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ROLE AND PLACE OF GREAT BRITAIN AMONG THE INNOVATIVE ECONOMIES IN THE WORLD

A b s t r a c t: Economies of individual countries of the world try to surpass each other to be more innovative, and thus to compete in the international arena. In many elaborations concerning the innovativeness as well as on industry websites numerous rankings and comparisons describing the determinants of the competitiveness of individual countries can be found. It is important because the innovativeness is now considered to be a factor for economic development and an indicator of the condition of economies and companies. To attract new customers and stay ahead of the competition, businesses have to introduce new products and services as well as to develop those that have generated financial benefits so far. This article presents the place of Great Britain in the international innovation arena, examples of organizations and other entities that support innovation in this country as well as the determinants of innovation in which Britain is leading among other countries.

Key words: innovativeness, innovative products in UK, innovate, innovative companies, GII
J E L C o d e: L21; O30

INTRODUCTION

As Christopher Freeman wrote many years ago - “Not to innovate is to die.” [Freeman 1973, p.21]. This does not apply only to companies but also to countries’ economies. Multiple reports concerning that which countries are more innovative than others are becoming increasingly widespread. Being on the top of the table means that the economy of a given country is developing dynamically, has an economic growth and is modern, so it can compete in many aspects with its rivals [Pangsy-Kania 2007, p. 15]. It is worth noting that according to the Lisbon Strategy the innovativeness and competitiveness have been recognized as the main strengths of the European economy [Kozioł 2007, p. 247],

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what is linked with the efforts of individual countries to improve their actions in this regard. At the time of writing this article and considering the fact that all mentioned data come from the time when Great Britain had not yet announced Brexit, the above applies also to the United Kingdom. Before we raise the issues concerning concrete examples and description of innovation in the Great Britain, in the introduction it should be briefly outlined what are the innovations in general. Following the Porter's approach, innovations are improvements in terms of methods, but also ways of execution of certain operations; innovations may include not only products but also processes, management concepts or marketing approaches [Porter 1990, p. 45]. Of course, there are many other definitions in the literature of the subject that more or less accurately describe both the core of innovation and its application. A comparison of above is not the essence of this article but it may be seen in Maciej Zastempowski [Zastempowski 2010, p. 55-60].

INNOVATIVENESS IN GREAT BRITAIN

Great Britain has been one of the countries with the highest innovative potential for many years. Taking into account the fact that barriers exist for the development of innovative potential, such as a lack of stable legal regulations, difficult access to financial resources, difficult access to institutions which support the entrepreneurship and innovativeness, or difficult access to the knowledge and information concerning new technologies [Haffer Toruń 2008, p. 61] it shall be stated that both companies and countries, which are at the global forefront on innovative countries, have to deal with them or even propose solutions so that they do not occur at all. Depending on the factors used while creating reports, the place of the Great Britain is even on the podium. The most frequently cited and presented ranking is the Global Innovation Index. In this ranking, the Great Britain is on the third place leaving Switzerland and Sweden behind. The ranking of the 10 most innovative countries is presented in Table 1. It is worth noting that the first three are the countries in Europe.

Table1. Global Innovation Index

Rank	Economy	Score
1	Switzerland	66,3
2	Sweden	63,6
3	United Kingdom	61,9
4	United States of America	61,4
5	Finland	59,9
6	Singapore	59,2
7	Ireland	59

8	Denmark	58,5
9	Netherlands	58,3
10	Germany	57,9

Source: Own study based on <https://www.globalinnovationindex.org/analysis-indicator>

Another report describing the innovativeness of individual economies is the innovation index created by the world's largest news agency Bloomberg. Here, taking into account such factors as R & D intensity, industry value, effectiveness of school system or the number of patents, the Great Britain takes 17th place in the table. As above, all factors considered and the classification of countries are presented in Table 2.

Table 2. Global Innovation Index according to BloombergMarkets.

Rank	Economy	Score	R&D intensity	Manufacturing value-added	Productivity	High-tech density	Tertiary efficiency	Researcher concentration	Patent activity
1	South Korea	91,31	2	1	39	2	1	6	2
2	Germany	85,54	8	3	32	5	17	14	3
3	Sweden	85,21	5	16	16	9	16	5	8
4	Japan	85,07	3	13	29	5	34	9	1
5	Switzerland	84,96	7	8	3	10	25	13	5
6	Singapore	84,54	17	5	5	13	2	7	24
7	Finland	83,80	4	18	26	23	4	3	7
8	United States	82,84	10	26	8	1	37	21	4
9	Denmark	81,40	6	22	13	21	18	2	10
10	France	80,39	15	39	15	4	12	18	11
17	United Kingdom	74,92	22	44	30	11	9	20	14

Source: Own study based on <https://www.bloomberg.com/news/articles/2016-01-19/these-are-the-world-s-most-innovative-economies>

The difference in the position taken shows that the multiplicity of issues which are considered and their diversity also position the scale of innovativeness of economies differently. Another ranking - the European innovation scoreboard positions the UK at 9th place, what is included in Table 3.

Table 3: The European innovation Scoreboard

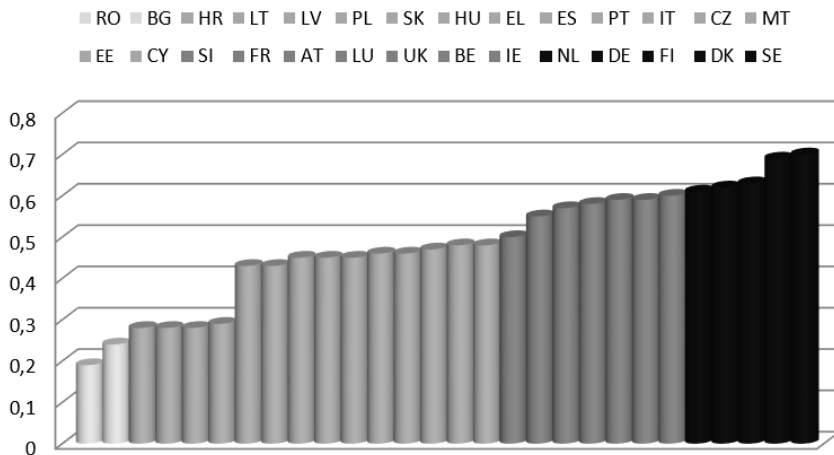
Rank	Economy	Score
1	Switzerland	0,791
2	Sweden	0,703
3	Denmark	0,700
4	Finland	0,649

5	Germany	0,631
6	Netherlands	0,631
7	Ireland	0,608
8	Belgium	0,602
9	United Kingdom	0,601
10	Luxembourg	0,598

Source: Own study based on http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_pl

In order to determine the right place for Great Britain among innovative countries, it is also necessary to divide the countries of the world into four types of innovators, i.e. innovation leaders, strong innovators, moderate innovators and modest innovators. Once again, paying attention to the first ranking, which is according to the author the most general, the innovation leader is Sweden. However, looking at the object of analysis of this article - Great Britain, it bears the name of the strong innovator. The whole ranking is shown in Figure 1 [http://ec.europa.eu/regional_policy/pl/newsroom/news/2016/07/14-07-2016-innovation-performance-compared-how-innovative-is-your-country].

Figure 1: European Innovation Scoreboard 2016 country ranking



Source: Own study based on: http://ec.europa.eu/regional_policy/pl/newsroom/news/2016/07/14-07-2016-innovation-performance-compared-how-innovative-is-your-country

The above figure presents, as described above, four divisions of countries, due to the level of innovativeness. Thus, the brightest color shows modest innovators, i.e. countries which are the least innovative of all surveyed. Among them there can be distinguished: Romania and Bulgaria. A little bit darker indicates moderate innovators, i.e. Croatia, Lithuania, Latvia, Poland, Slovakia, Hungary, Greece, Spain, Portugal, Italy, Czech Republic, Malta, Estonia and Cyprus. The next group, which also includes Great Britain, is created by strong innovators

including Slovenia, France, Austria, Luxembourg, Belgium and Ireland. The Netherlands, Denmark, Finland, Germany and Sweden are in the lead.

It is also worth turning the attention to rankings listing the most innovative companies in various industries. In the classification of the most innovative companies of 2016, created by PWC, there is no company from the Great Britain. Among the top 10 in this category, as many as 9 companies have their own headquarters in the United States. In turn, among the 20 companies that spend the most amount of money on researches and development, only one comes from the UK. It is AstraZeneca and it takes 18th place on the list concerning expenses for R & D in the amount of \$ 6Bn [<http://www.strategyand.pwc.com/innovation1000>]. This is quite puzzling taking into account the fact of taking high places in other classifications, however, innovations are not always associated with companies, but often with other institutions such as: research-scientific institutions.

As highlighted by Wojciech Popławski [Popławski 2004, p.66] there are some conditions of creating innovations and they primarily include conditions that create opportunities for innovations, organizations which support innovative ideas, scientific and technical base, technology transfer factors, and dynamic factors that shape the innovation process in businesses. The first three of these conditions will be described below in the context of Great Britain.

What should be emphasized is the fact that the United Kingdom has the most effective research among the G8 countries which include France, Japan, Germany, the United States, Canada, Italy and Russia. In addition, it should be emphasized here that the United Kingdom can boast a well-developed network of research institutions, such as universities, colleges, R&D centers, but also commercial enterprises where something new arises as a result of research. Here it is worth to focus on numbers that show the importance of this matter on the Isles [http://www.pi.gov.pl/parp/chapter_86197.asp?soid=C5B80DAA3AD940E-1957655C45E558A36]:

- as many as 14% of most highly cited results of research has been conducted in the UK,
- 4 of the top 10 universities in the world are located in the UK (Table 3),
- Scientists from the UK have won 78 Nobel Prizes - the most of all European countries
- British R&D centers carry out their research in over 400 fields,
- In 2016 the R&D sector was granted funding in the amount of £ 200mln for its activities.

Table 4: Best universities in the world in 2016.

Rank	Name of the University	Location
1	Massachusetts Institute of Technology	United States
2	Stanford University	United States
3	Harvard University	United States
4	University of Cambridge	United Kingdom
5	California Institute of Technology	United States
6	University of Oxford	United Kingdom
7	University College London	United Kingdom
8	ETH Zurich- Swiss Federal Institute of Technology	Switzerland
9	Imperial College London	United Kingdom
10	University of Chicago	United States

Source: Own study based on <https://www.topuniversities.com/university-rankings/world-university-rankings/2016>

Innovation potential in the UK is primarily based on education, research and development, but selling products and services that use the latest technology is also very important. In addition, the UK's economy is growing dynamically but steadily, what supports a development of the innovativeness.

Also in the UK the concept of "blues skies research" has been developed, which defines basic research, often conducted out of the pure curiosity of the person who conducted it, and which aims at in-depth knowledge of certain issues. They attract the best researchers in the world and allow for a fresh look at certain issues, and to combine different fields of study in order to obtain new results. The UK devotes a great amount of money for such research, which contributes to the fact that researchers want to do it in this country.

To make Great Britain even more innovative than ever before, the private sector can contribute the most and the development of the economy heavily depends on it. However, not only private-owned companies can contribute to increases of improvements as well as improvements of the mechanisms that have operated so far. First of all, the government must provide the right conditions in order to allow the private sector to develop.

This particularly relates to legal regulations, infrastructure and the access to financial solutions that allow to invest in new products. It is often the case that promoters of modern solutions do not have the adequate financial resources to implement them or after they have been implemented they do not have money for marketing, what leads to the failure of the whole idea. There are also restrictive laws that largely reduce the number of new products on the market.

The fact that the government of Great Britain takes a very serious look at the issue of innovation is confirmed by the fact that Minister for Business, Innovation

and Capability is selected. His department is responsible for the development of new solutions which are not only technological but of any kind, regardless of origin. The task of the government is to create an appropriate environment for innovative ideas as well as to work with foreign institutions. To date, the Great Britain has been cooperating in this regard with the EU countries, USA, China, Brazil and India. As regards the latter, in 2012 the UK-India Science Innovation Council was established.

In addition, the development of cooperation between the United Kingdom and India is promoted, among others, by:

[https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/300341/RESEARCH_Booklet_Updated_WebVersion2.pdf]

- **Science and Innovation Network (SIN)** – the network encourages, promotes and facilitates cooperation between businesses, research institutions and universities in the UK and India. Within the framework of this network numerous training courses, workshops and conferences are organized. In addition, members of the network collect the information, creating reports and analyzes.
- **UK India Education and Research Initiative (UKIERI)** – the international organization operates in order to improve educational opportunities and cultural relations. It operates on the basis of sharing knowledge and ideas. It is aimed to strengthen bilateral relations between India and the Great Britain.
- **UK Trade & Investment (UKTI)** – a government entity supporting local businesses with regard to the international success. It sends their professionals to India, who help in the development of those local businesses.
- **Department of International Development (DFID)** – one of the biggest founders of international research on development. It primarily supports research on development, climate changes, agriculture, health, management and new opportunities for development and challenges
- **South Asia Research Hub (SARH)** – it was established in order to increase the awareness and the ability to build research in development. It supports all kinds of research programs.
- **Energy, Climate and Growth Unit (ECGU)** – the organization focuses on promoting low-carbon technologies and supports the operations related to climate changes.

The year 2016 was announced by the governments of the United Kingdom and India as the Year of Education, Research and Innovation, what proves the importance of their cooperation.

[<https://blogs.fc.gov.uk/ritasharma/2015/12/17/uk-india-science-and-innovation-relationship-soars-to-new-heights/>].

In addition to the organizations mentioned above, thanks to which, within the framework of innovation, an international cooperation exists there are also other organizations which support innovators within the country. One of the most famous is Innovate UK – a government entity which cooperates with the private sector in order to work on innovations that are important for the UK economy. Its budget for 2015 amounted to as much as £616 million, and the support offered included direct investment, the assistance at finding business partners, or counseling [<https://www.gov.uk/government/organisations/innovate-uk>]. The next organization is NESTA, whose source of funding is the Nesta Trust fund, which receives revenues from The National Lottery. It primarily supports innovations that have an impact on UK society, and support instruments include investment funds, awards, but also help in building databases [<http://www.nesta.org.uk/>]. Still another significant organ in the UK is Council for Science and Technology. This is the most important advisory body for execution of the science and technology policy in the UK. In this case support instruments primarily include the counseling, but in various ways the Council for Science and Technology supports the improvement of education in terms of modern technology and helps in using support instruments offered by other entities [<https://www.gov.uk/government/organisations/council-for-science-and-technology>].

Multiplicity of the existence of, among others, the above mentioned bodies indicates that in the UK innovations are really important matters. Thanks to pro-innovation activities, the country will remain a strong innovator and will remain in the leading countries in the rankings classifying the above. However, not only the existence of the organization contributes to the emergence of new products. In the UK, in terms of innovation, great attention is also paid to care and promotion of new clusters. There is even an instrument for this purpose - Launchpad. It is a financial tool that supports companies operating within clusters and at this moment it operates almost in all of them [<https://www.launchpad-central.com/about-us>].

The fact that innovation is sometimes misunderstood is confirmed by the ranking of innovative things which aim at improving our homes, and which was published in the end of last year in the UK.

According to most people, the innovative things are considered to be only those things that are completely new, previously unknown, which bring a breakthrough in the current use of other objects. At the top of the above-mentioned list is a horizontal shower, which allows to lie down and relax in other position than ever before. "Six water bars operate on the same principle as the classic vertical shower, but allow you to get into a reclining or flat-out position. There is also an ambient tuning technique for different water flows and temperatures" [<http://www.telegraph.co.uk/lifestyle/interiors/9597073/Grand-Designs-Live-Six-innovative-products-to-improve-your-home.html?frame=2364414>].

It may seem that there is nothing innovative in this product, as the same procedure can be done in the bathtub, however as the ranking shows, in order to be innovative you do not have to create anything completely new, but it is enough to transform an already existing product. Other “wonderful” ideas include a spherical microwave oven that allows for easier cleaning or watering can which uses rainwater. It may seem quite absurd but innovative. It is important to remember that innovativeness does not always mean to create a new product or service, but sometimes to introduce things which are already known to everyone and which bring measurable benefits.

One example of that the UK is open to ideas not only of individuals and companies that are native to the country, is proved by Polish people: Jan Bagniewski, Jakub Wiczorek, Feliks Lobkowicz and their friend James Fryer, who, in the beginning of 2015 established a company producing shape memory mattress with thermoelastic foam which turned out to be a phenomenon on a British scale, and together with the entire marketing and logistical framework they were considered as an extremely innovative product. According to Agata Sudolska [Sudolska, Toruń 2011], the products proposed by numerous companies are increasingly complex and sophisticated. With that in mind, those who want to be competitive must constantly modify what they offer their customers and propose new technological solutions and products. Quite interesting is the fact that among the competition, which outdo each other in offering more and more of their products, Eve Sleep company offers only one type of mattress, but it has been refined over four years in order to meet the needs of as many customers as possible. The innovation in this case is not only the mattress itself, but also that every buyer receives a 100-day free trial period, free transport and 10-year warranty, and additionally to the fact that the mattress can only be purchased through a direct website the price doesn't contain merchants' margins [<http://www.prnewswire.co.uk/news-releases/eve-sleep-pozyskuje-16-mln-euro-i-wkracza-do-polski-596389891.html>]

Probably there are so many case studies similar to this, thus, it proves that a great deal is being done in terms of innovation in the UK. In subsequent years, the particular positions in rankings will change, but the leaders will probably remain the leaders and will be outdoing themselves in order to improve the quality of the factors that drive them to be more competitive.

CONCLUSIONS

The fact that innovativeness is important both for businesses and the whole economies does not have to be proven. Several years ago it has become so that the innovativeness has become a guideline in the economic policy of countries that want to achieve something in the international arena. In the country analyzed in this article, the Department of Trade and Industry has stated that innovativeness

is the driving force of today's economy, which transforms ideas and knowledge into products and services [Department of Trade and Industry, London 2003]. The well-developed UK economy owes its high position in the classification of innovative countries to national policy, numerous organizations and supporting entities. It is emphasized that national innovation systems have a clear impact on the intensity and direction of innovation in a given country [Tidd, Bessant, Warsaw 2008, p.770]. Whether Britain remains in the summit of countries with well-developed innovation potential and uses it in many aspects depends on national policy, support organizations, research and development bodies, but also on the innovators, whether they wish to implement their ideas in the United Kingdom and use the opportunities that this country offers.

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ROLA I MIEJSCE WIELKIEJ BRYTANII WŚRÓD INNOWACYJNYCH GOSPODAREK ŚWIATA

Zarys treści: Gospodarki poszczególnych krajów świata prześcigają się wzajemnie by być bardziej innowacyjnymi, a tym samym konkurować w tym względzie na arenie międzynarodowej. W wielu opracowaniach dotyczących innowacyjności oraz na stronach branżowych znaleźć można wiele rankingów i porównań opisujących determinanty konkurencyjności poszczególnych państw i przedsiębiorstw. Jest to ważne dlatego, że w dzisiejszych czasach innowacyjność uważa się za czynnik rozwoju gospodarczego i wskaźnik kondycji gospodarek i firm. Aby przyciągnąć nowych klientów i wyprzedzić konkurencję przedsiębiorstwa muszą wprowadzać nowe produkty i usługi oraz rozwijać te, które przynosiły korzyści finansowe do tej pory.

W artykule przedstawiono miejsce Wielkiej Brytanii na międzynarodowej arenie innowacyjności, przykłady organizacji oraz innych podmiotów, które w tym kraju innowacyjność wspierają oraz determinanty innowacyjności, w których Wielka Brytania przoduje wśród innych państw.

Słowa kluczowe: innowacyjność, innowacyjne produkty w Wielkiej Brytanii, innowacje, innowacyjne

