinence while creating, calculating and analysing specific indicators.

The main objective is to create a model as a response to both rural economy and Romanian food industry needs. In order to establish this model's pertinence, certain objectives should be reached:

- to elaborate a methodology for food industrial city's creation and function;
- to create system of indicators able to quantify the impact of this city's function upon rural economy and other economic sectors and social activities;

### Specific indicators for quality of life in rural areas

- to quantify and analyse the value ecart of created indicators;
- to create a connection network for being in permanent contact with local authorities, policy makers and stakeholders.

It is obvious that a result of building this model, is to give economic and social impact to the region. In this way, the region would benefit of all the model's advantages. At the end, all stakeholders might earn more:

- the farmers would have a successful business or, at least, more economic power: they would benefit of better supplies, better exploitation, better and closer demand;
- the food producers would have a direct connection to the region's agricultural producers and would encompass a better position on the market;
- the regions' inhabitants would have more jobs opportunities and better life conditions;
- the region would have an increasing GDP and a greater attractiveness for investors and tourists.

The methodology for food industrial city's creation and function should involve following activities or steps:

*Table 2*

#### Timetable for setting Agrifood Industrial City in rural economy

PHASE 1 – Methodology for food industrial city's creation and function	
	Activity 1.1 – Analyse of economic performance within Romania's rural economy and food industry
	Activity 1.2 – Analyse of European and national legal framework for food industrial city's creation and function
	Activity 1.3 – Identify the main food product for food industrial city
	Activity 1.4 – Identify the potential space/region for food industrial city
PHASE 2 – Indicators system for impact quantification of food industrial city	
	Activity 2.1 – Documentation
	Activity 2.2 – Elaboration of indicators system
PHASE 3 – Comparative study on pre and post food industrial city's implementation	
	Activity 3.1 – Simulation of food industrial city's implementation
	Activity 3.2 Calculation and interpretation pre and post food industrial city's implementation

**Source:** Own concept.

These are just few of the possible benefits of this model's application. Still, the quality of life may suffer some improvements. This conceptual model's results should further demonstrate the improvement of quality of life in rural areas where it will be applied.

Starting this model's objective and considering OECD Compendium of well-being indicators (2011) and the methodology used by Quality of Life Project in New Zealand, which is one of the best initiative in worldwide, in response to growing

pressure on urban communities, concern about the impacts of urbanization on the effects of this on the well being of residents (<http://www.bigcities.govt.nz/indicators.htm>, accessed on 4th of June 2011), we propose the following indicators for measuring quality of life in rural areas. The indicators may be used especially after the model's application.

Table 3

**Indicators for quality of life in Romanian rural areas – Housing**

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
Housing Rooms per person Dwellings without basic facilities	Housing Housing tenure Housing costs and affordability Household crowding Government housing provision Urban housing intensification Housing accessibility	Housing Rooms per person Dwellings without basic facilities Housing tenure Housing affordability Government housing provision Rural housing intensification Square metres of cultivated gardens next to house per person

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

In Romania's rural areas, almost each house has a garden next to it. There, the owners cultivate vegetables and fruits for own consumption and not only. The reason for emphasizing this indicator, square meters of gardens per persons, is, in our opinion, that it proves the high quality of basic agricultural product that a family may consume. It is true, that it may prove, also, the low life condition, meaning that this person has no money to buy already done products. But the quality of his consumption is our interest. The fact is, after putting in scene the proposed model, farmers will have an industrial production. Therefore, if a person still used the land next to his house for own consumption, is just for increasing the quality of his family's nutrition.

Table 4

**Indicators for quality of life in Romanian rural areas – Income and wealth**

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
Income and wealth Household net adjusted disposable income per capita Household net financial wealth per capita	Economic standard of living Income Work life balance Cost of living Social deprivation Net worth (assets and liabilities)	Income and wealth Household net adjusted disposable income per capita Household net financial wealth per capita Value of salary that farmer could obtain

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

### Specific indicators for quality of life in rural areas

Moreover, in Romanian small farms, keeping evidence of own and own family member's labour is not an usual thing. The explanation for creating this indicator is to emphasise the work value in the small farms and to make a public remark upon the great value that the individual farmers are missing because of this situation.

Table 5

#### Indicators for quality of life in Romanian rural areas – Income and wealth

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
Jobs and earnings Employment rate Long-term unemployment rate	Economic development Economic growth Employment Research and development Local businesses Retail sales Residential and non-residential building consents Tourism Skilled migrants	Jobs and earnings Employment rate Long-term unemployment rate Average salary from non-agricultural activities Number of high educational jobs per capita

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

Romanian rural areas may offer many jobs alternatives for locals, besides agriculture. Still, the economic development of these areas should interfere so that this situation to be met. Therefore, it seems important to know the average salary from non-agricultural activities in order to create an image upon the quality of life of the region.

In the same time, the number of high educational jobs per capita represents the quality of the jobs' offer in the region. Its publication may constitute an attraction for young persons who would be willing to come back home from their universities or to even migrate from urban to rural areas.

Table 7

#### Indicators for quality of life in Romanian rural areas – Social connections

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
Social connections Contact with others Social network support	Social connectedness Overall quality of life assessment Diversity and identity Local community strength and spirit	Social connections Contact with others Social network support Overall quality of life assessment Local community strength and spirit Internet connections

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OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
	Electronic communication Arts and culture	Internet communication Number of theatres, of cinemas, of plays per year Number of sportive games per year Number of barbeque places Number of libraries Number of weddings and baptisms, and local festivals

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

All the proposed indicators show the living conditions of the rural areas from the point of view of social relations and connections. The relevance of the indicators, for all mentioned events, is that they show possibilities for bringing together locals and for them to communicate. For Romania, weddings and baptisms are events where the locals spend much time and money. The indicator shows their availability for spending time to each other and spending money.

*Table 8*

### Indicators for quality of life in Romanian rural areas – Education and skills

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
Education and skills Educational attainment Literacy	Knowledge and skills Participation in early childhood education School participation Qualification levels Skill and job match Career training	Education and skills Educational attainment Literacy School participation Qualification levels Skill and job match Career training Density of kindergartens Density of primary, secondary and high schools Education 's accessibility Scholarships number and value Number of hours spend for educational purposes

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

Defining these indicators is for them to give a true image of rural areas concerning education and training, in comparison with urban areas. Usually, in Romania the education system is more difficult to access in rural areas, because the

### Specific indicators for quality of life in rural areas

density of public schools is small. And the actual reform on education is decreasing this number. Such indicators will, probably, prove to policy makers that rural areas need special care and, in long time, to people that they will benefit of the same advantages for their children. In the case of the functioning of the agrifood industrial city, the involved persons will ask for superior educational system.

Romania, due to its agricultural potential, fulfils as many of the premises for organic farming. The indicators may provide to policymakers good feedback. In the same time, regional agriculture may benefit of increasing volume of selling agricultural products in case of publishing good values of these indicators, of course, if there is the case.

*Table 9*

#### Indicators for quality of life in Romanian rural areas – Education and skills

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
Environmental quality Air pollution	Natural environment Local natural environmental issues Waste management and recycling Biodiversity Energy use Air quality Beach and stream / lake water quality Drinking water quality Water conservation	Environmental quality Air pollution Local natural environmental issues Waste management and recycling Biodiversity Energy use Air quality Beach and stream / lake water quality Drinking water quality Water conservation Hectares of agricultural utilised area for organic farming per capita Value of ecological products packs per capita Quantity of chemicals used per hectare

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

Agriculture, tourism, handicrafts in rural areas in Romania need a good representation at local decision making bodies, so that they could better present their needs and development plan. Therefore, the nominee of those two indicators will somehow boost the actions of national and local authorities for stronger support.

Table 10

**Indicators for quality of life in Romanian rural areas – Civic engagements and governance**

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
Civic engagements and governance Voter turnout in most OECD countries Consultation on rule-making	Civil and Political rights Treaty of Waitangi Community involvement in council decision-making Voter turnout Representation on local decision-making bodies	Civic engagements and governance Voter turnout in most OECD countries Consultation on rule-making Representation on local decision-making bodies of all socio-professional levels Number of local regulations approved by community interference

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

Table 11

**Indicators for quality of life in Romanian rural areas – Health status**

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
Health status Life expectancy at birth Self-reported health	Health Life expectancy Low birth weight babies Infant mortality Teenage parents Diseases Access to GPs Mental and emotional wellbeing Self-reported health status Modifiable risk factors Addictions Recreation and leisure	Health status Life expectancy at birth Self-reported health Number of teenage parents Number of annual days for leisure and recreation Number of medical visits Distances to the net medical care unit Number of beds per capita Number of offered medical services

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

Romania's medical system is under structural reform. The approach is to create a top list of Romanian hospitals. According to these results, a medical unit will receive financial support. Hospitals and care units with best results to obtain superior financial support and, many of the rural medical care units will be closed, as they have no outstanding medical results. Still, the population needs them. This is the reason for these indicators' nominalization: to compel national authorities to take into consideration, these regions' medical necessities and to harmonize the economic approach to the quality of life requirementst.



**Specific indicators for quality of life in rural areas**

*Table 12*

**Indicators for quality of life in Romanian rural areas – Personal security**

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
Personal security Intentional homicides Self-reported victimisation	Safety Perceptions of safety Child safety Injuries Road safety Workplace Safety Crime Levels	Personal security Intentional homicides Self-reported victimisation Child safety Number of labour accidents Number of family violence cases

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

Labour accidents are often in Romania, as the personnel usually do more than it should. This indicator will also help for better public policies in the field and for imposing accountability.

*Table 13*

**Indicators for quality of life in Romanian rural areas – Work and life balance**

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
Work and life balance Employees working very long hours Time devoted to leisure and personal care Employment rate of women with children of compulsory school age		Work and life balance Employees working very long hours Time devoted to leisure and personal care Employment rate of women with children of compulsory school age Number of effective paid labour hours in agriculture and handicrafts

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

Romania has less evidence on paid labour force in rural areas, especially in agriculture. The agricultural products that small farmers sell do not include salary evidence or recovery. To monitor an indicator as Number of effective paid labour hours in agriculture and handicrafts just draws attention upon this issue and may this labour will further be paid.

Table 14

**Indicators for quality of life in Romanian rural areas – People**

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
	People Population growth Ethnicity Age Families and households Disability Maori well being	People Population growth Ethnicity Age Families and households Disability Roma population's integration

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

Ethnicity represents an important theme in Romanian rural areas, as the roma population is increasing, but their economic contribution on regional or local level is not a benefit. Perhaps the agrifood industrial city will involve this population and will reduce the social disparities.

Table 15

**Indicators for quality of life in Romanian rural areas – Built environment**

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
	Built environment Look and feel of the city Land use Traffic and transport Public transport Access to services Density	Built environment Land use Traffic and transport Public transport Access to services Density of population Density of houses Density of personal gardens

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

The density indicators would show the space that a rural person benefits of and the buildings that everybody needs, but no one seems to like them. The rural areas are attractive given their open space. If the density of buildings is encompasses, then, the main attraction will disappear. Considering this, the agrifood industrial city should overcome this situation.

Table 16

**Indicators for quality of life in Romanian rural areas – Subjective well-being**

OECD Compendium of well-being indicators	Quality of Life Project in New Zealand	Quality of life indicators for Romanian rural areas
Subjective well-being Life satisfaction		Subjective well-being Life satisfaction Personnel happiness

**Source:** Proposal for quality of life indicators for Romanian rural areas based OECD methodology and New Zealand urban example, own concept.

There is no other indicator for subjective well-being than OECD's life satisfaction, except personnel happiness.

### Conclusions

No matter what the methodology used for creating quality of life indicators, this issue represents one of the policymakers' objectives. To permanently improve personal well-being, to shown responsibility for environment, to develop project for superior life conditions and personnel security and safety, is on the day agenda of the international bodies and national authorities.

This research reveals the conceptual model of agrifood industry city in a modern perspective. In addition, a specific indicators system it was built in order to be able to quantify the difference between obtained results in pre and post food industrial city's implementation, when taken into consideration the quality of life aspects.

The model may constitute a good practice for other field or countries, and provides a high level of knowledge transfer to public and private sector. Its implementation gives a new identity to Romanian rurality.

### Acknowledgements

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**Abstract.** *The marketing strategy of any company depends very much on the way the consumer behaves and how he takes the buying decision. The behavior of the consumer determines the way in which a company develops its products, how it sets its prices, how it communicates with its customers and how the stores are designed. Besides this the behavior of the consumer is a good indicator for the way and the quality of life. It shows how the consumer lives, what type of products he buys and how does this affect his welfare.*

*This article presents the behavior of the Romanian consumer for different product groups in comparison. It analyzes the results of a research about the consumer behavior and the rationality of the buying decision, by analyzing the cognitive and emotional reactions of the consumer towards the existing product groups as well as the motives which lead to this behavior.*

**Keywords:** consumer behavior, product groups, emotional reactions, cognitive reactions.

## **ANALYSIS OF CONSUMER BEHAVIOR FOR DIFFERENT PRODUCT GROUPS**

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## 1. Introduction

One of the biggest challenges for companies nowadays is to convince the consumers to buy their products. In order to be able to do this, it is important for companies to know the behavior of the consumer and the motives which lead to this behavior. Besides this, knowing the behavior of the consumer allows companies to implement the right marketing instruments.

Although the consumer behavior is a very important aspect for the marketing strategy of the companies, it is very difficult to determine it completely. The researchers in the field of consumer behavior have tried for many years to explain the buying decisions the consumer make. One of the most important theories in this field is the behaviorist SOR Model (stimuli-organismus-response) (Kroeber-Riel, Weinberg, 2003). This model relies on the fact that there are three phases in the buying process. The first element is the stimuli from the environment which determines the buying decision. The organismus represents the mind of the consumer in which the decision is formed, based on different elements such as cultural or educational background, social status, personality lifestyle. Although not all processes in the mind of the consumer can be determined, researchers have identified to types of processes: cognitive processes and emotional processes. Emotional processes rely on the activation of internal emotions of a consumer, which lead to a certain behavior (Foscht, Swoboda, 2004, p. 37ff). Cognitive processes refer to some thinking procedures which take place together with the emotional processes in the mind of the consumer and include perception, learning, evaluation, memory and decision-making (Foscht, Swoboda, 2004, p. 73ff). The last element of the behaviorist model is the reaction. Based on the cognitive and emotional processes in the mind of the consumers, the reaction is reflected in the buying decision. This refers to the fact that a consumer buys or not a certain product and the type of product he buys.

This article presents the reaction of the consumer for different product groups in comparison. Based on the reaction of the consumer, it is tried to determine, on what type of processes does the consumer take his decision. There are analyzed several reactions which can be based on cognitive or emotional processes. Besides this, a survey was done in order to determine the motives of the consumer towards this type of behavior, because only by observation it is difficult to say what really happens in the mind of the consumer

## 2. The coordinates of the research

In order to determine the behavior of the consumer an experiment was done. The objective of the experiment was to analyze and explore the cognitive and emotional reactions in the buying behavior and to determine their rationality from the point of view of the consumer. It consisted out of three parts. The initial part questioned the respondents on their initial purpose and desires of the buying process such as the products he wanted to buy, the amount of money, he wanted to spend and

so on. The second part consisted out of an observation regarding the buying behavior. There were analyzed the reactions in the buying process for several product groups. The third part included a survey, which should explain the aspects observed in the previous part, regarding the motives of buying the products. In this article there is presented a comparison between the different products groups and the type of behavior, which characterizes each product group.

The marketing-experiment was conducted in the period December 2010 – February 2011 in different retail formats in the main cities of Romania. There were observed 146 persons, which were chosen randomly by the interviewer. The only aspect which was considered in the marketing-experiment was that the number of female respondents should be equal to the number of male respondents. This condition was put, because previous researches and studies have shown that the buying behavior of women and men differs.

### **3. Cognitive and emotional reactions of Romanian consumers in the buying process**

In order to determine the cognitive and emotional reactions of the consumer, an observation was done. For the observation, there were five possible types of reactions. The first type was that the consumer took directly the product, which indicates a habitualized behavior and it is a rather cognitive reaction. The second type of behavior was the undecided one, when the consumer took one product, but he changed afterwards his opinion after seeing more products. The third type of behavior is the analytical one, when the consumer analyzed more products and then he decided to buy a certain product. The third category was the one, in which he analyzed more products, without taking one. The last option was, if the consumer didn't stop at this group of products.

Depending on the type of product a consumer can have different reactions towards this product. There products which have a rather emotional involvement in the buying process, like for instance products which we like or products with powerful brands, which contribute to the image of a certain consumer. Besides this, there are products, with a rather cognitive buying decision, as for instance products which we buy because they are healthy and they contribute to our welfare. In fig. 1 there can be observed the results of the observation regarding the buying behavior of the Romanian consumer for different product groups.

As it can be observed in fig. 1, the product groups, where the Romanian consumer stop least, are the cans, the cooked and the half-cooked products. 68,5% of the Romanian consumer don't stop at the cans department in a store, while 64,4% and 61,6% don't stop at the departments for cooked or half-cooked products. An explanation for this behavior can be the fact that the Romanian consumers prefer natural, self-cooked products. This shows a rather traditional way of life, where most of the cooking is done at home and it is self-made.

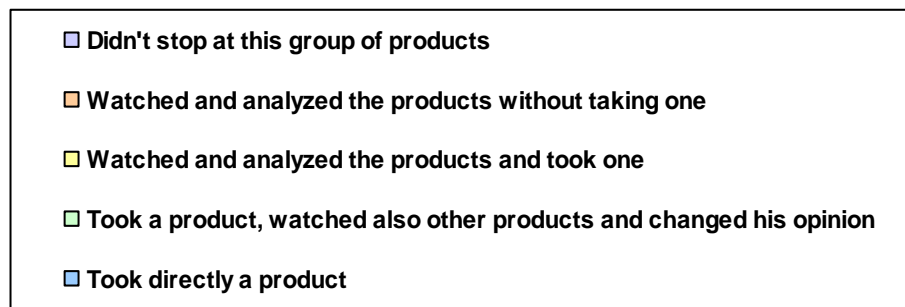
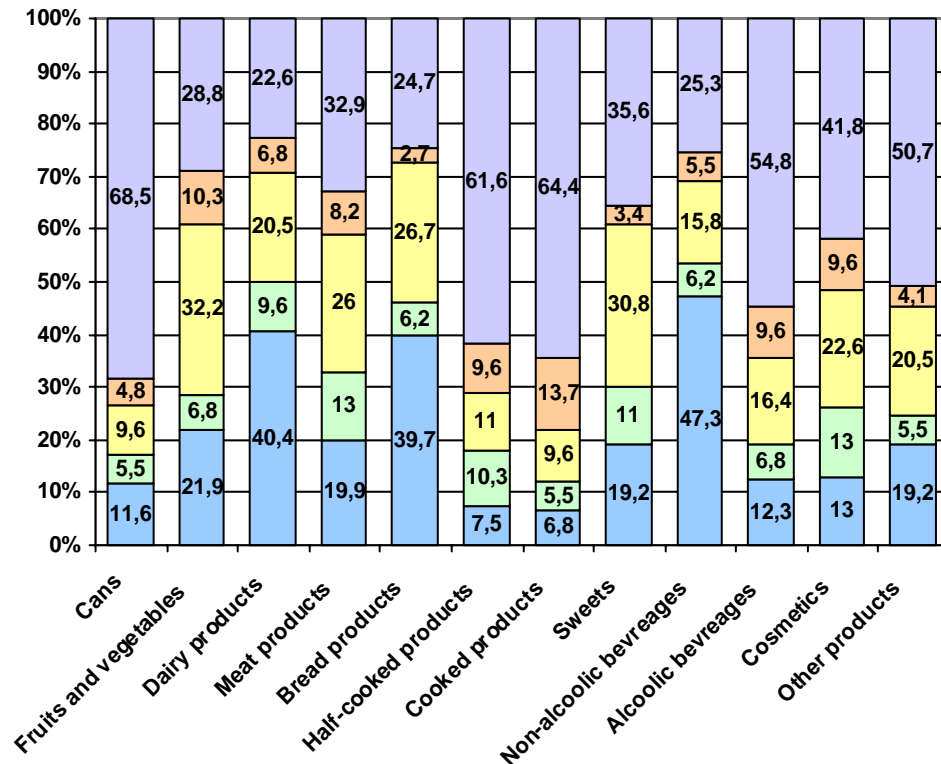


Figure 1. The observed buying behavior of consumer for different product groups  
(own processing based on the results of the research)

From the respondents, 54,8% of the consumer don't stop at the department for alcoholic beverages, while 50,7% don't stop at other categories of products. Regarding the high percentage of consumer, who don't stop at other categories of products, this can be explained by the fact that, they buy this type of products in other types of stores



not necessarily in a supermarket or a hypermarket. 41,8% of the consumer don't stop at the department for cosmetic products. Cosmetic products have a medium frequency of buying, so consumers don't have to stop every time they go to a supermarket at this type of products. Besides this, there are specialized stores, which offer this type of products, so that consumer can purchase this type of goods in other stores.

For the basic products, the percentage of people, who don't stop at these categories, range between 20%-36%. This can be explained by the fact that consumer don't buy these products every time they go shopping. So 25,6% of the consumers don't stop at the sweets and snacks category and 32,9% don't stop at the meat products. The product groups with the highest attendance, as expected, were the dairy products (22,6%), bread products (24,7%), non-alcoholic beverages (25,3%) and fruits and vegetables (28,8%).

Although not stopping at a certain product group may not be necessarily considered a type of behavior, but for the marketing strategy of a company it is essential to analyze which are the product groups which attract most the consumer. Not stopping at a certain type of product group may show the reduced importance of a certain product group at a moment of time. But it is interesting to analyze, whether this product group is growing or decreasing. So all three product groups, can be type of products, which have a low importance at this moment of time, but they can increase in the future. They can be new developed product categories (as for instance cooked products and half-cooked products), which can gain importance in the future, when the consumer won't have enough time to cook at home.

Regarding the type of behavior, the most habitualized type of behavior can be observed at the non-alcoholic beverages. 47,3% of the consumer take directly a certain drink without analyzing too much the other options. On the next place, there are the dairy products and the bread products, where 40,4% and 39,7% of the respondents have this type of behavior. This type of behavior is the most challenging for the marketing of a company, for it is very difficult to be influenced. Once a consumer got used to a certain product or brand, he won't pay too much attention neither to the other products in the store, nor to communication or advertising campaigns.

For the groups of products fruits and vegetables, meat products, sweets and other products the habitualized behavior of the consumer ranges between 19% and 22%. So 21,9% of the consumer take directly the fruits and vegetables, without analyzing too much, while 19,9% of the consumer have the same behavior for meat products. The sweets (19,2%) and the other products (19,2%) have a similar amount of people who buy them based on experience. The next places are taken by the cosmetic products (13,0%), alcoholic beverages (12,3%) and cans (11,6%). The product groups with the lowest rate of habitualized behavior are the half-cooked products (7,5%) and the cooked products (6,8%). In these cases, the layout of the products in the store or the advertising campaigns can still influence the buying behavior of the consumers.

Another type of behavior which could be observed at the consumers was the analytical behavior. At this type of behavior it was not possible to observe if the analysis was based on cognitive elements like good reasons for buying a certain

product or if it was based on emotional elements like liking a product. However, there can be observed three types of analytical behavior: the one in which the consumer analyze the products and buy one, the one in which they analyze the products but don't buy one and the undecided one, where the consumer takes a product, but changes his mind afterwards.

Regarding the analytical behavior, which ends with the buying of the product, this type of behavior is most frequent at the product group fruits and vegetables and sweets. 32,2% of the respondents analyze the fruits and vegetables before they buy it, and 30,8% do so for the product group sweets. For both product groups, this is the preponderant type of behavior. This type of behavior can be easily influenced by the way the products are presented in the store, because the consumer doesn't have a predefined opinion on what he wants to buy. In this case the way the product is designed, packed or presented, as well as its position on the shelf, can easily influence the consumer.

The next product groups, where this type of behavior can be found are: bread products (26,7%), meat products (26,0%), cosmetic products (22,6%), dairy products (20,5%) and other products (20,5%). For the products group meat products and cosmetic products, it is the preponderant type of behavior, so most of the consumer have this reaction when they buy the product. In the case of the bread products and dairy products, this type of behavior is not that important as the habitualized one, but because these product groups are among the most visited, the percentage of consumer who have this type of behavior is relative high.

At the alcoholic beverages and at the non-alcoholic beverages, 16,4% and 15,8% of the consumers have this type of behavior. The product groups with the lowest amount of this type of behavior are the half-cooked products (11,0%), cooked products (9,6%) and the cans (9,6%). This small percentages can be explained partly by the fact that these are the product groups which are not that visited by the consumers. Although if we compare the results of the analytic type of behavior with the habitualized one, there can be observed that the habitualized behavior is more frequent for cans in opposition to the half-cooked products and cooked products where the analytic behavior is more frequent than the habitualized one.

The undecided behavior is the most frequent at meat products and cosmetics. In both cases, 13% of the consumers have changed their mind regarding the product they buy. This type of behavior has also a higher frequency for product groups like sweets (11%), half-cooked products (10,3%) and dairy products (9,6%). It is interesting to observe, that in the case of the half-cooked products, this type of behavior is preponderant, which shows that the consumer take with difficulty the decision of what product to buy. This indicates also the fact that the final decision regarding the bought product is taken in the moment of the buying and not previous to it. All the other product groups have similar percentages, so 6,8% of the respondents have this type of behavior in the case of fruits and vegetables and alcoholic beverages, 6,2% of the respondents have this type of behavior in the case of bread products and non-alcoholic beverages and 5,5% of the respondents have this type of behavior in the

case of cans, cooked products and other products. In none of these cases, this type of behavior is preponderant, but it has comparable importance for products groups like cans and cooked products.

The last type of behavior is the one in which the consumers only watch a certain product, but they don't buy it. This type of behavior is most frequent at cooked products (13,7%) and fruits and vegetables (10,3%). It is interesting to analyze that this type of behavior is the preponderant behavior for the product group cooked products. Actually, this implies that the consumer doesn't have a predefined decision either to buy these type of products or not, but the decision is taken in the store after analyzing or watching the products. This type of behavior can be also observed at 9,6% of the respondents for the product groups alcoholic beverages, half-cooked products and cosmetics, but in none of the cases it is the most important type of behavior. For the other groups the percentage for this type of behavior are lower as for instance meat products (8,2%), dairy products (6,8%), non-alcoholic beverages (5,5%), cans (4,8%), other products (4,1%), sweets (3,4%) and bread products (2,7%). It is interesting to analyze that there are product groups, where this percentage is very low. The explanation for this is the fact that either the consumers don't watch the products if they don't want to buy it or they can not help themselves not to buy a certain product.

All this information about the type of behavior the consumers have regarding different product groups can influence the marketing strategy of a company. On one hand it can determine the type of communication strategy a company has. On the other hand it can influence the way the retail companies make the layout of the store. So product groups which are frequently visited by the consumers are put at the opposite part of the entrance of the store, while product groups at which consumers have a rather impulsive behavior are put on the way of the consumer from the entrance to the desired products.

#### **4. Motivation of buying of Romanian consumers for different product groups**

The results of the observation of the consumer behavior give us precious information regarding the reaction of the consumer in a store as a result of all external stimuli and internal motives for buying a certain product, but they don't describe the reasons which a consumer had to buy a certain product. Actually, we know that he buys a certain product in a certain way, but we don't know why he took that decision. For this reason, besides the observation of the consumer, we have also questioned them about the reasons and the motives they have when they buy a certain product. For instance we can observe that a certain consumer goes directly to a product and takes it, but we don't know if he had this type of behavior because they know that the product is good or because they saw it in advertising or because there is a special offer for this product. All these information can be determined only by questioning the respondents.

In order to find the reasons of a consumer for buying certain products we have predefined eight possible reasons for making a buying decision according to the typologies of behavior, depending on the cognitive or emotional elements which determine it. The first type of behavior is “I always buy the same products because I know they are good” and it is a rather cognitive behavior based on the previous experiences of the consumer. This is actually the habitualized behavior, where we don’t see only the reaction but also the reasons behind it. The second type of behavior is the analytical one where the consumer “analyzes every time he goes to a store which is the best option”. This is also a rather cognitive type of behavior, although it can also contain emotional elements like I analyze the product I like best. The third type of behavior is the one based on price “I always buy the product with the lowest price” and it is again a cognitive reaction. The next two types of behavior are the one in which the consumer is influenced either by an advertising or by a friend and he also admits it. For this behavior there are two types of situation: the one in which the consumer buys only the product which was recommended and the situation in which the consumer buys something else in case he doesn’t find the recommended product. The first situation indicates a strong influence from external factors like friends or communication campaigns, while the second behavior is a more flexible one. Both type of behavior combine cognitive and emotional elements as for instance the recommendation might be a guarantee that the product is good (cognitive element) or emotional elements like the consumer buys it just because it creates a certain image (friend has it or it is in fashion). The next category of behavior is the one in which the consumer buys products, which are at a special offer. This is again a mixed type of behavior, where the impulsive element is stronger. On one hand the consumer buys products at special offers because they are cheaper, on the other hand the low prices and the promotion for special offers attract the customer and create a buying stimulus. Another type of impulsive behavior, which is also mentioned in the research, is the one in which the consumer watches on the shelf and buys the product he likes best. This type of behavior has a preponderant emotional component because the decision of buying is done in the moment of buying. The behavior with the highest amount of emotional component is the one in which a consumer buys a certain product, even if he didn’t have this intention from the beginning. In this case the decision of buying is taken definitely in the moment of the purchase.

As it can be observed in fig. 2, the most frequent type of behavior for all product groups is the analytical one and the experience based one. Most of the consumers buy the same products, because they know that these types of products are good or they analyze every time, which is the best option for them. This behavior differs from one product group to another.

As the graphic in fig. 2 shows, the product group “dairy products” has the highest percentage of experienced based behavior. 50,7% of the respondents buy

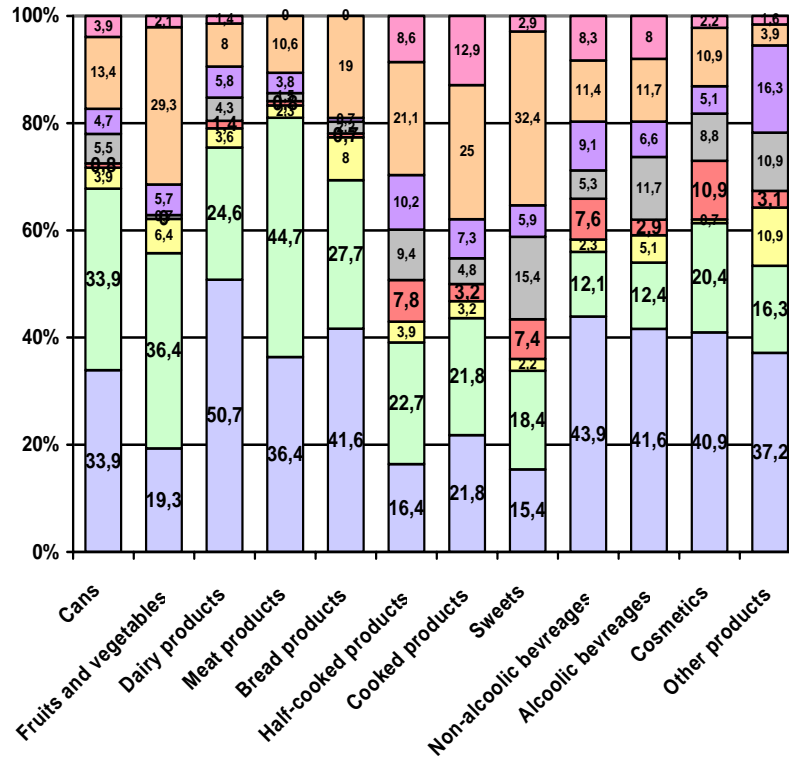
### **Analysis of consumer behavior for different product groups**

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the same products because they know that they are good. This high percentage of experienced based behavior makes it difficult for the marketing of the company to make the consumers change their mind. The next categories with a high percentage of experienced based behavior are the non-alcoholic beverages (43,9%), bread products (41,6%), alcoholic beverages (41,6%) and cosmetics (40,9%). This can be explained by the fact that the consumer know the product groups very well (for instance beverages) or they don't differentiate too much among products (for instance dairy products or bread). In all cases the consumers buy the same products without analyzing too much or without being influenced by other communication means. The product groups with an average experienced based behavior are the other products (37,2%), meat products (36,4%) and cans (33,9%). Although the experienced based behavior can be found in a quite big amount at all products groups, the product groups, with the lowest amount of experienced based behavior are cooked products (21,8%), fruits and vegetables (19,3%), half cooked products (16,4%) and sweets (15,4%). This can be explained by the fact that the offer for these products is very diverse and the consumers choose every time they go to the store what products they like best.

The analytical type of behavior (I analyze every time I go to the store, which is the best option) is most frequent at meat products (44,7%), fruits and vegetables (36,4%) and cans (33,9%). For the products group meat products and fruits and vegetables, this is the preponderant behavior. The explanation for this result, is the fact that these products don't necessarily have strong brands and because they depend very much on the harvest each year. Other product groups with important amount of this type of behavior are bread products (27,7%), dairy products (24,6%), half-cooked products (22,7%), cooked products (21,8%) and cosmetics (20,4%). Product groups with a smaller amount of analytic behavior are sweets (18,4%), other products (16,3%), alcoholic beverages (12,4%) and non-alcoholic beverages (12,1%).

It is interesting to observe that the cumulated percentages of experienced based behavior and analytic behavior are higher than 30% for all product groups. The basic food products as dairy products, meat products and bread products have the highest percentage of this cumulated type of behavior with rates over 68%, showing a rather cognitive behavior at this type of products. Meanwhile impulse based products like sweets, cooked products and half-cooked products have the lowest amount of these cumulated types of behavior.



- ☒ Even though I didn't intend to buy a product, but I like it, I buy it
- ☒ I watch on the shelves and I buy the products I like best
- ☒ I buy those products for which there are special offers
- ☐ I look for those products which I saw in an advertising or which were recommended by friends and if I don't find them I buy something else
- ☐ I look for those products which I saw in an advertising or which were recommended by friends and I buy only this product
- ☐ I always buy the product with the lowest price
- ☐ I analyze every time I go to a store which is the best option
- ☐ I always buy the same products because I know they are good

Figure 2. The motivation of the buying behavior of consumer for different product groups  
(own processing based on the results of the research)

### **Analysis of consumer behavior for different product groups**

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The buying decision based on low prices is not very frequent at any type of products group. If we compare the products groups, we can observe that the highest amount of this type of behavior can be observed at the other products (10,9%). This shows the fact that consumer buy in supermarkets or hypermarkets other types of products because they have low prices. Despite this, we can not say that this behavior can be found at food products, which can have a direct influence on the health of the consumer and the quality of their lives. Another product group with a higher percentage on price-based behavior are the bread products (8%). This can be explained by the fact that consumers don't make to much difference among the products and for this reason they choose the one with the lowest price. On the next places are alcoholic products (5,1%), cans (3,9%), half-cooked products (3,9%), dairy products (3,6%) and cooked products (3,2%). Other product groups with very low percentages of price-based behavior are meat products (2,3%), non-alcoholic beverages (2,3%), sweets (2,2%) and cosmetics (0,7%). They are either products which are needed in the everyday life (meat and beverages).

The product groups, where the consumers are most influenced by friends or advertising campaigns, are the sweets. 22,8% of the consumer take the buying decision at this category based on this argument. From these, 15,4% buy something else, if they don't find the recommended products, while 7,4% buy only the recommended products. The percentage of consumer, who would buy something else if they don't find the needed product, is the highest from all product groups. The next product groups, where the recommendations play an important role in the buying decision are the cosmetics (19,7%) and the half-cooked products (17,2%). In the case of cosmetics, 8,8% of the respondents buy something else if they don't find the needed product, while 10,9% buy only the recommended one. The cosmetics are the products, with the highest value for the consumers who would buy only the recommended products. The situation in the case of half-cooked products differs a little bit, where 9,4% would buy other products and 7,8% buy only the recommended products. Other two product groups with a high influence from the friends or advertising are the alcoholic beverages and the other products. In both cases the amount of respondents who would buy something else if they don't find the needed products is with values of 10,9% and 11,7%, much higher than of the ones who would buy only the recommended products (3,1% and 2,9%). The non-alcoholic beverages have an average influence from friends and advertising. 12,9% of the respondents are influenced by these, while 5,3% would also buy other products, while 7,6% would buy only the recommended one. For all the other product groups the influence of advertising and recommendation from friends is very low as for instance 8,0% for cooked products, 6,3% for cans, 5,7% for dairy products, 2,9 for bread products, 2,3% for meat products and 0,7% for fruits and vegetables. In most of the categories the consumer would also buy other products if they don't find the recommended products.

The behavior, in which the consumer bases his decision on special offers, is most frequent at the other products. 16,3% of the consumers buy other products at

special offers. This can be explained by the fact that the category other products is a very dynamic product group in the case of hypermarkets and supermarkets and consumers buy products here only if they find a special offer. The next product groups where the consumers are very much influenced by the special offers are half-cooked products (10,2%) and non-alcoholic beverages (9,1%). All the other product groups have lower percentage of consumer who buy products because of special offers.

One of the most important types of behavior is the one in which the consumer buy the products which they like best from the shelves. The product group which has the highest amount of this type of behavior are the sweets (32,4%). This type of behavior is preponderant for this product group and can be explained by the fact that sweets are emotional products which create appetite. The next product groups, where this type of behavior can be found are the fruits and vegetables (29,3%), cooked products (25%) and half-cooked products (21,1%). All these product groups have rather an emotional component for they are not essential for the survival, but they create appetite. On the next places are bread products (19,0%), cans (13,4%), beverages (11%), cosmetics (10,9%) and meat products (10,6%). The product groups with the lowest percentage of this type of behavior are dairy products (8%) and other products (3,9%).

The behavior with the highest emotional component is the one in which the consumer buys a certain product, even if he didn't intend to buy this product. This type of behavior is most frequent at cooked products (12,9%), probably because these products create appetite. Other product groups, where this behavior is preponderant are half-cooked products (8,6%), alcoholic and non-alcoholic beverages (8,3%). All the other products groups have values lower than 4%.

## 5. Conclusions

The results of the survey shows that the consumer behavior is based both on cognitive and emotional elements and it depends from one products group to another. Depending on the type of need which is covered, the reaction and the behavior of the consumer is different.

Some of the consumers make their decision based on cognitive elements as for instance the price or the best option. Other consumers make their decision based on emotional factors as for instance the products they like best. For this reason the producers and the retailers should adjust their marketing strategy in order to convince the consumers to buy their products. Besides this, retailer should know how to adjust their strategy, especially the layout of the store in order to convince the consumer to buy more products. As a general rule the products which fulfill basic needs and for which there are rather cognitive decision are placed opposite to the entrance, while more emotional products are put on the way of the consumer in order to determine impulse based buying decisions.



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**Abstract.** *Concern for the environment in last 30 years develop government policies for environment, programs for the environment coordinated by civil society and develop of markets with products that take care of the environment. These green markets have expanded including increasingly more products types. But when the concept enters on food market, the reasons for the development of markets change. The consumer health care has become the primary factor of market development. This article proposes a research instrument for more profound market segmentation for organic food products. We propose an information collecting instrument for demographics and the psychographics characteristics.*

**Keywords:** organic food, marketing research, buying behaviour.

## **THE PROPOSAL OF A METHOD FOR ANALYZING THE BEHAVIOR OF BUYING ORGANIC PRODUCTS**

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## 1. Introduction

The modern environmental movement has begun in the late 1960s in the United States, while the European interest for the ecological aspects and actions started to grow two decades later (Lampe et al., 1995).

Among the factors that have increased the pressure of taking into consideration the ecological and environmental aspects can be stated (Lampe et al., 1995):

- *reflection in media of the environmental damage and threats,*
- *public opinion and the social concern for the environment,*
- *social forces and the greening of business,*
- *green political power and the environmental law,*
- *consumers attitudes and the green purchasing,*

## 2. Literature review

Appearance of the *green marketing*, defined as a marketing response to the environmental effects of the design, production, packaging, labeling, use, and disposal of goods or services (Lampe et al., 1995), has been one of the most important effects generated by the above-enumerated factors.

In the recent years, the meaning of the word “green” has experienced a significant diversification different terms, more or less connected to the ecological and environmental area, being used to describe and explain it: “ecological”, “sustainability”, “conservation”, “corporate social responsiveness” etc (Peattie, 1995).

Green marketing is seen by many names: eco-marketing, environmental marketing, ecological marketing, marketing “green”, sustainable marketing, etc.. as can be seen from the table below (Rosca, 2007)

TERM	AUTHOR	YEAR
environmental marketing	Coddington	1993
ecological marketing	Fish	1974
	Henion și Kinneer	1976
green marketing	Peattie	1995
	Ottman	1992
sustainable marketing	Fuller	1999
reener marketing	Charter	1992

*Figure 1. Terms used for green marketing*

Seen from the side of marketing, the strategic ecological reorientation of the organizations, produced under the combined pressure of the legislation adopted to enforce ecological requirements and the consumers’ “green” demand (Larsson et al., 1996), has been located at the level of all the components of the marketing mix.

### **The proposal of a method for analyzing the behavior of buying organic products**

Concern for the ecology created various new products, and some organizations pride themselves for their conservation and antipollution measures (Synodinos, 1990).

The most people are positive to environmental friendly issues and actions (Solér, 1996).

The literature shows that consumers' eco-behavior is positively influenced by their level of environmental involvement and by an increased specificity in their involvement. (Diamantopoulos, A. et al., 2003).

Consumer segmentation studies on various markets are important for marketing professionals since the beginning of the concept of customer orientation. Consumers in developed markets have been segmented from ecologic point of view since the '80s.

Walter Coddington (1993) presents in Environmental Marketing a multitude of scientific segmentation that: Cambridge, FIND/SVP, J. Walter Thompson, Angus Reid, Simmons Market Research Bureau, SC Johnson /Roper etc.

Attitudes of ecologist people was study by Ottman (1993), Roberts (1996), Bahn and Wright (2001).

From legal point of view the most comprehensive effort in this direction is given by the European legislation (Regulation (EC) NR.834/2007).

Even if the regulations require compliance with established rules there are exceptions that lead to loss of confidence in using eco products.

For example, sustainable production should be made wherever possible using biological and mechanical processes of production through land and related production without using genetically modified organisms.

Food can be labeled as "organic" unless at least 95% of their agricultural ingredients are organic. For manufactured goods legislation refers only to labeling. Until now, eco-label – "EU flower" was given for 26 product groups, including 3,000 products and services.

The objective is to guide consumers towards products with low environmental impact during the entire life cycle of products.

But from marketing perspective, we care what comprehension consumers with products that is organic and their reasons for choosing the underlying purchase decisions.

For food it seems that the motivations are different and the ecological spirit is largely replaced by interest in his or family health.

Consumers purchase organic food mainly for health reasons; in view of being better for the children because of lower pesticides and fertilizer residues (Makatouni, 2002).

Organic Food is perceived as food without "chemicals" and "growth hormones", food that is "not intensively" produced and is grown as "natural" (Makatouni, 2002).

In other words, move from a social perspective, buying organic products because it is good for the planet, for the future, for humanity in general about buying organic food that is good for my health and my family.

### 3. Food purchasing decision

Therefore the present research proposal focuses on how decision making in buying organic food products.

First, research should only keep the food purchasing decision-makers. So we have asked a question with Yes and No response variants. For answer no we stop research.

*Do you personally ever decide what kind of food you buy in your household?*

**To see who the main decision-maker to buy food is we have formulated a question in this direction. As is known in most households, the woman is the main decider but there's family that purchases are made by the husband, he often taking decisions concerning several aspects of buying.**

*In your household, the person who is the main decision maker in terms of food purchased. (One possible answer)*

- ☐ Husband    ☐ Wife    ☐ One of the children    ☐ One of the grandparents  
☐ Someone else. Who ?.....

There is a research variable in the formula gone shopping. Modern trade with supermarkets has changed completely in the past 15 years, how to purchase food in Romania. It's shifted from shopping in the proximity of the house almost daily to weekly shopping, with car, along with the whole family in a supermarket on the outskirts. Therefore the decision to purchase is divided to almost all family members.

*When you go shopping for food, prefer to go (one answer possible)*

- ☐ alone  
☐ accompanied by my partner's life  
☐ accompanied by children  
☐ accompanied by parents,  
☐ accompanied by grandparents,  
☐ accompany a friend  
☐ the entire family,  
☐ together with other families.

Frequency of respondent's purchase of food from food purchasing frequency of the family is important also to determine exactly what influence has the respondent in purchase decision.

*How often you personally go food shopping. (One possible answer)*

- ☐ Once a month or less  
☐ 2-3 times a month  
☐ Once a week  
☐ More often than once a week

**and,**

*In your family how often they go food shopping, taking into account actions of all members. (One possible answer)*

- ☐ Several times a day  
☐ Daily

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#### The proposal of a method for analyzing the behavior of buying organic products

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- ☐ *Several times a-week*
- ☐ *Once a week*
- ☐ *2-3 times per month*
- ☐ *Rarely*

Since buying behavior is influenced by the size of the store where they shop as we have seen above we have formulated a question in this regard.

In large shops are found certified organic products while in specialized fairs and food markets found traditional products. On the Internet there are dozens of stores for organic products.

*What type of store would you prefer to do grocery shopping?*

- ☐ *Cash and Carry's (type Metro, Selgros)*
- ☐ *hypermarkets (type Carrefour, Cora, Auchan, Real)*
- ☐ *Supermarkets' (type Mega Image, Penny, Billa)*
- ☐ *neighborhood store*
- ☐ *food market*
- ☐ *Special Exhibitions*
- ☐ *Online stores*

#### 4. Two kind of ecologic food

**So there were questions about food shopping in general. Because we have wanted to study how to purchase organic food products we have tried to see what our respondents understand by organic food products. This was built by a closed question type filter. If the answer is No we stop the interview and if the answer is Yes we continue with a open question, stating that each respondent what understood by those products.**

*Have you heard of organic food?* ☐ YES ☐ NO

*What you understand by organic food products.?.....*

As in the case of previous research have been confusion between certified organic products and those considered environmentally friendly since they come on the market of traditional products, a fairly developed market in Romania, we have introduced an explanatory note.

*According to the EU organic food products are those certified and properly labeled but much of Romanians consider organic products and those purchased in traditional agriculture on peasant markets.*

This can influence the answers but we thought the only way we can know what kind of products is about answers. To compare and response options from certified organic and traditional products, these questions are available separately for each of the variants.

***You personally have bought organic products labeled organic / not labeled.***

☐ YES ☐ NO

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On these two questions we expect to come out the differences between certified and uncertified products but considered by buyers as organic. The difference between them is very important. As certificated products market is still a fairly small market in Romania while traditional products are still very high due to the structure of economic development in Romania. Much of the population lives in rural areas and is occupied in agriculture resulting in many small producers who are on the market.

*What are the latest organic products labeled /non-labeled remember that they have bought?*

Open question like spontaneous notoriety type should provide if respondents know organic products or not. This question will be analyzed after data collection and is a question of which should result if respondents know what kind of products and if you speak their responses will be considered. The following questions relate to the frequency of buying organic products both certified and non-certified.

*In your family how often are buy organic products labeled / non-labeled*

*Once a month or less*

*2-3 times a month*

*Once a week*

*More often than once a week*

Since the working hypothesis we have started from the idea that we have more than one segment of the population interested in organic products we were interested and their sensitivity to price. Suppose that the richer segments are less sensitive to price and will buy a greater proportion of certified organic products.

*How would you be willing to pay extra for an organic product certificate / derived from traditional farming but not organic certified*

*I would not give anything extra; between 0-5%; 5-10%; 15-20%; 10-15%; 20-25%; 30-40%; 25-30%; 40-50%; 50-75%; 75% -100%; Over 100%*

The main factors influencing organic food purchase we will determine by a multiple-response question.

*When taking the decision to purchase organic food you are interested for.*  
(Multiple answers)

*o Price*

*o Amount*

*o Module Packaging*

*o Presentation*

*o Specific labeling of organic products*

*o taste*

*o Other. What ?.....*

Also we intend to explore the main reasons for buying organic products. Depending on the answers to these questions, we can find reasons to buy for different segments of respondents. We expect that reasons that is claiming health and taste in other word personal reasons to be dominant.

*What is the main reason for buying organic food? (one answer)*



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- o There are healthier*
- o They taste better*
- o To protect the environment so*
- o Because we have a medical recommendation in this regard*
- o They are more nutritious*
- o The quality / price is the best*
- o Other reasons. What ?.....*

Reasons to stop buying organic products are related to the fact that they are too expensive and not found in stores

***What are the main reasons for not buying organic products? (Multiple answers)***

*Because there are not found in stores*

*Because they are too expensive*

*Because I trust that are really green*

*Because there is no difference between eating organic products and conventional products*

*Other reasons. What ?.....*

**To determine a personal image of the respondent about organic products we have proposed a 5-step Likert scale from strongly agree to strongly disagree on the following statements battery.**

*Chemical fertilizers, pesticides, insecticides, herbicides are a necessary evil*  
*Organic products are an everyday food*

*I have greater confidence in foreign organic products than in the Romanian one*

*I have greater confidence in the foreign food certification institutes than in the Romanian one*

*I know the markings made by the organic food certification institutes*

*I can not afford to buy organic foods as often as I'd like*  
*Organic products are more consistent*

*The people who buy organic products are responsible to their family*

*Organic products are more filling*

*Organic food remember me what we ate when I as a child*

*I want to buy organic products*

*I have not heard of any campaign to promote organic food*

*Among the certification of an independent institute and a manufacturer we have trust rather in the producer.*

*Just a housewife who buy organic products has truly care for his family*

*Preservatives, food dyes, natural identical flavorings, synthetically sweeteners should be banned even if food should become very expensive failure or insufficient*

*Genetically modified organisms in food have been introduce because the regular food is not enough*

*There are groups of influence who do not want to eat healthy*

## 5. Demographic data

Based on the answers to this question we intend to do a segmentation of the respondents between those who have a way of thinking environmentalist and others. However a demographic and psychographic analysis of those respondents is seen in front for this research.

Usual demographic data are used for this research, such as;

*Sex person: Male; Female*

*Age: 18 - 25 years old; 26 – 35 years old; 36 - years old; 46 - 55 years old; 55 - 65 years old; over 65*

*Last school graduate: general School; High School; Faculty; Master or doctoral studies*

*Household Income: <1000 RON, 1001-2000 RON, 2001-3500 RON; 3501-5000 RON; 5001-7000 RON; 7001-10,000 RON; > 10,001 RON*

*Area of residence: Urban; Rural*

To these we have added marital status and entering answers variant of cohabitation because food purchasing behavior in such a family is like that married one.

*Status.*

*Single*

*Married*

*I live with a partner but we're not married*

*Divorced / Widowed*

Another variable depending on which you suspect to obtain a significant difference is the type of housing. We suspect that those who live at home trying to be closer to nature and have a higher incidence of positive attitudes towards the environment as well as from organic food.

*Your home is:*

*a regular house*

*a house in a new residential area*

*into a new apartment complex,*

*a kind unit built before 89.*

*other response. What .....*

Household size, number of child in care and ages of children are other variables that should be important to buy organic products

*How many people are in your household: Fill .....*

*Number of children in care: None; one; two; three; more than three.*

*How old are children? First child\_\_\_\_\_, Second, \_\_\_\_\_, Third \_\_\_\_\_.*

Occupation of respondents is an important variable in demographic factors but no believe to be important to purchase organic products. A combination of education level and income level we believe offers a better picture of this. However we have formulated the question according guide COR Classification of Occupations in

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Romania to test this hypothesis. This is a restricted classification in order to work with her in a question,

*Your occupation according Classification of Occupations in Romania is:*

*High official, director or manager of political social and economic units*

*Specialist intellectual and scientific occupations*

*Technicians, supervisors with high school*

*Administrative clerk*

*Operative workers in services, trade*

*Farmers and skilled workers in agriculture, forestry and fishing*

*Craftsmen and skilled workers in trades, adjustment and maintenance of machines and installations*

*Plant and machine operators and assemblers of machinery, equipment and other products*

*Laborer*

*Student*

*Pensioner*

Another important demographic variable but that should not obtain significant differences by is geographical area

Area of residence

1 Ardeal

2 Banat-Crisana-Maramures

3 Dobrogea

4 Moldova

5 Muntenia

6 Oltenia

7 Bucuresti

### **6. Psychographic data**

In this exploratory study, we never proposed to make only demographic segmentation based but a psychographic one. In addition to statements relating to attitudes and opinions towards organic products we have proposed a variant of collecting data to attitudes, interests and opinions about life in general in order to make a lifestyle segmentation in Perspective VALS similar program. It should be a significant factor influencing the decision to buy environmentally friendly products.

Such statements will cover with the Likert-type scale, all dimensions of life style in the table below we have proposed a total of 54 statements (Likert, 1932)

*I keep thinking about my work and home*

*I like to spend my time with my family*

*Often, I act on impulse*

*It is ideal to have the same job for life*

*Marriage is an outmoded habit*

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*Corporations sponsoring educational and sporting events do just to increase sales*

*My hobbies help me relax more*

*Go to work only for money*

*I think I am a creative person*

*Having a hobby is a waste of time*

*I do not mind a service you get bored and just waiting to pass the time*

*Culture of other countries is interesting*

*It's best to attend as many social events*

*I hate any kind of household work by*

*It is important for a company to act correctly*

*In my free time I often go to cultural events*

*Always looking for new ideas to improve my house*

*It is important to respect the customs and traditions*

*I would like to travel abroad on holiday*

*I like to we have a circle of friends who help me to hard*

*Government should no intervening in the economy very much*

*When I go on holiday I just want to eat, drink and stay in the sun*

*I like to receive more home visits*

*The government should take care to give us to work*

*Really important in life is to have fun*

*I prefer to spend my free time looking at TV*

*Imports of foreign products harm the domestic industry*

*I have fun doing risky things*

*In my free time I want to do something extraordinary - something crazy*

*Always looking for new ideas to improve my house*

*It is important to respect the customs and traditions*

*I would like to travel abroad on holiday*

*I like to we have a circle of friends who help me to hard*

*Government should no intervening in the economy very much*

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*I prefer to spend my free time looking at TV*

*Imports of foreign products harm the domestic industry*

*I have fun doing risky things*

*In my free time I want to do something extraordinary - something crazy*

*I smoke because my friends and acquaintances smoke*

*In the actual situation, economic downturn the government took some measures good for the economy*

*Quality clothes improve image for a person*

*I would like to have my own business someday*

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*Doing part of some select clubs help for entire life  
I buy clothes for comfort and not because they are fashionable  
People have a duty to recycle products  
I like to enjoy life and not worry about the future  
I like to try new food products  
Over time there will not be enough food for as many are on the planet  
I enough often involved in volunteer projects for the ideas that I like  
I like to eat, even though I know that some products are not too healthy  
Over time, in Romania will live better  
I'd like to go shopping  
I watch more news media  
Prefer products with attractive packaging  
When I go shopping, look for the lowest possible prices  
When we have need information, the first place I look is the Internet  
To cope with life is one thing more important than education for children  
I do a form of sport or do exercise at least once a week  
I'm proud of what I accomplished in life  
Unemployment should be avoided even keeping more job unnecessary  
Always watch sporting events  
I am interested to succeed in life through my own work  
I'm always concerned about the evolution of the political situation in Romania*

The research we proposed to undertake a representative sample in the year 2011. The results of this research will be communicated in the project: Modeling consumer behavior of organic products by using marketing research in context of sustainable development for improve the quality of life.

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**Abstract.** *If foodstuff is a customary component of our lives, because living also requires eating, it should not be approached only as a common factor in meeting the physiological needs of macro-and micronutrients, it must be viewed from a holistic perspective, in terms of social and identity functions that it performs, but also from the effects on individual health and quality of life. Food supply has been renewed continuously by applying results of research and innovation in the food industry. In this process it can be distinguished as dominant trend of diversification: obtaining genetically modified foodstuff, obtaining organic foodstuff, obtaining functional foodstuff. In this paper is performed a literature review in order to highlight the impact of the main trends of development of food supply on consumers' health and quality of life. The main objective of the paper, in which lies its value, is the consumers' awareness on relationship between food quality and quality of life by providing arguments to avoid ultraprocessed and genetically modified foodstuff and to direct their demand towards organic and functional products, considered foodstuff with health benefits.*

**Keywords:** foodstuff, supply diversification, consumer, health and quality of life, genetically modified foodstuff, ecological foodstuff, functional foodstuff.

## **IMPACT OF FOOD SUPPLY DIVERSIFICATION TRENDS ON THE CONSUMERS' QUALITY OF LIFE**

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## 1. Introduction

Holistically regarded, food gets new dimensions, which require certain specific defining qualities. Food becomes not a mere link in the relationship with the environment, through which it takes substance and energy required to construction and functionability of the body, but a multidimensional complex that connects the spiritual with the material side. In this context, food becomes a complex of actions aimed to enroll in quality of human life.

Analyzing the preponderant offer of foodstuff it can be observed that this had its origin in the industrial period, when intensive agricultural and animal husbandry technologies enabled the development of a strong food industry. Also, in this period, the fast-food, cans and semi-cooked meals industry, conquered the market, but at the same time, they brought along the modern civilization's diseases (Olinescu, 2006).

Thus, agro-food materials, obtained through extensive use of fertilizers, pesticides, growth hormones and antibiotics, are highly processed and , which results in the production of contaminated food that is depleted of its essential nutrients. Through the application of industrial processes such as refining or hydrogenation, some products (sugar, oil, flour) were deprived of vitamins, minerals and dietary fiber, leading to the deterioration in the nutritional level of food (Mencinicopschi, 2007).

The scientific and technological innovations accomplished in the last years had a powerful impact on agricultural and food sectors from all over the world. Innovating methods of production revolutionized numerous traditional systems, and also the capacity of producing the food for a continuous increasing population (Pamfilie and Voinea, 2009).

Spectacular diversification and continuous renewal of the foodstuff supply was possible by applying results of research and innovation in the food industry.

In this process we can distinguish, as dominant tendency of diversification, the attainment of genetically modified food. Genetically modified organism are represented by plants, animals and microorganism whose genetic material has been altered other than by multiplication or natural recombination, their production being justified by improving the properties of food and increasing economic efficiency. Regarding the consequences of consuming genetically modified food, there are various ethical issues related to the insufficient knowledge of their long term impact on the environment and consumers' health.

In addition to the controversial genetically modified food, other directions to diversify the current supply of goods, which are highlighted in this paper, is getting the ecological foodstuff and functional foodstuff. Ecological products are considered pure from the biological point of view, being able to satisfy the consumer demands for naturally, authenticity and innocuity. Functional products have appeared due to the spectacular evolution that nutritional science has known in the last period, being products that contain at least one beneficial substance on one or more body functions, beside the basic nutritional effects.

The main objective of this paper is to study the impact of the main trends of development of food supply on consumers' health and quality of life.



Nowadays, it is very important that consumers begin to realize the connection between food, health and quality of life and now more than ever, to understand the essence of the precept promoted over historical epochs by great thinkers of humanity and also strongly supported by nutrition experts of our days: „you are what you eat”.

## **2. Risks in Using Genetically Modified Organisms (GMOs) in food**

The genetically modified organisms are created using the genetic engineering techniques. In the latest years, besides the classic methods of crossing types or of using fertilizers, new methods have appeared that involve the use of techniques specific to genetic engineering. All these human new created plants do not exist in nature and their impact on the environment and on the human being is fully known and controlled by the specialists.

Genetically modified (GM) foodstuff were first invented in the 1960s, when a team of Belgian scientists managed to insert bacterial DNA into barley. This invention led many companies to invest heavily in this technology. Monsanto was a front-runner in this field and is still today responsible for many of the large-scale, commercially viable GM crops (Denault, 2007).

Because the cultivation of GM crops has increased spectacular globally in the last few years, GM foodstuff is today, without any doubt, a subject that raises many ethical problems related to the agriculture and foodstuff fields. The main crops are cultivated and used in alimentation in USA (is estimated that over 70 % of foodstuff sold in the USA have some genetically modified ingredient), being: corn, rape (canola), potatoes, and soybeans.

Genetic engineering, also called gene modification, is the manipulation and modification of the genetic material of a living organism by technical intervention. The genetic procedures modify organisms in ways that are not possible with classical breeding techniques or natural recombination (Voinea, 2008).

Through the genetic engineering techniques the interested genetic material is transferred from the donor organism to the acceptor organism, thus obtaining organisms with new, useful characteristics. These techniques are the following (Dima et al., 2006):

recombination techniques of nucleic acids that imply the development of new combinations of genetic materials by inserting nucleic acid molecules (obtained by different techniques from outside an organism) in a virus, bacteria or another vector system and their insertion in a host organism where they do not usually exist, but organism which is capable to continue propagation;

Techniques that imply the direct introduction in a micro-organism of hereditary material separated outside the micro-organism;

Cellular fusion techniques or hybridization techniques, in which the live cells with new combinations of hereditary genetic material are formed by fusing two or more cells, by methods that do not appear naturally.

Genetically modified foodstuff is usually altered to increase productivity and nutritional values. That why, at present, we can talk about two generations of

genetically modified organisms. If the transgenic plants achieved with a technological purpose represent the first generation of genetically modified foodstuff, the genetic modifications that improve the nutritional quality of foodstuff is the second generation of this type of foodstuff.

First Generation of GM foodstuff presents “input characters” that generate value, improving cultivation conditions. “Input characters” consist of: tolerance to one or more herbicide, tolerance to insect and pests, tolerance to abiotic stress or combined tolerance (Badea and Săndulescu, 2001).

For example, the genes of one fish can be moved to a tomato or a strawberry to confer them increased resistance to very low temperatures. Just because of this universal language, the plants obtained through such techniques of engineering are determined to produce the chemical substances of the fish, substances produced by fish in a natural way to survive in the cold water.

To a genetically modified potato a gene was transferred from bacteria (*Bacillus Thuringiensis*), which destroys the Colorado beetle. Potato receiving genetic information from bacteria will produce a toxin that kills the beetle that eat the leaves.

The genetically modified tomatoes were intended to increase shelf life. On one hand was raised the amount of tomato solids, and on the other hand it was transferred genetic material that stops the process of over-maturation, of rotting.

Another example is the one referring to Bt corn, which had been transferred the gene of a bacteria (*Bacillus Thuringiensis*). Thereby, Bt corn becomes a corn type which identifies with an insecticide. This is due to the fact that each cell of the plant is modified to produces Bt, a natural bacterial toxin and if a corn worm eats each part of the plant, will die.

Second generation of GM foodstuff presents “output characters” - quality characteristics aimed to improve the nutritional value of products. “Output characters” consist of: changes in content of starch, protein, oils and sugars, changes in the characteristics of pastries, high content of  $\beta$ -carotene to correct vitamin A weaknesses, improve the nutrient digestibility (Badea and Săndulescu, 2001).

This new generation of OMG includes the oils with modified composition in order to improve the ratio between saturated fat acids and the unsaturated ones; ‘gold’ rice with a higher content of pro-vitamin A, starch with the ratio between amylose and amylopectin modified in order to increase the jellification capacity.

The supporters of the genetic modification technique state that its use brings numerous advantages, especially for the producers and traders of transgenic plants (Pamfilie and Voinea, 2009):

- cost reduction, because no longer requires treatment of crops with chemical fertilizers;
- increasing pests resistance;
- achieving significant increases in yields;
- extending the valability of products by increasing resistance to storage;
- improving the organoleptic characteristics (taste, color, shape) and chemical characteristics (containing vitamins, fatty acids, proteins and sugars) of products.

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Of course, the adverse effects on the human health and on the environment cannot be ignored (Rotărescu, 2005):

- allergic and toxic effects on humans;
- plant and animal diseases, including allergic and toxic effects;
- effects on population dynamics of species and the genetic diversity of each of these populations;
- altered sensitivity of pathogens, facilitating the spread of infectious diseases or create new vectors;
- reduce the effect of medical and veterinary treatment, by transferring genes that confer resistance to antibiotics used in human or veterinary medicine;
- effects on biogeochemistry, exchange in soil decomposition of organic material.

Specialists estimate that by using the genetic engineering techniques it is possible to damage the boundaries that the species set during their evolution. In the opinion of some, combining the genes of species that are not related, by permanently modifying the genetic code, it is possible that the newly created organisms hereditarily transmit the genetically induced changes to the next generation (Rotărescu, 2005).

GM foodstuffs have generated a lot of debate on the safety of modified organisms, and studies have found that the general public commonly distrusts and misunderstands genetic engineering.

The preoccupations of consumers with regard to the innovations from the foodstuff offer sphere can be summarized as follows: foodstuff safety, the impact of environment, risks and advantages, transparency, responsibility and professionalism of the economic agents, labeling.

With increased use of GM foods, there has been a growing public concern for strengthening the data requirements for approval. Also, obligation of post launch surveillance (akin to phase IV studies in the pharmaceutical industry) has been proposed to evaluate allergenic trends. Traceability and better labeling are often mentioned as solutions to GM concerns. All of these issues require significant developments in the form of new analytical detection tools, which have yet to be commercialized (Denault, 2007).

The foodstuff and environment safety problem, as well as the one of genetically modified organisms are tightly related in the consumers' mind that, by the request stated in the market, shall significantly influence the decision regarding the future of this technology.

### **3. Diversification trends in foodstuff supply with benefits on consumers' quality of life**

#### **3.1. Functional foodstuff**

Food and medicine have always been intimately linked. Hippocrates in 400 B.C. declared, "Let food be your medicine and medicine be your food," and for many centuries, physicians from other civilizations treated patients predominantly through

diet. With the rise of Western scientific medicine, the concept of health foods was largely marginalized. Only toward the end of the 20<sup>th</sup> century, a renewed interest in traditional systems of healing and alternate medical therapies emerged along with increasing dissatisfaction with costly health care based on drugs and surgical interventions (Fieldhouse, 2007).

The first half of the twentieth century was devoted to highlighting the role of essential nutrients for humans and the fact that insufficient intake may lead to diseases. Throughout the twentieth century, nutrition science has discovered nutrients and established nutritional standards, formulating recommendations and promoting directives in order to prevent deficiencies and to contribute to growth and body development.

At the beginning of the XXI-st century, the society had to face new challenges generated by the mutations in the life style. Thus, the science of nutrition had to adapt to these new conditions. As a consequence, the continuous efforts to favor a balanced diet lead to the construction of a new concept, that of “optimized nutrition”, which has as main objective the maximization of the physiological functions as to guarantee an optimum health state, also reducing to the minimum the risk of contracting diseases.

On the way to an optimized nutrition that represents an ambitious long-term objective, the functional foodstuff appeared as an interesting concept which is and will be supported in the future by scientific research. The functional foodstuff science has as main objective the contribution to improving the nutritional directives, by integrating all new knowledge on the interaction among foodstuff components, organism functions and/or pathologic processes (Robertfroid, 2004).

Functional foodstuff are products that contain at least one substance with beneficial effect on one or more functions of the body, in addition to basic nutritional effects.

The term functional foods was invented in Japan in the 1980s and gained currency around the world in the 1990s. It is used to describe the concept that foods may provide physical or mental health benefits beyond what are considered to be their basic nutritional functions. “Fibe Mini” is a Japanese soft drink with added dietary fiber that was launched in 1988 and is regarded as the world’s first functional food (Fieldhouse, 2007).

For functional foodstuff a definition is not universal, because a great variety of food products is or may be labeled as the future. These foods contain a variety of ingredients known for their ability to influence a wide range of functions involved in maintaining health and reducing risk of disease.

According to the definitions set by functional foodstuff professionals (Hillman, 1995; Riemersma, 1996; Smith, 1996; etc.) the functional products represent those foodstuff derived from natural substances that are meant for systematic daily consumption and that produce a regulatory action on the physiological functions, on the biochemical reactions and on the human psychosocial behavior.

The term functional foods is now commonly used to include all the products from the following four major categories (Fieldhouse, 2007):

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Basic foodstuffs that contain naturally occurring health-enhancing ingredients (for example: carrots, which contain high amounts of beta carotene which is an antioxidant). They are functional foods even though they have not been modified in any way.

Processed foods that have health-promoting ingredients added (for example: orange juice with added calcium or yogurts with added bacterial cultures).

Enhanced foods that have levels of bioactive compounds increased (for example: tomatoes with higher levels of lycopene, eggs with increased omega-3 fatty acids).

Purified preparations of active food ingredients in the form of pills, powders, or liquids (for example: omega-3 capsules or fish liver oil).

From a practical perspective, a functional foodstuff can be (Pamfilie and Voinea, 2009):

- a natural food;
- a food in which was added a component;
- a food in which was increased the concentration of a component;
- a food in which was removed a potential anti-nutritive component;
- a food in which one or more components have been altered;
- a food in which the bioavailability of one or more components has been modified;
- all combinations of the above options.

It should also be noted that this concept derives not from the nutrition and pharmacology. Functional foods are not drugs, thus do not have therapeutic effects. The role of these foods in relation to disease is, in most cases, to reduce the risk and not to prevent them.

Typology of functional foods:

Products containing probiotic compounds. Bacteria which produce lactic acid, that are perceived to exert beneficial properties such as improved lactose digestion and resistance to pathogens are common probiotics. The positive health effects attributed to lactic acid bacteria and foods fermented with these bacteria have been long recognised. Probiotic substances are live and active microorganisms cultures, which, after ingestion, transit through the digestive tract, exerting a balancing action of the microflora by direct colonization of the large intestine. The main probiotic bacteria are Bifidobacteria, Lactobacilli, Lactococi. Probiotic microorganisms are found in certain foods of animal origin (dairy sour (yogurt, kefir), cheese) or vegetable (raw or pickled cabbage, raw or pickled cucumbers).

Products enriched with prebiotic substances. Prebiotics are non-digestible food components (oligosaccharides) that are resistant to human digestive enzymes and pass to colonic regions undigested, undergo selective fermentation and provide nutrients for the colonic useful bacteria. Fructose oligosaccharides are able to modify the gut flora composition in favour of bifidobacteria. Prebiotics do not suffer survivability difficulties that may arise with probiotics. Thus the probiotic approach and the prebiotic approach in the development of functional foods are fundamentally different, though both contribute to overall gut health (Kailasapathy, 2008). Prebiotics

are present in many natural foods (onions, bananas, chicory, beet or sugar beet, dandelion roots, seeds, almonds, various herbs).

**Symbiotic products.** Symbiotic products are obtained through the association of probiotics with prebiotics. The development of symbiotic products is still in its infancy. New symbiotic products, containing both probiotic bacteria and prebiotic carbohydrates were developed, such yoghurts containing inulin and bifidobacteria. There is still only limited evidence of enhanced health efficiency due to symbiotics, over that of the probiotic alone or the prebiotic alone.

Functional foods may protect against chronic disease by combating degenerative metabolic processes. The main benefic effects of probiotics are focused on (Robert, 2007):

- reducing the risk of cancer by neutralizing free radicals that may cause cell damage.
- reducing cardiovascular risk
- positive effect on immune function.
- lowering blood cholesterol.
- improving gastrointestinal health.

The consumers of functional foodstuff are segmented in two main groups. One is the group of consumers with existing health problems and chronic conditions, to whom functional foodstuff are presented as a way of ameliorating or even curing health problems. The other group consists of consumers who are in good health, but who can be persuaded that functional foods offer significant benefits in enhancing health and preventing disease. The common aspect for both categories is that the normal diet cannot supply adequate levels of dietary components.

The special importance of the functional foodstuff is in its use (as a whole, not from the point of view of certain ingredients) for health and the lack of bad effects.

### 3.2. Organic foodstuffs

At present time, due to several unwanted metabolic effects induced by unhealthy foodstuff behavior, more and more consumer segments aims for the consumption of foodstuff products that are pure from the biological point of view. These are ecological foodstuff also named biological products or organic products.

To refer to food produced without using synthetic chemicals (fertilizers, soil, feed ingredients and additives for food preparation) is most often used the phrase “green product” and also “organic product” or “biological product”. Therefore, differences between the terms “eco”, “bio”, “organic”, “ecological” are just terminological. On a global scale, the preference for one of the synonymously terms imposed its prevalence in the economical practice and in common vocabulary. Thus, in Germany, Spain, Denmark and Romania is preferred the term “ecological”, in France, Italy, Portugal and the Netherlands is the most commonly used term “biological”, while in Britain and the U.S. the term “organic” (Voinea, 2010).

Organic foods are products exclusively natural, which fully comply with biological processes, being certified by an approved institute to carry the label

### **Impact of food supply diversification trends on the consumers' quality of life**

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“organic”, indicating that they were obtained according to recognized standards for organic farming (Dima et al., 2006).

As defined by FAO (Food and Agriculture Organization), organic farming is a holistic production management system that promotes agro-ecosystem health, biodiversity, biological cycles and soil biological activity (Viorel et al., 2004).

The ecologic production is defined as the obtaining of agro-foodstuff products without the use of synthesis chemical products, in accordance with the rules set for the ecological production, that abide by the national standards, guides and terms of supply and that are certified by an inspection and certification authority established for this purpose. The ecological agro-foodstuff production has as purpose to achieve durable, diversified and balanced agriculture systems that ensure the protection of the natural resources and of the consumers' health. The genetically modified organisms and their derivatives are not allowed in the ecological agro-foodstuff production.

The biologic foodstuff represents products exclusively natural, obtained by abiding by the following principles (Moceanu, 2007):

Eliminating any polluting technology from a not-polluted area;

The use of types and species with increased resistance to environment conditions;

Improving and maintaining the natural fertility of the land;

The use of land fertilizers and improvers, pesticides in conformity with the list of products allowed in the ecological agriculture (that fully abide by the biological and ecological processes);

The absence of genetically modified organisms and plant irradiation;

The absence of synthesis additives.

Using as a criteria the origin and state of technological processing, organic foods can be grouped as follows:

- primary unprocessed plant products of plant origin;
- unprocessed animal products;
- processed products for human consumption, prepared from one or more ingredients of plant origin and / or animal origin.

In the USA, standards have been introduced for the production and manipulation of biological agricultural products, which are applicable to the entire logistic chain, from the farmer to the consumer. These standards are also applicable for the intermediary operations. According to these standards, four categories of biological products are determined (Diaconescu, 2004):

- 100% biological, representing the products that do not contain but biologically produced ingredients;
- biological, representing the products that contain 95% biologically produced ingredients (referred to the product's weight);
- products prepared from biological ingredients, representing the products that contain more than 70% biological ingredients, but maximum three biologically produced components can be specified on the main wrapping label;
- transformed products that contain less than 70% biologically produced ingredients, and the “biologic” term cannot be written on the main wrapping label, but

in the ingredients' list on the wrapping the components that are biologically produced can be specified.

Organic foodstuff has taste, texture, authentic and attractive features, which were obtained by applying strict principles of organic farming.

Thus, in the production stage at the farm is prohibited the using of genetically modified organisms, chemical pesticides (herbicides, fungicides, etc.), chemical fertilizers or antibiotics. High quality products are obtained only through multi-annual crop rotation, by providing plants and animals the needing time to reach maturity, and by using species and varieties of native plants and animals. To ensure a high level of quality during processing is strictly prohibited to use GMOs, and there are severe restrictions on the use of synthetic food additives and processing additional substances (<http://ec.europa.eu>).

Since experimental investigations have shown that organic foodstuff have a high content of vitamins, minerals, essential fatty acids and antioxidants, it can be said that the introduction of the daily consumption of organic foods bring great benefits to the body, contributing primarily to the strengthening of the immunatary system (Voinea, 2010).

Also, organic foodstuff consumers are not exposed to the risk of food allergies, as for many conventional products. In addition, the absence of nitrates in organic foodstuff helps reduce the risk of cancer (Cottingham and Winkler, 2007).

For example, an ecologic egg, from poultry that have not been fed with genetically modified fodder or with synthesis vitamins, has a stronger shell and a higher content of vitamins. Also, the ecologic milk, from animals bred in organic farms (where the natural grass represents 84% of cows' feed) has a conjugated linoleic acid concentration, which helps prevent the appearance of cancer, 60% higher than in the normal milk. In addition, the omega-3 fat acids and the vitamin E concentrations (also, substances with an important role in reducing the cancer and heart diseases appearance risks) are higher. Meat from grass-fed animals has a higher content of essential fatty acids Omega-3 type and has a lower risk of contamination with *Escherichia Coli*. The ecologic oil from cold presses corm germs is assimilated by the organism in a 99% proportion, being twice richer in vitamins A, D and E than any other refined oil type, including the olive oil (Kluger, 2010).

Currently, the number of organic products is an increasing trend, the new alimentary style called "organic", appearing more pronounced due to the need for consumer safety and consumer awareness of the link between diet and health (Popescu et al., 2010).

Organic foodstuff produced in Romania or imported must be marked on the label "ae", which aims to identify agricultural and food products that are certified organic by an inspection and certification institute accredited by the Ministry of Agriculture.

Mark "ae" ensures that products meet the following conditions:

- originate from organic agriculture in Romania and are certified by an inspection and certification institute accredited by the Ministry of Agriculture;
- originate from import and are certified in Romania by an inspection and certification body accredited by the Ministry of Agriculture.



#### 4. Conclusions

The scientific and technological innovations accomplished in the last years had a powerful impact on agricultural and food sectors from all over the world. Innovating methods of production revolutionized numerous traditional systems, and also the capacity of producing the food for an increasing population. Spectacular diversification and continuous renewal of the foodstuff supply was possible by applying results of research and innovation. Widespread use of feed additives and genetically modified organisms, considered major innovations in food technology, only created a distance between man and aliments, which systematically turn into an abyss, culminated with real alimentary crisis, a result of some breakings in natural order.

Because much of the population now faces serious health problems, caused by overconsumption of ultra-processed and genetically modified foodstuff, created by modern food industry, it is important that consumers turn their attention to healthy food options, like organic foodstuff and functional foodstuff. Experimental researches have proven that these products have a high content of essential nutrients, so their introduction into daily consumption brings great benefits to the human body as a whole, contributing primarily to strengthen the immune system.

Now more than ever, the individual must be aware of the links between diet and health and understand the notions promoted along the historical ages, by great thinkers of humanity and strongly stated by our days nutritionist, namely: "Man is what he eats."

In the future, people must have an intelligent alimentation, which emphasize healthy food. This will be possible only if they'll improve their style of eating through education, communication and information. Only in this way, in the future, consumer's demands regarding food quality will increase.

Overseeing the foodstuff products' quality with the purpose to prevent affecting the consumer's health or life and the quality of the environment, is a subject that has to be treated with maximum responsibility. The health and quality of life of consumers should remain the center of specialty authorities' preoccupation, but also the center of all other decision factors. Keeping in mind all these arguments, the economic agents implicated in the foodstuff chain should act in the direction of foodstuff safety for the products offered on the market. Therefore, the organizations should apply modern foodstuff safety management systems (HACCP, ISO 22000). Only such they can demonstrate their ability to control foodstuff safety dangers, with the purpose to supply safe end products, and their capacity to improve the quality of foodstuff offer, which will be reflected in the consumers' quality of life.

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**Abstract.** *The quality of life is influenced by many factors, in the last years, one of the most important being food safety and security. Many governments adopted, in the last period of time, more strict regulations regarding food safety and security and private or public international organizations involved in developing and publishing standards in food safety and security area create, update and improve the procedures and assessments specified in standards.*

*This paper presents the main approaches regarding standards in food safety area and discusses a methodology for elaborating a set of indicators for measuring food safety on the extended food supply chain. Conclusions and future directions of the research are discussed.*

**Keywords:** food safety, traceability system, standards and regulations.

## **MEASURING FOOD SAFETY ON THE EXTENDED FOOD SUPPLY CHAIN**

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## 1. Introduction

Issues related to food safety and security start to represent one of the first priorities for many states because has a direct impact over the population health and quality of life. Vos (2000) considers that until BSE (Bovine Spongiform Encephalopathy) crisis the EU legislation for food safety and security was “created on an ad hoc basis and/or developed in the jurisprudence of the European Court of Justice”.

Pinto et al. (2006) consider that “unpleasant consequences” generated by some events and scandals from agro-food industry determined governments to adopt more strict regulations regarding food safety and security and, in the same time, producers, processors and distributors started to enhance their business relationships in order to cooperate for creating and improving sets of standards in order to certify the agricultural products. Therefore, in the last years, the importance of regulations and standards is continuously increasing and many governments have started to adopt new regulations or to improve existing regulations for food safety and security.

In this context, the European Union consider that the integrated approach related to food safety “aims to assure a high level of food safety, animal health, animal welfare and plant health within the European Union through coherent farm-to-table measures and adequate monitoring, while ensuring the effective functioning of the internal market”.

Based on this approach, the cooperation and coordination between companies and governmental authorities can provide a full traceability for all stages from the extended supply chain of food (or foodstuff). According to Thakur et al. (2011) the main actors that can be included in the extended food supply chain are: farmers, producers, processors en-gross sellers and en-detail seller.

In the same time in the EU were developed and implemented some standards and protocols for Food Quality Assurance Schemes (QAS) elaborated by various groups and organizations.

## 2. Food safety standards

The new food safety and security policies are focused on fulfilling the final consumers’ requirements regarding foodstuffs quality, safe and security (Beulens et al., 2005; Wolfert et al., 2010). In the Regulation (EC) No. 178/2002 of the European Parliament and of the Council (article 3), final consumers is defined as “the ultimate consumer of a foodstuff who will not use the food as part of any food business operation or activity”.

Governments, producers, processors and distributors started to cooperate for creating private or public bodies that must develop and continuously update sets of standards that are used for certifying agricultural products. The main goal of national and international regulations and standards is to certify that the foodstuffs provided by companies always fulfill the specified quality standards (Antle, 1999).

The E.Coli crises determine reactions (GLOBALG.A.P „has decided to temporarily withdraw all 13 certificates of seed sprouting operations and stop new certification for seed sprouts, until a review of the situation around sprout certification has been completed”) and statements from private or public organizations involved in developing and publishing standards in food safety and security area. For example, the statement posted on the GLOBALG.A.P website contains the following text “GLOBALG.A.P is a food safety and Good Agricultural Practices (GAP) management system and process certification that is based on a list of good practices and standard operating procedures in conjunction with the requirement of complementary risk assessments and risk management for identified areas. Following these procedures and assessments leads to a high control to manage the safety of food products, but does NOT guarantee a safe product to 100%”.

Analyzing this statement we can conclude that even an organization has implemented all procedures and assessments specified in standards there still exists a probability to appear situations that might conduct to unsafe food for human consumption, but this probability is significant lower that the probability that exist if the organizations do not implement these procedures and assessments.

### 2.1. ISO

ISO (International Organization for Standardization) is a non-governmental organization having 162 members, represented by national standards institutes, being the largest developer of international standards in the world.

The most important food safety and security standards are ISO 22000 family standards formed by: (i) ISO 22000:2005 – Food safety management systems - Requirements for any organization in the food chain; (ii) ISO/TS 22004:2005 – Food safety management systems – Guidance on the application of ISO 22000:2005; (iii) ISO/TS 22003:2007 – Food safety management systems – Requirements for bodies providing audit and certification of food safety management systems; (iv) ISO 22005:2007 – Traceability in the feed and food chain - General principles and basic requirements for system design and implementation; (v) ISO 22006:2009 - Quality management systems – Guidelines for the application of ISO 9001:2008 to crop production; (vi) ISO/TS 22002:2009 - Prerequisite programmes on food safety - Part 1: Food manufacturing.

The ISO 22000:2005 standard is designed to fulfill the need for every organization that is included in the extended food supply chain. Operations covered by this standard include: (1) Primary food production: (i) crop production; (ii) feed production; (iii) primary secondary food processing; (iv) secondary food processing; (v) wholesaling and distribution and (vi) food retailing and (2) related operations: (i) pesticide, fertilizer, and veterinary pharmaceutical production; (ii) ingredients and additives production; (iii) transportation and storage; (iv) equipment production; (v) cleaner/sanitizer production; (vi) packaging materials production; (vii) service providers.

ISO 22005:2007 standard defines a set of general principles and basic requirements for system design and implementation of food/feed traceability systems.

### **2.2. Codex Alimentarius Commission**

The Food and Agriculture Organization (FAO) and the World Health Organization (WHO) founded in 1962 the Codex Alimentarius Commission (CAC). “The Codex Alimentarius is a voluntary agreement among member states, and the Codex decision-making bodies have no statutory basis whatsoever” (Millstone and van Zwanenberg, 2002).

This body developed numerous sets of standards, good practices and recommendations for increasing food safety and quality, one of the most known system developed and adopted by this commission being Hazard Analysis and Critical Control Point (HACCP). By adopting and implementing this system in companies, the significant hazards for food safety and security are identified, evaluated and controlled. HACCP represents global recognized standard for food safety and security issues, many other national or international regulations and standards and being based on HACCP.

### **2.3. GS1**

Another important international association is represented by GS1, formerly known as EAN (European Article Numbering) International which was founded by 12 European organizations in 1997 and changed his name into GS1 in 2005. The objectives of GS1 are to build, implement and ameliorate global standards and to provide solutions for increasing and improving the efficiency of supply chain. Related to food safety and security, GS1 has developed GS1 Traceability Standard, which is „a business process standard describing the traceability process independently from the choice of enabling technologies”, that has five sub-processes: (i) plan and organize; (ii) align master data; (iii) record traceability data; (iv) request trace and (v) user information.

### **2.4. GLOBALG.A.P**

In 1997 retailers belonging to the Euro-Retailer Produce Working Group (EUREP) have founded an association named EUREPG.A.P. having as objective “to establish one standard for Good Agricultural Practice (G.A.P.) with different product applications capable of fitting to the whole of global agriculture”. In 2008 the name was changed into GLOBALG.A.P. the main standards developed by GlobalG.A.P are: Integrated Farm Assurance (IFA), Compound Feed Manufacturing (CFM), Plant Propagation Material (PPM), Risk Assessment on Social Practice (GRASP) and Animal Transport (AT), which is under development. One of the most important standards is represented by IFA standard which represents “a single integrated

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standard with modular applications for different product groups, ranging from plant and livestock production to plant propagation materials and compound feed manufacturing”. Farming categories covered by IFA standard version 4 are:

crop base (CB): (i) fruit and vegetables (FV), (ii) combinable crops (CC), (iii) coffee (green) (CO), (iv) tea (TE), (v) flowers and ornamentals (FO);

livestock base (LB): (i) ruminant base (RB) with the following subcategories: (ii) cattle and sheep (CS), (i2) dairy (DY), (i3) calf/young beef (CYB), (ii) pigs (PG), (iii) poultry (PY), (iv) turkey (TY);

aquaculture base (AB).

The GLOBALG.A.P has a procedure for harmonization other national or international standards with GLOBALG.A.P standards using a benchmarking procedure. In June 2011 were already 16 national standards fully approved from the following categories: fruit and vegetables, flower and ornamentals, combinable crops, cattle and sheep and 5 national standards provisionally approved.

### 3. Food traceability

The term of „food” or „foodstuff” represents “any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans. «Food» includes drink, chewing gum and any substance, including water, intentionally incorporated into the food during its manufacture, preparation or treatment” (Article 2 from Regulation (EC) No. 178/2002 of the European Parliament and of the Council of 28 January 2002).

National and international regulations and standards have similar points of view regarding food (or foodstuff) traceability, some of them being more general other being more detailed.

Food traceability definitions
[Law no. 150/2004 regarding food safety of the Romanian Parliament] „ability to identify and trace through all stages, production, processing and distribution, of a food or animal feed, food-producing animal or any substance which will be incorporated in a foodstuff or animal feed”.
[Regulation (EC) No. 178/2002 of the European Parliament and of the Council (article 3)] „ability to trace and follow a food, feed, food-producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing and distribution”
[ISO 22005:2007] “ability to follow the movement of a feed or food through specified stage(s) of production, processing and distribution”
[Codex Alimentarius] “the ability to follow the movement of a food through specified stage(s) of production, processing and distribution”
[GS1] “ability to track forward the movement through specified stage(s) of the extended supply chain and trace backward the history, application or location of that which is under consideration”

[GlobalGAP]

“the ability to retrace the history, use or location of a product (that is the origin of materials and parts, the history of processes applied to the product, or the distribution and placement of the product after delivery) by the means of recorded identification”

Summarizing all these approaches related to traceability concept we can conclude that the food traceability represents the ability to follow the evolution of a food/foodstuff until its origin and, even more, to follow the evolution of all components / ingredients that are included in the product till their origins.

#### 4. Food traceability information system

The information system (IS) represents the organization core, because collects, processes, stores, analyzes and provides data, information and knowledge in order to achieve the proposed objectives. An information system must provide accurate, complete and timely information to the right persons in an adequate form in order to achieve the proposed objectives (Davies and Ellison, 1990).

There are studies that consider that information systems can be evaluated by using two fundamental indicators: effectiveness and efficiency. The effectiveness represents the achievement degree of proposed objectives and efficiency represents the usage degree of resources allocated for obtaining the results. Peter Drucker (1966) states that “effectiveness is doing the right thing” and „efficiency is doing the thing right”.

Laudon and Laudon (2008) classify the information system in the following categories: (i) Transaction Processing System (TPS), (ii) Office Automation Systems (OAS), (iii) Working Knowledge Systems (WKS), (iv) Decision Support System (DSS), (v) Management Information System (MIS), (vi) Executive Support System (ESS).

The implementation of information system for food traceability will determine the increasing food safety and security (Liddell and Bailey, 2001), the increasing of the consumers’ trust in the acquired foodstuff and the increasing of the end-consumers’ protection against fraud or the producers from competitors from “black market” (Golan et al., 2002). Using food traceability systems for data acquisition and processing from the extended food chain in order to provide consistent, complete and timely information regarding food/foodstuff can be used for monitoring food traceability (Regattieri et al., 2007). Main objectives of food traceability information system are:

Complete and exact logs of the entire history and locations for a food/foodstuff during its lifecycle on the production-processing-distribution chain (Dabbene and Gay, 2011).

Identifying the foods/foodstuffs or ingredients which follow to be incorporated in foodstuffs that are potentially dangerous for human consumption in order to be eliminated from the extended food supply chain.



Continuously monitoring of the food/foodstuff on the entire extended food supply chain in order to identify places or causes that determined the “unpleasant consequences” to prevent similar cases in the future.

## **5. Measuring food safety on the extended food supply chain**

Baert et al. (2011) consider that the process of identifying, analyzing and selecting indicators, in order to be grouped in a set of indicator for measuring the safety on the extended food supply chain, must take into consideration the following criteria:

**Measurability:** because it is difficult to obtain qualitative indicators directly from data provided by information systems of the organizations included in the extended food chain supply (Leitao and Restivo, 2004), it is recommended to use quantitative measurable indicators.

**Independence:** in order to be included in a structural model it is necessary that indicators to be independent (Joreskog and Sorbom, 1993) and non-redundant (each indicators must have a distinctive contribution by measuring different aspects than other indicators).

**Reliability:** indicators must exhibit insignificant variation due to subjectivity.

**Availability:** the process of obtaining data that are used for calculating the indicators must not generate important resources (time, financial, human etc.) allocation.

**Durability:** the indicators will be used for a relatively long period of time because they were been observed, measured and analyzed over a significant period of time and fulfill all specified requirements.

**Being representative for food safety:** the categories of safety hazard covered must be representative and various.

**Being representative for the food chain:** all indicators must be representative for the relevant processes, issues or aspects of the extended food supply chain and, in the same time, for its stakeholders.

Because some indicators can increase and other can decrease from a period to period, it is a difficult task to compare and analyze the “evolution of food safety” using the only the indicator from the proposed set.

A better approach can use a scoring of food safety on the extended food supply chain; therefore it is necessary to assign a weight to each indicator. In this case the analyzing of food safety in time can be done more accurately. The most challenging part is to determine the weight for each indicator, this process being very difficult because it can be done: (i) analyzing the historical data and trying to obtain a model or (ii) interviewing human experts that will assign weights for each indicator.

The first option, analyzing the historical data and trying to obtain a model, is difficult because the period of recorded data for indicator can significantly vary and, in the same time, the consequences or results generated by some indicator it is possible to be impossible to be found.

The second option, interviewing human experts that will assign weights for each indicator, is easier to be applied, but the procedure to obtain final weight that will be assigned to each indicator it is not very accurate, because the weights specified by human experts can vary very much.

### 6. Conclusions

In the actual social and economic context, food safety and security still remains a high priority for most governments, private or public international organization, organizations from the extended food supply chain and final consumers.

Measuring food safety on the extended food supply chain is a very challenging activity which must include specialist from various domains: food safety and security, statistics, data modeling and analyses, computer science etc.

The future researches will be focused on identifying the most relevant indicators which will be included in the set of indicator that will be used for measuring food safety on the extended food supply chain and to identify the optimal option that will be used for scoring food safety.

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- \*\*\* Regulation (EC) No. 178/2002 of the European Parliament and of the Council
- \*\*\* Law no. 150/2004 regarding food safety of the Romanian Parliament
- \*\*\* ISO 22005:2007 - Traceability in the feed and food chain - General principles and basic requirements for system design and implementation

\*\*\* [www.codexalimentarius.net](http://www.codexalimentarius.net)

\*\*\* [www.gs1.org](http://www.gs1.org)

\*\*\* [www.globalgap.org](http://www.globalgap.org)

\*\*\* [www.iso.org](http://www.iso.org)