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## Article

# The Sustainability of Digital Networks and Globalisation, the Key to Resilience?

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**THE SUSTAINABILITY OF DIGITAL NETWORKS AND GLOBALISATION,  
THE KEY TO RESILIENCE?**

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**Abstract**

Rethinking the concept of resilience in the post-pandemic period is urgently needed considering an uncertain and unpredictable future. To identify the necessary solutions for the recovery of the economy, the involvement of all actors in the socio-economic and political environment is vital. Consolidating regional development, intensifying global cooperation, and developing sustainable business models in the field of digital entrepreneurship are necessary pillars in revitalising the economy and creating a sustainable economy. In this context, using data for the countries of the European Union, it was shown, using statistical methods of multivariate analysis, that globalisation and digitalisation are necessary to achieve resilience. Thus, new opportunities are opening up for creating development strategies that can prepare socio-economic systems for future shocks and uncertainties.

**Keywords:** resilience, globalisation, digitalisation, networks, sustainability, multivariate analysis

**JEL Classification:** L14, L26, C01, O52

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## **Introduction**

The coronavirus pandemic highlighting the difficulty in facing an uncertain and unpredictable future. Although resilience is not a new concept at this time it is necessary to be updated and rethought considering disruption impact of COVID-19 crisis and robust recovery approach. Global economic uncertainty causes crisis management to be approached more from a behavioral perspective than an economic one, defining the pre-pandemic period (Grewal and Tansuhaj, 2001; Ratten, 2020).

Simultaneously, the dynamics of entrepreneurial ecosystems are influenced by the phenomenon of globalisation but also by changes due to technological progress, which shows the importance of analysing the evolution of entrepreneurial behavior in terms of digitalisation and innovative decision-making capabilities (Korber and McNaughton, 2017). This test fact is also confirmed in the specialised literature by identifying a strong correlation between social sustainability, innovation, and competitiveness not only at the organisation level, but also at the country level (Fonseca and Lima, 2015; Fonseca, Domingues and Dima, 2020).

Considered an essential feature of the entrepreneurial ecosystem, resilience can be a trigger for entrepreneurial intentions, as evidenced by the European Union's strategies and policies on the possibility of remedying immediate economic and social damage caused by the coronavirus pandemic (European Commission, 2022). Thus, in addition to the long-term EU budget, NextGenerationEU is a temporary tool designed to stimulate recovery and create a greener, more digital, and resilient Europe (European Commission, 2022), continuing to capitalise on the opportunities offered by globalisation.

The fiscal and financial commitments made in this activity will have a lasting impact on the global economic direction, the recovery of losses caused by the COVID-19 pandemic being influenced by adaptability and efficiency in decision making (Ioan-Franc and Diamescu, 2021; Schwab and Sternfels, 2022). Similarly, the World Economic Forum (WEF) emphasises the importance of adopting sustainable and inclusive solutions that consider, in the long-term, changes in socio-economic and political factors, which coincides with the vision of the Recovery Plan for Europe (Schwab and Sternfels, 2022; European Commission, 2022). Recommended public policies, obtained from the analysis of macroeconomic indicators, offer private entrepreneurs the opportunity to make optimal decisions for the evolution of their business (Păunică et al., 2021).

To ensure stability and support the economic openness necessary for sustainable development, it is necessary to consider all aspects of resilience: risk reduction, the ability to absorb shocks, respectively recovery through adaptation and transformation (OECD, 2021). This study focuses on identifying innovative factors that ensure a sustainable process of resilience in a country's economy. The post-pandemic context requires new approaches to maintain stability within a global system based on agreed rules and to ensure sound governance, which is necessary for economic openness to create a predictable economic environment conducive to sustainable development (OECD, 2021).

The main purpose of this research is to identify whether there is a relationship between resilience and globalisation and a country's ability to implement information technology and communication networks (ICT) to create a sustainable and competitive economy. Therefore, we analysed 27 European countries from this perspective in 2019, 2020 and 2021, using correlation and regression analysis. The results highlighted that in order to

achieve resilience, globalisation and networks are necessary, the correlation between them being positive and strong. To achieve this objective, the data were processed and analysed using the specialised software packages SPSS, XLSTAT and VOSviewer.

The paper is structured in three main sections. Section 1 presents a literature review and provides an overview of selective studies on globalisation, a country's ability to benefit from digital transformation and resilience, being dedicated to exploring the most relevant studies in the field. In Section 2, the methods and data used in the analysis are presented, with the main results being described and analysed in Section 3. The paper ends with the authors' conclusions regarding the studied topic, as well as future research possibilities.

## **1. Review of the scientific literature**

Originally defined as the capacity to absorb disturbances with the possibility of returning to a functional state, today, the concept of resilience also includes aspects related to the possibilities of adapting to new realities (Walker, 2020; Ioan-Franc and Diamescu, 2021). Resilience, analysed from an organisational point of view, is often used to show how a national economy can return to the level before an economic shock, from the perspective of macroeconomic indicators. At the same time, the ability to return to an economic level as close as possible to the one existing before the shock is also supported by the potential of organisations to respond to negative impacts by minimising the effects of these changes (Marković, 2018).

Entrepreneurial resilience is an important factor in building a sustainable entrepreneurial ecosystem using the three dimensions of resilience: resistance, ingenuity, and optimism (Ayala and Manzano, 2014). At the same time, as an important quality for entrepreneurs, resilience can be defined as the result of interactions between entrepreneurs and their environment (Vogus and Sutcliffe, 2007; Ayala and Manzano, 2014) and can make a major contribution to community recovery and enhanced social cohesion (Grube and Storr, 2018; Muñoz et al., 2020). At the same time, the dynamic capacity of resilience leads to the need to periodically assess the resilience of the supply chain (Pettit, Fiksel and Croxton, 2010; Datta, 2017). On the other hand, Kharrazi (2020) considers redundancy, diversity, and modularity essential characteristics that contribute to systemic resilience (Ringsmuth et al., 2022).

An important effect of globalisation is the reduction of inequalities, both at the interstate and at the intra-state level. During the COVID-19 pandemic, this progress was slowed down, with restrictions imposed and isolation measures bringing differentiated damage, both at the individual level and in various sectors of activity (Narula and van der Straaten, 2020). This idea is also supported by Ciravegna and Michailova (2021), who, at the same time, consider that the world economy will not see a greater globalisation in the post-COVID-19 era, which is in contradiction with the statement of Contractor (2021), who supports a sharp evolution of globalisation in the post-pandemic period.

In the case of a system, resilience is not always easy to identify and is affected by the interaction between the system and the type of shock suffered (Kharrazi et al., 2020; Ringsmuth et al., 2022). If we talk about the economic system, it can be considered a network characterised by all activities carried out by the economic organisations included in its composition (Chiriță, Ciurea and Nica, 2021). One of the main components of the economic system is the digital one, the development of digital entrepreneurship being a key

pillar for job creation and innovation which leads to economic growth (Antonizzi and Smuts, 2020). As innovation capacity is the main tool for increasing the level of competitiveness, it will be necessary to adopt government strategies that lead to the development of a sustainable and innovative society (Suciu and Petre, 2021). Additionally, the way in which digital trends influence the transformation of the business environment and the way in which they are associated with the resilience of the innovation system, in addition to entrepreneurial skills, make the development of digital entrepreneurship a prerequisite for sustainability (Satalkina and Steiner, 2020). This fact is consistent with the results obtained by Pinzaru et al. (2022), who identified an interdependence between digitisation and the drivers of sustainability adoption. Although, at the state and global level, digital inequalities existed even before the COVID-19 panic, they have now intensified further (Beaunoyer, Dupéré and Guitton, 2020; Silva et al., 2022), reducing the digital divide is a challenge for most states (Aissaoui, 2021). Thus, the benefits of the resulting information and communication technology offer a new perspective on the entrepreneurial ecosystem in a digital age (Elia, Margherita and Passiante, 2020).

The concept of globalisation rose to popularity in the 1980s and 1990s, with resilience implying popular appeal and policy relevance so that allowing security objectives to shift, adapt, and according to media narrative, both in policy and the everyday effective (Brassett, Croft, and Vaughan-Williams, 2013). Gunasekaran, Rai and Griffin (2011) associated resilience with competitiveness of SMEs that are influenced by advances in operations strategies, technology, and globalisation. Although there are diverse existential challenges, the nation state proved to be resilient, in context of globalisation continuing to remain the main actor that provides major communication channels to work out projects of cooperation/coalitions, including alliances and treaties (Harshe, 2014). Financial globalisation has resulted in further exposure to external conditions, leading to financial sector modernisation, thus providing a source of further economic growth through the development of this sector and also through institutional development, thus contributing towards economic resilience building (Jankee, 2006).

Even territories that have not shown vulnerability presented many of the effects of extreme events that today give rise to relief and rehabilitation programmes, being indicated that colonialism, development, and globalisation have reduced resilience, increasing exposure (Campbell, 2009).

Detecting and characterising community structure is absolutely necessary when studying networked systems, understanding how community structure affects systemic resilience and stability. Dong et al. (2018) indicated that the connections among communities' influence resilience, highlighting the important effects that community structure has on network resilience. Gao, Barzel and Barabási (2016) studied resilience patterns in complex networks, the empirical results unveiling the network characteristics conducting to diminish resilience, thus offering ways to prevent the collapse of ecological, biological, or economic systems, and guiding the design of technological systems resilient to both internal failures and environmental changes (Gao, Barzel and Barabási, 2016; Lapatinas, Litina and Poullos, 2022). The network structure and network components, regardless of domain, can influence resilience concept thought changes and dynamics (Gao et al., 2015), the dynamical mechanism of the cascading failure can help us to design more resilient networks (Liu, Peng and Gao, 2015; Yuan, Aihara and Tanaka, 2017).

Globalisation can be defined as a process of interconnection that creates a global information society, with ICT facilitating the emergence of a ‘network society’ based on the spatial nature of flows of finance, information, and knowledge (Castells, 1996; Castells, 2001).

Globalisation is associated with four broad processes: mobility of capital; simultaneity; bypass; and pluralism (Kanter, 1995), Vickery (1996) reporting a link with networks, an increased number of network relations, and strategic alliances conducing to globalisation (Dunning, 1997). Håkanson and Dow (2012) highlighted that markets and Networks in international trade reduce distances regarding globalisation; the impact of geographic distance has increased markedly for homogenous goods, whereas for more differentiated goods it has decreased mildly.

Otherwise, Kharrazi et al. (2015) indicated that secure and responsible consumption requires the diversification of both energy generation and energy imports, highlighting the role of resilience in global energy networks. System resilience significantly influences the network interconnectedness and modularity, depending on the network structure (Tu, Suweis and D’Odorico, 2019). The world is facing an increasing complexity, connectivity, and turbulence, thus multinational corporations recognised the need for resilience, the pathway to globalisation and outsourcing creating complex supply networks vulnerable to disruptions (Fiksel, Goodman and Hecht, 2014). Wei and Pan (2021) indicated that the information, transportation, and economic networks of cities exhibit a dense pattern of spatial distribution, the capacity of regions for resistance and recovery can be improved by strengthening the construction of emergency systems and risk prevention mechanisms. The main studies related to the FM Global Resilience Index - FM\_GRI, the Network Readiness Index - NRI and the KOF Globalization Index - KOF\_GI are highlighted in Figure no. 1.

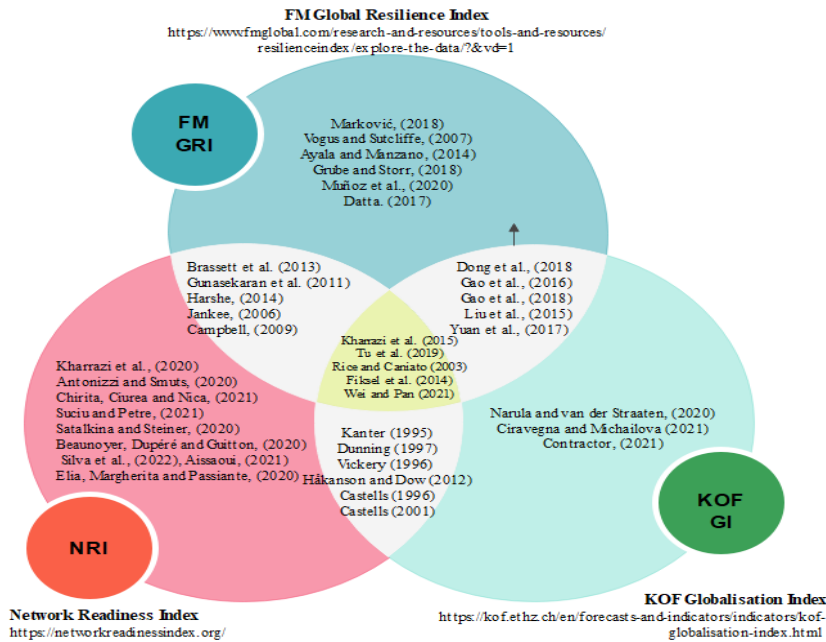


Figure no. 1. Principal studies on resilience, networks and globalisation



H1: There is a strong link between globalisation and resilience in the case of European countries.

H2: There is a strong link between digital networks and resilience in the case of European countries.

H3: Globalisation and digital networks together lead to a better resilience.

**2. Data and methodology**

The study of the relationship between *globalisation, the development of digital networks, and innovative services and resilience* was carried out on the basis of three composite indices (Table no. 1), determined at a global level, the values used in the analysis for European countries were recorded for the years 2019 (KOF\_GI), 2020 (NRI), and 2021 (FM\_GRI). Although there are no records for the same year, the analysis carried out better captures the researched topic, since the data used are complete for the countries considered, and the effects of globalisation and digitisation on resilience can be well quantified after a certain period. In addition to the immediate effects of digitisation and globalisation, there are also long-term effects that can be reflected in an economy’s ability to recover from a crisis, this study being the first analysis of all three concepts together.

To identify a relationship between *resilience, globalisation and the efficiency of the use of ICT by a state to increase competitiveness and well-being*, it is necessary to use composite indicators, due to their characteristic of quantifying multidimensional concepts that cannot be measured directly because of their complexity (Oțoiu and a Grădinaru, 2018; Lindén et al., 2021).

For the accuracy of the analysis, each indicator must have data for each country; thus, the most complete and recent available data were considered. In addition to the immediate effects of digitisation and globalisation, there are also long-term effects that can be reflected in an economy’s ability to recover from a crisis. The data are provided by KOF Swiss Economic Institute, FM GLOBAL, and Portulans Institute (Figure no. 5, Table no. 1). The component description of the indicators included in the analysis is presented in Table no. 1.

**Table no. 1. Variable’s description**

| <b>Variables</b>           | <b>Code</b> | <b>Components</b>   | <b>Source</b>                       |
|----------------------------|-------------|---|-------------------------------------|
| FM Global Resilience Index | FM_GRI      | Economic Factors<br>Risk Quality Factors<br>Supply Chain Factors          | FM GLOBAL (2021)                    |
| Network Readiness          | NRI         | Technology<br>People<br>Governance<br>Impact                              | Portulans Institute (2020)          |
| KOF Globalisation Index    | KOF_GI      | Economic Globalisation<br>Social Globalisation<br>Political Globalisation | KOF Swiss Economic Institute (2019) |

To characterise urban resilience, we used the FM Global Resilience Index (FM GRI), which best reflects the level of resilience (Figure no. 3). It is a composite measure



calculated at country level (it takes values from 0 - the lowest resistance to 100 - being the highest resistance) and includes three basic resilience factors: economic, risk quality, and the supply chain. Additionally, each factor represents the result of four basic factors.

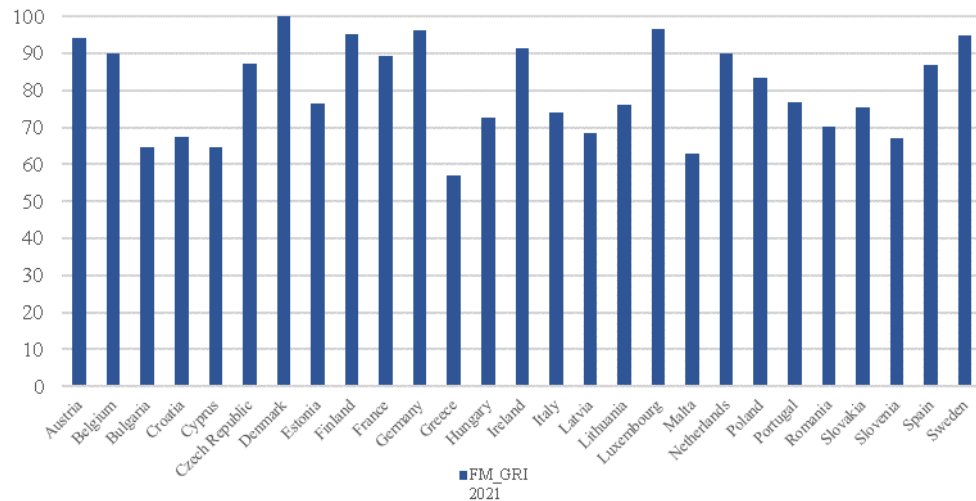


Figure no. 3. FM Global Resilience Index - Country Score (2021)

Networked Readiness Index (NRI) is a composite index measuring the propensity for countries to exploit the opportunities offered by information and communications technology (ICT). It is a composite index constructed with three levels (Figure no. 4).

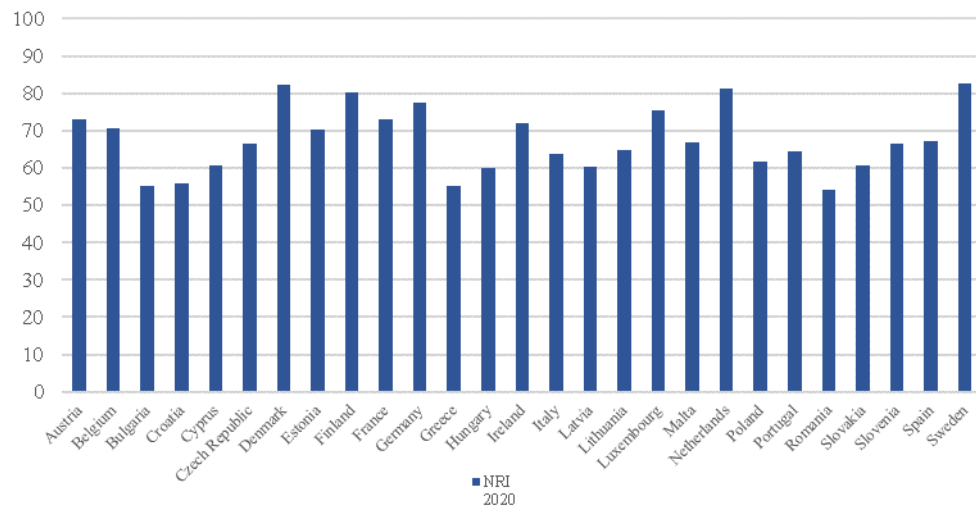


Figure no. 4. Networked Readiness Index - Country Score (2020)

The KOF Globalisation Index (KOF GI) is a composite index measuring the economic, social, and political dimensions of globalisation for almost every country in the world on a scale of 1 - least to 100 - most globalised (Figure no. 5).

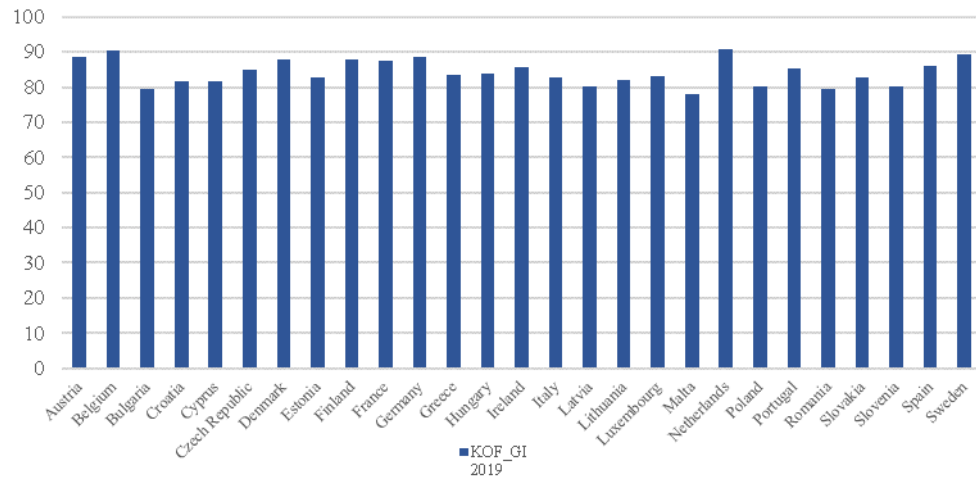


Figure no. 5. KOF Globalisation Index - Country Score (overall 2019)

Correlation analysis is used to identify the existence of a relationship between *globalisation, the development of digital networks and innovative services and resilience* (Fox, 1997; Jaba, 2002). To identify whether “*globalisation*” and “*network development*” significantly influence “*resilience*”, regression analysis was used. This technique of multivariate data analysis allows measuring the correlation between variables and identifying the mathematical function that models the dependencies between them (Jaba, 2002). The regression model equation is:

$$FM\_GRI = \beta_0 + \beta_1 \cdot NRI + \beta_2 \cdot KOF\_GI + \varepsilon \tag{1}$$

Cluster analysis was used to group the 27 countries of the European Union according to the indicators included in the analysis (Ketchen and Shook, 1996). Hierarchical Cluster Analysis involves building a hierarchical sequence of partitions for a given set of objects, resulting in a classification based on proximity measures defined for each pair of objects (Köhn and Hubert, 2015). The similarity between the countries included in a cluster was measured using the Minkowski (Generalised Euclidean distance) metric, and Ward’s method. Thus, the grouping of countries, carried out according to similar characteristics for FM\_GRI, NRI, and KOF\_GI, can lead to common cluster economies. At the same time, based on these results, as a future research direction, it is desired to identify the existence of significant correlations or differences between the clusters identified based on the variables used.

### 3. Results and discussion

Descriptive analyses of the data were conducted to examine the sample characteristics. The summary of descriptive statistics of each variable for the entire sample of countries used in this study can be seen in full in Table no. 2. From Table no. 2 it was known that the average

score for resilience in case of European countries into the sample in this study is 80.36, the lowest is 57.19 and the highest is 100 with standard deviation 12.58. The medium NRI score is 67.49, ranging from 54.16 to 82.75, with a standard deviation of 8.65. The KOF Globalisation Index ranges between 78.03 and 90.91, the medium value being 84.22 and standard value 3.68 (Table no. 2).

**Table no. 2. Summary statistics of dependent and explanatory variables**

|                       | FM_GRI | NRI     | KOF_GI |
|-----------------------|--------|---------|--------|
| <b>Mean</b>           | 80.36  | 67.4915 | 84.22  |
| <b>Std. Deviation</b> | 12.58  | 8.65    | 3.68   |
| <b>Minimum</b>        | 57.19  | 54.16   | 78.03  |
| <b>Maximum</b>        | 100.00 | 82.75   | 90.91  |

As can be seen from Figure no. 5, regarding resilience, the countries with the highest values for the FM Global Resilience Index are: Denmark, Luxembourg, Austria, Germany, and the Netherlands, and the lowest values are achieved by: Malta, Greece, Cyprus, and Bulgaria. Network Readiness Index records the highest values in the countries: Denmark, the Netherlands, Sweden, and Finland, and the lowest values in the countries: Romania, Greece, Bulgaria, and Croatia (Figure no. 4). When referring to globalisation, the highest values for the KOF Globalisation Index (Figure no. 5) were recorded by the countries: Netherlands, Belgium, Sweden and Austria, the countries with the lowest values being: Croatia, Malta, Bulgaria, and Romania.

Analysis of the normality of the distributions of the indices used, using the Shapiro-Wilk test, indicated that the FM Global Resilience Index, NRI, and KOF Globalisation Index verify the null hypothesis of normality, reflecting a normal distribution. To measure the correlation between FM Global Resilience Index, NRI, and KOF Globalisation Index, parametric and nonparametric methods were used (Table no. 3), the results of the two methods confirming each other (Corder and Foreman, 2014).

**Table no. 3. Correlation**

|               | Pearson Correlation |         |         | Spearman's rho Correlation |         |         |
|---------------|---------------------|---------|---------|----------------------------|---------|---------|
|               | FM_GRI              | NRI     | KOF_GI  | FM_GRI                     | NRI     | KOF_GI  |
| <b>FM_GRI</b> | 1                   | 0.852** | 0.777** | 1                          | 0.843** | 0.772** |
| <b>NRI</b>    | 0.852**             | 1       | 0.758** | 0.843**                    | 1       | 0.745** |
| <b>KOF_GI</b> | 0.777**             | 0.758** | 1       | 0.772**                    | 0.745** | 1       |

Note: \*\*. Correlation is significant at the 0.01 level (2-tailed).

There is a direct and strong connection between the three indicators at the level of European countries, which is easily visible in the correlograms for the analysis of the dependance between the FM\_GRI and NRI, respectively, KOF\_GI indices (Figure no. 6).

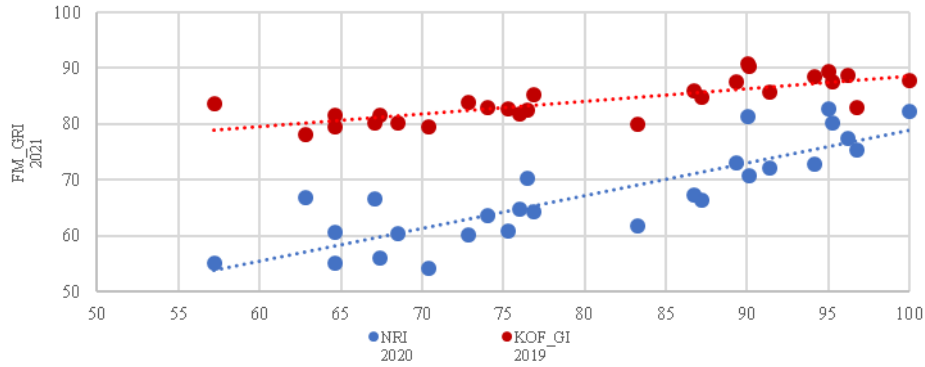


Figure no. 6. Correlogram, European Union countries

This is reinforced by the values of the Pearson and Spearman correlation coefficients (Table no. 3), which means that a country with a high score for both the Network Readiness Index and the KOF Globalisation Index will score high in terms of resilience, so a high degree of resilience, thus confirming the research hypotheses H1 and H2.

To analyse the dependency relationship between the three indices considered, a multifactorial linear regression model was used, in which the *FM Global Resilience Index* is the dependent variable, and the *KOF\_GI* and *NRI* indices represent the independent variables. The model is statistically significant (*Significance F* = 0.00000003), explaining 77% of the *FM Global Resilience Index* variation, and the coefficient of the *NRI* variable is statistically significant for a significance level of 5%. The coefficient of the variable *KOF\_GI* is statistically significant at a confidence level of 94.7%, both results confirming the research hypothesis H3 (Table no. 4). The resulting regression equation is as follows:

$$FM\_GRI = -68,897 + 0,899 \cdot NRI + 1,052 \cdot KOF\_GI + \varepsilon \tag{2}$$

Therefore, if the *NRI* score increases by one unit, the *FM Global Resilience Index* increases by an average of 0.9 units (direct correlation), and if the *KOF Globalisation Index* score increases by one unit, the *FM Global Resilience Index* increases by an average of 1.05 units (direct correlation), considering a probability of 95%, confirming hypothesis H3 (Table no. 4).

Table no. 4. Regression analysis

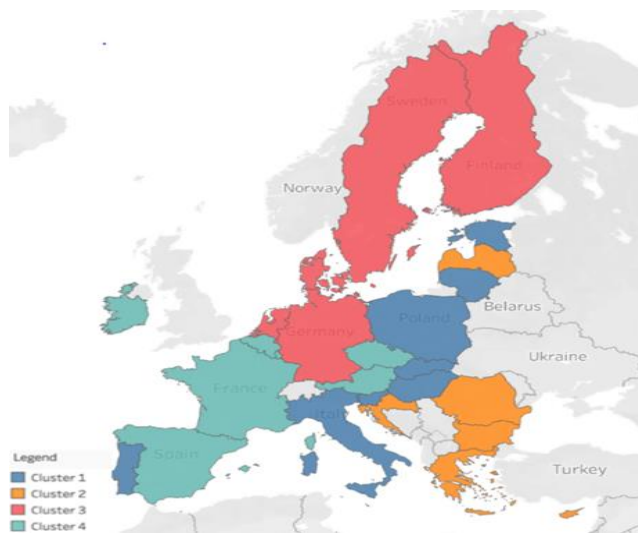
|           | Coefficients | Standard Error | t Stat | P-value | Lower 95% | Upper 95% |
|-----------|--------------|----------------|--------|---------|-----------|-----------|
| Intercept | -68.897      | 33.741         | -2.042 | 0.052   | -138.534  | 0.739     |
| NRI       | 0.899        | 0.220          | 4.077  | 0.000   | 0.443     | 1.353     |
| KOF_GI    | 1.052        | 0.517          | 2.033  | 0.053   | -0.016    | 2.12      |

Given that, at the level of EU countries, globalisation and the development of digital networks and innovative services lead to stronger resilience, a grouping of states was made (Figure no. 7) which highlights the intensity of the correlations.

The cluster analysis results indicate a strong influence of the network on resilience for countries in cluster 4. The countries with the best *FM Global Resilience Index* scores are those in clusters 4 and 3.

Clusters 1 and 2 are governed by countries with high scores for the *KOF Globalisation Index* (KOF\_GI), compared with the *Resilience Index* (FM\_GRI) and *Networked Readiness Index* (NRI). The impact of globalisation on economies differs depending on the political, economic, social, cultural, technological, and environmental aspects of each state. This fact is also confirmed by inclusion in the two clusters of some ex-communist countries, states for which the globalisation component of the economy is more pronounced.

Clusters 3 and 4 include the states with the highest values for the three indicators used in the analysis. Although the crisis generated by the COVID-19 pandemic made 2021 considered a disruptive year, the values of the resilience index for 2021 do not indicate major changes for the countries included in the analysis. Denmark stands out, which in 2021 is at the top of the ranking in terms of the resilience of the business environment in almost 130 countries, compared to 2020, when it occupied position 3. This fact can also be confirmed by the scores obtained for the *Networked Readiness Index* (NRI) and the *KOF Globalisation Index* (KOF\_GI).



• **cluster 1**

Estonia, Hungary, Italy, Latvia, Malta, Poland, Portugal, Slovenia, Slovakia;

• **cluster 2**

Bulgaria, Croatia, Cyprus, Greece, Lithuania, Romania;

• **cluster 3**

Denmark, Finland, Germany, the Netherlands, Sweden;

• **cluster 4**

Austria, Belgium, Czechia, France, Ireland, Luxembourg, Spain.

**Figure no. 7. Clustering European countries according to resilience, globalisation, and networks**

Certainly, the obtained results are interesting and consistent with the obtained results following the application of the regression model, the mode of interaction of the three indicators represents the starting point of a future research in which the analysis will be carried out regionally.

### Conclusions

The health crisis generated by the COVID-19 pandemic has highlighted the global vulnerability as well as the difficulty of the population to adapt to an uncertain and unpredictable future, showing at the same time that global resilience is low. Therefore, the

concept of resilience needs to be updated and rethought, taking into account the destabilisation caused by the COVID-19 crisis and the robust recovery approach. This fact is also emphasised in these OECD reports – Policy Responses to Coronavirus (OECD, 2020), the rethinking of priorities being also confirmed by Hierro et al. (2020), which looks at which coverage will involve very high socio-economic costs post-pandemic from the perspective of the link between the resources allocated to medical protection and economic development.

The comparative analysis of NRI, Globalisation Index and Resilience Index highlighted the strong, underdetermining link between the development of digital networks and innovative services, globalisation and resilience, a fact confirmed by the results found in the specialised literature, regarding the influence of globalisation and the modularity/structure of a network on the resilience of an economy (Wilson, 2012; Tu, Suweis and D’Odorico, 2019; Blum and Neumärker, 2021). Concurrent, Pollák et al. (2021) confirm a major relocation of digital interactions, during the pandemic, underlining the need to redefine procedures in every sector of activity. According to the analysis, at the level of European countries, there is a strong link between resilience, globalisation, and networks, resilience being explained 77% by the indices that reflect the level of development of digital networks and innovative services and globalisation. Finally, we clustered the European countries according to the three indices, highlighting the similarities and differences between countries in this regard. The results of this study are consistent with both Kharrazi et al. (2017), who showed that network structure can significantly affect resilience to global economic shocks, as well as Juhász et al. (2022) who pointed out that digital transformation influences all areas of life regardless of geographic location. Simultaneously, ensuring the resilience of a community can be supported by the diversity and globalisation of economic activities (Muñoz et al., 2020).

The results open the possibility for future research on a better measurement, through statistical indicators, of post-pandemic resilience in the context of globalisation and digitalisation. The update of the three composite indicators included in the analysis is annual; however, it is possible that some components within them are not updated regularly, which can lead to results that can distort the overall picture of the 27 economies. Practically, this limits the number of potential variables that can be used in the analysis and is one of the arguments for selecting indicators for different years. The authors aim to develop and test a composite index for resilience that captures the new approach to digital economic development - through a robust, resilient, and sustainable recovery, based on indicators that quantify the results of the implementation of the latest technologies (AI, IoT, etc.), but also some indicators that characterise the objectives of sustainable development.

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