# “Positive impact of international companies on development of knowledge economy”


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# POSITIVE IMPACT OF INTERNATIONAL COMPANIES ON DEVELOPMENT OF KNOWLEDGE ECONOMY

## Abstract

In recent years, all economically developed countries of the world experience formation of knowledge economy as the highest stage of postindustrial economy development. International companies, basing their activity on accumulation of human capital according to the principles of innovativeness, scientific nature, continuity and progressiveness, play an important role in activation of this process. Owing to global nature of their activity it influences all spheres of human life in the world, improving it, as well as having an adverse impact (enhancement of poverty in some regions of the word, environment pollution, etc.). Achievement of these conditions of sustainable economic growth is possible just by the way of prevention of the adverse impact, which, among other things, depends on the active social position of the management of international companies. Therefore this paper is aimed at identification of priority focuses of socially responsible activity of international companies. This goal was achieved through generalization of basic program initiatives of the activity of three companies, leading in innovations (Apple, Samsung and IBM). Adoption of the above-mentioned initiatives by other companies of the world as guides while developing their own development strategy has to facilitate the growth of positive effects from enhancement of knowledge economy in the world.

**Keywords** knowledge economy, international companies, innovations, sustainable development, socially responsible activity

**JEL Classification** F23, F62, I25, O34

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## INTRODUCTION

The innovative development, being demonstrated by economically developed countries of the world during the last decades, lies at the root of gradual achievement of the fifth and sixth technological waves of economy (Mathews, 2013). This development is grounded on the course for a comprehensive economic support of the key high-tech branches, timely announced by the countries (Knowledge, 2016). At the same time, whatever direction is chosen by the leadership of the country, any innovative development is always grounded on the human with his/her unique knowledge, abilities and skills (Azam, Khan, Zainal, Karuppiah, Khan, 2015). This thesis id proved by Muleya, Ngirande and Rachidi (2016), who insist on the fact that the primary competitive advantage of any country consists in the ability to create favorable conditions for further growth of the gifted persons. Therefore, the social and economic output from investment to the human capital and building of the society of knowledge depends on the extent of favorable conditions for accumulation and practical realization by human of his/her unique knowledge potential at all levels of

management without any exception. It is building such society that lies at the root of knowledge economy formation, and thus a perspective innovative growth of national and global well-being, as well as quality of human life in the world.

Muchlup is considered to be the founder of the theory of knowledge economy and in 1962 he has already singled out a new sector of economy in the national economy of USA, i.e. the sector, focused on development of informatization and information technologies (Machlup, 1962). So, Machlub, having introduced the term, did not extend its meaning to the entire economy of the country. Later Porat applied the new term to the whole economy of the world, having defined it as the economy, which studies economic laws, acting in the sphere of production and reproduction of scientific and technical information and scientific knowledge (Porat, 1977). Generalized application of the term "knowledge economy" was introduced by OECD in 1996 and meant "economies, which are directly based on the production, distribution and use of knowledge and information" (OECD, 1996). This is the meaning of the term "knowledge economy" that we use in our paper.

The primary driving force of knowledge economy is represented by the activity of globally known and economically successful international companies, which has to become an example to follow by all entities of business environment, irrespectively from their national or territorial identity. It is international companies, which introduce the innovative methods for knowledge management, that gradually invest funds in the processes of transforming implicit knowledge into the explicit ones and create conditions for maximum productive application of knowledge of all participants of business processes without exception. At the same time, such innovative activity cannot but entail considerable risks and constraints with negative and continuously increasing impact that the companies have to cope with all the time.

## 1. DEFINITION OF THE RESEARCH PROBLEMATICS

Papers of numerous scientists and particularly practitioners of the world, who are concerned about the patterns of development of the global economic system, based on the innovative knowledge and technologies, are devoted to diverse aspects of achievement of knowledge management productiveness in the modern international companies. Thus, Tsaparis (2014) asserts that the economy of knowledge lies at the root of reverse transfer of innovative productions from the countries with the low cost and quality of workforce to the economically developed countries, sufficiently provided with highly-qualified personnel. This conclusion is also confirmed by Hutton (2016), who emphasizes that owing to the expansion of knowledge economy in recent times there is a world tendency towards a drastic increase of demand for knowledge personnel with simultaneous decline of demand for the personnel with low level of qualification, irrespectively from their national identity. Under such conditions the assertions of Radosevic and Stancova (2015) in respect of importance of the processes of internationalizing the innovation through international cooperation at all levels and promotion of the flows of direct foreign investments, sufficient by the level of intensity and scope of contributions to ensure global development, are quite relevant. So, we can state that the knowledge economy is a development stage of the economy, when we observe elimination of all possible barriers on the way to intensive relocation of expertise, human capital, investments and technologies, and international companies simultaneously play the role of primary consumers, translators and producers of novel knowledge and innovations.

At the same time, Duperrin (2011) emphasizes the problem of technological nonconformity or even complete absence of the developed infrastructure and the channels for distribution of innovative products, technologies and investments in the global economy that is a factor of its growth slowdown. The key of such channels is represented by modern education system, which, in the opinion of Cogburn (2000) and Hanekom (2013), does not sufficiently quickly adapts to the fastidious needs of international business and limits the access to the high quality education of the representa-

tives of socially vulnerable groups of the population. Due to this situation there is a stratification of the global economy observed according to the criterion of access to the innovative technology and knowledge, as well as increase of the gap in the level of development of science-intensive and other branches of national economies, being evidenced by Smith and Doyle (2013) and Sullivan (2016) in a well-argued manner. Moreover, according to Hanekom (2013) a global nature of the international companies' functioning considerably increases a risk of catastrophically fast change of the society's professional structure, almost eradicating certain activities. The aforesaid implications of science-intensive economy expansion in the global environment more and more enhance social inequality and exacerbate a problem of poverty and social vulnerability of the world population, which leads to the general social instability and limits positive effect from the knowledge economy, as well as creates additional social and economic barriers and risks to resultative functioning of the international companies. We should also take into consideration a significant adverse impact of the companies' activity on the environmental condition (Doorasamy, 2015).

Moreover, due to the leading role of the international companies in the sphere of knowledge economy formation, they face a huge multitude of problems and intricacies of diverse nature. Thus, Brant (2014) draw special attention to the complexity of keeping and protecting commercial secret due to loss of control over the employee's knowledge, appropriated by a company in a certain period of time or, vice versa, gained by the employee in progress of working for the company. At the same time, risk to lose control over knowledge increases dramatically since the moment of such employee's dismissal, which makes the company quite vulnerable on the international market with its variability of legislative and regulatory framework and public morality (Zakharova, Kratt, 2014). Alongside with that, according to Bolgar (2014), the global expansion of knowledge economy increases risks of multidirectional cyber-attacks, significantly threatening the development of all aspects of the international companies' business without exception. Thereby, according to the author, a devastating effect of the most today's attacks becomes visible just in a few weeks or even months, i.e. at the moment when these attacks had a chance to inflict harm. Therefore the international companies have continuously to invest in support of their own information security, as follows: monitoring of the internal and external situation, realization of diverse educational purposes and personnel skill advancement, involvement of the respective experts to work for the company on permanent or temporary basis, support of insurance programs against diverse risks, etc.

Thus, we can tell about ambiguity of the impact of knowledge economy on the global economy. Indeed, the knowledge economy is a consequence of the innovatively-informational breakthrough in a majority of industries that by itself is a manifestation of positive transformations, being peculiar to a huge majority of economically developed countries of the world. However, in parallel, the knowledge economy increases a risk of negative trends enhancement for the less economically developed and socially protected countries of the world, ultimately leading to exacerbating the problems of poverty and inequality on the planet and reduction of global economic growth. Therefore, under present conditions we cannot say with all certainty that the economy of knowledge is a universal panacea for any social and financially-economic crisis phenomena, threatening to the global economy today or in future. Nevertheless, it is possible to replace this assertion by the contrary one owing to the more profound scientific researches of this phenomenon, being new for the society, which would be focused on creation of methodologies, intended to minimize possible risks and maximize the expected benefits for the society.

### 1.1. Formalization of research goal

Proceeding from the fact that the international companies play a critical role in achievement by economies of different countries of the knowledge economy stage, enhancement of responsibility in their activity will enable to come closer to the expected potential advantages of science-intensive development and rational use of human capital. In this context the goal of the paper was to identify priority areas of the socially responsible activity of the international companies, which are introduced to optimize the impact of knowledge economy on the world economy.

## 2. EVIDENCE BASE

Identification of the priority areas of socially responsible activity of international companies has to be grounded on systematization of the respective investment-fundraising expertise of the world innovative leaders (Giannarakis, Konteos, Zafeiriou, and Partalidou, 2016). For this purpose let us analyze the latest program initiatives of the leading companies of the world in respect of preventing the progress of human social problems due to global expansion of the knowledge economy (see table 1). We have chosen the world companies-leaders in the sphere of innovations according to the ranking of TOP-50 of the most innovative companies, annually published by The Boston Consulting Group since 2005, based on the expert appraisals, made by more than 1.5 thousand of world leading managers in the area of innovations, representing diverse business segments (BCG, 2016). Thus, for the purpose of this research we have chosen three companies, which are, first of all, related to the group of steadfast innovators, i.e. those, who are annually present in the above-stated ranking during the whole period of evaluation, and, secondly, are indisputable world leaders in the area of creation and introduction of innovations as almost all the time they are among the top ten of the ranking.

For the first example we have chosen the American intellectual technology company Apple, which has been being an irreplaceable leader in the level of creation and introduction of innovations in the world during the last twenty years. Such a result, among all other things, has been achieved owing to declaration by the management and implementation of two fundamental principles of the company's business: attracting and fostering talents, as well as aiming the intellect to serve the mankind (Apple, 2017). Taking into account the fact that a lifecycle of the product, manufactured by the company, is quite short and the level of competitiveness on the global IT market is very high, Apple are forced by all means to maintain the process of their own continuous innovative development, treating knowledge, intellect and novel professional information as the key resource to attain competitive advantage and success in business. At the same time management team of the company clearly understands that it is not possible to maintain leadership position for a long time, if all investments are targeted for their own benefit, i.e. solely for the present day. It is care of the future that explains active and responsible public position of Apple, based on three fundamental focus areas – all-round development of a child, prevention of all types of discrimination and preservation of the environment for future generations. Thus, Apple, relying on their own accumulated human capital, apply complex approach to solving the pressing problems of society, thereby demonstrating an example of the positive impact of the knowledge economy on global economy.

Choice of South Korean company Samsung as an illustrative example of successful enterprise is based on the leap-like nature of their presence in the ranking that clearly demonstrates the company's hard competition for the world innovative leadership, as well as their ups and downs on this path. Thus, BCG recorded a dramatic drop in the company's innovative ranking in 2008 and 2012: in 2008 the company turned out to be the 26$^{th}$ in the list in comparison with the 11$^{th}$ in 2005, and in 2012 they failed to enter the ranking of TOP-50 innovative companies of the world. However, in 2013 Samsung occupied the second place in the ranking and later failed to keep it, and due to insignificant annual fall in 2016 they turned out to be in the second place of honor. The above-stated example of competitive struggle is quite peculiar for any contemporary company, functioning in market economy and continuously proving their right to exist on the market. At the same time under such severe conditions none of the companies is able to mobilize all efforts and focus them on ensuring sustainable development, as well as to use their own knowledge and intellect for the benefit of the humankind. Thus, Samsung announced "focusing of their own human and technology resources on creation of high-quality goods and services to encourage global development of the society" as their primarily initiative (Samsung, 2016).

The components of practical implementation of this initiative are represented by the green management policy, grounded on multi-faceted programs of natural environment conservation as well as responsibility for creation of the better life for people on the planet and continuous, development of their own personnel.

**Table 1.** Systematization of program initiatives of social responsibility of the companies, being innovative leaders of the world

| Company | Area of activity | Initiative, mission, value | Programs and activities |
|---|---|---|---|
| Apple | Production of PC and tablets, audio players, telephones and software | Our planet deserves our better thinking. Any technologies have to be available to every human. Every school has to feel transformative force of technology. A company has to be a reflection of the surrounding world. Attraction and support of talents | 1. *Environment:* transfer to use of more ecological materials for making safe products and production processes for human and nature; switching the production to 100% use of renewable energy sources to reduce carbon emission into the atmosphere; programs of reuse in production of paper and water, recycling and utilization of the own products aiming at protection and preservation of forestLI, water reservoirs and mineral resources.<br>2. *Availability:* manufacturing of products for everybody's use without any exception, availability of functions, focused on all-round support and quick socialization of people with disabilities.<br>3. *Education:* providing schools of the country with their own products and maintaining technical conditions of their use aiming at introduction of the innovative technology into education, addressing the local and global education problems; training the teachers in interactive technologies; continuous software support of teachers and administrators of educational institutions.<br>4. *Integration and diversity:* breaking the barriers and inequalities by race, gender, ethnical identity, etc. while employing; equal remuneration for equal job irrespectively from the country; creating interest associations, aiming to support and engage present and ex-employees of the company; creating conditions when every employee feels his/her participation in the company.<br>5. *Responsibility:* observance of human rights in respect of the company's employees, working worldwide; ensuring fair hiring conditions and safe labor conditions; continuous professional skills training and personnel development, focused on transition to the next career step |
| Samsung | Production of high-tech components, telecommunication equipment, domestic appliances, audio and video devices | Inspire the world and create the future. Creation of the company that the majority of the world talents would like to work for. Creativity, partnership and the best human assets. Targeting of their own human and technological resources to creation of high-quality products and services to facilitate global development of the society. Responsibility for creating the better life for people. Green management policy | 1. *Sustainable development:* monitoring of risks, factors and opportunities aiming at gaining the skills of quick response to any change of trend, as well as providing opportunities to attain competitive advantages; increase of economic cost of the company; diversification of business environment; protection of intellectual property rights.<br>2. *Humans:* talents and career management, fostering creativity, competence development and self-improvement; fair policy of labor payment and safe ergonomic conditions of work; monitoring of the results of personnel management to improve the employees' satisfaction; ban on discrimination on any grounds; all-round ensuring human rights; new employment opportunities and facilitating youth and local dwellers employment; protection of public information; fighting against corruption; social volunteering.<br>3. *Society:* high quality of products and services to satisfy volatile needs of clients; ban on use of unethically mined mineral resources; introduction in different countries of programs in the field of education, healthcare, environment protection, aimed at improvement of the quality of life of local population; providing the youth of different countries with digital devices aiming at improvement of their IT-competence; technical support of the personnel who provides services for vulnerable segments of population and in poor districts in an integrated and holistic manner; introduction of the remote medical services; creating the process of quick response to natural disasters.<br>4. *Environment:* ecologically-friendly products and services; minimization of all types of impact on the product environment; enhancement of efficient use of resources at all stages of product lifecycle; reduction of the intensity of greenhouse gas emission on the construction sites; effective management of water resources; biological resources circulation management; programs of adaptation to climate change on the planet |
| IBM | Hardware and software, IT and consulting services | Use of their own talent and technology, aiming at creation of innovative solutions in the field of education, economic development, ecological stability and health care. Demand for social and environmental responsibility in relation to the whole chain of the company's supplies. | 1. *Education and personnel development:* advance preparation of pupils for entering the higher institutions and career planning; professional adaptation of military veterans; training and professional support of teachers and instructors; providing the universities with access to the company's software databases.<br>2. *Development of communities, improvement of society and environment:* grants for development of communities; volunteering with schools and non-governmental organizations; implementation of projects to address challenges of the developing countries; assistance to small business.<br>3. *Health care in the world:* programs to expand access and improve quality of health care in the world; engineering innovative equipping the world leaders in healthcare studies.<br>4. *Environment and effects of disasters:* sharing the experience and technology to address ecological challenges of the world, overcoming the consequences of natural calamities and disasters |

**Table 2.** Ranking of the companies by R&D investment in 2016

| Company | Rank R&D investment on 2016 | R&D investment, Euro million | R&D investment, % | Rank change 2004-2016 |
|---|---|---|---|---|
| Apple | 11 | 7.4 | 3.5 | up 93 |
| Samsung | 2 | 12.5 | 8.0 | up 31 |
| IBM | 27 | 4.5 | 6.0 | down 17 |

Selection of the American Company IBM to join a list of the successful innovative and socially responsible companies is based on their relatively stable tenth place in the ranking of the innovative countries of the world during the whole period of research (upward and downward fluctuations do not exceed three places in the ranking) as well as the initiative, declared by the company, in respect of the obligation to create innovative solutions in the field of education, economic development, ecological stability and healthcare (IBM, 2017). At the same time the company has chosen not so much the exterior as the interior vector of the declared initiative implementation, i.e. they focus all efforts on creation of new technologies and products, which, being used by the best professionals of the world, will enable making an innovative breakthrough in the sphere of education, healthcare and natural environment protection on the planet. As an organizational charitable support of the above-stated initiative, the company provides the leading scientists in each of the fields with the innovative samples of their own products, as well as intellectual support, opens special professional access to their own IT databases and creates favorable conditions for intensive development of small business in the world.

Each of the selected companies made considerable efforts to expand knowledge economy on the global scale and, at the same time, in the sphere of personnel management they transferred to the novel and more advanced level – their efforts are focused not on the personnel development and accumulation of personnel knowledge on this basis, but directly on attraction, support and effective use of talents in all cases and spheres of activity without exception. The focus of the companies' activity on the prospective development and scientific researches facilitates implementation of such policy that is evidenced by their high rankings in R&D Investment Scoreboard, which are annually determined by the Joint Research Centre of European Commission, Table 2 (The 2016 EU Industrial R&D Investment Scoreboard).

Among three companies Samsung is a leader in investments to scientific researches and Apple made a breakthrough in this sphere from 2004 to 2016 and managed to improve its ranking by 93 positions. IBM slightly lost its positions among the key investors-innovators of the world, although they have quite high proportion of R&D investment, thereby making significant contribution to their own development and knowledge economy. The companies' conscious choice of such policy predetermined their leadership status among the most successful innovators of the world.

## 3. PRIORITY AREAS OF THE INTERNATIONAL COMPANIES' ACTIVITY

Detailed study and thereupon generalization of the implemented social initiatives by the worldwide-known and successful companies enabled substantiation of the respective priority areas, which will allow the global companies to maximize positive effects of the knowledge economy formation, as well as to neutralize possible negative impact on the world economy. As a result we have singled out four priority areas of social responsibility of international companies and for each of these areas we have specified the steps of their implementation, table 3.

The first area "orientation towards all-round innovative development" is focused on regulation of the company's internal activity by the way of acceleration of the procedure of joining the number of the world providers of knowledge economy through shifting the emphasis from material component of production to intellectually-innovative one, maximizing social and economic effect from accumula-

**Table 3.** Priority areas of the international companies' activity

| Areas of activity | Program initiatives |
|---|---|
| Focus on all-round innovative development | Continuous professional education, skill improvement and effective planning of employees' career growth |
| | Involvement and development of their own talents, creating conditions for their all-round encouraging and productive professional creativity |
| | Minimization of the period, starting from emergence of innovative idea to its practical implementation and economic effect |
| | Monitoring of risks, aiming at acquiring the skills of quick response to any change of trend, growth of the company's economic value |
| | Creation of the new safe ergonomic employment. Protection of intellectual property rights. Information security |
| Ensuring the respect for human rights and opportunities | Prevention of all kinds of discrimination. Ensuring fair policy of labor remuneration. Fight against corruption |
| | Participation in the programs of access expansion, quality improvement and funding the world healthcare researches |
| | Participation in the programs of access expansion, quality improvement and funding the world education researches. Child development |
| | Effective use of the experience and knowledge of the aged or ex-employees, global programs of youth and disabled persons socialization |
| | Fostering human self-development, encouraging employment of youth, local population and disabled persons. Social volunteering |
| Sustainable development of society | Establishing grant support of the initiatives to develop communities; active volunteering involvement in non-governmental organizations |
| | Membership in the programs, addressing the problems of the developing countries, assistance to vulnerable segments of population and poor districts |
| | All-round support and financially-economic and intellectually-informational assistance to small business |
| | Membership in the programs, focused on improvement of human life on the planet, access to education and medical aid |
| | Development and introduction of technology, products and services, facilitating sustainable development of the society. |
| Environmental protection | Introduction of safe technology of manufacture and use of their own product, as well as programs of its 100% utilization |
| | Business process re-engineering and use of recycled resources and renewable energy source |
| | Application of exceptionally ethically-pure and certified mineral resources in production |
| | Active involvement in the programs of effective circulation of biological resources and adaptation to climate changes on the planet |
| | Assistance to the areas, suffered from the adverse impact of natural disasters and catastrophes; addressing the ecological problems |

tion of human capital. The second area "ensuring respect for human rights and opportunities" regulates the sphere of free and non-discriminated access of human, irrespectively from the place of residence in the world, to the high-quality education, healthcare, labor activity, professional and personal development. A role of the international companies in implementation of this area is quite extensive – from volunteering to direct funding. Implementation of the area "sustainable development of society" implies active participation of the company in the global social life that can be carried out through establishing and funding the grants, providing different kinds of assistance, developing and introducing the technology, products and services, which will facilitate sustainable development of society. The fourth priority area is devoted to the environmental protection, where the company primarily has to revise and, if necessary, to change the technology of their own product manufacture and the product itself into the human-friendly one; to develop program of complete recycling of the product after ex-

piry of the term of its serviceable life; to modernize production, aiming at transfer to using the recycled resources, renewable energy sources, etc.

The defined priority areas and program initiatives, specifying them, have to be considered exceptionally as a guideline for substantiating by the international company of their policy of mutual relations with the surrounding world, determining their own desirable role in increasing positive advantages from expanding the knowledge economy on the global scale.

## CONCLUSION

The international companies play a critical role in formation of knowledge economy, followed by positive, as well as negative effects for the society. The processes of minimizing negative effects of knowledge economy and enhancing positive ones are possible owing to undertaking by the international companies of the socially responsible activity. The Paper defined the guidelines of such activity by the way of familiarization with program initiatives of the three international companies-leaders in innovations and R&D investment – Apple, Samsung and IBM. Generalization of the studied companies' expertise made it possible to single out four priority areas of the international companies' activity: focus on all-round innovative development; ensuring the respect for human rights and opportunities; sustainable development of society; environmental protection. For each of these priority areas we have formulated five program initiatives, revealing and specifying the meaning and focusing management activities. Focus of the world companies' management on the suggested areas and outlined program initiatives, while formulating their own development strategy, will facilitate gradual reduction of possible negative effects of knowledge economy for the mankind.

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