**THE COMPETITIVENESS BASED ON XXXXXX XXXXXXXX XXXXXXXX**

**First and last name of author**

**Abstract**(Times New Roman, 12 pt., alignment in block, spacing 1,5): **Max. 300 words**

**Purpose**: What are the reason(s) for writing the paper? What are the aims of the research?

**Design/methodology/approach**: How are the objectives achieved? Include the main method(s) used for the research. What is the sample? What is the approach to the topic and what is the theoretical or subject scope of the paper?

**Findings**: What was found in the course of the work? This will refer to analysis, discussion, or results.

**Research/practical implications:** What outcomes and implications for practice, applications and consequences are identified? What changes to practice should be made as a result of this research/paper? What are the suggestions for future research?

**Originality/value**: What is the original contribution and main added value of the paper?

**Keywords:**Knowledge Economy, Innovation, Competitiveness

**JEL Codes:** M41, Q01, Q56

**INTRODUCTION**

Formulation of objectives and hypotheses contained in this paper is based on the development of economic growth theories since the forties of the twentieth century. The first wave of interest in economic growth falls in the late 40's and into the 50 years of the last century. In this period the oldest analysed Keynesians models of E. D. Domar (Domar, 1966) and R. F. Harrod (Harrod, 1966) were published. They were closely followed by the neoclassical Solow´s model (Solow, 1956).

Models of American E. Domar and Englishman Roy F. Harrod are from the forties of the twentieth century. Due to similar (Keynesian) approach of both authors, sometimes is spoken about a single Harrod - Domar model. International Financial Institutions (World Bank, IMF etc.) widely used the principles of Harrod - Domar model in its activities throughout the second half of the twentieth century.

**LITERATURE REVIEW**

The growing role of technological change and innovation for the development of all economies are projected not only in the indicated qualitative changes but also in theoretical growth models. Simultaneously, new categories that reflect these ongoing processes appear in economics: it is mainly the concepts of knowledge (or knowledge-driven) economy.

The concept of a knowledge economy comes from Fritz Machlup. F. Machlup´s study The Production and Distribution of Knowledge in the United States (1962) grew out of five lectures he gave in 1959 and 1960.

**METHODOLOGY**

The indicators´ structure which was used for knowledge economy evaluation in the Faculty of Business Administration project is visible in the Table 1. Together 15 indicators were used for the evaluation of quantitative aspects of knowledge economy.

The score for each indicator is given from the raw data on the base of the following formula:

$$H\_{ij}=\left(X\_{ij}-X\_{j}\right)/S\_{ij}$$

where $H\_{ij}$ is the *i* country score in the partial characteristics *j*, $X\_{ij}$ is a raw value of the *i* country score in the partial characteristics *j*, $X\_{j}$ is average value of *j* characteristic for all countries regarded in the data set and $S\_{ij}$ is a standard deviation of characteristics *j*.

Raw scores are based on standard deviation from the mean. Therefore, on average for the most indicators, approximately half the states initially have negative score (below the data set mean) and approximately half states have positive scores (above the data set). The scores are equally adjusted – the figure ten is added to each indicator to ensure that all are positive.

**DATA**

The FBA World Innovation Index was created at the Faculty of Business Administration, University of Economics, Prague. The methodology used at the Faculty of Business Administration was inspired by the Information Technology and Innovation Foundation (ITIF) practice but it is not identical. It is given mainly by the availability of the statistical data for selected countries. Methodology requires the calculation of the average value for each indicator and so there was necessary to know all data for each of analysed country.

**Tab.1** - **Structure of the FBA World Innovation Index and data sources**

|  |  |  |
| --- | --- | --- |
| **Indicator** | **Weight** | **Source** |
| A. Human Capital |  |  |
| Educational attainment of the population aged 25 years and older | 5 | OECD (2014) |
| Total R&D personnel per thousand total employment (FTE) | 5 | UNESCO (2015) |
| *Total* | *10* |  |
| B. Innovation Capacity |  |  |
| Research and development expenditure (% of GDP) | 18 | World Bank (2015) |
| H index – country | 4 | University of Granada (2015) |
| *Total* | *22* |  |
| C. Investment |  |  |
| Venture capital availability | 6 | WEF (2013) |
| Gross fixed capital formation of GDP | 6 | World Bank (2015) |
| *Total* | *12* |  |
| D. ICT Development |  |  |
| E-Government Development Index | 4 | United Nations (2014a) |
| Percentage of households with Internet access at home | 6 | WEF (2013) |
| Business-to-business Internet use | 10 | WEF (2013) |
| *Total* | *20* |  |
| E. Economic Policy |  |  |
| Total tax rate (% profit) | 6 | World Bank Group (2015) |
| Index of economic freedom | 5 | Heritage Foundation (2015) |
| *Total* | *11* |  |
| F. Economic Performance |  |  |
| Current account balance (% of GDP) | 6 | World Bank (2015) |
| FDI inflow as percent GDP | 3 | United Nations (2014b) |
| GDP per capita (current US$) | 8 | World Bank (2015) |
| High-technology exports (current US$) | 8 | World Bank (2015) |
| *Total* | *25* |  |
| Total | 100 |  |

*Source: Own computation based on resources mentioned in the third column of the Table 1, latest year available.*

**RESULTS AND DISCUSSIONS**

We will deal with the results of our research in this part of the contribution. As it was mentioned the FBA World Innovation Index consists of six modules. Firstly, we will describe results which were obtained in each module separately.

**Human Capital**

The first module examines the level of human capital in selected countries. The module includes two indicators: Educational attainment of the population aged 25 years or older (indicator 1) and Total R&D personnel per thousand of total employment (full time equivalent) – indicator 2. Countries with a high proportion of graduates of tertiary education gets more skilled workforce. Higher qualification of the workforce is usually related to higher economy productivity. Scientists and engineers are usually employees with university education and they just play a key role in innovation processes.

USA traditionally exhibited high share of college graduates in the population. At present, the situation is changing. Countries such as Russia, Canada or Australia are leading in this indicator, followed by the USA. In terms of total module results, the greatest emphasis on human capital is given in countries such as Russia, Canada and Republic of Korea.

However, it is still true that the largest investments into human capital are observable in North America and Europe (including Russia). The BRICS countries (with the exception of the Russian Federation) operate behind them. Vietnam utilizes human capital like the BRICS countries (excluding Russia).

If we consider the countries of East Asia, we find again their lagging behind North America and Europe countries (Republic of Korea there is an exception).

**Tab.2 - Module A – Human Capital**

|  |  |  |  |
| --- | --- | --- | --- |
| **Indicator** | **1** | **2** | **Weighted score** |
|   | raw value | score | rank | raw value | score | rank | score | rank |
| Russia | 60,1 | 12,02 | 1 | 11,4 | 10,36 | 10 | 111,92 | 1 |
| Canada | 47,7 | 11,29 | 2 | 12,92 | 10,64 | 5 | 109,66 | 2 |
| Korea, South | 35,3 | 10,56 | 5 | 15,06 | 11,04 | 2 | 107,97 | 3 |
| Australia | 41,3 | 10,91 | 3 | 12,5 | 10,56 | 6 | 107,37 | 4 |
| USA | 40,7 | 10,88 | 4 | 11,98 | 10,47 | 9 | 106,71 | 5 |
| France | 25,9 | 10,00 | 8 | 15,25 | 11,07 | 1 | 105,37 | 6 |
| Japan | 29,9 | 10,24 | 7 | 13,96 | 10,83 | 4 | 105,35 | 7 |
| UK | 33,1 | 10,43 | 6 | 12,13 | 10,50 | 7 | 104,60 | 8 |
| Germany | 25,6 | 9,98 | 9 | 14,26 | 10,89 | 3 | 104,36 | 9 |
| CR | 17,3 | 9,49 | 10 | 12,09 | 10,49 | 8 | 99,89 | 10 |
| Brazil | 11,4 | 9,14 | 11 | 2,84 | 8,77 | 12 | 89,57 | 11 |
| China | 3,6 | 8,68 | 14 | 4,23 | 9,03 | 11 | 88,55 | 12 |
| South Africa | 6,4 | 8,85 | 13 | 2,11 | 8,64 | 13 | 87,41 | 13 |
| Vietnam | 6,7 | 8,86 | 12 | 0,26 | 8,29 | 15 | 85,78 | 14 |
| India | 3,6 | 8,68 | 15 | 0,98 | 8,43 | 14 | 85,53 | 15 |

*Source: Own computation based on OECD (2014) and UNESCO (2015)*

**Innovation Capacity**

The second module explores the innovative capacity of the selected sample of countries. The module also includes two indicators: Research and development expenditure, % of GDP (indicator 3) and H index (indicator 4). Investments in R&D include both private (corporate) and public expenditures. Public expenditures are usually aimed at earlier stages of research. These stages are more risky and may not produce the commercial effects in the short run. Private expenditures are important for the realization of innovation at markets. In addition, business spending on R&D is more geographically mobile than public ones.

**CONCLUSION**

Now we evaluate all countries surveyed in terms of overall results which states exhibited in the FBA World Innovation Index. The outcome is published in the Table 8.

We divide all 15 countries into four groups according to the overall score they achieved. The inclusion of a specific country into the group was decided upon the following computation: first, the difference between the highest and the lowest total score achieved was calculated, and the difference was then divided by four. The value obtained was subtracted from the highest score to calculate the range for the 100th to 76th percentile and likewise for other three percentile ranges. The used methodology result is the percentiles do not necessarily include the same number of states but rather indicate which state scores fall into a particular range.

From the human capital perspective, FBA World Innovation Index suggests that Vietnam should increase as the share of university-educated population as the share of R&D personnel. Another option is to participate in international research.

That is not enough. FBA World Innovation Index recommends to create the space in the business sector for the exploitation of research and innovation results. The way how to use them better is wider utilization of venture capital.

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