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USAGE OF ICT IN EU CULTURE SECTOR AS A TOOL OF CULTURAL PARTICIPATION

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ABSTRACT

Culture is not only an inherent part of human life but it also creates the potential for economic growth, employment and innovation. For this reason, the European Union considers the development of culture sector and Cultural and creative industries as very important. Nowadays the culture sector is confronted with the penetration of Information and communication technologies. The widespread use of Internet and Information and communication technologies implies more participatory behaviours on the side of users, who are increasingly involved in cultural activities electronically.

The presented article is focused on the issue of electronic cultural participation in European Union member countries. The aim is to evaluate the usage of Information and communication technologies for cultural purpose. For the purpose of this aim the selected multi-criteria decision-making method MAPPAC is applied. In the result is presented the ranking of European Union member countries according to the participation of citizens in culture through Information and communication technologies. In the research there was confirmed the importance of Information and communication technologies in European Union culture sector. High involvement of individuals in electronic cultural participation is obvious in developed European Union countries; in less developed countries the electronic cultural participation is habitually lower.

KEY WORDS

Cultural and Creative Industries, European Union, ICT, MAPPAC, participation

JEL CLASSIFICATION

H440, O300, Z110

INTRODUCTION

Information and communication technologies (ICTs) are an inherent part of the contemporary world. They are gaining importance also in the European Union (EU) member countries as a means of cultural participation (UNESCO, 2009a). Nowadays, the Internet allows people to take part in cultural activities that were previously inconceivable, such as creating, downloading and sharing

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cultural content, watching films and videos online, streaming live concerts and other activities (European Commission, 2013). Cultural institutions and other providers of cultural services are also adapting their products and services to new technological tools (Eurostat, 2016).

This paper is focused on the issue of electronic cultural participation in EU countries. Cultural participation is an essential dimension and driving force for the development of cultural sector of every country. It contributes to personal well-being and to the integration of individuals in society (Morrone, 2006; Brook, 2011). The cultural participation covers cultural activities as reading habits (books and newspapers), going to the cinema, attending live performances (plays, concerts, operas, ballet and dance) and visiting cultural sites (historical monuments, museums, art galleries or archaeological sites), etc. (Eurostat, 2016).

Across the EU member countries we can see nowadays the significant decline in some fields of cultural participation (European Commission, 2013). For example the share of book readers fell from 2007 to 2011 on about 10 percentage points (the indicator "Number of books read in the last 12 months"), see Eurostat (2016). Moreover the statistical data document the new trend on EU book market – increasing share of e-books and decreasing trend of printed books. However the share of e-books in EU countries remains relatively small. In 2014 the e-book market in the leading EU markets represented 1.6% of the total book market (European Commission, 2012; IDATE, 2011). Also reading newspapers (newspapers are also considered as the form of cultural participation, as the press is a privileged source of information on international and local events as well as societal - including cultural – phenomena) loses its significance. The paper form is replaced by the online form that is connected with the development of new ICTs platforms for news dissemination (online press). Same going to the cinema and visiting live performances is significantly influenced by the entry of ICTs. Nowadays the electronic form of cultural participation is gaining importance in all developed countries what covers also the EU countries. According to Pilik et al. (2016) the Internet has become in the past years one of the most popular shopping channels. Its importance was demonstrated also in the sector of culture, where the cultural goods and services are increasingly purchased through Internet.

The aim of this paper is to describe the trend of electronic cultural participation in EU member countries and to evaluate the state of electronic cultural participation in the EU according to the usage of ICTs for cultural purpose in individual EU countries by the application of selected MCDM method – MAPPAC (Multi criteria Analysis of Preferences by means of Pair Actions and Criteria comparisons).

1 CULTURE SECTOR IN THE EU AND ELECTRONIC PARTICIPATION

The culture sector is nowadays increasingly becoming the important component of the modern economy and knowledge-based society (UNESCO, 2009a). The cultural industries generates not only the non-economic impacts as social cohesion, affirmation of creativity, talents and excellence, or development of cultural diversity but also the economic impacts as GDP (gross domestic product) or GVA (gross value added) growth, increasing of employment and competitiveness of the country. The importance of the culture sector in the modern economy is thus currently indisputable (Eurostat, 2016; European Commission, 2006). Cultural and Creative Industries (CCIs) are in EU considered as an engine for economic growth. CCIs are estimated to be responsible for over 3 % of the EU's gross domestic product and jobs (Europa, 2017). Beyond their significant economic contribution, CCIs have built a bridge between arts, culture, business and technology. From this reason EU promotes the development of the overall culture sector and CCIs in EU member countries and aims in this area significant financial resources through EU structural funds and

special programmes supporting the culture and cultural activities (e.g. Creative Europe Programme).

1.1 Trend of Digital Culture

The 21st century is characterized by digital culture. The penetration of ICTs into society or the relationship between culture and new media.is called a digital culture or e-culture. The emergence of this phenomenon dates back to the 1990s, when the Internet became a mass affair and opened up to commerce, and thus to the creative industry (Tribe, 2006). The Internet has become a place not only of commerce, but also of personal communications and distribution possibilities outside of the existing centralized system. Digital culture has been conceptualized by Manovich (2001), introducing the concept of an information culture as manifested in the convergence of media content and form, of national and cultural traditions, characters and sensibilities, as well as a mixing of culture and computers. Digital culture is the product of contemporary phase of communication technologies deeply amplified and accelerated by the popularity of networked computers, personalised technologies and digital images. The emergence of digital culture is usually associated with a set of practices based on the ever more intensive use of communication technologies. These uses imply more participatory behaviours on the user side which is called participatory culture (Gere, 2008).

Participatory culture is an opposite concept to consumer culture — in other words a culture in which private individuals (the public) do not act as consumers only, but also as contributors or producers (prosumers). The term is most often applied to the production or creation of some type of published media. Recent advances in technologies (mostly personal computers and the Internet) have enabled private persons to create and publish such media, usually through the Internet (Gardiner &Gere, 2010). This new culture as it relates to the Internet has been described as Web 2.0 (Willis, 2003). This marks a new type of web site dominated by centralized service systems where consumers create their own content. With web services such as eBay, Blogger, Wikipedia, Photobucket, Facebook, and YouTube, it is no wonder that culture has become more participatory nowadays. Participatory culture empowers humans to be active contributors in personally meaningful activities.

1.2 Electronic Cultural Participation in the European Union

According to Council of Europe the right to take part in cultural life is - and shall be recognised as being - pivotal to the system of human rights (Compendium, 2017). Participation in cultural activities is a fundamental human behaviour and is promoting human well-being (Brook, 2011, Schuster, 2007). Wider participation in cultural life is a major concern of national cultural policies in different countries around the world (Compendium, 2017). Cultural practices can be defined according to three categories (Morrone, 2006):

- **Home-based** - watching TV, listening to the radio, watching and listening to recorded sound and images, reading and using computer and the Internet.
- **Going out** - visits to cultural venues such as cinema, theatre, concerts, museums, monuments and heritage sites.
- **Identity building** - covers amateur cultural practices, membership of cultural associations, popular culture, ethnic culture, community practices and youth culture.

However according to studies of European Commission from 2007 and 2013 (European Commission, 2013) the cultural participation is decreasing in the EU. The main reasons to participate in cultural activities are lack of interest, lack of time and expense. Electronic or online cultural participation is quite new form of cultural participation that has been developed thanks to

the increased number of households with Internet access at home. As evidenced by Eurostat (2016) between 2010 and 2015, the percentage of EU households with Internet access increased by 13 percentage points from 70 % to 83 %.

Nowadays the use of ICTs and Internet for cultural purposes is quite common in EU. The Internet can be used in many different ways to discover, research, purchase and participate in cultural activities (European Commission, 2013). The people are reading online news, playing and downloading games, images, films or music, listening to web radio and creating websites or blogs. More captivated by entertainment activities via Internet are then according to statistics (Eurostat, 2016) more men than women (about 6 %). A relatively new phenomenon is the use of cloud services for storing and/or sharing cultural content. Services based on cloud computing technology allow users to store files or use software on a server run over the Internet. Another way to monitor electronic cultural participation is to analyse data on the use of the Internet to purchase the cultural goods and services as films/music, books/magazines/e-learning material or tickets for cultural and sporting events.

2 PROBLEM DESCRIPTION

Access to and participation in various cultural activities can be measured, and levels of involvement and barriers to participation are assessed (European Commission, 2013; Morrone, 2006). To help identify levels of engagement in cultural activities among citizens from the 27 EU member states, a simple index of cultural practice has been built based on frequency of participation and access to the different cultural activities (European Commission, 2013). Very often are used the surveys and questionnaires to assess the frequency of cultural participation (Eurostat, 2016; UNESCO, 2009b). The example is the survey of Eurobarometr from 2007 and 2013 (European Commission, 2013), which includes also the electronic cultural participation or other surveys in the United States (Bradshaw & Mosier, 1999), United Kingdom (DCMS, 2010), Malta (NSOM, 2012) or other analysis as Diniz & Machado (2011), Wiesand (2002), Brook (2011) or Merli (2002). The need of measurement is connected with the activities of developing cultural indicators and cultural statistics (Allin, 2000, ESSnet, 2012, UNESCO, 2009c).

2.1 Definition of research objectives

Main objective of the research is to assess the state of electronic cultural participation in EU member countries. In the research there are analyzed the indicators describing the usage of ICTs for cultural purpose by individuals in individual EU countries. The EU countries are ranked by usage of MAPPAC method from the best to the worst. The area of interest is to find out which countries are placed in the best places or in the worst places and what they could have in common. In this article above all the question of economic development of the country will be monitored and the relation to the electronic cultural participation. The hypothesis of the research is that the more developed EU countries are characterized by higher values of selected indicators. This means that it is possible to argue that the citizens of these countries are more involved in electronic cultural participation than citizens of less developed EU countries. In the article there is explored the ranking of individual EU countries according to the state of electronic cultural participation and discussed the link with the country's development.

2.2 Contribution to academic debate

The presented research enriches and brings new impetus to the academic debate. This issue is not currently adequately dealt with on the international level and reliably results are only available in the studies made by Eurobarometer surveys from 2007 and 2011 (European Commission, 2013).

Studies of this issue are not available due to insufficient statistical data. Above all, there is a small number of indicators describing direct electronic cultural participation and usually this area is not monitored primarily, but as a part of a wider survey, or within the evaluation of cultural participation or use of ICT by individuals where this area is also partially covered. Or the number of indicators monitored is wider, but only within one country without international comparison. The problem is also that indicators are not monitored annually and systematically. They are available data only for some years or some indicators. When evaluating in this area, there is also the misuse of the multicriteria evaluation methods. The results are mostly presented only in the form of graphs or tables for individual indicators and individual EU countries and using the percent.

The intention of this article is therefore to bring acquisition to investigated area and, using the exact method of economic decision making, to make an assessment of electronic cultural participation at international level. In this way the author is offering the reliable results for academic debate.

2.3 Appropriateness of research method and data

In this paper was performed the evaluation of electronic cultural participation in EU member countries based on 4 culture indicators (consist from 10 criteria) selected from the Eurostat database (Eurostat, 2016). The evaluation is based on the application of MCDM method MAPPAC. The observation is corresponding to the year 2014. The purpose was to obtain the ranking of EU countries according to selected criteria. MCDM methods are nowadays widely used for the evaluations in wide scope of economic areas. MAPPAC is one of operations research methods that is used for multi-criteria decision-making. The application of this method is obvious in different economic fields for the evaluation of performance or assessing of options in business and management, for example performance measurements of container terminals (Jafari, 2013), spatial planning (Sabokbar, 2014) or health insurance (Guo, 2017). Also Saeidi & Rezapour (2015) used MAPPAC and AHP for determining the effective factors in competitiveness rate of container ports. In the presented research was used the MAPPAC method for the evaluation of electronic cultural participation in EU member countries.

The research was based on the selected indicators from the dataset of Eurostat related to the "Culture statistics". Culture statistics present a selection of indicators on culture pertaining to the following topics: cultural employment, international trade in cultural goods, cultural enterprises, cultural participation, use of internet for cultural purposes and private cultural expenditure (Eurostat, 2016). From this dataset were selected 4 culture indicators connected with electronic cultural participation and selected the comparable data of the year 2014 or when not available of the year 2015. Selected indicators and the data source with characteristics are described below:

- Households with access to the Internet, 2015 (% of all households) – data were collected by "Community survey on ICT usage". The aim of this survey was to provide the relevant statistics on the information society: access to and use of ICTs, purposes of use of Internet, ICT security and trust, ICT competence and skills, etc. The population of surveyed households consists of all households having at least one member in the 16–74 age group. The population of individuals consists of all individuals aged 16–74. Different breakdowns by socio-demographic variables are available: sex, age, educational attainment level, working status etc. (Eurostat, 2016).
- Use of Internet for cultural purposes, 2014 (% of individuals who used the Internet in the last 3 months) - Eurostat's statistics on the use of ICTs for cultural purposes are gathered from the annual "Community survey on ICT usage" in households and by individuals and its specific modules carried out at irregular intervals. The data are collected by the national statistical institutes with the help of Eurostat's annual model questionnaires (Eurostat,

2016). The identification of cultural items in the variables of the ICT surveys was based on the methodology of cultural participation as exposed in the ESSnet (2012). Regarding the usage of ICT by individuals, the following online cultural activities have been identified for which the data are available on annual basis: reading online news sites (newspapers or news magazines); playing or downloading games, images, films or music; listening to web radio; creating websites or blogs; consulting wikis (to obtain knowledge on any subject).

- Use of cloud services for storing or sharing cultural content, 2014 - the results of the ICT 2014 survey module on cloud computing provided information on the use of cloud services for storing and/or sharing cultural content and in particular for storing and/or sharing of: e-books or e-magazines; music; photo; videos including films and TV programmes.
- Use of Internet for purchasing cultural goods and services, 2015 (% of individuals who used the internet within the last year) - the e-commerce is monitored through ICT annual survey and the culture related items are as follow: books/magazines/e-learning material; films/music; tickets for events (including sport events).

The four above mentioned indicators consist of 10 criteria. All the criteria were of maximizing type. The appropriateness of the method was confirmed by test of non-dominance of alternatives. If all the criteria are maximizing, variant a_i is dominating the variant a_j if there is at least one criterion k_l to which for $y_{il} > y_{jl}$ and for the other criteria: $(y_{i1}, y_{i2}, \ldots, y_{in})$ is > or = $(y_{j1}, y_{j2}, \ldots, y_{jn})$.

If there is only one non-dominant alternative in the decision-making situation, it is an optimal option. If the non-dominant alternatives are more, then is needed to be applied the method to choose a compromise alternative.

The alternatives were marked according to the results of the non-dominance test as dominated or non-dominated, see table 2, where are illustrated the input data (all alternatives and criteria).

3 METHODS

MAPPAC method together with the PROMETHEE method or ELECTRE method are the example of MCDM methods based on the preference relation (Fiala, 2013, Brans et al, 1984). The MAPPAC method was chosen because, apart from the information from the multi-criteria matrix and the vector of weights, it does not need any additional information, such as threshold values or the choice of generalized criteria.

The MAPPAC method is based on paired comparisons of the alternatives, whereby each pair of individual criteria results in a decision on which of the two objects is the more important, or whether they are indistinguishable in terms of the selected criteria (Matarazzo, 1991). The MAPPAC method algorithm is composed of 3 phases: definition of input data (alternatives, criteria), pairwise comparison of alternatives for each pair of criteria resulting in the definition of indifference and preference relations and aggregation of preferences constructing the final ranking (Martel & Matarazzo, 2005).

The MAPPAC method works with the criterion matrix and weights of the criteria. The method splits the alternatives into several preferential classes. MAPPAC method uses a normalized multi-criteria matrix $C = (c_{ij})$, where r-th row corresponds to alternative a_r and s-th row corresponds to alternative a_s.

First the paired comparison of alternatives is processed. On the basis of the results there are possible two relationships between alternatives. Either preference (alternative a_r was rated better than

alternative a_s) or indifference (alternative a_r and alternative a_s are assessed in the same way). This method also allows the presence of fuzzy relations, which allow taking into account when assessing the uncertainty associated with measurement or arising from the different nature of the criteria.

Than the basic preferential index π_{ij} (a_r, a_s) of variants a_r, a_s is calculated, according to the pairs of criteria f_i and f_j. After the preferential indexes calculation is performed, the basic preferential indexes are arranged into the matrix π_{ij}. Following is the calculation of the aggregate matrix according to the formula (1), see Matarazzo (1986):

$$\pi(a_r, a_s) = \sum_{i=1}^{k-1} \sum_{j=i+1}^{k} \pi_{ij}(a_r, a_s) \frac{v_i + v_j}{k-1} \quad (1)$$

where $r = 1,2, ...,p$, $s = 1,2, ...,p$.

In the last step preferences are aggregated, resulting in a final order. The row totals of the aggregated matrix π are calculated according to the equation (2):

$$\sigma^l(a_i) = \sum_{j=1}^{p} \pi(a_i, a_j), \; i \in J^l \quad (2)$$

where $i = 1,2, ...,p$.

Alternatives with the highest σ^l values are placed on the first place in the arrangement. The set of alternatives is reduced from these alternatives, new set of alternatives A^l is created, the set of indexes of alternatives from A^l are marked as J^l. The procedure is repeated for m steps where m is the number of preferential classes by the arrangement from top.

In a similar procedure is reached the value of τ^1, τ^2,…, τ^n, where n is the number of preferential classes in the arrangement from bottom, by usage of equation (3):

$$\tau^t(a_i) = \sum_{j \in J^t} \pi(a_j, a_i), \; i \in J^t \quad (3)$$

where $t = 1, 2, \ldots n$.

The output is the arrangement of alternatives into the preferential classes. The overall arrangement of alternatives is reached by averaging of the serial numbers of alternatives by the arrangement from top and from bottom. In the column from top, the order of the alternatives is sequentially sorted into the indifferent classes according to successive values σ^l. Similarly, the column from bottom shows the arrangement of individual alternatives into indifferent classes by values τ^t.

As the best evaluated is the alternative which has the lowest overall serial number. Some alternatives can be ranked in the same place, although they were ranked differently from top and from bottom, because their average serial numbers are the same.

4 RESULTS AND INTERPRETATIONS

In the research, there was selected the final list of alternatives (EU-28 countries) and criteria (10 culture criteria) as the input for applying of MAPPAC method. The summarization of monitored indicators and their weights are shown in Table 1. The weights of selected 10 criteria were established by usage of scoring method. These weighted values were used for the calculation.

Table 1 **Weights of criteria processed by scoring method**

Indicator	Criteria *(C_1 - C_{10})*	Weight of criteria	Weight of indicator
Households with access to the internet, 2015 (%) – C_1		0,18182	0,18182
Use of internet for cultural purposes, 2014 (%)	Reading online news sites/ newspapers – C_2	0,09091	0,45455
	Playing/downloading films or music – C_3	0,09091	
	Listening to web radio – C_4	0,09091	
	Consulting wikis – C_5	0,09091	
	Creating websites or blogs – C_6	0,09091	
Use of cloud services for storing or sharing cultural content, 2014 – C_7		0,09091	0,09091
Use of internet for purchasing cultural goods and services, 2015 (%)	Books/magazines/e-learning material – C_8	0,09091	0,27273
	Films/music – C_9	0,09091	
	Tickets for events – C_{10}	0,09091	

(Source: Eurostat, 2016, own calculations)

The input data are summarized below in Table 2 in the form of criterion matrix.

Table 2 **Input data**

Criteria	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	C_9	C_{10}	NON-DOMINANCE
Austria	81	67	42	26	68	6	29	34	19	26	Dominant
Belgium	83	62	65	28	51	7	33	19	13	23	Non-dominant
Bulgaria	57	74	57	35	42	8	21	5	2	6	Dominant
Croatia	68	79	34	23	65	4	22	8	4	11	Dominant
Cyprus	69	72	55	32	62	4	19	5	3	3	Dominant
Czech Republic	78	86	57	28	46	10	21	9	2	21	Dominant
Denmark	93	74	57	37	63	7	46	25	22	57	Non-dominant
Estonia	83	90	49	35	62	20	31	22	11	38	Non-dominant
Finland	90	85	70	33	77	31	27	27	24	46	Non-dominant
France	83	46	47	34	32	5	25	22	14	18	Dominant
Germany	89	70	53	30	75	7	24	36	27	33	Dominant
Greece	66	85	52	52	50	7	19	6	3	5	Non-dominant
Hungary	73	86	47	27	60	12	16	13	4	13	Dominant
Ireland	82	46	43	23	33	8	35	23	16	35	Dominant
Italy	73	60	52	26	58	5	30	11	4	7	Dominant
Latvia	73	86	52	26	28	4	19	4	3	14	Dominant
Lithuania	66	94	46	30	46	6	12	5	3	15	Non-dominant
Luxembourg	96	85	59	37	82	7	37	44	29	39	Non-dominant
Malta	81	74	56	28	61	9	32	25	11	21	Dominant
Netherlands	96	61	65	40	61	18	36	36	18	41	Non-dominant
Poland	75	71	41	28	44	4	13	12	4	9	Dominant
Portugal	65	74	49	34	60	11	26	15	10	14	Dominant
Romania	61	70	46	26	31	5	15	5	2	3	Dominant
Slovakia	78	65	35	23	46	4	20	16	5	17	Dominant
Slovenia	77	82	47	42	51	8	25	7	3	11	Dominant
Spain	74	78	52	37	67	10	32	16	8	23	Dominant
Sweden	90	88	57	49	67	10	39	33	30	49	Non-dominant
United Kingdom	90	65	52	27	58	33	42	38	37	41	Non-dominant

(*Source:* Eurostat, 2016, own calculations)

C_1 – C_{10} are the selected culture criteria (10 criteria), the alternatives are the 28 EU member countries. There are also marked the dominant and non-dominant alternatives according to the results of the non-dominance test.

The output of MAPPAC method is the arrangement according to preferential classes. In Table 3, it is possible to see the alternatives in the order according to the average serial numbers and rankings from the top and bottom. It can be seen that the first two alternatives (Luxembourg and Sweden) are placed in the same preferential class. Average serial numbers of these alternatives are the same. These two countries are placed on the 1. and 2. position together. For the third place the rank is clearly given – it is Finland. It is ranked in the same place as when ranking from top and from bottom. For the fourth place, there was sorting match. From top ranking it is Denmark, from bottom ranking it is Netherlands. On the other hand on the worst four positions ranked Latvia, Croatia, Poland and Romania. The Czech Republic ranked on the 13. position. It means that the level of electronic cultural participation is in comparison with other countries of the EU satisfactory. It is comparable to Belgium and Austria (11. and 12. position) or Slovenia and Ireland (13. and 14. position).

Table 3 **Results of electronic cultural participation evaluation in EU countries by MAPPAC method (2014)**

Class	Country	Rank from top	Rank from bottom	Average serial number	Final arrangement of countries
1	Luxembourg	2	1	1,5	1./2.
	Sweden	1	2	1,5	1./2.
2	Finland	3	3	3	3.
3	Denmark	4	5	4,5	4./5.
	Netherlands	5	4	4,5	4./5.
4	United Kingdom	6	6	6	6.
5	Estonia	7	8	7,5	7./8.
	Germany	8	7	7,5	7./8.
6	Malta	9	10	9,5	9./10.
	Spain	10	9	9,5	9./10.
7	Belgium	11	11	11	11.
8	Austria	12	12	12	12.
9	Czech Republic	13	14	13,5	13.
10	Slovenia	14	15	14,5	14.
11	Ireland	17	13	15	15.
12	Portugal	15	16	15,5	16.
13	Hungary	16	19	17,5	17.
14	France	18	18	18	18.
15	Greece	20	17	18,5	19.
16	Italy	19	21	20	20.
17	Cyprus	22	20	21	21.
18	Slovakia	21	24	22,5	22.
19	Lithuania	23	23	23	23.
20	Bulgaria	26	22	24	24.
21	Latvia	24	25	24,5	25.
22	Croatia	25	26	25,5	26.
23	Poland	27	27	27	27.
24	Romania	28	28	28	28.

(*Source:* Eurostat, 2016, own calculations)

5 DISCUSSION

Nowadays ICTs enable new avenues for communication, collaboration, and circulation of ideas. They have also given rise to new opportunities for culture consumers to create their own content. Barriers like time and money are beginning to become less significant to large groups of consumers. For example, the creation of movies once required large amounts of expensive equipment, but now movie clips can be made with equipment that is affordable to a growing number of people. The ease with which consumers create new material has also grown. Extensive knowledge of computer programming is no longer necessary to create content on the Internet. Media sharing over the Internet acts as a platform to invite users to participate and create communities that share similar interests through duplicated sources, original content, and repurposed material.

In the research there was confirmed the increased involvement of people to participate in culture using online technologies and ICTs in more developed countries of EU like Luxembourg, Sweden, Finland, Denmark, Netherlands, United Kingdom or Germany. These countries are among the most competitive countries in the world and hold primacy in the EU. According to The Global Competitiveness Index ranked the Netherlands on the 4. position worldwide, Germany on the 5. position, Sweden on the 6. position and United Kingdom on the 7. position, see Schwab (2016). Among top countries is also Finland (10. position), Denmark (12. position) and Luxembourg (20. position). On the other hand in the countries as Lithuania, Bulgaria, Latvia, Croatia, Poland, Romania was found out the low involvement of people in electronic cultural participation using online technologies and ICTs. All of these countries belong to less developed countries than the EU average and joined the EU also later.

According to Eurobarometer survey (European Commission, 2013) the cultural participation across EU countries differ significantly. In northern European countries are the most engaged people in a range of cultural activities (Sweden, Netherlands, Denmark). By contrast, southern and eastern countries are often the least engaged in cultural activities (Romania, Greece). This results correspond with the results of Brook (2011) and also with own research in this article. It is possible to assume, that the engaged people in cultural activities are using also online and electronic forms for cultural participation. Moreover the respondents from northern countries are most likely to use the Internet for cultural purposes than those from southern and central-eastern European countries (European Commision, 2013).

A significant fact that affects the use of ICTs in culture is the access to the Internet and its availability. In this area the best countries in EU are again Luxembourg, Netherlands, Denmark, Sweden and United Kingdom, they ranked on the best positions when evaluating the Internet access of households in EU countries (Eurostat, 2016) and also when evaluating the daily use of Internet (Denmark, Luxembourg, United Kingdom, Finland). The worst Internet access is in Lithuania, Romania, Greece and Bulgaria. In United Kingdom, Denmark, Luxembourg and Sweden are the individuals also more keen to use Internet when ordering goods or services. On the other hand in Italy, Cyprus, Bulgaria and Romania is this form of purchase not very obvious. This was also reflected in the statistics of purchase of cultural goods and services.

In the Eurobarometer survey from 2007 (European Commission, 2013), it was suggested that the disparity in cultural participation may be narrowed in time by increased Internet access, and that this could transform the cultural sphere. In this survey, 56 % of Europeans say they use the Internet for cultural purposes, 30 % doing so at least once a week. The most popular activities are reading newspaper articles (53 %), searching for cultural information (44 %) and listening to the radio or music (42 %). The Internet is changing the way both “consumers” and “creators” of cultural

activities access cultural content and its influence is increasing in importance for all categories of the population (European Commission, 2013).

According to major organizations such as the EU, UNESCO or OECD, the importance of ICTs in culture is undeniable and it is needed to pay on this area the scientific attention. As stated by UNESCO (2016) ICTs have a direct impact on the way cultural expressions are created, produced, disseminated and accessed and play an increasingly pertinent role in the safeguarding and transmission of cultural heritage, can respond to major global challenges through the exercise of freedom of expression and the promotion cultural diversity. Karaganis (2007) considers digital technologies as engines of cultural innovation, or the necessary tool for digital preservation of cultural content (Digital Meets Culture, 2017). ICTs can also help in the area of cultural sustainability. As stated by Loach & Rowley & Griffiths (2017) cultural sustainability has become a growing priority within sustainable development agendas and is now often depicted as a fourth pillar, equal to social, economic, and environmental concerns.

CONCLUSIONS

Nowadays are ICTs the everyday reality in the culture sector. ICTs are fostering cultural entrepreneurship in the Cultural and creative industries and play important role in developing countries and at the local level. New forms of media and technologies are strengthening platforms for dialogue, exchange and building capacities of local populations. In developing countries ICTs allow a greater access to cultural goods and services and allow creators to engage with the audience and to co-create. In this research, there was confirmed, that ICTs are progressively more incorporated into the EU culture sector and are actively used by individuals for participation in culture. The higher involvement of individuals was found out in the more developed EU countries. In this research was by MAPPAC method confirmed the top position of Luxembourg, Sweden, Finland, Denmark, Netherlands and United Kingdom. The hypothesis of the research was also confirmed. Regularly the more developed EU countries are characterized by higher values of selected indicators of electronic cultural participation and it is possible to conclude that the citizens of more developed EU countries are also more involved in electronic cultural participation than citizens of less developed EU countries. However ICTs are very important also in less developed EU countries (Bulgaria, Romania and Croatia) and are leading to positive innovative models and creativity (creating cultural content, access and distribution of culture). ICTs can help in the situations when marginalized groups are not engaged to foster social cohesion by sharing knowledge. The ICTs in culture are also the driving force for increasing initiatives in digitization of cultural content and heritage. These initiatives can help to preserve culture content for future generations (e.g. digital libraries and museums).

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