TOOLS FOR THE PROTECTION OF INTELLECTUAL PROPERTY RIGHTS IN ENTERPRISES OF CREATIVE INDUSTRY IN THE EUROPEAN AREA

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Abstract: It can be stated that most authors publishing in the field of creative industries directly or indirectly link the creative economy with intellectual property and innovation. The importance of formal and informal instruments for the protection of intellectual property rights continues to grow and this issue is increasingly published in various scientific and professional studies. Evidence is also provided by newly emerging legislation in the European but also in the American space on this area, such as the Transpacific Partnership Agreement (TPP), the World Trade Organization Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). On the other hand, there is a virtual absence of research that investigates the relationship between the impact of the type of IPR protection and the innovation process. As the literature in this area shows us, creative economy policies have proliferated globally and questions have legitimately arisen as to whether existing IP legal systems positively or negatively affect the development of creative industries. In order to at least partially contribute to filling this gap, we present an analysis that is oriented towards the space of European countries. The data source is the Eurostat database. However, this database, besides to its valuable data, has limitations that also limit the conclusions of this paper.

Keywords: creative industry, intellectual property, hierarchical cluster analysis

JEL Classification: O34, K11, L20

INTRODUCTION

The creative industry was first mentioned in John Howkins' book The Creative Economy: How People Make Money from Ideas (2001), defining it as a product that arises from creativity and has economic value (Hawkins, 2001). In addition to the essence of the creative economy, he emphasizes that entrepreneurs in creative entities use creativity to unlock the wealth that lies within them and that they must acquire some specific skills, which include a basic understanding of intellectual property in context of the ability to manage cash flow, acquire key talent and manage the creative process. It considers two complementary values as the basis of the creative economy – the value of intellectual property and the value of the physical carrier of intellectual property. According to Howkins, the creative economy (CE) is the product of the value of the creative product (CP) and the number of transactions (T): CE= CP*T (Hawkins, 2001). Howkins also claims that the creative economy is based on 4 areas: Copyright, Patents, Trademarks and Design.

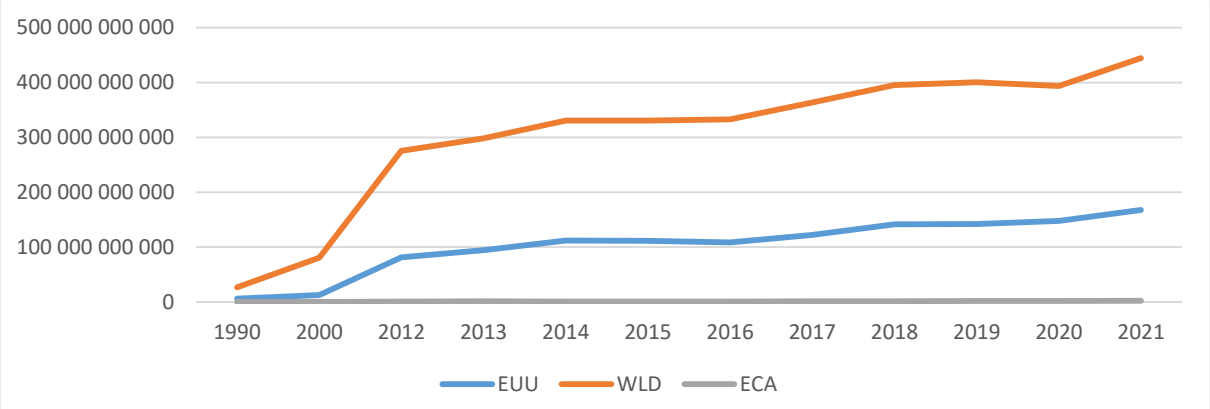
The discussion on the creative economy was enriched by Richard Florida (2002), who in his book The Rise of the Creative Class defined the "creative class", i.e. workers who possess creativity and knowledge, and he attributed to this class a leading role in economic development because they have the ability to stimulate economic growth through innovation. As an urban planner, Florida connected creativity with the regional dimension, emphasizing that if cities want to develop, they must be able to attract creative workers. Although Florida later recognized the limitations of the creative model, as well as its possible negative effects on territorial development (gentrification, social exclusion and poverty), his ideas are among the pioneers and he

was among the public policy theorists who spearheaded efforts to quantify and measure the economic impact of creativity. and innovations. Scientific literature in the field of defining the nature of the creative industry further developed in the direction of defining creative clusters and their position in the economy (Mercer, 2002; Gill & Pratt, 2008; Landry & Bianchini, 2008; and others).

Due to its history and culture, the European Community belongs to traditional civilizations. Its countries share a common history in many aspects. In its strategic documents, the European Union emphasizes the importance of the creative industry as a dynamic force that contributes to sustainable development (Florida, 2002; EUIPO, 2019a). The Community of the European Union has already adopted a number of documents, declarations and legislative regulations, the task of which is to support the development of the creative economy. The creative economy creates new jobs, plays a crucial role in global value chains and supports innovation processes, brings added value as an indicator of social cohesion and serves as a tool for preventing or eliminating recession in economic development. The creative industry is perceived as a combination of business activities in the field of art and other creative activities. We identify its importance in relation to other economic sectors, to which it brings innovative elements ensuring their competitiveness, especially in relation to information and communication technologies. The importance of the creative industry thus goes beyond its playing and is a means to the intelligent growth of its surroundings. It can be assumed that industries in the 21st century will increasingly depend on the generation of knowledge through creativity and innovation (Landry & Bianchini, 1995; Villalba, 2008).

Intellectual property rights play an important role in the development of the creative economy. These protect creativity and control the commercial use of products of scientific, technological and cultural creation. The protection of intellectual property rights in CE entities is a very complex problem and represents a challenge for the participating entities due to the fact that in the current era of digitization and the advent of artificial intelligence, copying and imitation is very easy. In the current era of the Internet, when most works of art can be digitized and exchanged and shared on the web frequently completely for free, intellectual property rights are of paramount importance in ensuring that the creators who participated in the creative process and who invested in their funds, time, energy and own know-how will be rewarded. Protecting IP rights is a matter of survival for these entities, because otherwise the motivation for their creators to operate in the given industries and to create relevant innovations is lost. intellectual property rights protection regimes were originally developed for the analogue age. Their basic goal was to achieve an appropriate balance between the interests of creators on the one hand and users on the other. However, it is much more difficult in the digital environment.

Fig. 1 Charges for use of IPR receipts and payments of all countries with data, ordered by net profit (million USD)



Source: https://data.worldbank.org/indicator/BM.GSR.ROYL.CD

Figure 1 shows the development of fees for the use of intellectual property rights, income and payments of all countries with data for the entire economy, sorted by net profit. It is possible to state that the largest increase was recorded between 2000-2012, during which the European Commission began to be very active in this area.

Intellectual property is a key asset to compete globally. The number of intellectual property applications is growing worldwide. The same trend can be observed in the EU. Between 2010 and 2019, the number of European patents granted increased from around 58,000 to 137,000 - although this increase is not as pronounced as in other parts of the world, particularly in Asia, where economies are rapidly catching up with the creation of intellectual property (European Commission et al., 2020).

1. CURRENT CHALLENGES OF PROTECTION OF INTELLECTUAL PROPERTY RIGHTS IN THE CREATIVE INDUSTRY

It can be stated that most of the authors publishing in this field directly or indirectly connect the creative economy with intellectual property and innovation. As the literature in this area shows, creative economy policies have spread worldwide and questions naturally arose as to whether the existing legal systems of intellectual property have a positive or negative effect on the development of creative industries. On the one hand, no one doubts that adequate protection of intellectual property rights is essential, for the simple reason that creators of creative content want to profit adequately from it. On the other hand, it is important to create a flexible legal framework that will allow innovative sharing of creative ideas as well as public access to them. However, this connection faces some limits:

- The classification of the branches of the creative industry is not uniform and various areas are hidden under the common name, which, in addition to specifics in the organizational structure, the subject of intellectual property rights, informal standards and procedures, also include the diverse essence of creative work that is used in individual areas. The categories defined to represent the creative industry have an impact on intellectual property policy because they relate to the legal concepts associated with intellectual property rights, i.e. it is an intangible asset that must be subject to disposal, or the subject of private law relations of their owners and has a certain, at least potential, value.
- We classify intellectual property rights into copyright and industrial rights, and different legal instruments are used for these two groups of rights from the point of view of formalizability. The protection of industrial property rights can be described as formal rights, i.e. institutionalized and registered. For other intellectual property objects, including those that are protected in terms of copyright law (author's work, artistic performance, audio recording, audio-visual recording, broadcast, database) or in terms of commercial legislation (for example, in the Slovakia it is Commercial code) (trade secret, know-how, confidential information, logo), the principle of informal protection applies without the need for administrative registration or review (special arrangements are usually used to ensure a formal arrangement, such as a confidentiality agreement and others.).
- Another problem in finding links between the creative economy and intellectual property rights is the assumption that these rights are the stimulus and driving force of the creative economy. It is indisputable that the original legislative regulation for the protection of IP rights was developed for traditional industries and not for areas of the creative economy. Creative industries have traditionally relied (though not exclusively) on copyright and trade secrets. These rights require an ownership relationship to the given subject of protection, and in particular copyright is acquired by the individual or company that created the work first. In order to be able to use such a work, the user must obtain a license from the right holder. The term of protection provided by copyright is traditionally granted for 70 years from the death of the author. After this period, the work becomes public property. However, without formal registration, it is difficult to find out whether this period has passed, which

increases the search costs for potential users. Copyright thus creates a certain brake in the development of creativity. (The concept of copyright is considerably more complicated and it is not possible to briefly summarize all the facts - more e.g. the Berne Convention for the Protection of Literary and Artistic Works)

- Another limit is the fact that creative industry entities deal mainly with intangible products and are therefore more prone to copying than those that offer tangible products. Digitization and network sharing are accelerating this problem. Digital technologies have made the copying, distribution and publication of creative products extremely cheap and fast. This creates a certain paradox. On the one hand, the creative industries have contributed to technological development and technological innovation through their activities, and on the other hand, they have created an environment that allows the sharing of creative material content with greater connectivity, interactivity and cost-effective streaming using mobile applications and smart devices.
- The last limit of the search for a proper connection between the protection of IP rights and the products of the creative economy is the fact that these products are not exclusively connected with economic profit, while the implementation of intellectual property rights assumes this profit. Creative works often have the character of public goods and are non-excludable (it is difficult to exclude the unauthorized use of all aspects of creative work) and non-rivalrous in consumption (the value of the work for an individual will not decrease with the number of other users). The motive for the creation of a creative work does not have to be connected with economic profit, but e.g. with the creation of cultural identity, which requires that such a work be widely available.

Already in 2013, when formulating recommendations to support flexible and sensitive legal systems for the protection of intellectual property rights of creative content, the World Economic Forum emphasized in particular:

- Regular review and updating of copyright laws and policies by official government institutions;
- The need to reduce incentives for obtaining pirated content by creating legal systems that allow legal access to creative content over the internet;
- Creation of a voluntary register of content protected by copyright, which would allow easier acquisition of licenses for this content;
- Create simpler systems for solving the so-called orphan works;
- IPR policymakers on the one hand and rights holders on the other should adopt a common set of digital copyright principles that will ensure a fair balance between the interests of owners and users.

Individual public policies should follow up on these recommendations. The improvement of legal systems in accordance with the specifics of the creative economy can thus contribute to its consistent growth. Ineffective IP laws cause uneven and unpredictable development in the creative economy. This particularly concerns developing countries that have a dysfunctional IP protection system, resulting in an unreliable and unguaranteed source of income from their creative content, which is often appropriated by third parties. There is thus a strong correlation between economies with thriving creative industries and effective IP rights systems. But even in countries with a strong IP legal system, it is necessary to constantly improve this system. There arises, for example, the danger of manipulating IP laws for economic gain, as this may have adverse consequences of anti-competitive behaviour. E.g. companies. can register large numbers of patents, which they do not use or license for the simple reason of preventing their competitors from innovating.

Based on the above as well as the recommendations of world professional institutions and business circles (e.g. European Commission, EUIPO - European Union Intellectual Property Office; EPO - European Patent Office - European Patent Office, WIPO - World Intellectual Property Organization) we formulate the following calls for the protection of intellectual property rights in creative industries:

1. Modernize the system for the protection of intellectual property rights and adapt it to the needs of the creative industry. The current protection system was originally developed for classic manufacturing companies and does not correspond in all its aspects to the current needs of creative industry companies, especially those that are under great pressure from digital technologies. Current systems are slow, expensive and complex. It is necessary to achieve, at least at the European level, their simplification and unification. The introduction of a unified patent system as well as trademarks, trademarks designs and geographical indications at the European level thus becomes a challenge for the future period.
2. Motivate small and medium-sized enterprises to use and implement IP rights. Enterprises of the creative industry are primarily small and medium enterprises in size. As the conducted surveys (EUIPO, 2019b) in this area show, many of them do not have sufficient knowledge or experience in this area. It is necessary to create a protection system that will also be financially accessible for small and medium-sized enterprises and manageable in terms of time and capacity. It would contribute to the fact that these companies could evaluate also their intangible capital. The development of quality advice in the field of intellectual property, the creation of a European information centre platform, as well as the search for ways to financially help small and medium-sized enterprises in the valuation of intellectual property rights, are other challenges for Europe.
3. To ensure access to intangible assets and their joint use. Tools to facilitate access to innovations that would enable the introduction and spread of modern technologies are not sufficiently developed. The sharing of data and information databases is proving to be very important in many industries, but a balance needs to be considered between free access to this information and its appropriate protection.
4. It is necessary to increase efforts in the fight against plagiarism and piracy. The value of imports of counterfeit and pirated goods into the EU (OECD & EUIPO, 2019) reaches up to EUR 121 billion, which represents up to 6.8% of imports into the EU in 2016 (compared to 5% of imports into the EU in 2013). This leads to direct sales losses of EUR 50 billion annually and a direct decrease in employment by the loss of 416,000 jobs (EUIPO, 2020). According to estimates, cyber theft of trade secrets represents a loss of EUR 60 billion in the EU 20 (EC, 2018). Harmonization of a set of special, binding and appropriate obligations relating mainly to digital services as well as strengthening the powers of supervisory and law enforcement authorities are among other challenges in this area

2. RESEARCH DESIGN

The aim of this paper is to point out the use of formal and informal tools for the protection of intellectual property rights in creative industry subjects, including its relation to the innovation process. The importance of formal as well as informal tools continues to rise and is increasingly published in various scientific and professional studies. The proof is also the newly emerging legal regulations in the European but also the American area about this matter, such as Trans-Pacific Partnership (TPP), World Trade Organization Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Despite these political initiatives, real empirical documentation on the nature, implementation of IP law is carried out rather in developed countries and there are relatively few surveys in this area, not to mention the fact that there is practically no research investigating the relationship between the impact of the type of IP protection and the innovation process. In order to at least partially contribute to filling this gap, we present an analysis that is oriented to the area of European countries. The data source is the Eurostat database. However, this database, in addition to valuable data, has its limitations, which also limits the conclusions of this paper.

In order to ensure the comparability of the achieved results, the Eurostat methodology was used for all investigated parameters.

According to NACE_R2 according to the Eurostat methodology (EUROSTAT, 2008), we have selected three branches of the creative industry that we will analyse, namely a) architectural and engineering activities,

technical testing and analysis (NACE 71), b) scientific research and development (NACE 72) and c) advertising and research market (NACE 73).

a) Architectural and engineering activities, technical testing and analysis (NACE 71). This division includes the provision of architectural, engineering and project services, building inspection services, geodetic and cartographic services.
b) Scientific research and development (NACE 72). This division includes three types of research and development: 1) basic research; experimental or theoretical work carried out primarily with the aim of obtaining new knowledge about the nature of phenomena or observable facts, without the prospect of specific application or use 2) applied research: original investigation, carried out for the purpose of obtaining new knowledge, oriented mainly towards specific practical goals or purposes and 3) experimental development: systematic work based on existing knowledge obtained from research and/or practical experience, aimed at the production of new materials, products and devices, at the introduction of new processes, systems and services and at the substantial improvement of those already being produced or being established.
c) Advertising and market research (NACE 73). This division includes the execution of advertising campaigns and the publication of these advertisements in periodicals, newspapers, radio and television or other media, as well as design and placement. Advertising is one of the important drivers of economic growth.

In the framework of the selected industries, further, on the basis of the Eurostat database, data were processed according to the size of the enterprises. According to Eurostat's methodology, the classification of the size of enterprises is used to determine the size of enterprises only according to the number of employees, as follows.

- Small enterprises (S) - from 10 to 48 employees
- Medium enterprises (M) - from 50 to 249 employees
- Large enterprises (L) - 250 employees or more

The subject of the scientific research presented in this paper is the investigation of the relationship between formal and informal tools for the protection of intellectual property rights in creative industry enterprises and their link to the innovation process. The chosen approach was inspired by the European Observatory on Infringements of Intellectual Property Rights study, which the authors published in June 2017 and contained data for the years 2010-2012. (Wajsman & Garcia-Valero, 2017) as well as other publications in this area, for example (Hall & Harhoff, 2014; Rammer, 2007, Arora et al., 2015) formulated the following determinants.

The reasons for choosing these industries were the following facts:

- These sectors are economically significant within the creative industry sector (in 2018, the turnover of all enterprises in the analysed countries in these sectors reached €442,266,249 and 2,603,816 employees work in them) (Eurostat database).
- The number of companies that used intellectual property rights was the largest in these sectors, a total of 23,392 companies (Eurostat database).
- The Eurostat database made it possible to monitor the analysed indicators in these sectors also according to the criterion of company size, because the data for individual countries were the most complete. The indicators of other branches of the creative industry are also tracked by branch in the Eurostat database, but only formally, because data for individual countries is missing.

To fulfil the goal of this research paper, we formulated the following questions:

- What type of innovation (product or process) prevails in the countries that have the largest share of innovative enterprises within selected industries according to the turnover achieved by innovative enterprises in 2018? An innovative product (product or service) is considered to be a product that is new or significantly improved with respect to its essential characteristics, technical specifications,

used materials, software, components, accessibility for users and other functional characteristics. A change in aesthetic character is not considered product innovation. Process innovations include new and significantly improved production methods or supply and distribution systems. This also includes significant changes to specific techniques, equipment or software, which are intended to improve the quality, efficiency and flexibility of production or supply activities, or to reduce environmental threats or security risks (Statistical Office of the Slovak Republic, 2020).

- What type of intellectual property rights protection prevails in countries with a high proportion of innovative firms? We make the assume that in a country with a high proportion of innovative companies, protection of the invention through a patent will be preferred. On the contrary, in a country where there is a smaller share of innovative companies, they will prefer informal tools for the protection of intellectual property rights. Creative industry enterprises are the carriers of innovation and examining their ability to use intellectual property rights will be a determinant that deserves attention

We consider finding these answers important for the formulation of public policy recommendations, to find the right balance between the interests of innovators and the broader public interest so that the intellectual property system aims to foster an environment in which creativity and innovation can flourish.

Descriptive profiling and hierarchical cluster analysis were used to analyse the set of data obtained from the Eurostat database, following the established questions. Within the scope of descriptive profiling, according to question no. 1 selected as the main descriptors are the percentage shares of the turnover of innovative enterprises in the total turnover and the percentage shares of product innovations in the turnover. Based on the mentioned descriptors, the countries were classified into quartiles. Hierarchical cluster analysis using Enginius Segmentation software (Štetka et al, 2022) will enable the segmentation of countries according to the prevailing type of intellectual property rights. European countries will be divided into clusters (segments). The countries located in one cluster are homogeneous, or related in relation to the segmentation variables, and the individual clusters are statistically significantly different from each other. To create a universal base, segmentation variables were used in the form of a percentage share of individual types of intellectual property rights on the total for individual countries. Enginius Segmentation software uses Ward's (1963) procedure to create clusters based on minimizing the loss associated with grouping individuals into clusters. It measures the loss of information by the sum of the squares of the deviations of each observation from the mean of the cluster to which it is assigned. Using Ward's method, it assigns clusters in the order that minimizes the error sum of squares (ESS) of all possible assignments. When the number of squared errors is small, it means that the data are close to their cluster mean, which means that a cluster of similar units has been formed. This method is most appropriate for quantitative variables. In the hierarchical cluster analysis, according to question no. 2, the percentage shares of individual types of intellectual property rights in the total number for each country were chosen as the main hierarchical variables. Descriptive variables (descriptors) such as turnover were not included in the analysis.

The research paper is focused on countries that are in the Eurostat database. However, it is necessary to realize that the subjects of the presented analyses will not always cover the entire set of these enterprises, due to the absence of many data. We do not consider the listed questions to be exhaustive, rather we consider them to be an academic list that should be further tested, analysed and subsequently expanded.

3. RESULTS AND DISCUSSION

Descriptor values were calculated collectively for the analysed industries 71-73 according to NACE_R2 separately for small, medium and large enterprises for individual EU countries. The results are presented in the Tab. 1, where the values of the descriptors included in the fourth quartile (75% or more) are marked in colour (blue and green).

Tab. 1: Descriptors for industries 71-73 according to NACE_R2 for small, medium and large enterprises according to data for 2018

GEO/ ENTERPR	Small (10-49 employed employees)		Medium (50 -249 employees)		Large (250 employees or more)	
	Share of innovative enterprises in total turnover	The share of product innovation in the turnover of innovative enterprises	Share of innovative enterprises in total turnover	The share of product innovation in the turnover of innovative enterprises	Share of innovative enterprises in total turnover	The share of product innovation in the turnover of innovative enterprises
Belgium	67%	41%	75%	61%	97%	73%
Bulgaria	30%	48%				
Czechia	43%	57%	46%	67%	83%	94%
Germany	79%	55%	95%	69%	97%	88%
Ireland	65%	81%	58%	38%	96%	76%
Greece	46%	76%	83%	88%	100%	84%
Spain	41%	55%	23%	77%	77%	76%
France	54%	68%	70%	77%	97%	90%
Croatia	61%	69%		88%		
Italy	80%	54%	69%	60%	88%	89%
Cyprus	77%	64%	92%	100%		
Latvia	40%	53%	53%	55%		
Lithuania	52%	71%				
Luxembourg	49%	68%				
Hungary	50%	79%	60%	98%	91%	31%
Malta			52%	100%		
Austria	73%	48%	95%	72%	80%	100%
Poland	30%	53%	39%	63%	63%	69%
Portugal	42%	86%	54%	84%	100%	91%
Romania	17%	95%	14%	71%	54%	90%
Slovenia	65%	77%		84%		
Slovakia	29%	40%	51%	83%	71%	100%
Finland	73%	68%	84%	78%	84%	83%
Sweden	72%	70%	79%	68%	95%	93%
Iceland	46%	57%	95%	28%		
Norway	74%	57%	84%	85%	98%	96%
Switzerland	41%	54%	60%	91%	91%	75%
Turkey	22%	70%	23%	58%	38%	82%

Source: processed according to the EUROSTAT database

Estonia and the Netherlands, for which the required data are missing, were excluded from the observation. Countries that had at least partial data were kept in the file. The share of innovative enterprises in the total turnover of enterprises varies according to the size of enterprises. While among small companies' innovative companies have a decisive share (4th quartile) of turnover in Germany, Italy and Cyprus, among large companies' innovative companies have a decisive share of turnover in almost all countries except Poland (63%), Romania (54%), Slovakia (71%) and Turkey (38%). In Germany, innovative companies have a decisive share of turnover in all types of companies (small, medium, large). Product innovative enterprises have a decisive (4th quartile) share in innovations (measured by turnover), especially in large enterprises. Small product innovative enterprises have a decisive share in countries where innovative enterprises do not significantly dominate in terms of turnover. A specific situation can be observed in Hungary, where product innovative enterprises have a decisive share in small and medium-sized enterprises, and business process innovative enterprises (69%) in large enterprises. Overall, it can be concluded that product innovative enterprises prevail in all types of enterprises in individual countries, i.e. have more than 50% share.

For a detailed hierarchical cluster analysis in relation to the type of intellectual property protection (patent, trademark, design, trade secret and copyright), we selected small businesses that had data for 25 countries in the Eurostat databases. In the Tab. 2, we present the total number of all types of intellectual property protection for the analyzed industries 71-73 according to NACE_R2 separately for small businesses and the share of individual types. The colour indicates the type of intellectual property protection that has the highest percentage in each analyzed country.

Tab. 2: Segmentation variables for industries 71-73 according to NACE_R2 for small businesses according to 2018 data

		Segmentation variables - the share of				
GEO	*total*	Patent -P	Trademark - T	Design -D	Trade secret - TS	Copyright - C
Bulgaria	185	11%	18%	4%	44%	23%
Czechia	355	21%	22%	7%	23%	27%
Germany	8,439	12%	14%	5%	58%	11%
Estonia	93	0%	3%	0%	85%	12%
Greece	136	13%	40%	0%	19%	29%
Spain	608	23%	36%	13%	19%	10%
France	1,878	17%	51%	10%	3%	20%
Croatia	147	3%	6%	1%	80%	10%
Italy	809	24%	40%	7%	12%	17%
Cyprus	30	0%	13%	0%	87%	0%
Latvia	29	10%	17%	0%	52%	21%
Lithuania	179	6%	30%	2%	60%	3%
Hungary	269	12%	16%	4%	41%	27%
Malta	23	4%	52%	9%	17%	17%
Austria	937	8%	18%	2%	65%	6%
Poland	174	53%	40%	7%	0%	0%
Portugal	167	17%	42%	4%	23%	14%
Romania	92	20%	29%	0%	0%	51%
Slovenia	76	32%	0%	0%	68%	0%
Slovakia	105	5%	8%	0%	42%	46%
Finland	123	37%	37%	0%	20%	6%
Sweden	285	0%	62%	22%	0%	15%
Iceland	22	27%	27%	5%	36%	5%
Switzerland	256	100%	0%	0%	0%	0%
Turkey	2,333	19%	32%	7%	30%	11%
total	17,750	3	9		11	3

Source: processed according to the EUROSTAT database

In small businesses, trade secret and trademark prevail. Patents prevail in Poland, Finland and Switzerland, with Finland having the same share of patents as trademarks. Copyright as a form of intellectual property protection prevails in Romania, Slovakia and, to a lesser extent, the Czech Republic.

Within the hierarchical cluster analysis, the segmentation variable trade secrete was removed because of high collinearity with another segmentation variables present in Tab.2. The ideal number of segments is a function of statistical fit, managerial relevance, and targetability. Using Ward's (1963) procedure to create clusters based on minimizing the loss associated with grouping individuals into clusters (Enginius Segmentation software), we have retained 4 segments (Tab. 3). The segmentation method relies on the hierarchical clustering approach. This approach generates a dendrogram. The dendrogram represents the grouping process of observations into clusters. The scree plot displays, for each cluster solution, a measure of within-cluster heterogeneity. If clusters group observations that are widely different (which will happen if the number of clusters is too small to capture the variability in the data), the value will be high. A good cluster

solution might be where the scree plot displays an 'elbow', that is, where increasing the number of clusters beyond a certain point does not dramatically decrease within-cluster heterogeneity.

Tab. 3: Segment size and segment membership

	Population	Segment 1	Segment 2	Segment 3	Segment 4
Size	24	6	7	4	7
Segment membership		Bulgaria	Germany	Greece	Spain
		Czechia	Estonia	France	Italy
		Latvia	Croatia	Malta	Poland
		Hungary	Cyprus	Sweden	Portugal
		Romania	Lithuania		Finland
		Slovakia	Austria		Iceland
			Slovenia		Turkey
Relative size	100%	25%	29%	17%	29%

Source: own processing

Tab. 4 shows average value of each segmentation variable, overall for each segment (centroid). Segmentation variables that are statistically different ($p<0,05$) from the rest of the population are highlighted in red (lower) or green (higher).

Tab. 4: Segment description

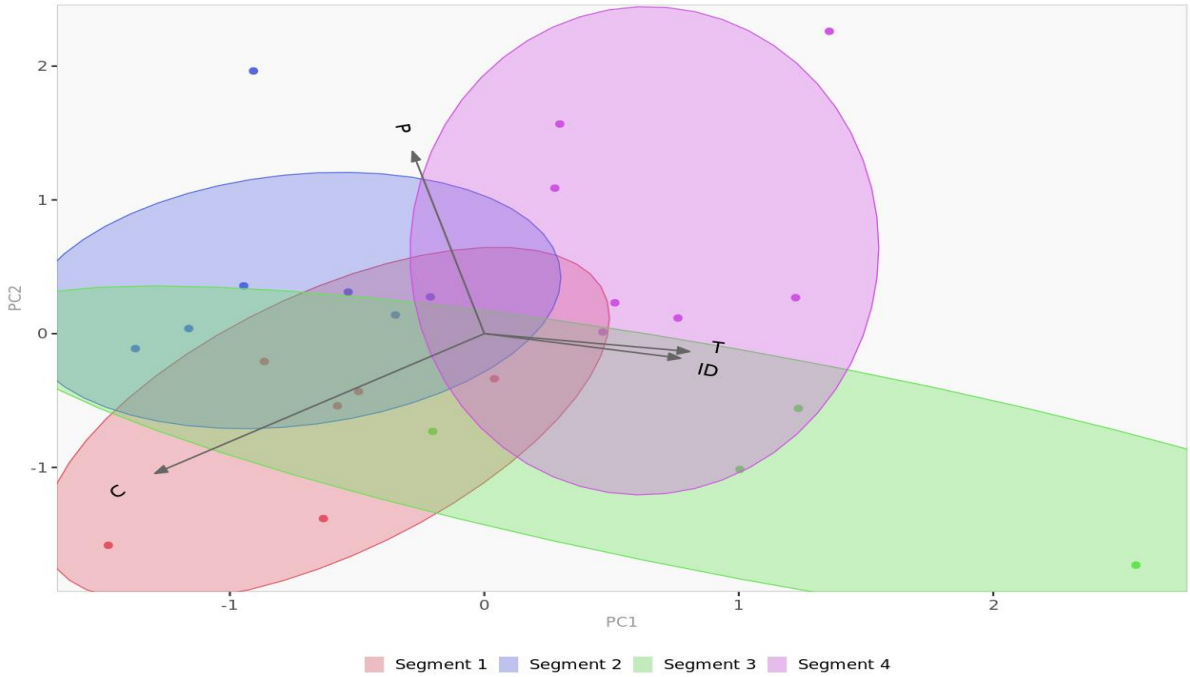
	Population	Segment 1	Segment 2	Segment 3	Segment 4
P	0,156	0,132	0,087	0,085	0,287
T	0,272	0,183	0,120	0,513	0,362
ID	0,045	0,024	0,014	0,102	0,062
C	0,158	0,324	0,061	0,203	0,088

Source: own processing

The most significant in terms of types of protection of intellectual property rights is segment 4, in the countries included in this segment they focus on patents and trademarks.

The Fig. 2 below is a graphical representation of the various segments, segment members, and segmentation variables. It is obtained by plotting the first two dimensions of a principal component analysis performed on the (standardized) segmentation data, on top of which segment information has been overlaid. Based on the notion that clusters of multivariate observations should be approximately elliptical in shape, we assume that the data from each of the clusters have been realized in a multivariate distribution. Therefore, it would follow that they would fall into an elliptical shape when plotted in a p-dimensional scatter plot. Because only the first two dimensions of the PCA are displayed, and these two dimensions capture only 73.4% of the variance in the data (Enginius Segmentation software), some differences between segments might not appear here. Note that segmentation variables with no variance, if any, have been excluded. Two clusters that appear to overlap on the first two dimensions might be distinct on other dimensions. Consequently, this chart is a useful guide, for checking which variables are correlated, but may be misleading if used to select the optimal number of segments. The individual segments are shown in Fig. 2 shown by coloured ellipses, the coloured points indicate the values of members of individual segments (Tab. 3) obtained by plotting the first two dimensions of the principal component analysis performed on the segmentation data. The graph is a useful tool for determining correlated variables according to the direction of the arrows shown for each type of segmentation variable.

Fig. 2: Segmentation space



Source: own processing (Enginius Segmentation software)

The graph expresses the relationship between the analyzed intellectual property rights segments, their overlap and difference. It points to a strong positive correlation between trademark (T) and design (ID), which are indifferent to patent (P) and negatively correlated to copyright (C). There is also an indifferent relationship between patent (P) and copyright (C).

After identifying the appropriate number of segments and the countries that belong to each segment, the process of profiling the members of these segments begins. In cluster profiling, we try to create a picture of cluster members using all the variables of interest. In this paper, we do not present the results of the discriminant analysis using descriptors. It is an area for further scientific research.

Subsequently, we examined the percentage shares of individual types of intellectual property rights for medium and large enterprises, where to greater extent product innovative enterprises have a decisive share in the turnover of innovative enterprises. The percentage shares are shown in the following tables 5 and 6.

Tab. 5: Percentage shares of individual types of intellectual property rights for industries 71-73 according to NACE_R2 for medium enterprises according to data for 2018 (23 countries)

		The share of				
GEO	***total***	Patent -P	Trademark - T	Design -D	Trade secret - TS	Copyright - C
Bulgaria	8	38%	0%	0%	0%	63%
Czechia	184	27%	24%	7%	27%	15%
Germany	2342	15%	19%	8%	45%	14%
Estonia	9	0%	0%	0%	100%	0%
Greece	26	15%	38%	0%	19%	27%
Spain	196	40%	34%	10%	13%	4%
France	347	69%		27%	4%	0%
Croatia	24	25%	4%	4%	58%	8%
Italy	215	21%	21%	2%	27%	28%
Latvia	6		33%	0%	67%	0%
Lithuania	27	11%	22%	0%	59%	7%

		The share of				
GEO	***total***	Patent -P	Trademark - T	Design -D	Trade secret - TS	Copyright - C
Hungary	47	9%	17%	4%	36%	34%
Austria	206	26%	12%	2%	46%	14%
Poland	45	51%	44%	4%	0%	0%
Portugal	42	33%	31%	12%	7%	17%
Romania	27	78%	0%	0%	0%	22%
Slovenia	22	27%		0%	73%	0%
Slovakia	29	31%	21%	14%	31%	3%
Finland	27	26%	59%	7%	7%	0%
Sweden	63		57%	30%	0%	13%
Iceland	4	50%	0%	0%	50%	0%
Switzerland	120	100%	0%	0%	0%	0%
Turkey	242	18%	36%	4%	34%	8%
total	4,258	9	4		11	2

Source: processed according to the EUROSTAT database

Tab. 6: Percentage shares of individual types of intellectual property rights for industries 71-73 according to NACE_R2 for large enterprises according to data for 2018 (16 countries)

		The share of				
GEO	***total***	Patent -P	Trademark - T	Design -D	Trade secret - TS	Copyright - C
Czechia	29	31%	21%	21%	24%	3%
Germany	300	19%	19%	0%	49%	14%
Spain	65	34%	31%	12%	17%	6%
France	125	64%	0%	32%	4%	0%
Croatia	1	100%				
Italy	35	34%	29%	9%	17%	11%
Lithuania	4	50%	0%	0%	25%	25%
Hungary	2	0%	50%	0%	50%	0%
Austria	22	23%	18%	0%	45%	14%
Poland	5	0%	80%	20%	0%	0%
Portugal	10	40%	20%	0%	30%	10%
Romania	6	100%	0%	0%	0%	0%
Finland	12	33%	33%	0%	33%	0%
Sweden	18	0%	39%	17%	0%	44%
Switzerland	10	100%	0%	0%	0%	0%
Turkey	42	24%	40%	0%	21%	14%
total	686	10	4	0	4	1

Source: processed according to the EUROSTAT database

The use of patents as a type of intellectual property protection increases significantly in medium-sized enterprises and in large enterprises, where product innovative enterprises predominate. Different trends in the protection of intellectual property can be seen in the comparison between countries. In Germany, Austria, Estonia and Latvia (the last two do not have data for large enterprises), trade secrets prevail in all types of enterprises (Tab. 2, Tab. 5 and Tab. 6), in Switzerland it is a patent. In Poland, on the other hand, small and medium-sized enterprises have a patent, but large ones have a trademark. The results of the cluster analysis for medium and large enterprises could therefore differ in the case of some countries.
The entire issue requires further analysis and will be the subject of further investigation.

CONCLUSION

Intellectual property rights, formally and informally, are among the cornerstones of a market economy. They ensure the competitiveness of the given economy on the global market and thus become a key asset not only

of national economies, but also of individual business entities. Public policies of the creative economy have developed tremendously in recent years, and questions have naturally arisen as to whether the existing legal systems for the protection of intellectual property rights adequately support economic growth in the creative industries. As the studies, mentioned in our paper, have shown, finding a balance between strong protection of intellectual property rights and public awareness of creative ideas is very difficult. Within the professional community, there is consensus on the importance of an effective legal system in the creative economy paradigm among intellectual property stakeholders. However, differences exist in the perception of the factors to be considered in finding an economic balance between strong intellectual property rights, the development of the creative economy and innovation.
We consider the submitted contribution to be an academic discussion on this topic and with our analyses, we wanted to point out certain regularities that exist between innovations and the used tools of intellectual property law in the countries of the European area.

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