

# From technological readiness to business sophistication through ICT applications

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## Abstract:

The knowledge based society raises some new imperatives, challenges and opportunities for firms, generally speaking, because newer and better knowledge can lead to an estimate rising of 70- 80% in firm competitiveness under the circumstances characterized by the transformation of the older economy into the new economy – with the help of the global informational and technological influence.

The present study tries to analyze the importance of some ICT applications on the transition of efficiency economies – delimited also by technological readiness – to the innovation economies – delimited also by business sophistication – with the help of the regression index  $R^2$ . From all ICT applications we consider the e-Commerce and e-Business to be the most relevant and to have a very strong impact; in fact we consider, on one hand, that e-Commerce is related with technological readiness and e-Business is related by business sophistication, on the other hand.

Keywords: technological readiness, business sophistication, ICT applications, e-Commerce, e-Business

## INTRODUCTION

Creating the information society as support for the knowledge society has become a common objective, both on an individual and a country level. The evaluation of the progress is possible only by using some indexes that can measure exactly the degree of penetration of novelties required by the informational society. The indexes will facilitate the evaluation of the individual progresses made by every country and at the same time it will allow a comparison between them.

The Information and Communication Technologies (ICT) sector is a rapidly developing area intensive in technological R&D&I and with immediate industrial effects. It is critically important for the competitiveness of all industrial sectors and it is considered a source of economic growth. Being at the leading edge of the development and innovation in these technologies this sector has always been an objective for governments.

## RESULTS

According to the Commission of the European Communities (Preparing Europe's digital future i2010 Mid-Term Review, ICT Country Profiles, Working document, 2008) the 2 ICT applications – e-Commerce and e-Business – have the following composition:

- ✓ for **e-Commerce**
  - e-commerce as % of total turnover of enterprises
  - % enterprises receiving internet orders
  - % enterprises purchasing on the internet
- ✓ for **e-Business**
  - % enterprises with integrated internal business processes
  - % enterprises with integrated external business processes
  - using ERP system
  - using analytical CRM
  - sending/receiving e-invoices
  - using digital signatures
  - using secure protocols for internet order
  - using open sources operating system

The Global Competitiveness Report 2008/2009 identifies three stages of development for the economy such as: factor-driven economies, efficiency-driven economies and innovation-driven economies. Countries falling in between two of three stages are considered to be in transition. Countries that move from efficiency-driven stage into the innovation-driven stage must be able to sustain higher wages and the associate's standard of living only if their business they are.

**Technological readiness** is the 9<sup>th</sup> pillar of national competitiveness and is a key for efficiency-driven economy in stage 2 of development. It has the following composition: availability of latest technologies; firm-level technology absorption; laws relating to ICT; FDI and technology transfer; mobile telephone subscribers; internet users; personal computers; broadband internet subscribers (Xavier Sala-I-Martin, Jennifer Blanke, Margareta Drzeniek Hanouz, Thierry Geiger, Irene Mia, Fiona Paua, Global Competitiveness Report 2008/2009, pg. 5).

According to Global Competitiveness Report 2008-2009 the *technological readiness* measures the agility with which an economy adopts existing technologies to enhance the productivity of their industry. The importance of technology adoption for national competitiveness has been growing in recent years, as well as progressed in the dissemination of knowledge and the rising use of ICT has become increasingly widespread.

*Business sophistication*, the 11 pillar of national competitiveness, is a key factor for innovation-driven economy and concerns the quality of a country's overall business networks, as well as the quality of operations and strategy of individual firms. This pillar is very important for economies in stage 3 of development and it has the following composition: local supplier quantity; local supplier quality; state of cluster development; nature of competitive advantage; value chain breadth; control of international distribution; production process sophistication; extent of marketing; willingness to delegate authority (Xavier Sala-I-Martin, Jennifer Blanke, Margareta Drzeniek Hanouz, Thierry Geiger, Irene Mia, Fiona Paua, Global Competitiveness Report 2008/2009, pg. 6).

### The link between e-Commerce and Technological readiness

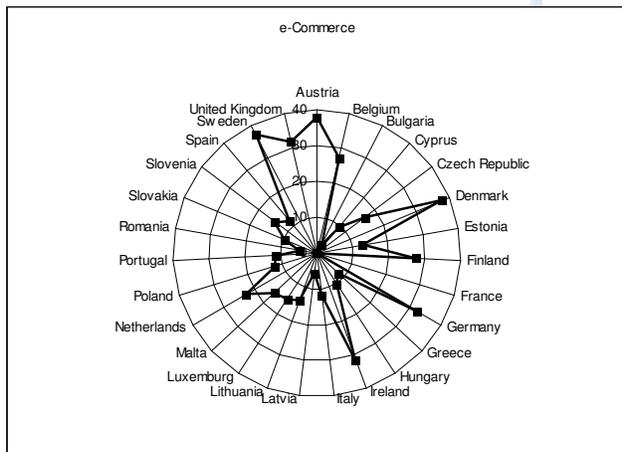


Figure 1. The values of e-Commerce in EU  
 Source: *Preparing Europe's digital future i2010 Mid-Term Review, ICT Country Profiles, Working document, country profile, 2008.*

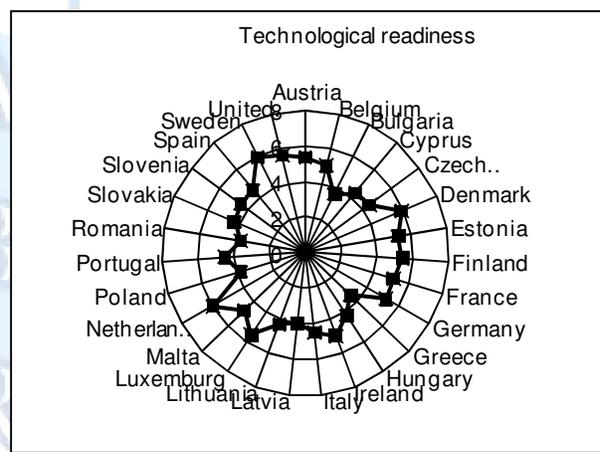


Figure 2. The values of Technological readiness in EU  
 Source: *Global Competitiveness Report 2008/2009*

Although e-Commerce is relatively developed in the European Union with an average of 17.51% only 9 countries show a value above average; among them we mention Austria (38%), Denmark (38%) and the other North countries, while the other 18 countries have values below average. The lowest two positions are taken by Romania with 4.66% and Bulgaria with 2.66% (Preparing Europe's digital future i2010 Mid-Term Review, ICT Country Profiles, Working document, 2008).

The 9<sup>th</sup> pillar of global competitiveness – technological readiness – shows that Romania takes the 25<sup>th</sup> position out of 27 member states of the European Union with a value of 3.7. The Netherlands finds itself in the top position followed by Sweden with 5.9. With an average of 4.77 we find countries like Ireland (4.98) and Malta (4.75). The lowest two positions are taken by Bulgaria with 3.65 and Greece with 3.5 (Global Competitiveness report 2008/2009, full rankings).

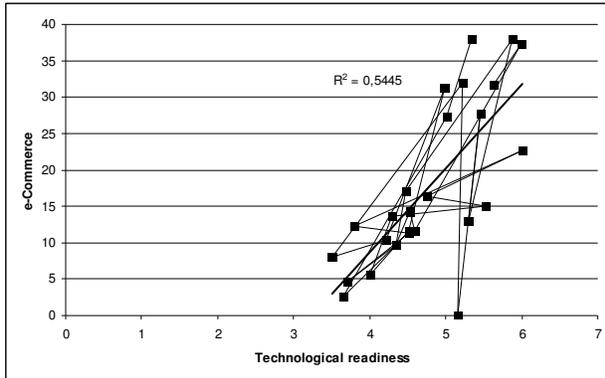


Figure 3. Interrelation between e-commerce and Technological readiness

The  $R^2$  value of 0.5545 shows a direct relationship between the two variables, which means that in countries where the values of Technological readiness are high the values of e-Commerce are high as well and the other way around. Considering the fact that they are interdependent the y ax shows that e-Commerce is not dependent of x and the choice is aleatory in calculating the  $R^2$  (correlation coefficient).

**The link between the e-Business and business sophistication**

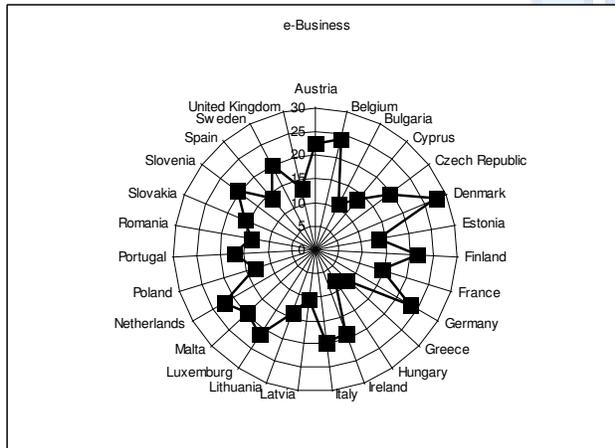


Figure 4. The values of e-Business in EU  
 Source: *Preparing Europe’s digital future i2010 Mid-Term Review, ICT Country Profiles, Working document, country profile, 2008.*

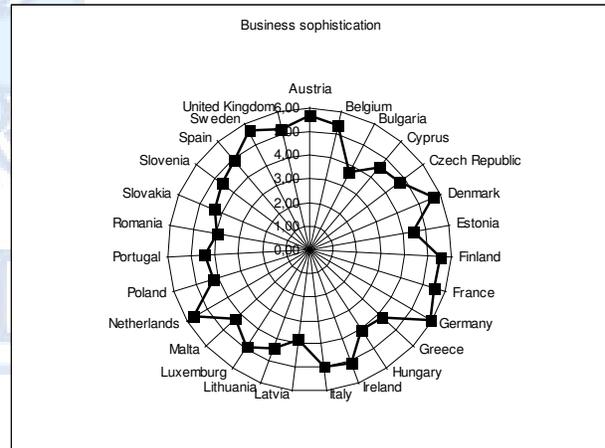


Figure 5. The values of Business sophistication in EU  
 Source: *Global Competitiveness Report 2008/2009*

After analyzing the data from picture 4 we conclude that the average of the EU for e-Business is 17.5%. It is somehow equal to the e-Commerce average, except it places 13 countries over the average and 14 under this level. Countries like Denmark (27.63%), Belgium (23.75%) and Germany (23%) are on the first three positions while Greece (9.37%) and Hungary (7.87%) are on the bottom two positions and they are considered to be countries where the e-Business is

not too developed (Preparing Europe's digital future i2010 Mid-Term Review, ICT Country Profiles, Working document, 2008).

The Business sophistication – the 11<sup>th</sup> pillar of the GCI composition (Global Competitiveness Index) – the average for the European Union of 4.79 is relatively low compared to other world economical powers. The values marked by countries like Germany (5.87), Denmark (5.66) and Austria (5.65) places them in stage 3 of development. It is not the same for countries like Romania (3.93), Latvia (3.85) and Bulgaria (3.69) which are in stage 2 of development (Global Competitiveness report 2008/2009, full rankings).

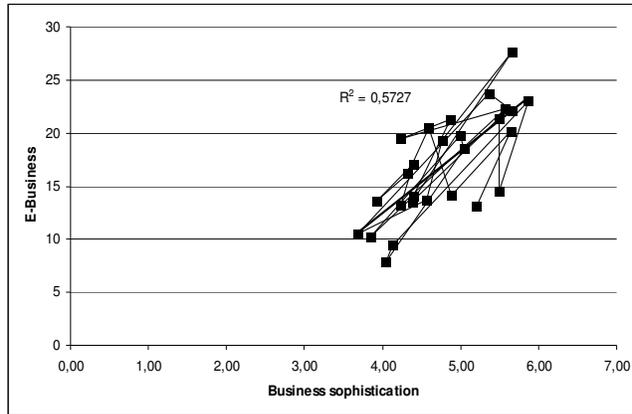


Figure 6. Interrelation between e-Business and Business sophistication

The calculation of the regression index number between e-Business and Business sophistication is important for the identification of the correlation between the two factors. The value 0.5727 of  $R^2$  shows a direct interrelation between the two variables although this is not too strong. Therefore we can claim that in countries of the European Union where the e-Business factor is high the values of Business sophistication are also high (see countries like Germany or Denmark). At the same time when the values of e-Business are low the values of Business sophistication are also low (see countries like Bulgaria). As a conclusion countries that have values above/below average for one variable will have values above/below average for the other variable.

## CONCLUSIONS

In conclusion, in recent years, many firms have elected to focus their efforts on gaining differentiation through the development of capabilities. Very often these capabilities come in the form of specific technologies. For example this might cover also the e-commerce. This technology can drive efficiency economies towards innovation economies in order to achieve competitive advantage in several ways including: reducing overall cost, enhancing inventory efficiency, improving order and production timeliness, supporting strategic planning and facilitating firm to firm information sharing.

The countries need to develop their own ICT strategies by creatively drawing available experience to configure their technical and human resources. The investment in ICT should be

made to achieve the highest social and economic benefits at the lowest costs. Each developing country needs to prepare itself to make maximum use of the new opportunities.

In the European Union there are 17 countries in stage 3 of development, 5 countries are in transition between stage 2 and 3, and 5 countries are in stage 2 of development. In order for these countries to move from stage 2 of development (efficiency-driven economies) to stage 3 (innovation-driven economies) they have to impose the utilisation of e-Commerce and Business sophistication on a wider scale.

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