Human Capital as a Development Factor for Cultural and Creative Industries

Yurii Horban[1], Tetiana Dolbenko[2], Tetiana Yaroshenko[3], Oleksandr Sokol[4], Nataliia Miatenko[5]
[1,2,5]Kyiv National University of Culture and Arts, [3]National University of Kyiv Mohyla Academy,
[4]Odessa National A.V. Nezhdanova Academy of Music

Summary
Human capital is the defining value of the national economy under market conditions. The manifestation of human capital is realized as an intellectual and creative capital, theoretically grounded and proven. The realization of intellectual capital is realized through the research creativity of scientists and researchers, and creative capital is manifested through artists and thinkers. Accordingly, creativity in market conditions forms a separate source of income and is an essential article in the formation of the GDP of the national economy. This research aims to analyze human capital from the perspective of cultural and creative industries. Research methods: systematization; comparative analysis of individual indicators of advanced countries of the world on the training system; statistical, taking into account macroeconomic indicators to assess the level of national creativity potential; system and logical analysis; method of information synthesis. Research results. The structural and quantitative composition of the factors of intellectual and creative capital formation has been systematized. The article proves that the unique properties of human capital, knowledge, creativity, experience and professional skills are the push factors of creativity development of the national economy and provide the priority development of creative and cultural industry that allows generating the added value on the national scale. The functions of creativity in the sphere of cultural industries are highlighted. It is noted that education and creativity of both intellectual and creative capital are the forming basis. The research of the world's advanced countries on the creativity index has pointed out the Netherlands as the leading country in the quantitative measurement of creativity. The economic development factors of the Netherlands were analyzed from the position of economic creativity, which allowed the formation of a two-factor model providing priority development of creativity in the cultural and creative industries.

Key words:
Human Capital, Intellectual Capital, Creative Capital, Global Creativity Index, Cultural and Creative Industries.

1. Introduction

The human factor starts to determine the prospects, forms, and ways of formation of a new post-industrial reality more and more obvious. In the theoretical sphere, this has naturally led to the formation of the creative capital concept.

On the one hand, creative capital is a leading factor of production, a vital resource of economic activity; on the other hand, it is an independent object of economic and managerial relations.

At the company level, the ability to create and effectively use creative capital becomes one of the main factors determining its economic potential and competitive advantages and, therefore, its competitiveness in the rapidly changing market of goods and services. The research aims to analyze human capital from the perspective of cultural and creative industries.

Research tasks:

1. To analyze the human capital factor as a necessary condition for creativity development in the cultural industries.
2. To reveal the main components of a modern form of creative capital in cultural and creative industries
3. To evaluate the creativity of the world countries and to form an approach to refine this indicator.

2. Literature Review

The concept of human capital was introduced into science in the 1960s. The scholar Becker [1; 2] and Shultz [3] are considered to be the authors. There are many studies on human development theory and methodology [4; 5]. However, there is still no consensus on human capital development. The majority of authors argue that human capital is used as a key indicator of economic and social development [4; 6; 7].

With the development of the creative economy [8; 9; 10], the concept of creative capital has found a wide application [11; 12].

However, creativity is measured from the perspective of intellectual property [13; 14], which is reflected in the income from patents, inventions, technical designs, and publishing. It does not take into account the contribution of creative work of artists-innovators of the artistic and cultural sphere, the gap in the system of scientific research of creative economy, and modern development of cultural and creative industries.

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3. Methods

The implementation of the goal of the research involves the use of the following methods:

Systematization, generalization of scientific publications on the study and assessment of the creativity level in different countries and spheres of socio-economic development. In particular, the ten most developed countries concerning the creativity index are allocated, and the creativity level is specified through an indicator of education.

The method of comparative analysis of human capital formation factors from the position of creative competencies, which allowed to specify the components of creative capital formation.

The methods of elementary mathematics concerning macroeconomic indicators for the refined assessment of the rating of the most developed countries of the world according to the creativity index. The study used macroeconomic indicators of GDP and GDP per capita, taking into account the percentage of the population with access to education and the level of quality of education. It is a quantitative calculation of the potential creativity of individuals in a country.

The method of statistical calculations to estimate the level of influence factors on the formation of a creative national economy and the effectiveness of the country's creative capital.

System and logical analysis, the method of information synthesis. At the expense of these methods, analytical comparisons and coordination of indicators and conclusions of the previous researches on the given theme were carried out.

4. Results

The development of socio-economic relations determines the modern phenomenon, which allows us to evaluate a person as an element of capital. At the same time, the category of intellectual capital, defined by the contribution of a person in market relations from the position of his activity capitalization, is introduced. A high capitalization is brought by the sphere of scientific and applied research, which forms the corresponding inventions, industrial designs, which are implemented in industry. For the sphere of culture, art, leisure the manifestations of intellectual capital are works of art, music, and cinema. However, their capitalization is formed in a very specific way. Firstly, the generally recognized system of copyright in book publishing is realized through the indicator of net income. Secondly, the capitalization of trademarks, the patenting of which is a manifestation of creativity. Thirdly, it is the box office figures for cinemas and concert events.

Considering that the culture and art sphere requires interaction at the level of artist - user; artist - artist (personal communication and discussion, exchange of opinions, ideas); artist - environment. It leads to an ongoing process of increasing education, qualifications, skills, and abilities that are enhanced with the accumulation of practical experience, attitude towards the creative process, the ability to form a creative vision in different situations. Thus, there is a formation of various competencies of creative activity not only in the sphere of culture and art.

The internal structure of human capital in market conditions is evaluated by patents, inventions, and copyrights received. Due to the development of communication and information technologies, the internal structure expands by introducing the computer, administrative-digital systems, and networks.

The external structure of human capital in the sphere of art and culture represents relations with consumers, competitors, support groups, and fans. Therefore, creativity development is shaped by the elements of the internal and external structure of human capital.

The internal structure is determined by the main factors, which develop in an interconnected way based on genetic assignments. These factors are fixed and strengthened by the education and professional activity of a person. Let us note the proportionality of these components in the intellectual capital formation (see Fig. 1).

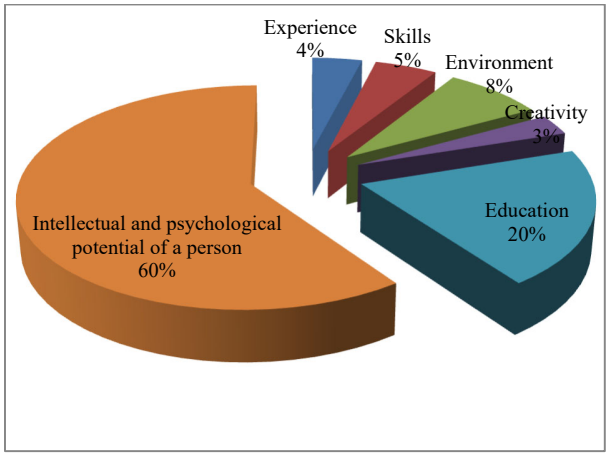

Fig. 1. The quantitative structure of the intellectual capital formation

Source: [15; 16].

As for the creative capital components, they are based on intellectual capital. At the same time, there is a strengthening of the creativity's role in human activity on limited resources.

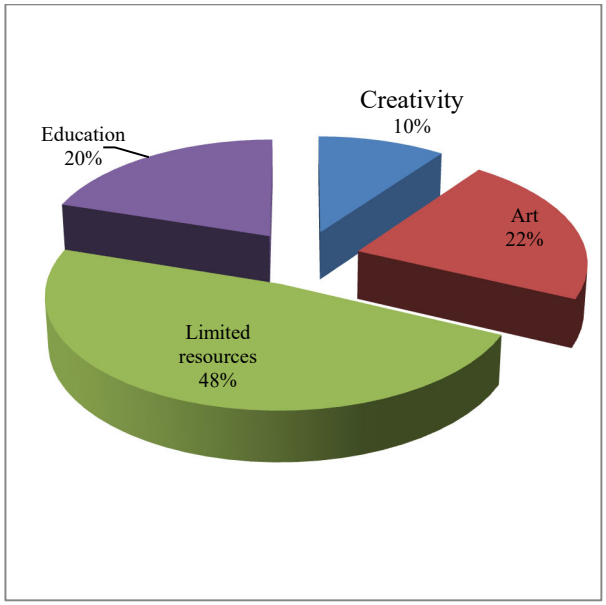

Fig. 2. The quantitative structure of creative capital formation

Source: [16; 17].

It is necessary to specify the following functions of creativity in the sphere of cultural industries on the plane of the entrepreneurial approach:

informational – accumulation, systematization and transfer of knowledge, abilities, skills, information;

cognitive and cognitive – acquisition of knowledge about the processes and phenomena of both the creative process and its implementation and perception by other consumer groups;

transformative – a transformation of knowledge into new results of creative activity (universal information, display products – performances, exhibitions, services for the possibility of repeating this creation to those who want it);

scientific-research – organization and carrying out of events in the spheres of social life and formation of the corresponding technologies;

axiological – assistance to individuals in understanding the importance for themselves and society of certain events and phenomena, works, services, participation in the formation of a personal attitude toward them, the choice of behavior based on conscious action and per the values;

integrative – orientation to the introduction of creativity in the field of knowledge to create new products, works, services;

regulatory – establishment of traditional norms and rules regulating the behavior of subjects of culture and art sphere;

culturological – participation in widening of outlook, education, self-education, development of a thinking culture of culture and art sphere subjects;

pedagogical - formation of individuals' self-consciousness;

practical (utilitarian) - assistance in solving socio-economic and cultural tasks;

protection - protecting the results of intellectual work through their use in daily activities.

The realization of these functions is provided by all components of human capital. The modern entrepreneur has to solve:

1. Progress in the development of the creative component forms.
2. Increase of managerial staff creative thinking.
3. Formation of the intellectual center, allowing quickly and effectively to realize creative ideas.

It is expedient to estimate the creativity components by parts. Therefore, the human capital can be estimated on several indicators:

level of staff commitment to creative task performance;

the level of employees' satisfaction with the implementation of creative ideas;

a turnover rate of persons generating creative ideas and creative behavior in a favorable environment for their realization;

level of training (independent, professional, planned) that shapes creativity enhancement;

experience of creativity, i.e., a quantity of realized ideas, ideas, projects.

Another group of indicators is the economic evaluation of creativity, which is determined primarily by the cost of training. However, the main indicator is the formation of surplus-value in the implementation and realization of relevant plans, ideas, and projects as a whole. This factor determines the level of creativity capitalization of the collective or creative entrepreneurial structure.

Thus, the creativity level in the culture and art society is evaluated in the publishing business by the indicator of net income. According to the report World Intellectual Property Indicators Report, 2020, the trend of creativity is reflected in the following indicators: in the publishing industry of 21 countries, the net income was $67.3 billion. The leading positions were taken by ($23.5 billion), Japan ($16.1 billion), the Republic of Korea ($6.2 billion), Germany ($5.6 billion), the UK ($5.4 billion), and France ($3 billion). However, more than half of the total income was due to online sales. Among the leaders were Sweden (50.1%), the United Kingdom (55.2%), the United States (43.5%), and Turkey (22%).

For mass educational publishing, the UK had the highest number of publications during 2019 at 202 000, followed by France (107 143), Italy (100 266), and Spain (95 849).

This approach characterizes the value-quantity component of publishing creativity and the return of creative capital. However, in our opinion, the decomposition of creative capital is based on distinguishing four types of assets, which together form its total value:

market assets - this is the potential that is provided by intangible assets associated with the profit from the cultural and artistic events held (concerts, exhibitions, shows, etc.; the purchasing power of visitors, brand positioning of cultural and artistic spheres, income from the events held);

intellectual-property as an asset - a legalized tool for the protection of creative assets (copyrights);

human assets - a set of individual artists and creative associations (creative and creative potential, creative behavior);

infrastructural assets - technologies, methods, and processes, allowing to produce and scale the final creative product (buildings, constructions of culture and art, formed specialized databases, institutions of financing, and crediting of the sphere of culture and art).

Thus, this model explains creativity through the prism of the process of realization of creative ideas in the market environment. The most effective method of creativity estimation is the balanced system of indicators realized in the calculation of the corresponding index. Thus, according to the creativity index, a rating of the world's countries is presented, in which the leading position is occupied by the USA [18].

As we noted above, the training system is the main component of creativity formation in human capital. As a result, let us form a comparative analysis of the most creative world countries, taking into account the education quality index and the education opportunities index (see Table 1). This table is accordingly the basis for further calculations.

Table 1: The ranking of the world's leading countries by index indicators of creativity and education in 2020

Country	Education quality index	Education Opportunity Index	Creativity index
United Kingdom	78,2	69,79	0,881
USA	72	68,74	0,952
Australia	70,5	67,52	0,97
Netherlands	70,3	67,21	0,889
Sweden	70,1	66,95	0,915
France	69,9	66,3	0,822
Denmark	69,8	62,54	0,917
Canada	69,8	61,01	0,92
Germany	69,5	60,64	0,837
Switzerland	68,3	60,12	0,822

Source: [18; 19]

Therefore, we will conduct a quantitative assessment of the country rankings. The calculation methodology will be formed by determining the number of persons who receive the opportunity to get an education and its high-quality level. We will divide expenditures on education from GDP into monetary terms by GDP per capita of the country and correct the obtained number of persons by the education quality index (percentage) and the education possibility index. The second indicator will be the number of creative persons from those who received a complete and high-quality education (see Table 2).

Table 2: Creativity assessment of the most developed countries through the system of obtaining high-quality education in 2020

Country	GDP per capita, thousand dollars	Number of people who received a high-quality education	Number of people regarding the possibility of receiving education	Number of trained people	Tuition expenses, thousand dollars	Number of people who had the opportunity to receive a complete and high-quality education	Number of creative people who received a complete high-quality education
United Kingdom	40,28465	14714	13132	18816	39416	10269	9047
USA	63,54358	237267	226524	329538	1047000	163097	155269
Australia	51,81215	18111	17345	25689	70543	12228	11862
Netherlands	52,30406	12260551	11721645	17440329	50171000	8240316	7325641
Sweden	51325,71	7	7	10	41395,2	5	4
France	38,62507	47107	44681	67391	148371	31232	25672
Denmark	60,90884	41	36	58	269,952	25	23
Canada	43,27162	26503	23165	37969	87079	16169	14876
Germany	56,72364	46633	40688	67097	182688	28278	23669
Switzerland	8,66126	59774	52615	87516	38658	35936	29539

Source: [18; 19].

Thus, among the leading countries in terms of the economy's creativity, it is noted that the only dominant country is the Netherlands. For clarity, let us present the graphical component of the analysis (Fig. 3).

According to the mentioned mathematical approach in the calculation, let's define the main components, which provided high creativity of the Dutch economy. The Netherlands is defined as the country with the most creative economy.

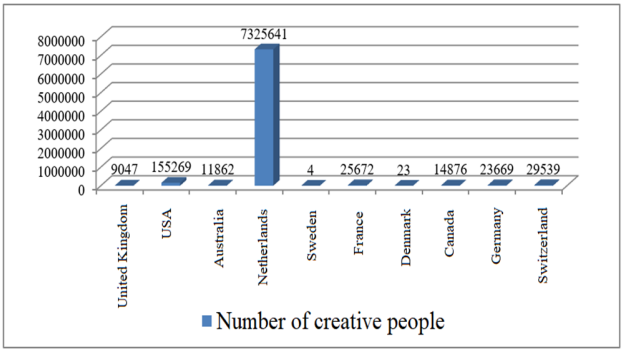

Fig. 3. The dominant creativity indicator of developed countries in 2020

Source: [19; 20]

Further analysis of our research will be focused on the demonstration of the main factors. According to them, we build a model and determine its correspondence by statistical calculations. We have revised a significant number of indicators and carried out calculations. However, the best version of modeling returns from the creative economy came to two main factors – incomes of the creative economy and public expenditures on education. That ensured a high level of return on creativity in the country.

Let us form the initial data on revealing the influence of creativity factors on GDP (see Table 3).

Table 3: The data on the dynamics of the Netherlands GDP change from the factors, which form the creativity during 2010-2020

Years	Revenues of the creative economy, billion dollars (x_1)	Government expenditure on education, billion dollars (x_2)	GDP, billion dollars.
2020	2,359	49,7149	912,2
2019	2,258	47,022273	907,1
2018	2,476	49,151088	913,6
2017	2,226	43,04353	831,8
2016	2,16	42,9556	782,5
2015	2,298	42,586124	796,3
2014	1,483	48,63969	891
2013	1,619	48,466263	876,9
2012	1,64	48,[illegible]99	839
2011	1,789	49,390983	904,1
2010	1,72	46,300554	846,6

Source: [20]

We will use the Linest MS Excel function to calculate the dependence of indicators x1 and x2 on GDP. Let us present the calculation results through the following data:

16,63103695	22,83994484	42,1088072
1,737222974	13,56666597	90,2803
0,919727099	14,91572228	
45,8300168	8	
20392,41165	1779,83017	

According to the calculation, the determination coefficient is 0.9197, which indicates a close relationship between the factors and the resultant trait. The calculated F-distribution is 45.83. It confirms that the relationship between the variables for the entire data population is the main one, which indicates the standard error S0=90,28, and S1=13,57, S2.=1,73. Hence, we determine the factor model coefficients - factor model parameters $t_i = \frac{a_i}{S_i}$, where a_i – is the coefficient of factor model, a_i = 0,3. Therefore, $t_0 = 0{,}466$ t_1=1,683t_2=9,573, which indicates the adequacy of the factor model.

Thus, the conducted statistical calculation noted that the factor model is expedient while using assessment and forecasting of influence on GDP of factors of creativity of economy of the country, namely public expenditure on education, which makes about 5% of GDP and income of the creative economy.

The favorable conditions for the development of creativity in the country are achieved at the expense of the system of basic and special education. In particular, in the sphere of culture and art, there is a world school of history, culture, and communication Erasmus University Rotterdam that conducts training of masters on programs “Media and business, media and creative industries”, “Media, culture, and society”.

As a result, these facts noting the level of creativity of the Netherlands indicate the main factors that provided such a high rate of country's creativity:

The current high level of education in the context of quality and accessibility, with the possibility of attracting foreign students and providing them with appropriate grant scholarships.

The multidisciplinary state support for education and implementation of creative project plans not only for citizens of the country but also for emigrants.

The focus on innovative developments due to the lack or limited natural resources, which is brightly manifested in agriculture.

5. Discussion

The research of creativity is a central issue of scientific debate because of different profiling scientists. We support Torrence [21] on the point, that creativity is the process of creative thinking formation. At the same time, we highlight that creative thinking is formed through the system of education and vocational training. In this aspect, the creative process is seen as an entrepreneurial ability in a cultural and artistic environment. The process of the randomness of creative product formation is reduced to zero, which contradicts the views of Smith [22]. Therefore, we are more wedded to Euler [23] that creativity is explained through the process of human self-organization. The self-organization of a human being is a prerequisite for the

development of his creativity. At the same time, the role of self-organization increases when resources are limited.

Western scientists estimate creativity through verbal and nonverbal tests and application of the "motivation in professional activity" method. In our research, these methods were not taken into account, because the task was to determine creativity at the expense of macroeconomic market indicators, focused on the training system.

6. Conclusions

This research assessed the creativity of the world's most developed countries by the factor of the number of educated and creative persons, which allowed us to identify the leading country in the implementation and embodiment of creativity - the Netherlands. The calculation methodology was based on the assessment of the education system and the share of GDP for this education. These calculations are compared with the general facts of creativity for this country according to world publications and statistical data. Therefore, the main factors determining the level of creativity development in the country were identified, namely the high level of education in the context of its quality and accessibility; state support of education and its continuation in the implementation of creative plans and projects; orientation on the innovativeness of project implementation.

The research results in the identification of the main factors that ensure the growing formation of creative capital in the sphere of cultural and creative industries of the leading economy of the Netherlands. Thus, the main factors of the creativity's contribution to GDP were the level of public spending on education and accessibility and quality of the educational process. The statistical calculation indicated the adequacy of this two-factor model.

The quantitative structure of human and creative capital formation is also noteworthy, noting the special role of education and creativity in the formation of creativity of the art and cultural industry. Education and creativity have become formative factors of cultural and creative industries of modern society development in market conditions.

Further research should be directed on factors' development estimation of cultural and creative industries on groups of the countries on the corresponding economic development. After all, the creativity of the social sphere has been assessed only in the world's developed countries. It is also expedient to estimate the contribution to GDP of the developed countries of the artists who have emigrated from other countries.

The research results (the influence level of accessibility and quality of education and the level of public expenditures on it) should be taken into account in training courses and programs of professional development of workers of culture and art, and in economic subjects for the corresponding specialties. Also, in recommendations for officials and parliamentarians on certain aspects of the formation of a balanced scientific socio-cultural governmental policy and the formation of a favorable intellectual creative environment.

References

[1] Becker G. S. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*, Second Edition, New York, 264 p. https://www.nber.org/books-and-chapters/human-capital-theoretical-and-empirical-analysis-special-reference-education-second-edition. (1964).

[2] Becker G. S. *Human Capital. A Theoretical and Empirical Analysis, with Special Reference to Education.* Third Edition. Economics and Business, 412 p. (1993).

[3] Schultz, T. W. *Human Resources (Human Capital: Policy Issues and Research Opportunities).* New York: National Bureau of Economic Research, 85 p. https://www.nber.org/books-and-chapters/economic-research-retrospect-and-prospect-volume-6-human-resources/human-capital-policy-issues-and-research-opportunities. (1972).

[4] Kotsantonis S., Serafeim G. *Human Capital and the Future of Work: Implications for investors and ESG integration*. Journal of Financial Transformation 51, pp. 115–30. (2020).

[5] Ali M., Egbetokun A., Memon M.H. *Human Capital, Social Capabilities and Economic Growth*, Economies, MDPI, Open Access Journal, vol. 6(1), pp. 1-18(2018).

[6] Widarni E.L., Bawono S. *Human Capital, Technology, and Economic Growth: A Case Study of Indonesia.* Journal of Asian Finance, Economics and Business, 8(5). DOI:10.13106/jafeb.2021.vol8.no5.0029. (2021)

[7] Hippe R. *Human capital in European regions since the French Revolution: Lessons for economic and education policies*. Revue d'économie Politique, 130, pp. 27–50. DOI:10.3917/redp.301.0027. (2020).

[8] Schlesinger, P. *The creative economy: Invention of a glob l an orthodoxy.* Innovation: The European Journal of Social Science Research, 30(1), pp. 73-90. DOI: 10.1080/13511610.2016.1201651. (2017).

[9] Guilherme, L. L. *Creative economy: Thematic perspectives addressed and research methodologies adopted*. Brazilian Journal of Science and Technology, 4(1), 2. DOI: 10.1186/s40552-017-0040-0. (2017).

[10] Andres L., Round J. *The creative economy in a context of transition: A review of the mechanisms of micro-resilience*. Cities, 45, pp. 1-6. DOI: 10.1016/j.cities.2015.02.003. (2015).

[11] Batabyal A. A, Nijkamp P. *Creative capital in production, inefficiency, and inequality: A theoretical*

analysis, International Review of Economics & Finance, Elsevier, vol. 45(C), pp. 553-558. (2016).
[12] Batabyal A.A., and Beladi H. *The importance of creative capital for economic growth in the presence of learning by doing*, Regional Science Policy and Practice, 7, pp. 187-197. (2015).
[13] Auriol E., Biancini S., Paillacar R. *Universal Intellectual Property Rights: Too much of a good thing?* International Journal of Industrial Organization, Volume 65, pp. 51-81. (2019),
[14] Asria D.P.B., Sudiyanab, Sriyono E. *Demystifying Intellectual Property Rights in the Creative Industry SMES*. International Journal of Innovation, Creativity and Change. Volume 12, Issue 12, 2020.
[15] From Data to Value 2020/21: Annual report with intellectual capital statement. https://www.salzburgresearch.at/en/2021/from-data-to-value-2020-21-annual-report-with-intellectual-capital-statement/.
[16] Human Capital Report. https://www.verizon.com/about/our-company/human-capital-report-2020
[17] Otis Report on the Creative Economy. https://www.dwt.com/-/media/files/advisories/media/otis-creative-economy-report.pdf.
[18] Global Creative Index. https://www.provokemedia.com/ranking-and-data/global-creative-index
[19] Human Development Report. http://hdr.undp.org/en/2020-report
[20] The World Bank Data. https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG
[21] Torrance E. P. Guiding creative talent – Englewood Cliffs. NY: Prentice-Hall, 278 p.
[22] Smith R.E. *The Impact of Advertising Creativity on the Hierarchy of Effects.* Journal of Advertising, 37(4) pp. 47-62. DOI: 10.2753/JOA0091-3367370404. (2021).
[23] Euler M. *Creativity in Action: Exploring Cross-Cutting Models of Self-Organization and Emergence in Science and Technology*. Proceedings of the Singapore National Academy of Science, 15(02), pp. 135-150, (2021).