Modern technologies and business performance in creative industries: a framework of analysis

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Abstract. The creative economy is, at the moment, one of the most dynamic sectors of the world economy and international trade generating jobs, revenues, export earnings while promoting social inclusion and human development (United Nations Conference on Trade and Development). It is also a set of knowledge-based activities that make intensive use of creative talent incorporating techniques or technologies bringing added value to intellectual capital. The heart of the creative economy are the creative industries, those industries which have their origin in individual creativity, skill, talent and which demonstrates to have the potential for wealth and job creation "through the generation and exploitation of intellectual property" (Department of Culture, Media and Sport, UK, 2001). The aim of this paper is twofold: to explore and to analyze the role and the contribution of technology, particularly of the new technologies, on the economic and social performance of the Creative Industries at European Union level. The foreseen output is a model for analyzing the impact of technology on business performance level of Creative Industries.

1. Introduction
Right from their appearance, Creative Industries have sparked many controversies, questions, misunderstandings on both how they are defined by different specialized national/international bodies or international (such as Global Alliance for Cultural Diversity, Department for Culture, Media and Sport from United Kingdom (DCMS), United Nations Educational, Scientific and Cultural Organization, United Nations Conference on Trade and Development, United Nations Development Programme) or specialists in the field (Richard Caves, Richard Florida, Charles Leadbeater, Terry Flew), and how they have so far been classified by some of them.

According to John Hartley, the idea of creative industries seeks to describe the practical and conceptual convergence of creative arts, and individual talent, with the cultural industries, taking into account the new media technologies / ICT’s. This convergence takes place in the new economy of knowledge, as a new way of usage by interactive consumer-citizens [1].

The fact that technological changes and cultural transformations that have been associated with convergence are responsible for the development of creative industries is no longer debatable. Taking into account the technological dimension of convergence, this is the one “in which digitization enables the conversion and distribution of content across multiple formats and platforms” [2].
2. About Creative Industries
Creative industries have been seen to become significantly important to economic well-being, proponents suggesting that “human creativity is the ultimate economic resource” and “the industries of the twenty-first century will depend increasingly on the generation of knowledge through creativity and innovation”.

Among the first works undertaken with the view to creative industries, DCMS (1998) identified several “industrial” sectors, starting from advertising, architecture, art and antiques, and continuing with computer games, crafts, design, film and video, publishing, software, television and radio, all and each of these incorporating a different technology but nevertheless depending on the technology used.

All types of creative industries that have managed to grow / develop despite the hard times of crisis and doubt, are often perceived to have as many differences on so many similarities. Indeed, even within a sector, such as editing (publishing), the perceived differences between newspapers and educational publishers are often considered much higher than the points in common [3]. However, in spite of the above, each of the creative industry has a common business model and a technology that relies on, both influencing the assessment of the creative industries’ contribution to a country / region’s economy.

Recently, the level of awareness of the importance of cultural and creative industries at European Union level has increased. The European Union is calling on European countries / regions to make better use of European Union funds for the Cultural and Creative Industries, as well to develop “smart specialization strategies” (RIS3 – National / regional research and innovation strategies for smart specialization) which should embrace a broad concept of innovation, including not only investment in research or in the manufacturing sector, but also in design and creative industries.

3. Types of technologies that support Creative Industries
Globally, a revolution in cultural and creative industries based on technology, the communications infrastructure networks, but also on traditions and cultural events takes place. The great global centers of creativity, such as New York and London, are characterized by clear regulations on copyright laws, many educational systems, transportation hubs and strong support from local government. By comparison, in Romania, political discourse on creativity barely emerges and there’s still not a law to support the creative industries [4].

The concept of Creative Industries, as shown in the WIPO Guide (World Intellectual Property Organization), represent groups of activities with a certain size and structure, "which can be identified and statistically measured", comprising the following categories [5]:

- Core copyright industries
- Interdependent copyright industries
- Partial copyright industries
- Non-dedicated support industries

In terms of creative industries, United Kingdom is the most advanced country at the European Union level according to different industry reports. Even more, the United Kingdom can be considered as a reference country for these industries to all other countries, European Union members, especially to those where a definition or classification of the creative industries has not been yet established.

Eleven sectors of the creative industries out of 13, according to DCMS [6], depend more than 50% on technology. But when it comes to technology’s dimensions in creative industries, as Richard Florida first talked about the creative class [7], we can also talk about creative technology or creative tech. Creative tech sectors are those sectors that support Creative Industries: IT (internet and technology), software and computer services. Besides the creative tech, another type of technology that can be met in the creative industries is the specific technology, as we will call it in this paper, that each sector needs.

Creative tech can be considered both:
as technology sectors that support the sectors of creative industries, and
as sectors of creative industries themselves.

Figure 1. Technology and business performance in Creative Industries – a model of analysis.

According to Figure 1, the IT sector (Internet & Technology) supports all creative industries, and its degree of development has a great impact on them, on multiple levels: increase the speed and quality of manufacturing the creative products / services, the speed of accessing information (of better quality), interactive communication with stakeholders, competitive advantage in the markets through promotion (on and off line), the possibility to find (better) solutions to different problems and so on. At the same time, all the sectors placed in the core area, also rely on their specific technologies (e.g. for film and video different cameras are needed; in music, there are simple masterly crafted wooden instruments, but also instruments that use advanced technologies).

Software and Computer services can also support the majority of creative industries. The question is, with Arts and Antiques markets, and Crafts. These sectors, especially the last one, usually don’t need special software, much less computer services, as they rely on handicraft / individual craftsmanship. For this reason, in the above model, we left them outside the red border, as we consider that they rely more on their specific technology.

Using the NESTA Model of Creative Industries as a starting point, the way IT support all sectors of the creative industries is better emphasized in figure 2. NESTA Model of Creative Industries is well known as a useful tool in analyzing the creative industries as industrial sectors, and classifying different types of creative entrepreneurs that can be found in markets [8]:
- Creative service providers, entrepreneurs
- Creative content producers, entrepreneurs
- Creative experience providers, entrepreneurs
- Creative originals producers, entrepreneurs

**Figure 2.** Technological sensitivity - The IT impact on the four types of creative industries’ businesses.

Whatever type of technology is used in the creative industries (creative tech or specific tech), the technology / technique has changed the destiny of these sectors, especially the art, in that it gave art a new reality / dimension, determining the explosive development of new domains, such as: *art research, research through arts, art & technology, human & technology*.

The amazing show that technology can offer in public spaces or in contemporary theaters is obviously showing, while hiding, an effervescent phenomenon: the interdisciplinarity at the boundary between two fields of knowledge, scientific knowledge and artistic knowledge [9].

**4. The contribution of technology to Creative Industries’ economy**

The technology has many roles: it aids the creative process, is integral to products, provides the route to market and many others. For example, the impact of technology is evident, especially with digital technologies. It stimulates innovation across the value chain, and challenges existing market structures and business models.

Whichever business model was chosen / adopted, nowadays, there is no doubt that the creative industries play an important role in the economy of the countries or regions where they have been established. The main question is how important is the contribution of the technology to the development of these industries?
Taking into account that, at the European Union’s level, in most countries the leading sectors of the creative industries are software, computer games and electronic publishing, publishing, and TV & radio, sectors that are based on technology, the answer is obvious. For example, according to the Staying Ahead report from 2004, in the UK, all these sectors account for around two-thirds of the creative industries.

According to the research studies done in 2009, the creative and cultural projects accounted for 5.93% of the Romanian GDP, and generated around 100.000 jobs. The most profitable sectors of the creative industries are as it follows [10]:

- Software and computer games (11.136 employees)
- Publishing and book industry (2.462 employees)
- Advertising (10.728 employees)
- Film & TV & Radio (5.139 employees)
- Performing arts
- Design

The fact that the United Kingdom has a history of giving rise to new thinking and technical important discoveries is no longer a wonder. Due to UK’s open, competitive environment in which innovators are able to develop ideas and collaborate, and find funders and partnering organizations, the UK is ranked (2011-2012 weighted average) [11]:

- Third worldwide for the quality of its scientific research institutions, and
- Second worldwide for the quality of university-industry collaboration, as it offers excellent educational institutions.

As a comparison, Romania is ranked (2011-2012 weighted average) [11]:

- 84 worldwide for the quality of its scientific research institutions out of 144 countries, and
- 113 worldwide for the quality of university-industry collaboration, out of 144 countries.

5. The contribution of IT to Creative Industries’ economy

At both European and world levels there are different views on the classification of Information and Communication Technology sector (ICT) within the creative industries. In this regard, activities in the IT sector falling within the creative industries are: Editing of other software products, Activities for realization of software on demand (software-oriented client), Consultancy activities in information technology, Other service activities regarding information technology, Activities of web portals.

Creative industries’ economy, for short creative economy, comprises both the total number of jobs in creative industries, and creative jobs outside those industries. By a creative job outside the creative industries, we refer, for example, to the designer hired by a company from the automotive industry.

IT, software and computer services are the largest of the creative economy classifications used by the DCMS in UK to measure the creative economy. In turn, Romania has a high potential to become a real force in the IT industry, IT sector being able to be the engine of a sustainable employment, being the only sector that during the economic crisis promoted employment opportunities.

As a comparison between the United Kingdom and Romania, statistic data have shown that the sector of IT, software and computer services has a great contribution to the economic and social performance of the Creative Industries.

In terms of employment in 2014:
IT, software and computer services was almost double in size that of the next biggest classification in the creative industries: Advertising and marketing, and 871,000 employees were estimated to worked in this sector in 2014 [12].

Romania had over 64,000 IT specialists, being the leader in the European Union regarding the number of employees in the technology sector per capita, and ranks sixth worldwide [13].

In terms of Gross Value Added (GVA), in 2014, IT, software and computer services sector:

- accounted for 43.5% of GVA of the creative industries, in the UK [12], and
- increased by 50% in two years, as in 2012 it accounted for 55% of GVA of the final production, from 27 billion lei in 2012 to 40 billion lei in 2014, in Romania [14].

Year by year, despite the economic crisis, creative industries experienced increases, especially in sectors based on technology. These sectors are considered to be the most dynamic of all creative industries’ sectors (mainly IT, software and computer services sector). Practically, the creative industries are themselves considered the most dynamic sectors in the world economy, not only at EU level, as they provide “new opportunities for developing countries to leapfrog into emerging high-growth areas of the world economy” [15].

5. Conclusions

Regardless of statistics and methodologies used in numerous documents, studies and analyzes, it appears that an important part of the economy of developing countries, about 10% in employment and 5% in share of GDP, counts directly on the creative effort of people, without taking into account their indirect contribution to the economy and society in general.

It is important to note that many analyzes and studies dedicated to creative industries reveals a much faster growth potential of these types of industries from the rest of the economy. Among many factors, the level of technology involved plays a very important role to determine this growth, as it has changed the destiny of these creative sectors, especially the art, in that it gave art a new reality / dimension, determining the explosive development of new domains, such as: art research, research through arts, art & technology, human & technology.

The model presented in figure 1 is best used in analyzing the impact of technology on business performance level of creative industries, based on the two main types of technologies: creative tech and specific tech. Even though, the influence of the creative tech (IT and Software & Computer Services) on the creative industries is evident, changing at a fast pace, the influence of the specific tech on them should not be minimized. If the latter is mainly important for the fact that it has helped and influenced the possibility of their appearance, the creative tech is the one that continually helps them to develop and to cope with market demands.

Nowadays one can easily talk about the so called technology sensitivity, as we named the model proposed in figure 2. Most businesses are influenced about it, as IT has boldly managed to reach them, answering their most sensitive needs, and creating, at the same time, direct and interactive cross-links among all players (creative entrepreneurs in our case). Being at the core of the creative sectors, IT is acting like a hub for all of them, demonstrating in this way its impact on their business performance level.

Both models proposed in this paper will be tested further, by means of empirical research, in later stages of a larger research project, with the purpose to emphasize the impact of the (both types of) technology on business performance level of creative industries.

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