

At the Intersection of Technological Innovations and Geopolitical and Economic Turmoil. Echoes of Insolvency Law and Practice

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Abstract

Through our research we set out to explore the transformative effects of artificial intelligence (AI) and digitalisation on insolvency law and practice, in the context of global economic uncertainties and geopolitical transformations that have altered the way businesses operate and restructure and generated a steep increase in the number of insolvencies globally. In this “triangle” of research, in which AI, the digital economy and geopolitical turmoil generate strong echoes on the business environment and implicitly on the field of insolvency, we will capture the profound changes in the global economic structure. The economy of the future will work “breathing” technological innovations, and the “ripple” of these innovations will penetrate the codification of norms of international, regional and national law, profoundly changing the nature of corporations, capital markets and the structure of the global economy. Thus, the transformative effects of artificial intelligence (AI) reconfigure new regulatory paths that allow companies to adapt to “digital mixes” such as data protection, cybersecurity, emerging technologies, ethics, etc. These are key items on the agenda of international bodies and organisations, such as the World Trade Organisation, UNCITRAL, the OECD, the World Bank or the European Commission, which have developed uniform principles to facilitate cross-border restructuring, making it imperative to integrate AI-based solutions and create a rescue culture that prioritises restructuring and economic sustainability. The future of insolvency is set to be shaped by a combination of economic factors, technological progress and evolving regulatory frameworks. Last but not least, this article highlights the need for a transdisciplinary dialogue between economics, technology and law in order to respond to the challenges generated by AI, and the results of the research may generate a wave of reflection for the legislator, for the business environment and researchers in terms of economic changes, regulatory changes and emerging trends in business. The penetration into the realm of transdisciplinarity reflects nothing but the need to adapt the norms of law to the diversity and dynamism of global developments, mutations and challenges, the acceptance and deepening of these interrelationships and mutual influences can generate a significant impact on the evolution of humanity, by re-establishing the legislative models of the states and adapting to the new socio-economic landscape.

Keywords: artificial intelligence, digital economy, care economy, new business models, insolvency, legislative reforms and hybrid restructuring models, transdisciplinary vision.

JEL Classification: K22, K33, K35

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1. Introduction

While geopolitical conflicts and recent economic crises have increased insolvency risks globally, AI-based systems such as neural networks and machine learning are increasingly being integrated into managing and streamlining insolvency proceedings. In this regard, new technologies enable predictive analysis, identifying financial risks early and providing proactive solutions for restructuring. At the same time, advanced technologies help reduce costs and increase the efficiency of insolvency procedures and virtual tour platforms allow creditors to quickly access information about debtors' assets, eliminating geographical barriers. These solutions demonstrate the potential of technology to streamline complex legal processes. The digital age of insolvency certainly requires a holistic approach, and the “embrace” of innovation outlines a successful “journey” in the procedure of restructuring, reorganization or bankruptcy of professional debtors, our research pursuing an interjurisdictional vision.

The interdependencies under the magnifying glass of our research have a profound impact on society at large, the logical thread of this study closely following the analysis of the echoes of these interferences, echoes that propagate in the acute need to reconfigure the insolvency legislation and practice in the light of technological innovations.

Thus, the “research thread” aims primarily at the contact with the new reality of the economy, namely the transition from the classical economy to the digital economy, marked by e-commerce platforms, hybrid economy systems, virtual services, digital assets, digital information consumption, followed by the role of AI in the future of businesses and key trends, technologies penetrating downright into the “consciousness” of businesses that have metamorphosed dramatically due to digitalisation, in order to finally reach the global forecast of insolvencies, due to both geopolitical frictions and economic crisis. In any case, insolvency frameworks are also the subject of discussions by European forums for future legislation, as is also evident from the strategic Agenda for the period 2024-2029 adopted at the European Council meeting on 27 June 2024,³ all the more so as the Capital Markets Union becomes a key priority for the next European Commission.

International law is in transition and we will touch on this topic from a transdisciplinary perspective on the interaction between technology and law. In order to outline a complex picture of the trends of insolvency proceedings, our analysis will

³ <https://www.consilium.europa.eu/ro/policies/strategic-agenda-2024-2029/>, accessed on 1.09.2024.

cross several international standards and legal systems, including Japan, Saudi Arabia, Greece, etc., so as to take the pulse of the reality of the progress of insolvency law and untouched idealizations, left perhaps “in the shadow of the law”. For a sound economic outlook and for outlining economic scenarios, as well as a possible “World Order of AI”, we will consider the OECD Interim Report of September 2024 - Global Debt Report but also the global insolvency report, thus extending the previous reviews.

Digital transformation and technological innovations are causing profound changes in the global economic structure, including affecting the practices and legal framework associated with insolvency. In this challenging economic landscape, we need a fresh breath for insolvency proceedings, and it is also imperative for insolvency practitioners to harness their capabilities effectively to “navigate” through complex financial scenarios.

As we look to the future, two key factors will shape insolvency: the impact of economic uncertainty on business resilience and the transformative role of technological innovations.

Geopolitical conflicts and recent economic crises have increased the number of insolvencies globally, highlighting the limits of the current legal framework. At the same time, financial crises have demonstrated the importance of international coordination in developing uniform policies for managing insolvencies.

In the midst of this “storm” of multiplying and interconnected global crises, the world is becoming more volatile and complex. Geopolitical risks were the main threat to the economic outlook for 2024, a year that anyway bore the “burden” of previous crises generated by the Covid pandemic that left behind 7 million deaths, Russia’s war of aggression, combating climate change, transposed over the re-intensification of geopolitical competition for regional or global supremacy, over the revolution of transformative technology, digitalisation, over the revolution of green technology and ecological transition. On the other hand, Iran was on the verge of making its first nuclear bomb this year, and in this perspective, this year’s “military dialogue” between Israel and Iran are more than a message for the entire region, while in Riyadh, Ankara, Baghdad, Damascus, Beirut and Cairo different structures are reworking their analyses, relative to their own geopolitical capabilities. All these large-scale wars converge with a series of essential choices in the major global powers. We are perhaps at a point that we no longer find in human history, in the midst of an “avalanche” of interconnected crises involving accelerated and very dynamic measures, with the economy, security, technology and society trying to identify a new balance in such a fragile context.

As experts in geopolitics say⁴, through the prism of multiple electoral events, the year 2024 could change both political hierarchies and options for the manifestation of power and strategic thinking in the economic sphere. In this regard, more than 40 countries held elections in 2024 and over half of the population of the planet was directly involved, with the indication that the effect of the presidential elections in the

⁴ Marius Vacarelu, geopolitics specialist, *Anul geopolitic 2024 – un an hotărâtor pentru un secol?* [Geopolitical year 2024-a decisive year for a century?], 21/11/2024 - <https://adevarul.ro/amp/blogurile-adevarul/anul-geopolitic-2024-un-an-hotarator-pentru-un-2403196.html>.

USA will be seen at any point of the globe. Thus, in a world reshaping the global geopolitical order as inherited from the end of World War II, some of the choices will prove decisive.

At the same time, 2024 was an almost decisive year for the implementation of Artificial Intelligence (AI), and the effects of this new technology will surely propagate by the end of the century, the researchers stating that “the country that will lead the competition in the sphere of AI in 2030, will rule the world until the end of the century”. The development of Artificial Intelligence (AI) becomes a fundamental problem for the years 2024-2028, as it creates a huge pressure on all political and administrative systems of countries, which inevitably begin to face the multiple transformations generated by cyber algorithms, which will create even more panic in political - administrative systems than it is now.

In this landscape of lightning-fast transformations, we wonder how we will manage the current economic crisis, especially now that AI is about to become a quintessential and effective player in global politics and the economy. We already know that since 2017, the technology war between the USA and China has shaken the global electronics landscape, this rivalry reshaping supply chains and creating major uncertainties. Moreover, the technological war between the United States and China has intensified considerably amid several measures such as the imposition of tariffs, export controls and market access restrictions, the technologies of the future, especially semiconductors and artificial intelligence, generating for China costs of almost 150 billion dollars resulting from losses of exports to the United States⁵. According to COFACE analyzes, the future of the global electronics industry could be divided into different scenarios, from “technological stagnation” to “technological fracture”, and two distinct ecosystems could emerge: one dominated by the USA and its allies, the other by China, forcing companies and countries to choose sides. Such fragmentation would increase the complexity of trade, limiting access to markets and making competition more unpredictable.

There is even talk of a deglobalization, with globalization suffering numerous shocks in the last decade. Moreover, all these rising geopolitical tensions will trigger more trade restrictions across the globe, which will inevitably lead to further economic fragmentation. World trade is going through a period of transition, with geopolitical unrest, from Ukraine to the Middle East, pushing in the direction of fragmentation and reorienting trade flows according to geopolitical alliances. However, we believe that globalization is reorganizing in order to adapt and survive and world trade is not collapsing but reorganizing. This adaptability of world trade can be seen in the evolution of trade routes. For example, in the context of European sanctions, Russia has created new trade routes, such as the northern sea route, to redirect its oil exports to China, geopolitical tensions thus changing not only the destination of the products, but also the infrastructures used to transport them. At the same time, historic routes, such as the

⁵ COFACE study, *Războaiele tehnologice: rivalitatea SUA-China pentru electronice până în 2035* [Tech wars: U.S.-China rivalry for electronics by 2035], 19/11/2024 - <https://www.coface.ro/stiri-economie-opinii-experti/razboaiele-tehnologice-rivalitatea-sua-china-pentru-electronice-pana-in-2035>.

Suez Canal, have been replaced by alternative routes that are less affected by regional conflicts.⁶

This is how political risk returns to the spotlight, with its inevitable impact on global trade and business, as the world order reshapes. Are we talking about shaping a world order of AI? Why? Because the echoes of AI go beyond the barriers of technology and extend into the fundamental structure of global economies and society. Hence this dynamic and profound connection between AI and economy in the diffusion of innovation. Technological innovation will become the cornerstone in the development of the economy. But how can AI really provide stability in these volatile times? And how can it become support for entrepreneurs and businesses?

In essence, this research invokes, on the one hand, the impact of AI on the economy, in the current geopolitical context, and, on the other hand, the effects generated by the current socio-economic context on the avalanche of insolvencies triggered worldwide, but also the potential to transform the mechanisms of restructuring and reorganization of enterprises by identifying the latest generation “algorithms” in the fight against financial difficulties. In this regard, in addition to the modeling of the economic landscape by AI, we will also “put under the magnifying glass” digital tools with a predictive role in the intelligent management of restructuring and insolvency procedures, but also possible transformative methods and technologies to simplify the activity of insolvency practitioners, such as the use of systems based on artificial neural networks, robotic automation of processes and acceleration of repetitive tasks, the creation of platforms that allow virtual tours of the assets of the insolvent debtor by creditors and beyond, all this creating opportunities for legislative reform and ensuring the success of global and local insolvency practices to help shape and strengthen a “rescue culture” in line with ethical business guidelines.

We will end this introduction by quoting Albert Einstein, who said that “*in the middle of difficulty lies opportunity*”, and this crisis that keeps rolling does nothing but “stretch” opportunities for legislative reform and re-establishment of society, economy and politics, the next period may be defining for many decades to come. We’re talking about a kind of “*mobilising science in times of crisis*”⁷, by assuming lessons so deeply shaped in our consciousness, but also by the need for an *interdisciplinary*, *transdisciplinary* dialogue, to identify regulatory “formulas” appropriate to exit the global crisis without stifling innovation, AI gravitating as a huge challenge globally.

All that remains is for us to accept and embark on this fascinating journey to the digital future, leaving us surprised by the overcoming of new frontiers of innovation in all aspects of our lives.

⁶ COFACE study, *Un sat mai puțin global? Comerțul mondial în era fragmentării geopolitice* [A less global village? World trade in the age of geopolitical fragmentation], 01/10/2024 - <https://www.coface.ro/stiri-economie-opinii-experti/un-sat-mai-putin-global-comertul-mondial-in-era-fragmentarii-geopolitice>.

⁷ OECD, “*Science, Technology and Innovation Outlook 2023*” - Mobilising science in times of crisis: Lessons learned from COVID-19, <https://www.oecd.org/sti/science-technology-innovation-outlook/>.

2. Methodology. Evoking transdisciplinarity in economy and law

Technological effervescence can in turn only generate the acute need for transdisciplinary research, since all these digital mixes and mutations have reconfigured the conceptual boundaries of disciplines and research, generating such receptivity in the legal environment around the world.

In the “world of high-class researchers” transdisciplinary analysis and the tendency to interconnect disciplines and juxtapose theories has become a way of writing, a way of creating, being and seeing and understanding the world of today and tomorrow.

Under the umbrella of these research aspirations, we tried to decipher the current interdependencies, multi-dependencies and collisions in the “tumult” of the digitalisation process, investigating the echoes of the triad represented by the fragile economic and geopolitical context, “rolled” in turn by the effects of AI, in order to finally give meaning to the echoes generated on insolvency proceedings in all this “messy” picture of our era. And what is the thread of these interdependencies? The mere fact that the development of an insolvency law that meets the best international standards has become a major problem for economic attractiveness. After all, insolvency is itself a procedure that involves multidimensional approaches and perspectives, based on economics, management, legislation, culture, sociology, and more recently the paradigm of new technologies, the political impact and the evolution of international law, the impact on international relations being analyzed in the light of digital changes. However, new technologies, everything related to AI, blockchain, cloud computing, etc. cannot be investigated from a disciplinary perspective, but certainly involve penetration into both technical and legal, economic and social aspects.

The need to integrate different approaches into the sphere of economics, or rather its intersection with other spheres in the social area, arises, for example, from what researchers call “care economy”⁸, which integrates two dimensions that conventional economy ignores. Here we are talking about a transdisciplinary perspective and the consideration of the common good, beyond the purely economic dimension, practically integrating new fields such as sociology, anthropology or political science. In this spirit, the “care economy” goes beyond classical economic theory, approaching philosophy based on solicitude, on concern and attention to the other. The transdisciplinary department⁹ advocates a profound reassessment of values and priorities to ensure the survival and flourishing of both humanity and the planet, a

⁸ Eric Carrey, „*Economics of Care and Meaningfulness for an International Transdisciplinary Chair*”, in Popa Tache, Cristina Elena, Hubert Landier, Leonardo da S.G. Martins da Costa & Mariana Thieriot Loisel (eds.), *For an International Transdisciplinary Chair. About the Dialogue Between Culture and Technoscience*, volume I, ADJURIS – International Academic Publisher, Bucharest, Paris, Calgary, 2024, pp. 83-89, <https://doi.org/10.62768/ADJURIS/2024/2/05>, <https://adjuris.ro/books/fitc/5.pdf>.

⁹ Landier, Hubert & Eric Carrey, „*A Transdisciplinary Chair in the Service of an Economy of Care and Meaning*”, in Popa Tache, Cristina Elena, Hubert Landier, Leonardo da S.G. Martins da Costa & Mariana Thieriot Loisel (eds.), *For an International Transdisciplinary Chair: From Knowledge to the Future*, volume II, ADJURIS – International Academic Publisher, Bucharest, Paris, Calgary, 2024, p. 176-183, <https://doi.org/10.62768/ADJURIS/2024/4/12>, https://www.adjuris.ro/books/fitc_v2/12.pdf.

sense in which the “care economy” must “shake” and renew the entire worldview.

In reality, interdisciplinarity and transdisciplinarity are only answers to the diversity of social changes, and the “decompartmentalization”, the “decomposition” of a discipline or even the “assembly” of a new one, are inevitable effects of globalization and interdependencies generated more recently by technological innovations, the law being after all “a living instrument”, having to adapt to the constantly changing realities. Slowly, slowly, new branches of law will be born, one of them being certainly the law of artificial intelligence, an attempt being already been made to coagulate the regulations in this area by French professors researchers of the University of Paris and the Sorbonne¹⁰, declaring it as a stand-alone law, built by virtue of its own principles and institutions of operation that touches areas such as ethics, law of persons, liability and insurance law, autonomous vehicles, justice, criminal law, intellectual property, personal data, labour law, health law, military law, administrative decision making and cyber security, blockchain, civilian drones and even international law. Also, in the context of these emerging interdependencies that cause a reassessment of how domains and disciplines influence each other, researchers¹¹ are talking about a new branch of law called international corporate law, specifically targeting the interference of digital transformations with transnational business, society and the environment. In this sense, corporate governance is no longer so far from international law, but penetrates right into the midst of legal, political and societal phenomena of visible interference. Such a path could also have, why not, the development of a law of the digital economy. Therefore, the law is forced to conceptualize links, to participate in the evolutionary actions of the economic-social system, to face different forms of crisis, all branches of law being permanently “connected” to the same circuit although they can function autonomously. The lack of a permanent connection to socio-economic evolution would cause legal norms to remain without form and meaning.

New technologies, which subtly and surely penetrate everything that means legislation, economy, business environment, education, research fields and disciplines, certainly “reveal” the way to *transdisciplinarity*, a phenomenon capable of creating the necessary bridges between science, law and morals or faith, through a complex view of reality. In fact, in 2024 we marked 30 years of existence of the Transdisciplinarity Charter, which brings us immense joy to researchers thirsty for transdisciplinary vision. The Transdisciplinarity Charter relies on the idea of opening all disciplines to what they have in common and to what lies beyond their borders, in the hope that a higher degree of analysis is reached, capable of interpreting the planetary complex dimension, so that humanity can face the contemporary danger of the material and spiritual self-destruction of our species, as affirmed by the researchers who promote and create through the filter

¹⁰ Bensamoun, Alexandra & Loiseau, G., *Droit de l'intelligence artificielle*, LGDJ Collection: Les Intégrales 2e edition, 29 November 2022 - <https://www.lgdj.fr/droit-de-l-intelligence-artificielle-9782275095424.html>.

¹¹ Popa Tache, Cristina Elena & Săraru, Catalin Silviu, *Evaluating today's multi-dependencies in digital transformation, corporate governance and public international law triad*, Cogent Social Sciences, 10(1)/2024, <https://doi.org/10.1080/23311886.2024.2370945>, <https://www.tandfonline.com/doi/full/10.1080/23311886.2024.2370945#abstract>.

of transdisciplinarity.¹²

We must also take into account the fact that at present the resonances of AI on research are revolutionary¹³, inciting researchers to develop new methods or to combine them in an innovative way to “overturn” the paradigms of the science of law and to be fully consonant with the revolutionary trend of digital transformation, abundant in quantum computing software and applications. Also, in the idea of interdisciplinarity and transdisciplinarity, researchers are talking more and more about jurimetry¹⁴, which comes from *jus*, *juris*-law, respectively *metrum*-measure, a method that involves the analysis of legal phenomena in relation to mathematics and statistical data, practically competing with AI, capable of storing huge amounts of data and instantly making statistics based on algorithms.

In conclusion, our research focuses, in addition to scientific documentation and observation of the phenomenon, on the methodology of transdisciplinarity, inspired by the spirit and writing of specialists and researchers with affinity and openness to this vision. In this respect, the research thread approached from the angle of multiple mutations of our society, starts from the global, regional and national geopolitical and economic context and the analysis of the business environment, in order to subsequently identify the priorities of legislative reform in the field of insolvency, in the context of echoes generated by the impact of AI on society in general, and the economy in particular. *How else could we encompass and capture in a single picture of the research all the key elements of our analysis, namely technological transformations, artificial intelligence, law, business and insolvency?* As noted by renowned researchers in the field of transdisciplinarity¹⁵, it is preferable that any analysis relates to all the evolutionary mechanisms of society, discovering international prerequisites and analyzes that can be useful to arrive at a result.¹⁶ Moreover, superimposed on globalization and the idea of universalism, new technologies, especially AI (artificial

¹² Popa Tache, Cristina Elena & Săraru, Catalin Silviu, *Lawfare, Between its (Un)Limits and Transdisciplinarity*, Precedente, Vol. 23/julio-diciembre 2023, 37-66. Cali – Colombia, <https://doi.org/10.18046/prec.v23.5889>.

¹³ Google recently launched a new intelligence software called *Gemini Ultra* and designed to exceed the capacity of human experts on the massive comprehension of language in multiple tasks (MCLU), Gemini being able to use information from 57 areas, disciplines such as medicine, law, physics, mathematics or ethics, which allows it to test both knowledge of the world and analyze and solve a series of problems, “penetrating” nuances and reasoning in complex topics. See Also Răzvan Mihalașcu, *Google lansează Gemini, un nou model de inteligență artificială pentru chatbotul Bard. Cum vrea să capitalizeze funcțiile avansate [Google launches Gemini, a new artificial intelligence model for the Bard chatbot. How it wants to capitalize on advanced features]*, 06/12/2023 - <https://www.euronews.ro/articole/google-lanseaza-gemini-un-nou-model-de-inteligena-artificiala-pentru-chatbotul-b>.

¹⁴ Ovidiu Predescu în Mircea Duțu, *Primul tratat internațional privind IA [First international treaty on AI]*, 02/04/2024, pp. 6-7 - <https://www.juridice.ro/essentials/7647/primul-tratat-international-privind-ia>.

¹⁵ See Cristina Elena Popa Tache, *The Possibility of a Law of All Forms of Life in the Context of Transdisciplinary Mutations in International Law*, in, Federica Cristani, Cristina Elena Popa Tache (eds.), *Tempore Mutationis in International and Comparative Law*, ADJURIS – International Academic Publisher Bucharest, Paris, Calgary 2023, p. 11, <https://adjuris.ro/books/tmic/Tempore%20Mutationis%20in%20International%20and%20Comparative%20Law.pdf>.

¹⁶ See Cristina Elena Popa Tache, *Le dynamisme du droit international public contemporain et la transdisciplinarité*, Collection: Le Droit aujourd’hui, L’Harmattan, France, 2023.

intelligence) have triggered a reshaping of the way the business environment works and a deep international interconnection, inevitably overcoming the problems of adaptation to different cultures, perceptions and ways of working, characteristics that begin to circulate in research and education at international level.¹⁷

Certainly, insolvency law can be considered a result of the interdisciplinary research and analysis approach in the context of branches related to the sphere of economics, sociology, psychology but also of the branches of law, by interfering with other domestic and international normative acts, such as labor law regulations, criminal law, civil law, civil procedural law, administrative law, public procurement, etc., which have left their mark on the evolution of the insolvency institution and have created new perspectives of analysis, new legal views, outlining, why not, a new law, a special, particular, self-contained law, that of insolvency, which has transcended the boundaries of traditional branches of law, by incorporating social, economic, administrative, management factors. AI, in turn, can only be “traversed” and deciphered through an inter - and transdisciplinary analysis, this being the way forward to give brightness to the research of the future, renowned researchers advocating the establishment of international chairs of transdisciplinarity in law,¹⁸ evoking the dialogue between culture, technoscience, economy and law and the need to design a transdisciplinary legal curriculum adapted to fuse social, technological and ethical considerations.

In considering these aspects, the law, in general, remains an action conditioned by the complex realities, such as the social, economic, political, spiritual, domestic or international, that make up the so-called “starting point”¹⁹, evoking in this sense M. Djuvara who stated that “all history, all past, all social forces, language, economy, industry, trade, agriculture, politics, moral and scientific conceptions, compete to exert a strong influence on legal evolution, just as law exerts a strong influence on their evolution”.

3. Research hypothesis - reflections on the future of the digital economy

Aware or not, humanity is going through the so-called digital (r)evolution or revolution of artificial intelligence, which asserts its supremacy through technological advances such as humanoid robots, cyberspace, cloud computing, blockchain, Internet of things, quantum communication, Big Data, ChatGPT, computer security or the so-called metaverse, which develops a new, virtual world, the human-machine interaction

¹⁷ See Cristina Elena Popa Tache & Catalin Silviu Săraru, „New Transdisciplinary Directions in International Law?”, *Lex Humana*, vol. 15, no. 4, 2023 <https://seer.ucp.br/seer/index.php/LexHumana/article/view/2705>.

¹⁸ See Popa Tache, Cristina Elena & Eduardo Seino Wiviurka, *Designing a Transdisciplinary Legal Curriculum Tailored to Fuse Social, Technological, and Ethical Considerations. Elevating the Voice of International Law*, in Popa Tache, Cristina Elena, Hubert Landier, Leonardo da S.G. Martins da Costa & Mariana Thieriot Loisel (eds.), *For an International Transdisciplinary Chair. About the Dialogue Between Culture and Technoscience*, ADJURIS – International Academic Publisher, Bucharest, Paris, Calgary, 2024, p. 90-134, <https://doi.org/10.62768/ADJURIS/2024/2/06>, <https://adjuris.ro/fitc.html>.

¹⁹ See Ramona Duminiță, *Lege și legislație în societatea românească actuală [Law and lawmaking in the current Romanian society]*, Ed. C. H. Beck, Bucharest, 2024, p.43.

becoming more and more complex and profound. We are talking about an “augmented reality” that led to the extension of the physical space, now complemented by the digital space, in which all social relations have acquired an obvious hybrid nature, which determines the interpenetration between the physical sphere and the digital sphere.

A socio-economic landscape “metamorphosed” by emerging and disruptive technologies, with the potential to radically change the way an industry or society works, is being outlined before our eyes, by creating new business opportunities and the development of a digital economy whose “universe” encompasses what we call cyberspace, cloud computing, blockchain, “Internet of things”, quantum communication or smart contracts, Big Data, ChatGPT, technology-assisted review (TAR), electronic business, electronic seals, computer security or the virtual world of *metaverse*. As emerging technology analysts say, “*is the next evolution of connectivity, where all these things begin to come together in a perfect, understudy universe, so that you live your virtual life in the same way that you live your physical life*”²⁰.

This “digital world” has become a reality that imposes regulatory legal norms and institutions, and researchers²¹ rely on the gradual drawing up of a new branch of law, respectively the *digital law*, digitalising of public relations reshaping the entire “ecosystem” of law branches to open “new windows” of analysis.²²

We could say that the European Union is a pioneer in shaping the legislative premises of digitalisation, as early as March 2021 the Commission presented its vision for the digital transformation of Europe as a mission to be achieved by 2030 in the communication called: *Digital Compass 2030: the European Way for the Digital Decade*.²³ Moreover, in January 2022, the Commission developed the *Declaration of digital rights and principles*, an agreement between the Commission, the EU Parliament and the Council being reached only in November 2022, following the “special Eurobarometer” survey and an open public consultation, in which 8 EU citizens out of 10 found it useful for the EU to define and promote a common European vision on digital rights and principles. This Declaration joins the previous package of digital

²⁰ *Ce este metaversul, cum funcționează și cum ne poate influența viața* [What is Metaverse, how it works and how it can influence our lives] - <https://www.euronews.ro/articole/ce-este-metaversul-cum-functioneaza-si-cum-ne-poate-influenta-viata>, accessed on 1.09.2024.

²¹ Victor Marcusohn, *Dreptul digital: spre o nouă paradigmă socio-juridică* [Digital Law: towards a new socio-legal paradigm], 07 April 2023, available by accessing <https://www.juridice.ro/500753/dreptul-digital-spre-o-noua-paradigma-socio-juridica.html>, accessed on 1.09.2024.

²² For example, in the USA, but also in many countries in the European Union, we already find the study discipline “internet law”, the university centers developing multiple programs of studies and applied research of digital, such as “artificial intelligence: ethics and fundamental freedoms” of the University Paris 1 Pantheon – Sorbonne, “Law and digital activities” program valid since the academic year 2024-2025 within Jean Moulin Lyon 3 University, France or the study program “In digital law and AI: Fundamentals of digital law and emerging technologies” of the Atlantic University Casablanca - See Marin Voicu, *Inteligența artificială (IA), Statul de drept și drepturile fundamentale, în programele de master din universitățile europene* [Artificial Intelligence (AI), Rule of law and fundamental rights, in Master’s programs in European universities], 16/02/2024 - <https://www.juridice.ro/essentials/7520/inteligenta-artificiala-ia-statul-de-drept-si-drepturile-fundamentale-in-programele-de-master-din-universitatile-europene>.

²³ *Digital Compass 2030: the European Way for the Digital Decade*, 09 March 2021 - <https://eufordigital.eu/ro/library/2030-digital-compass-the-european-way-for-the-digital-decade/>.

initiatives by Member States, such as *Tallinn declaration on eGovernment*²⁴, *Berlin Declaration on digital society and value-based Digital Government*²⁵ and *Lisbon Declaration on Digital Democracy with a Purpose*²⁶.

In shaping this digital sphere of regulation, we find an “avalanche” of instruments and legislative acts developed and approved in recent years at Union level in sectors specific to digital transformation, such as the Digital Services Act (DSA),²⁷ Digital Markets Act (DMA), ePrivacy, General Data Protection Regulation, Artificial Intelligence Regulation or the European Digital Identity Regulation. At the same time, the Council and the representatives of the European Parliament reached a provisional agreement on a new framework for a European Digital Identity (eID), this regulation being a fundamental step for digital identity in Europe, in particular towards the 2030 Digital Decade objectives on the digitalisation of public services²⁸, allowing citizens and businesses to hold digital wallets through which they can link their national digital identities with evidence of other personal attributes such as driver’s license, qualifications, bank account, etc. Last but not least, we must also bear in mind the Cyber Solidarity Regulation which aims to strengthen the EU’s capacities to detect, prepare for and respond to significant and large-scale cyber security threats and attacks.²⁹

Also, Romania, along with all EU Member States, has declared at the highest level its commitment to the digital transformation of the state through the “*National Action Plan on the Digital Decade for Romania 2030*”³⁰, this being a strategic document that includes the essential coordinates of the Romanian digital ecosystem and in which the national trajectories are aligned with the European values and targets. The four directions of action are digital public services, digital skills, digital infrastructure and digital transformation of enterprises, which outline Romania’s firm commitment to achieving an inclusive, innovative and competitive digital society. It becomes extremely important for any country to embrace the “digital decade” to ensure the success of this

²⁴ Accelerating the digital transformation of governments in the EU - Action Plan 2016-2020 - <https://eur-lex.europa.eu/RO/legal-content/summary/accelerating-the-digital-transformation-of-governments-in-the-eu-2016-2020-action-plan.html>.

²⁵ The Berlin Declaration takes forward the Tallinn principles, which put the user at the heart of policies, and emphasises the pioneering role of public administrations, which can drive the digital transformation of society. Romania signed the Berlin Declaration for Digital Society, <https://www.euractiv.ro/economic/romania-a-semnat-declaratia-de-la-berlin-pentru-societate-digitala-22177>.

²⁶ See the Preamble to the European Declaration on Digital Rights and Principles for the Digital Decade - <https://eur-lex.europa.eu/legal-content/RO/TXT/PDF/?uri=CELEX:52022DC0028&from=EL>.

²⁷ The Regulation applies to the following types of digital services: “mere conduit” services, “caching” services, “hosting” services, online platforms, and search engines. For development, see Marius Chelaru, *Răspunderea online după Digital Services Act [Online liability under the Digital Services Act]*, 9 February 2024 - <https://www.universuljuridic.ro/raspunderea-online-dupa-digital-services-act/>, accessed on 1.09.2024.

²⁸ <https://www.consilium.europa.eu/en/press/press-releases/2023/11/08/european-digital-identity-council-and-parliament-reach-a-provisional-agreement-on-eid/>, accessed on 1.09.2024.

²⁹ <https://digital-strategy.ec.europa.eu/ro/policies/cyber-solidarity>, accessed on 1.09.2024.

³⁰ Authority for the Digitization of Romania - National Action Plan on the Digital Decade for Romania - https://www.mcid.gov.ro/wp-content/uploads/2024/05/Plan-national-de-actiune-roadm-ap-pentru-publica-re_corectat.pdf, accessed on 1.09.2024.

transformation.

All these steps have been a “beacon” of inspiration at international level, OECD³¹ adopting The Declaration on a Trusted, Sustainable and Inclusive Digital Future launched in 2022, which sets out a vision for a digital transformation centred on the human factor and reflects the themes of the Declaration on European Digital Rights and Principles.³² The EU Declaration also “fueled” the United Nations Global Digital Compact, analyzed at the Summit of the Future and adopted by the UN General Assembly in September 2024, which aims to promote an open, free, secure and central digital future for the human being, anchored in universal human rights and favouring the achievement of sustainable development goals. On this occasion, F. Gutteriez, Secretary General of the UN also brought up the fact that “digital technologies accelerate the concentration of economic power in the hands of an increasingly narrow group of privileged and business: the combined wealth of billionaires in the technology sector, 2100 billion dollars in 2022, is superior to the average annual gross domestic product of the countries of the group of 20”, which becomes worrying. Consequently, it is necessary to urgently identify means of exploiting digital technologies for the benefit of all, with the support of national and international governance, which prevents the misuse of technologies.³³

The Framework Convention on Artificial Intelligence, Human Rights, Democracy and the Rule of Law, whose draft was finalized on 14 March 2024 by the Committee on Artificial Intelligence (CAI) of the Council of Europe, a Convention that paves the way for the establishment of a general international legal framework³⁴. This outlines the foundations of international artificial intelligence law,³⁵ and it is part of the vision of a global approach to AI.

Artificial intelligence remains the central element of the digital transformation of society, becoming a priority at global level, meaning that globalization accentuates the trends of universalization/uniformization in regulation, and digitalisation in turn

³¹ The Organisation for Economic Cooperation and Development (OECD), based in Paris, is an intergovernmental forum that aims to identify, disseminate and evaluate the implementation of optimal public policies to ensure economic growth, prosperity and sustainable development among Member States, as well as globally - <https://www.mae.ro/node/1481>, accessed on 1.09.2024.

³² The OECD has issued a statement on a “reliable, sustainable and inclusive digital future” - <https://digital-strategy.ec.europa.eu/en/news/oecd-puts-forward-declaration-trusted-sustainable-and-inclusive-digital-future>, accessed on 1.09.2024.

³³ Marin Voicu, *Pactul (digital) mondial – un viitor digital deschis, liber și sigur pentru umanitate [Global digital Compact - an open, free and secure digital future for humanity (22-23/09/2024, UN), 05/11/2024* - <https://www.juridice.ro/essentials/8442/pactul-digital-mondial-un-viitor-digital-deschis-liber-si-sigur-pen-tru-umanitate-22-23-09-2024-onu>.

³⁴ According to Marija Pejmainovi, Secretary General of the Council of Europe: “*The Framework Convention on Artificial Intelligence is a global treaty, the first of its kind, that will ensure that artificial intelligence respects human rights. It is a response to the need for an international legal standard supported by states on different continents that share the same values to harness the benefits of artificial intelligence while reducing risks. With this new treaty, we aim to ensure a responsible use of artificial intelligence that respects human rights, the rule of law and democracy*”.

³⁵ Mircea Duțu, *Primul tratat internațional privind IA, [First international treaty on AI]*, 02/04/2024 - <https://www.juridice.ro/essentials/7647/primul-tratat-international-privind-ia>, accessed on 1.09.2024.

accentuates globalization.

And because we are talking about digital rights, why can't we also talk about a digital economy or even a possible digital economy law? Why? Because we are talking about trade through information and communication technology, services assisted by AI or made with the help of intelligent programs, which today have become a social and economic normality and which certainly require a reconsideration of the legal relations that cross the digital economy. Researchers³⁶ talk about a *digital economy law* which is becoming a reality in today's trade relations. Thus, the economy also naturally makes the transition from the classic model based on human-to-human interaction and paper transactions, to a digital economy, characterized by the use of advanced technologies, online platforms, digitalisation of production or business processes, data transfer in digital format or financial transactions based on electronic banking applications, elements that facilitate interaction at a global level, blurring borders of any kind. Of course, this digital transformation requires caution in data protection, cybersecurity, cross-border transactions and intellectual property rights, through innovative legal instruments adapted to the complexity of the digital economy. An important role in shaping framework principles and guidelines in the new landscape of the digital economy and international digital investment is played by the World Trade Organization, OECD,³⁷ IFRS, UNCITRAL and other international bodies. Moreover, global initiatives such as the UN Global Compact insist on the need to adhere to ethical principles, social responsibility, environmental protection, prevention of corruption and promotion of transparency in business. In this landscape, we consider that the standards of public international law "climb" in a natural way we would say, on a pedestal of regulations and guidelines in matters of digitalisation and economy, aspects that merge and intertwine with the need for global social welfare.

In addition to the classical economy, which is based on digital technologies, researchers³⁸ are talking about the digital economy which creates added value even without the use of labour, with the European Union encouraging and allocating funds for the digitalisation of economic processes, hence the digitalisation of the economy.

The reality is that the widespread use of e-commerce platforms, along with other "fruits" of technological innovations, outline new questions for the legislator but also the need for answers for entrepreneurs, a clear definition of such commercial "tools" being hidden behind still abstract notions like AI. Let's not forget about smart

³⁶ Manole Decebal Bogdan, „The Law of the Digital Economy a Reality for Legal Relations in the Future - New International Investment Protection”, *International Investment Law Journal*, Volume 3, Issue 2, July 2023, p. 146, <https://investmentlaw.adjuris.ro/anul3nr2.html>, accessed on 1.09.2024.

³⁷ G20/OECD Principles of Corporate Governance 2023, 11 September 2023 - https://www.oecd.org/en/publications/g20-oecd-principles-of-corporate-governance-2023_ed750b30-en.html, accessed on 1.09.2024.

³⁸ Manole Decebal Bogdan, *op.cit.*, p. 146.

contracts³⁹ or blockchain technology⁴⁰, which ticks off the EU's efforts to create a digital economy through the ability to use data efficiently. These technological innovations, such as blockchain technology, present many challenges, including the need to adapt existing regulations to the accelerating pace of innovation in the field. There are questions related to the clear definition of the legal status of digital assets, such as cryptocurrencies and tokens, questions related to the issue of ensuring security and data protection within blockchain networks, given their decentralized and distributed characteristics. However, they represent significant impulses in shaping the economy of the future, namely the digital economy.

Shedding light on these transformations, the researchers captured, for example, a series of interdependencies between digital transformation, corporate governance and public international law,⁴¹ interdependencies that highlight the need to develop new rules or adapt existing ones in order to address new digital realities and create a more uniform and responsible business environment at global level on the basis of international standards, with the natural consequence of reconfiguring the “maps” of international law. On the other hand, this uniformity also comes from the need to attract global investors, to access international markets, through a uniformity of responsibility and transparency in business, but also through a “discipline” of the market. To this end, the World Bank and the International Monetary Fund (IMF) have launched a joint initiative called ROSC, comprising a set of twelve internationally recognised standards and base codes relevant to economic stability and private and financial sector development.⁴²

The EU's efforts to manage the ever-expanding era of digitalisation and to participate in the strengthening of the digital economy result from the impressive array of regulations, each year since 2023, with the European Commission publishing the

³⁹ Smart contracts, or computerised protocols, are digital tools that facilitate the verification, management and execution of contracts without the need for intermediaries, having the ability to significantly modify many aspects of private law transactions and are designed on the basis of commercial agreements, operating on blockchain networks and processing every transaction in a contract - European Law Institute, ELI Principles on Blockchain Technology, Smart Contracts and Consumer Protection, 2022, pp. 10 *apud* Iulia-Alexandra Didu, Sebastian-Andrei Cofas, *Calea către convergență: reconfigurarea legislației europene în lumina inovațiilor tehnologice. Utilizarea tehnologiei blockchain în sectorul bancar. Analiză asupra Smart Contracts și proceselor AML și KYC*, [The way to convergence: reconfiguring European legislation in the light of technological innovations. The use of blockchain technology in the banking sector. Analysis on Smart Contracts and AML and KYC processes], 13 June 2024 - <https://www.juridice.ro/739827/calea-catre-convergenta-reconfigurarea-legislatiei-europene-in-lumina-inovatilor-tehnologice-utilizarea-tehnologiei-blockchain-in-sectorul-bancar-analiza-asupra-smart-contracts-si-proceselor-aml-s.html>, accessed on 1.09.2024.

⁴⁰ Blockchain is a distributed, decentralized and secure data storage technology. It consists of a series of interconnected blocks, each containing a set of transactions. These blocks are linked together using cryptography techniques, which ensures the immutability and integrity of the stored data. See Iulia-Alexandra Didu, Sebastian-Andrei Cofas, *op.cit.*

⁴¹ See Popa Tache, Cristina Elena & Săraru, Catalin Silviu, *op. cit. (Evaluating today's...)*.

⁴² Gielen, Frederic; Hegarty, John; Hirata Baros, Ana Cristina, *Report on the observance of standards and codes (ROSC): accounting and auditing (English)*. Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/137971468315281018/Report-on-the-observance-of-standards-and-code-s-ROSC-accounting-and-auditing>, accessed on 1.09.2024.

state of the art of the digital decade. The report analyses the progress made by the EU in its digital transformation, measured in 4 key areas: digital infrastructure, digital skills, digitalisation of public services and digitalisation of businesses.⁴³ The 2024 Report also explores current challenges, including the geopolitical paradigm, the complex economic context influenced by new technologies such as generative AI and their impact on competitiveness, highlighting the need to keep people and companies involved in an increasingly hybrid context. Unfortunately, the progress made so far, both at national and EU level, has been inadequate, with considerable fragmentation along national lines.

To close this section on an optimistic note, we will “cling” to the idea that the digital decade represents a significant opportunity in shaping our future so that, by harnessing digital technologies and stimulating innovation, we improve the quality of life and contribute to the creation of a sustainable and inclusive society.

4. World order of IA. New business models

Artificial intelligence it has gradually emerged as a core of global discussion, being defined by the organization for Economic Cooperation and Development (OECD) as representing “that system that works thanks to a computer capable of influencing the environment, by producing results (predictions, recommendations or decisions) meant to meet a certain set of objectives. It uses computer-generated and/or human-input data and inputs for the purpose of (i) perceiving real/virtual environments; (ii) producing an abstract representation of these perceptions in the form of models; and (iii) using model inferences to formulate different outcome options”.⁴⁴

Also, according to the Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislation⁴⁵, “AI is a family of rapidly evolving technologies that can generate a wide range of economic and societal benefits across the spectrum of industries and social activities”.

Browsing through the works “thirsty” for the discovery of the secrets of AI, we encounter the idea of shaping a new type of bipolar world order, currently China and the United States of America being those who “incubate the artificial intelligence giants that will dominate global markets and generate profit from consumers around the world...so the world order of AI will combine the economy of the type – winner-take-all - with an unprecedented concentration of wealth in the hands of a few companies in China and the USA”.⁴⁶ According to the same author, the first two waves of AI,

⁴³ European Commission, 2024 state digital decade package - <https://digital-strategy.ec.europa.eu/en/policies/2024-state-digital-decade-package>, accessed on 1.09.2024.

⁴⁴ https://www.cdep.ro/afaceri_europene/afeur/2022/st_3516.pdf, accessed on 1.09.2024.

⁴⁵ Document 52021PC0206, Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislation, COM/2021/206 final - [https://eur-lex.europa.eu/legal-content/RO/TXT/?uri=CELEX %3A52021PC0206](https://eur-lex.europa.eu/legal-content/RO/TXT/?uri=CELEX%3A52021PC0206), accessed on 1.09.2024.

⁴⁶ See Kai-Fu Lee, *Superputerile Inteligenței Artificiale, China, Silicon Valley și noua ordine mondială* [AI

repective AI on the internet and AI in business are already all around us, reshaping the digital and financial world in different, almost imperceptible ways. Autonomous AI will come last, but it will have the greatest impact on our lives, in which it will revolutionize the very way we experience and interact with the world, blurring the boundaries between the digital world and the physical world.

As for the AI wave in business, we know that as early as 2004 there were companies, such as Palantir and IBM Watson that provided Big Data business consulting for companies and states, but a large-scale adoption of deep learning only occurred in 2013, through new competitors such as Element AI from Canada and 4th Paradigm from China. If we talk about the USA, we will find, however, that they have built a strong advantage through the early use of AI, unlike China. Thus, US corporations have always collected large volumes of data and stored it in well-structured forms, making it much easier for companies like Palantir to apply business AI to generate significant new results and to identify, for example, solutions to minimize costs and maximize profits.⁴⁷ The third wave is perceptual AI, in which algorithms have become able to group pixels in an image or video into meaningful groups, recognizing objects just like a human brain. That is why it is said that machines “are no longer deaf and blind”. Last but not least, the fourth wave is represented by autonomous AI, which represents the integration and culmination of the previous three waves, the researchers describing the period quite gloomy – “after the machines will be able to see and hear the world around them, they will be able to safely move through it and work productively”.

The triumphant impact of these waves produced by AI worries some economists, futurists and researchers, who speak of a real AI crisis that will stretch across our global economy, generate widespread technological unemployment, economic divisions that will tear apart the “fabric” of society and call into question the essence of human dignity and purpose.⁴⁸

Coming out of this gloomy scenario, we will nevertheless acquiesce to the more optimistic opinion of researchers who count on the positive impact of artificial intelligence on economic growth and well-being of society,⁴⁹ AI is one of the most important factors that will drive future economic growth. Indeed, unlike traditional machines, which have replaced heavy or dangerous activities, AI-related inputs can change the type of human labour in a comprehensive way. Thus, compared to previous industrial revolutions, AI does not simply involve the invention of a new machine or technology, but resembles the accumulation of human capital, since it can learn and accumulate knowledge by itself.

superpowers: China, Silicon Valley and the new world order], translated from English by George Chiriță, Corinth, Bucharest, 2021, pp. 41 et seq.

⁴⁷ Ibid., pp. 162-163.

⁴⁸ Ibid., pp. 208-209.

⁴⁹ Chia-Hui Lu, „The impact of artificial intelligence on economic growth and welfare”, *Journal of Macroeconomics*, Volume 69, September 2021 - <https://www.sciencedirect.com/science/article/abs/pii/S0164070421000458>.

In a recent study⁵⁰ the global economy could benefit \$ 13 trillion from artificial intelligence by 2030, but 375 million jobs could be destroyed, making work one of the many areas of life where AI will bring a real revolution. Thus, AI can streamline processes, save costs and improve decision-making, while reducing construction and production accidents and generating new employment opportunities in data science, machine learning and AI education. India is one of the leaders of the G20 in funding for computer vision, with the National Artificial Intelligence Plan for India aiming to boost infrastructure development, retraining of the workforce, research, collaboration and international cooperation in the field of AI safety and security, while encouraging data access, openness and collaboration among educational institutions.

Reviewing recent research in the field, we will find that economists are generally enthusiastic about AI's prospects for economic growth, counting on innovations that ultimately lead to increased productivity. However, we wonder why despite the thundering technological advances of AI, we are facing a global economic slippage.

In the literature⁵¹ we find it to be the best collection of current research on the link between AI and economics "The Economics of Artificial Intelligence" (EAI), a textbook edited by Ajay Agarwal, Joshua Gans and Avi Goldfarb, covering a variety of topics, including the effects of AI on competition policy, innovation, international trade and productivity growth. So far, AI has been too small a component of the overall economy to have a significant impact on labour markets. In fact, over the past decade job growth has generally exceeded expectations, while GDP growth has fallen below expectations, the opposite of what would have been expected if automation had replaced significant amounts of labour. Given the potential for AI to increase productivity, on the one hand, and the potential for large workforce disruptions, on the other, it will be important to ensure that there are appropriate policies in place.

As for the digital economy market, it differs greatly from the "old economy" market. Some of these differences are differences in degree, with the internet reducing many costs for small businesses and increasing their ability to expand quickly and cheaply, collect information about potential consumers, and create new products and ideas. These are differences that do not transform the structure of the market, instead, reduce the cost of doing business. Certain business models, however, can be dramatically different due to digitalisation. One type of business model that has flourished with digitalisation is the "platform" model, which relies heavily on direct and indirect network effects to grow. Thus, direct network effects, whereby the value for a customer increase through the number of other customers using the same platform are extremely important for social media platforms like Facebook, Twitter and LinkedIn, since the main benefit for any customer is access to other customers. Change costs for

⁵⁰ Govindharaj Yoganandham, „The impact of Artificial Intelligence (AI) on the economy, politics, ecosystem, innovation, and promoting inclusive workforce frameworks - a theoretical analysis", *Science, Technology and Development Journal*, Volume XIII, Issue 1, January 2024, p. 66-82, DOI: 24.18001.STD.2024.V13I1.24.38706.

⁵¹ Jason Furman, Robert Seamans, „AI and the Economy", *Innovation Policy and the Economy*, Volume 19, issue 1, 2019, p. 161-191, <https://doi.org/10.1086/699936>.

customers are particularly high in these markets and no one wants to be the first and only user of a social media platform, as these direct network effects can act as a barrier to entry⁵².

The same researchers also invoke the possibility of business opacity due to digitalisation. Why? Because pricing and collusion could be detected in communications between companies, but the task of detecting unwanted price behaviour becomes more difficult with the use of increasingly complex algorithms for pricing. This type of algorithmic price setting can lead to unwanted price behaviour, sometimes even unintentional. Thus, using advanced machine learning algorithms to set prices and tailor product functionality can further increase opacity.

The reality is that economic research is at the beginning of the way in assessing such issues that are gradually crystallizing in the world economy, with the first research findings suggesting that artificial intelligence and robotics do indeed stimulate productivity growth and that the effects on the workforce are mixed. Let's not forget, however, the world robotics conference, held in China in August 2023, where 600 robots, including some humanoids, were presented, ready to take on the heavy and boring tasks in companies. Elon Musk, CEO of Tesla, uses thousands of humanoid robots in his factories. At the same time, for the well-known American company Amazon, it is robots that hire staff, evaluate and fire millions of people, operations uncontrolled or supervised by human minds. Moreover, algorithms also evaluate employee performance.⁵³ Although the International Monetary Fund says artificial intelligence will affect nearly 40% of existing jobs globally, and even climb to 60% in advanced economies, AI is creating new employment opportunities in areas such as AI development and maintenance, data analytics and project management. A balanced approach must be considered to manage the transition of the workforce to new technological realities and ensure social inclusion.

In a world marked by such profound transformations, we could say that the role of AI becomes a critical one. In this context, how can we identify the benefits for businesses? Of course, the AI revolution is at the forefront, setting the tone for some key trends that will shape the future for the business world as a whole, especially for medium, large companies or startups, AI entering the business consciousness quite recently. Thus, studies show that AI will bring significant opportunities, especially in terms of improving productivity, due to the fact that intelligent robots will soon take over much of the routine tasks, freeing up the workforce to focus on essential issues. The trend is supported by a Stanford University study, AI Index Report 2024⁵⁴, according to which AI will increase worker productivity and output quality, with the potential to close the skills gap between lower-skilled versus high-skilled workers.

⁵² Ibid.

⁵³ See Alexandru Țiclea, *Inteligența artificială, roboții și lumea muncii*, [Artificial intelligence, robots and the world of work], Universul Juridic, 01/02/2024 - <https://www.universuljuridic.ro/inteligena-artificiala-robotii-si-lumea-muncii/>, accessed on 1.09.2024.

⁵⁴ „The role of artificial intelligence in the future of business - 5 key trends”, 31 July 2024 - <https://www.bursa.ro/rolul-inteligentei-artificiale-in-viitorul-businessurilor-5-tendinte-cheie-85281354>, accessed on 1.09.2024.

Moreover, there is talk that AI models will be integrated everywhere in the future.

We also consider the applications of AI language models that are increasingly diversified, making this a key trend to watch for companies, which can use these models in several areas to increase efficiency and innovation. At the same time, AI models can analyze large data sets, identify patterns and information that people would reach in a significantly longer time. They can generate texts, images and videos, which makes content creation much more accelerated, from marketing materials to technical documentation. Undoubtedly, technological advances in the economy have transformed the way business is conducted, the way business decisions are made and even the way jobs are defined, with one of the most obvious effects of AI on the economy being increased business efficiency. Companies have the ability to deploy AI-powered automation systems that can perform repetitive tasks and manual labour, allowing employees to focus on more complex and creative activities, leading to more efficient use of resources and increased profitability and competitiveness in the market.

The change in business model will also be marked by companies being able to completely re-evaluate their business processes and strategies through the implementation of AI. For example, in the financial services industry, trading robots and virtual assistants can completely transform the way transactions are made and how the investment portfolio is managed, or the retail sector can benefit from advanced consumer behaviour analysis systems to personalize the buying experience and predict their preferences.⁵⁵ Surely AI will become an imperative tool needed to stay competitive.

The impact of artificial intelligence on the economy is a complex one, fundamentally redefining how the global economy works, from increasing business efficiency and driving innovation, to transforming jobs, but especially the challenges of ethics and regulation. It is the duty of each of us to contribute to taking on these challenges with responsibility, by developing solutions that maximize the benefits of AI technology, to ensure social inclusion and protect individual rights, thus building the foundations of a sustainable and equitable economic future.

5. Global “forecast” of insolvencies. The ebb and flow of insolvency “waves”

The radiography of the international economic and geopolitical context is a rather worrying one in this landscape of reconfiguration of the world order, in which economic uncertainty and resistance in business “floats”.

According to the Global insolvency report⁵⁶ there is a sharp rise in global business insolvency for 2024 (+11%), with further growth of +2% in 2025, before stabilising at high levels in 2026. Even larger companies were not immune from

⁵⁵ „Impactul inteligenței artificiale asupra economiei” [„The impact of artificial intelligence on the economy”], 01/03/2024 - <https://jurnaluldeafaceri.ro/impactul-inteligentei-artificiale-asupra-economiei/>, accessed on 1.09.2024.

⁵⁶ https://www.allianz-trade.com/en_global/news-insights/news/insolvency-report-2024.html, accessed on 1.09.2024.

insolvency, with a 23% increase in major insolvencies in Western Europe.

Why do so many businesses go bankrupt? Of course, many companies were previously protected from financial measures implemented by governments during the COVID-19 pandemic and the energy crisis after the Russian invasion of Ukraine. On the other hand, there is a lack of adaptation of companies to the profound structural and societal changes brought about by the pandemic, including digitalisation. The rise of e-commerce and the changing nature of consumer shopping have caused many retailers to go bankrupt. Moreover, geopolitical uncertainty seems to have “studded” the entire globe. Inflation causes high interest rates, exacerbating borrowing costs and reducing consumer spending. It is likely that start-ups are often at greater risk of financial difficulties.

Ongoing conflicts in Russia-Ukraine and the Middle East, tensions in the South China Sea and Taiwan and continuing uncertainties in European democracies will continue to contribute to the escalation of insolvencies, both globally and regionally. For example, bankruptcies in the USA are expected to increase by +12% in 2025, reaching a total of 27,800 companies before falling by -4% in 2026. At the same time, in Germany, business insolvencies will increase by +4% to 23,000 companies, before also decreasing by -4% in 2026, and in France and the UK the number of insolvencies will decrease slightly by -6% for both countries in 2025, to 63,000 and 27,480 companies filing insolvency declarations, respectively. And in Italy, liquidations will continue to increase by +4% in 2025, representing 9,700 cases and +3% in 2026, while in China, insolvency will begin to increase from low levels by +5% to 6,850 companies and +6% in 2025 and 2026, respectively.⁵⁷

Globally, the rebalancing of the economy will not be easy, and the lack of economic momentum will put pressure on profitability. Finally, European insolvency frameworks will also be the subject of discussion in the upcoming European legislation (2024-2029), as the Capital Markets Union becomes a key priority for the next European Commission.

Worrying is also the economic landscape in Romania, the latest Coface study showing that in S1 2024 3,684 new insolvency procedures were opened, up by 8.32% compared to the same period last year, with a deterioration in payment behaviour among companies as the number of payment incidents was 29% higher compared to the same period of 2023. The data also indicates a 73% increase in the number of insolvencies at the level of companies with turnover of over 5 million EUR, compared to the same range in 2023.⁵⁸

The above data mirrors or “reveals” the challenges faced by companies in an increasingly volatile economic environment, in an international geopolitical context marked by global economic uncertainty and unforeseen events, such as the COVID-19

⁵⁷ Allianz Trade, *Global Insolvency Outlook: Regional outlooks - The ebb and flow of the insolvency wave*, 15/10/2024 - https://www.allianz.com/en/economic_research/insights/publications/specials_fmo/241015-global-insolvency-outlook.html, accessed on 1.09.2024.

⁵⁸ „Insolvencies in Romania increased by 8.32% in S1 2024 compared to S1 2023”, 23/09/2024 - <https://www.coface.ro/stiri-economie-opinii-experti/insolventele-in-romania-au-crescut-cu-8-32-in-s1-2024-fata-de-s1-2023>, accessed on 1.09.2024.

pandemic and energy crises, the prolongation of the war in Ukraine but also the start of the conflict in Israel, companies from around the world experiencing difficulties in managing financial flows and maintaining competitiveness.

The main causes of this negative dynamics are high inflation and operating costs such as rising prices for utilities, fuels and raw materials, falling sales, limited access to finance, especially for SMEs that have experienced difficulties in accessing bank loans with the approach of precautionary lending by banks and tightening credit conditions, the energy crisis, companies in sectors such as industrial production, agriculture and transport being severely affected, some of them unable to cope with new operating costs, the crisis of supply chains due to pandemic restrictions and international crises, which have created delays in the delivery of raw materials and products, preventing companies from fulfilling their contracts and maintaining healthy financial flows, and last but not least, reducing the number of start-ups and increasing the number of deregistered companies⁵⁹.

This ebb and flow of waves of insolvencies “strikes us” with an alarm signal, which should be taken into account not only by the business environment, but also by the authorities and the legislator, since this imbalance can lead to disastrous effects of the economy and society in the long term, by increasing unemployment and reducing investors’ confidence in the business environment.

At the end of this “tunnel” of risks, however, “buffer” solutions can be strengthened, such as government support for companies through direct financial support in the form of subsidies or grants, the implementation of credit guarantee schemes to facilitate access to finance, the promotion and stimulation of investments in strategic sectors such as agriculture, technology and green energy, which can generate jobs and economic stability in the long term, a diversification of the market, but especially the reform of insolvency procedures and the emergence of hybrid restructuring solutions with innovative approaches, so as to prevent the aggravation of these overlapping crises, by crystallizing sustainable and digital. The gradual integration of digital tools will redefine how companies approach insolvency and restructuring and help improve recovery outcomes in the face of financial challenges, with business practices becoming more robust, adaptable and accountable. So companies will have to focus on key strategies such as proactive risk management and early intervention, alongside insolvency experts.

The future of insolvency is prepared to be shaped by a series of economic factors, technological progress and innovations, but also reformed regulatory frameworks, proactively adapting to these trends representing the only road to survival of companies.

6. Between idealizations and realities of advances in insolvency law

Summing up the year 2024, we find that it was indeed the “year of

⁵⁹ Alina Moldovan, *Insolvency on the rise* - <https://www.firon-barnir.com/in-the-press/alina-moldovan-insolvency-on-the-rise/>, accessed on 1.09.2024.

insolvencies”, “a wave” that has been carrying us for some time through the “world of restructuring, reorganization and bankruptcy regulations” in the desire to identify solutions to the economic crisis. But we remain optimistic because on the global socio-economic “stage” we enjoy an intensification of the process of legislative harmonization in insolvency matters and a permanent reconfiguration of this insolvency “puzzle” that transcends the classic approach to bankruptcy and becomes a real instrument of socio-economic evolution, with a deep orientation towards building rescue mechanisms for debtors in difficulty. In all this “whirlwind of uncertainties” AI can in turn become one of the triggers of the efficiency of insolvency procedures, especially in the direction of granting the second chance to honest debtors, by shaping the confidence in such procedures, much more transparent, much more predictable due to the new technologies that can be thus implemented and integrated these practices.

Insolvency remains a “centrifuged” area accelerated by a good period of significant regulatory revisions, with EU and UNCITRAL actions being the “engine” of these reforms to harmonise insolvency regulations.

In addition, we are currently talking about a real mobilizing force of the European Commission regarding the legislative harmonization at EU level in the area of the development of a *culture of rescuing borrowers* in difficulty through instruments such as the arrangement with creditors or other preventive restructuring instruments. *Directive (EU) 2019/1023 on restructuring and insolvency*⁶⁰ is the first major step in the process of harmonizing the various European insolvency laws, going beyond the stage of achieving standards that are limited to cooperation between courts and coordination of insolvency proceedings of a cross-border nature, such as, for example, Regulation (EC) no. 848/2015 on insolvency proceedings, which introduced uniform rules on international jurisdiction and the law applicable to cross-border insolvency cases, in particular rules on the Member State in which insolvency proceedings are to be opened and the applicable law.

Why the focus on legislative harmonization? Because recent studies have found evidence that insolvency regimes have a significant effect on the scale of cross-border investment and, consequently, on the economy. According to the results of the IMF (2019), the better the insolvency regime in the destination countries, the higher the cross-border investments. Consequently, according to the specialists’ scenario, improving the quality of regulation will impact the cross-border capital holdings, the ultimate goal being to balance the key “ingredients” in order to eliminate the obstacles to the integration of the capital market, which consist in the convergence of insolvency procedures at European level, and, why not, internationally, the quality of regulation and transparency.

The sources of European insolvency law are varied. Traditionally, experts have divided them into two categories, as they relate to actual laws or non-binding legal instruments. The first category consists of regulatory instruments that are mandatory (*hard law*), while the second consists of recommendations, advice, codes of good practice and anything that refers, broadly speaking, to the idea of unauthorized or

⁶⁰ Published in the *Official Journal of the European Union* as of 26 June 2019.

permissive regulation (*soft law*).

The reality is that in this area the European Union has sent a growing number of recommendations that are, according to Art. 288 (5) of the Treaty on the functioning of the European Union (TFEU), non-binding. At the same time, the CJEU decides that national judges must take into account EU recommendations. Indeed, experts point out that the EU recommendations can have a pre-law function “if they have been adopted for the preparation of traditional regulations, that they can have a legal function” if they have been adopted as an intentional alternative to traditional regulation, and finally that they can have a post-law function “if they aim to improve statutory interpretation”⁶¹. This declaration also applies to other non-binding acts of the Union. Recommendation no. 135/2014 of the European Commission represents a case in point, a recommendation that triggered a legislative (r)evolution in the direction of outlining a distinct perspective of approach and reconfiguration of insolvency law oriented towards prevention, giving a second chance and restructuring. Moreover, the Recommendation certainly performed a prior function, in that it prepared the elaboration of *Regulation 848/2015 on insolvency proceedings* and it will probably also perform a post-legal function, in that it will help judges and other legal operators interpret the prescriptions of the rules of the regulation.⁶²

In any case, it is obvious that the new international legal instruments have deliberately departed from the archaic approach to insolvency, incorporating more and more the desire to save the debtor in financial difficulty. The concept of “second chances”, care for anticipation and prevention of difficulties are explicitly highlighted. The collective interest of creditors is placed behind the priority issue of saving the business and the consequences of this change in perspective are considerable.

What is the next step towards harmonising insolvency law at European level? Creating new hard-law tools. In this regard, on 07 December 2022, the European Commission proposed a new *Directive on the harmonisation of certain aspects of insolvency law*⁶³, a legislative instrument aimed at advancing the implementation of the Capital Markets Union, considered a key project for further financial and economic integration in the European Union⁶⁴. This proposal for an EU Directive represents an extension of UNCITRAL’s work, with certain key objectives that are found in this proposal already being “assembled” in UNCITRAL’s international soft-law

⁶¹ Linda Senden, *Soft Law in European Community*, Oxford and Portland Oregon: Hart Publishing, 2004, *apud* Reinhard Bork, Renato Mangano, *European Cross-Border Insolvency Law*, Oxford, 2016, p. 5.

⁶² See Ionel Didea, Diana Maria Ilie, *O nouă etapă în dezvoltarea și consolidarea unei „culturi a salvării și a prevenției în business” în spiritul unui instrument juridic european de tipul hard law. Transpunerea la nivel național a Directivei (UE) 2019/1023* [A new stage in the development and consolidation of a “culture of rescue and prevention in business” in the spirit of a European legal instrument such as hard law. National transposition of Directive (EU) 2019/1023], in *Revista Universul Juridic, Societăți, Afaceri și Insolvență*, 8 April 2021 - <https://www.universuljuridic.ro/autor/diana-maria-ilie/>, accessed on 1.09.2024.

⁶³ <https://data.consilium.europa.eu/doc/document/ST-15896-2022-INIT/ro/pdf>, accessed on 1.09.2024.

⁶⁴ See Ionel Didea, Diana Maria Ilie, „Increasing Legal Certainty for Cross - Border Investments by Making National Insolvency Procedures More Efficient and Effective”, *International Investment Law Journal*, Vol. 4, issue 1, February 2024, p. 30 - <https://www.investmentlaw.adjuris.ro/anul4nr1.html>.

instruments.

At the same time, we must point out that the previous EU Directive no. 1023/2019 has revealed somewhat of the intentions of the immediate future perspective of the EU institutions, stating in its content that the support of SMEs is needed in order to ensure low-cost restructuring. In this regard, the European Commission has since recommended the need to develop model restructuring plans tailored to the needs and specificities of SMEs, to be made available electronically, and to insist on early warning tools to be effectively implemented to warn debtors of the urgency to act, taking into account the limited resources of SMEs to hire experts. Directive 1023/2019 “gravitated” mainly around elements corresponding to the prevention area, in the area of insolvency prevention procedures, the preventive restructuring procedure being available only to debtors for whom there is only a probability of insolvency. Another feature of the Directive is that insolvent entrepreneurs must have access to a full extinguishment of their debts within a period of not more than three years after the opening of insolvency proceedings. As a result, national insolvency laws remained divergent with regard to debtor insolvency proceedings. However, the express regulation of these pre-insolvency procedures was a first step towards harmonisation,⁶⁵ for a considerable number of national legal orders there are major shortcomings on the side of granting second chances to debtors and consolidation of a culture of rescue mirrored by the insolvency procedure itself.

Proposal initiative of the *Directive on the harmonisation of certain aspects of insolvency law*⁶⁶ is not to reopen the analysis on the elements already covered by Directive 1023/2019, but to take another step towards legislative harmonization at European level, this “pedaling” on the establishment of minimum standards in the area of the insolvency procedure itself, namely the judicial reorganization procedure and bankruptcy, more precisely beyond the pre-insolvency phase, when the debtor is at the stage of initiating an insolvency procedure. The expected echo of this regulation, however, remains the completion of the Capital Markets Union.

In addition to the general objectives, such as more efficient allocation of capital in the economy, which means supporting the granting of credit to companies and improving the adjustment capacity of the EU economy as essential elements for balanced economic growth and a highly competitive social economy, as well as ensuring the free movement of capital in the single market by boosting investor confidence and increasing cross-border investment, the Directive also contains specific objectives. They are aimed at: *effective and similar* in the Member States for better

⁶⁵ For development regarding the harmonization of the insolvency field through the implementation of Directive 1023/2019 see Ionel Didea, Diana Maria Ilie, *A new stage in the development and consolidation of a “culture of rescue and prevention in business” in the spirit of a European legal instrument such as hard law. National transposition of Directive (EU) 2019/1023*, 08 April 2021, Universul Juridic portal - <https://www.universuljuridic.ro/o-noua-etapa-in-dezvoltarea-si-consolidarea-unei-culturi-a-salvarii-si-a-preventiei-in-business-in-spiritul-unui-instrument-juridic-european-de-tipul-hard-law-transpunerea-la-nivel/>, accessed on 1.09.2024.

⁶⁶ *Proposal for a Directive of the European Parliament and of the Council harmonising certain aspects of insolvency law* - <https://op.europa.eu/ro/publication-detail/-/publication/8adadc6c-76e9-11ed-9887-01aa75ed71a1/language-ro>, accessed on 1.09.2024.

tracking and recovery of assets belonging to the insolvency estate, in particular in the areas of transaction avoidance, the duties and liability of directors approaching insolvency and procedures *pre-pack*, development of similar rules for insolvency proceedings in respect of *simplification of SMEs procedures*, as well as *ensuring transparency* insolvency rules, but also the development of similar rules for *efficient and fair distribution of recovered values in the Member States*, in particular in the area of creditor committees and claims hierarchy, with a view to reducing legal uncertainty and information costs related to insolvency processes for cross-border creditors.

Starting from the premise that SMEs are the backbone of the EU economy, the need to implement simplified procedures remains a very tense, sensitive dimension of the insolvency matter, amplified by the entrepreneur's emotional attachment to the company, which, unlike the hired, emotionally detached manager, can generate a behavioural bias towards keeping the non-viable enterprise alive as much as possible, which reduces the recovery value. The new Directive proposes a simplified special procedure for SMEs at EU level, eliminating the idea of derogations from existing general rules on insolvency proceedings. According to the harmonisation Directive, this specific procedure should follow a flexible, modular approach in which the implicit winding-up process takes place with little formality and without the involvement of lawyers or insolvency practitioners. Additional elements, such as involving insolvency practitioners, could optionally be included at the request of the debtor or creditors, while keeping costs as low as possible. In order to make this procedure attractive to SMEs, the procedure would be automatically coupled with a discharge of debt, stating that the opening and carrying out of simplified winding-up proceedings cannot be refused on the grounds that the debtor has no assets, or their assets are not sufficient to cover the costs of simplified winding-up.⁶⁷

The need for flexible and efficient rescue and restructuring laws for SMEs has indeed become a strong focus point on the agenda of international bodies such as OECD, INSOL International, UNCITRAL and the International Association of Insolvency Regulators, highlighting the fact that the formal insolvency procedures that prevail are designed primarily for larger companies. In this regard, the foundations were laid for the *Draft law on a simplified insolvency regime for micro enterprises*⁶⁸, Working Group V of UNCITRAL providing after long efforts a model agreed by states and specialists for a simplified insolvency regime for microenterprises. The first full draft of the simplified insolvency regime was considered at the 56th session in Vienna in 2019, discussed and revised several times during the sessions that followed in 2020, with the last updated at the 59th session of the Working Group on 13-17 December 2021 in Vienna. This draft law is largely based on similar concepts and provisions included in the legislative guide *UNCITRAL on insolvency law*⁶⁹, which was designed to provide “a comprehensive statement of key objectives and principles that should be

⁶⁷ Ionel Didea, Diana Maria Ilie, *op. cit. (Increasing Legal Certainty...)*, p. 30, accessed on 1.09.2024.

⁶⁸ *Draft legislative guide on insolvency law for micro and small enterprises*, <https://documents-dds-ny.un.org/doc/UNDOC/LTD/V21/074/07/PDF/V2107407.pdf?OpenElement>.

⁶⁹ The UNCITRAL legislative guide on insolvency law can be found by accessing - https://uncitral.un.org/en/texts/insolvency/legislativeguides/insolvency_law, accessed on 1.09.2024.

reflected in the insolvency laws of a state”.

The key objectives of the simplified insolvency law through the UNCITRAL Guide filter aim at a fast, simple, flexible and low-cost insolvency procedure and easily accessible by SMEs. The regime also aims to promote the opportunity for a “fresh start” and a discharge of debtor obligations by agreeing and implementing a debt restructuring plan with creditors.

We are talking about numerous instruments for safeguarding insolvent debtors, preventive insolvency procedures, simplified procedures for SMEs, financial support measures, harmonization for transparent cross-border insolvency, a real effervescence and colour in this area of company rescue. *Is all this palpable? Have they materialized in the real world of business, or have they remained in the aspirational angle of the legislator and the Union and international bodies?*

For example, in Japan we find guidelines for changing SME business. Thus, in March 2022, the Ministry of Economy, Trade and Industry, in collaboration with the Agency for Financial Services and the Ministry of Finance, formulated *SME Relief Package* to develop comprehensive support measures, including the formulation of new guidelines for SME business recovery based on out-of-court insolvency proceedings. These procedures based on the SME recovery guidelines are procedures designed to facilitate the rehabilitation of debtors facing difficult business conditions by granting grace periods for debt repayment and their reductions and exemptions, inter alia, on the basis of agreements between SMEs and creditors. Taking into account the availability of this procedure, SMEs shall appoint an expert who will apply such SME recovery guidelines, on ways or measures to resolve substantial excess debt within five years, the business revitalisation plan, management responsibilities and the policy of winding down collateral obligations when secured by management. The business revitalization plan is confirmed when all target lenders agree to the plan and a third-party support expert confirms this in writing. Third-party experts and large creditors regularly carry out monitoring during the three fiscal years from the date of adoption of the plan. The plan must be economically rational for the target creditors: for example, it must present the prospect of obtaining a better recovery than the liquidation value to be distributed in bankruptcy proceedings.

Turnaround ADR is another popular out-of-court procedure in Japan, based on rules, in which third-party experts coordinate communications between creditors (e.g. financial institutions) and debtors. The Japanese Association of Turnaround Professionals (JATP) is responsible for conducting these procedures, with no limit on the size or industry of debtor companies that can apply ADR. The system can be used by SMEs and larger companies and does not involve any judicial supervision, no restrictions, the unanimous consent of the relevant creditors being required. If any creditor does not agree to the plan, it is assumed that special conciliation will be used or a transition to insolvency proceedings will take place in court. In April 2020, the Tokyo District Court launched a program to expedite a special conciliation process within Court wards dealing with civil rehabilitation cases and corporate reorganizations when only a particular creditor or certain creditors oppose a plan outlined in a previous out-of-court proceeding.

The Japanese economy is also in a precarious situation, aggravated by the uncertainties arising from the factors that we have also developed. Despite the recent general increase in insolvencies, the number of insolvency cases in court in 2023 has returned to the pre-pandemic levels seen in the late 2010s, but not to the levels after the financial crisis of 2007-2008, which is due to these out-of-court agreements and procedures, which have become a preferred choice in the transformation or restructuring of businesses. Such procedures are more flexible than court proceedings and are less harmful to borrowers' businesses because the process does not have to be made public and involves less stigma. There are several frameworks for rule-based out-of-court arrangements in Japan, including Guidelines for Out-of-Court Workouts, Guidelines for Business Turnarounds of SMEs, turnaround alternative dispute resolution (ADR), and SME relief package.⁷⁰

Even in Saudi Arabia we are talking about key developments and trends in insolvency law, which has interesting points to note. Thus, the Bankruptcy law and its implementing regulations are part of the rapid and significant transformation of the legal landscape in Saudi Arabia thanks to the 2030 Vision reforms, which seek to strike a balance between protecting the rights of debtors and creditors while encouraging economic growth.⁷¹ The law regulates a protective settlement procedure, which seeks to facilitate the reaching of an agreement between the debtor and their creditors for the extinguishment of their debts, in which the debtor retains the right to manage their activities. The debtor may apply for a moratorium provided that the debtor's application is accompanied by a report signed by a trustee stating that, in his opinion, the proposal will likely be approved by the majority of creditors and can be implemented. The Commercial Court may grant a suspension for a period not exceeding 90 days and may extend this period by 30 days at the request of the debtor. In all circumstances, the duration of a moratorium should not exceed 180 days. Also, in the financial restructuring procedure, which is carried out under the supervision of a trustee, which seeks to facilitate the reaching of an agreement between the debtor and their creditors for the financial restructuring of the debtor's activity, the payment of creditors' claims is compulsorily suspended. This prohibits creditors from taking any legal action against the debtor or its assets, or from otherwise taking any action with respect to the performance of any security. The Commercial Court may grant a suspension for a period not exceeding 180 days and, at its own discretion or at the request of a debtor or trustee, extend the moratorium for a further period not exceeding 180 days.

Greece also managed to significantly reform the insolvency legislation, the new Insolvency Law, Law 4738/2020 with subsequent amendments (Insolvency Code) being amended consecutively by Laws 4818/2021, 4821/2021, 5024/2023 and

⁷⁰ Hajime Ueno, Masaru Shibahara, Kotaro Fujii, *Trends and developments in restructuring and insolvency in post-pandemic Japan*, 15 august 2024 - <https://globalrestructuringreview.com/review/asia-pacific-restructuring-review/2025/article/trends-and-developments-in-restructuring-and-insolvency-in-post-pandemic-japan>, accessed on 1.09.2024.

⁷¹ Amar Meher, *Saudi Arabia: Key developments of the Bankruptcy Law and latest trends*, 11.04.2024 - <https://globalrestructuringreview.com/review/europe-middle-east-and-africa-restructuring-review/2024/article/saudi-arabia-key-developments-of-the-bankruptcy-law-and-latest-trends>, accessed on 1.09.2024.

5072/2023. The objective of this new legislation was to fundamentally reform the framework for addressing the financial incapacity of debtors by introducing a new out-of-court insolvency mechanism (OCW) as well as pre-insolvency proceedings in court. The significant novelties of the new OCW scheme are as follows: it is an out-of-court process running exclusively on an electronic platform; only amounts due exclusively to banks and lending agents, the State (and third-parties who are paid through the State) and social insurance funds can be subject to the new OCW; the new OCW does not have an expiration date, the appointment of a coordinator is optional; the terms of the restructuring agreement can be determined by an automated tool (algorithm) specified by a ministerial decision.

Among the main benefits of the new OCW for borrowers are long-term settlements of up to 35 years, the out-of-court settlement of loans guaranteed by the Greek state or the suspension of all enforcement measures, the absence of court fees and, in addition, the granting of a five-year monthly state subsidy for the loan rate to vulnerable borrowers under specific terms and conditions.⁷²

There are so many “notes and colors” in which legislations have managed to adapt to what we call the “new picture of insolvency”, a positive and expansive one. We must admit that the toolkit available to companies to restructure their financial obligations has expanded exponentially over the past five years, and globally, there has been an increase in legislation to make it easier to rescue companies as companies in operation, in particular by opening up to “packages” of out-of-court agreements, as hybrid restructuring procedures, much more flexible and non-restrictive. And France, the United Kingdom and the United States would be three of the most active jurisdictions in complex and cross-border restructuring at present. Moreover, there is more and more talk about the LME technology on the US market, which is developing at breakneck speed and is expected to penetrate Europe as well. According to experts, LME technology is an effective tool for companies in obtaining additional liquidity, allowing existing lenders to exchange their existing instruments for new instruments that have longer maturities, with improved legal terms and economic conditions (often for both the company and negotiating creditors). Moreover, it becomes extremely important and transparent for creditors to have the ability to track their money in a range of securities, both receivables and equity.⁷³

If we turn our attention to Romania, we will find that although we enjoy a modern legislation and harmonized with the European norms, statistically speaking, reorganization procedures represent an insignificant percentage of the total insolvency

⁷² Alexandros Kontogeorgiou and Georgia Papathanasiou, Kontogeorgiou Bakopanou, *Greece: Significant reform to insolvency law*, 11.04.2024 - <https://globalrestructuringreview.com/review/europe-middle-east-and-africa-restructuring-review/2024/article/greece-significant-reform-insolvency-law>, accessed on 1.09.2024.

⁷³ For development see Helena Potts, Jessica Ling, Caroline Texier, Emily Kuznick and Leonie Koch Paul Hastings LLP, *A comparative review of restructuring processes in the United Kingdom, France and the United States*, 06.08.2024 - <https://globalrestructuringreview.com/review/europe-middle-east-and-africa-restructuring-review/2024/article/comparative-review-of-restructuring-processes-in-the-united-kingdom-france-and-the-united-states>, accessed on 1.09.2024.

procedures opened, considering that the overwhelming majority of them are actually bankruptcy procedures. More so insolvency prevention procedures. Thus, depending on the degree of difficulty it crosses, the Romanian legislator provides companies in difficulty with several restructuring procedures, namely, the Restructuring agreement – an insolvency prevention procedure, implemented in the Romanian legislation during 2022, as a result of the transposition process of Directive 2019/1023 on restructuring; Arrangement with creditors – an insolvency prevention procedure modernized and updated also in 2022 as a result of the transposition process of Directive 2019/1023 on preventive restructuring frameworks, on discharge of debt and disqualifications, and on measures to increase the efficiency of procedures concerning restructuring, insolvency and discharge of debt – as a procedure for restructuring the business within the framework of insolvency proceedings.

We must recognise that the foundation for creating a culture in the field of restructuring stems from a set of factors, including access to information, education of practitioners and judges on the economic and management aspects involved in restructuring proceedings, in particular training and education in the field of international insolvency and restructuring law, acceptance and involvement of the banking system and financiers in ensuring access to information on a large scale, support for companies in identifying the financial difficulties they face as early as possible (early warning), but also better communication between financiers and companies, based on known and accepted principles and rules.

Thus, while in a survey conducted in 2023 through which answers were collected from banking professionals from the most important banking institutions, including those from the Central, Eastern and South-Eastern Europe region, on restructuring trends, it was revealed that almost 80% of restructuring situations in the second half of 2022 were settled amicably, out of court, in Romania consensual procedures involving the restructuring of a debtor's debts in relation to all or a significant part of its creditors they are very rarely used in practice, Romanians preferring to adopt individual negotiations, between a creditor and a debtor. For example, during this year, about 70 applications were registered for the opening of the arrangement with creditors procedure, a procedure to prevent insolvency, and of these, about 10% were rejected. From the observations of the doctrine, most of the proceedings, the opening of which was rejected earlier this year, are based on a restrictive analysis of the state of difficulty made by the courts, in the sense that if the respective companies registered debts exceeding Lei 50,000, older than 60 days, it was considered that those companies are not in difficulty, but in insolvency⁷⁴.

Thus, we insist on the need to educate all the parties involved in order to take shape in a real way what is intended to be the “culture of rescue” and second chances, promoted so intensively at the Union and international level, otherwise, such mechanisms of insolvency prevention remain mere norms of law checked in a code, the

⁷⁴ See Alina Popa, „Starea de dificultate în procedurile de restructurare – aspecte juridice” [„State of difficulty in restructuring proceedings-legal aspects”], *Revista de Insolvență PHOENIX*, No. 89/2024, p. 30-33, https://www.unpir.ro/documents/phoenix/pdf/revista_phoenix_nr_89.pdf.

Insolvency Code.

7. The transformative role of technology in insolvency practices

“Unlocking” this new “universe” open to reflection and practical applications of the most innovative, we will try to explore closely the impact of AI and transformative technologies on the insolvency field, thus realizing the profiles of the future of national and cross-border insolvency and the potential of AI in the reshaping and success of global, national and restructuring insolvency practices, aspects we could say too little promoted and addressed so far at the level of the national doctrine and vision of insolvency practitioners.

Under the impact of the (r)evolution of such algorithms, both at national level and in most European states, the upgrade of the Insolvency Law towards digitalisation was achieved, on the one hand, through the transposition at national level of Directive (EU) 2019/1023 on preventive restructuring frameworks, on discharge of debt and disqualifications, and on measures to increase the efficiency of procedures concerning restructuring, insolvency and discharge of debt, as well as under the impact of COVID-19, a true catalyst for the reform of the insolvency field. In this respect, the foundations have been laid for communication by electronic means, as well as for organizing online meetings of creditors or auctions on the recovery of debtors’ assets, measures that only facilitate the conduct of pre-insolvency and insolvency proceedings. The EU restructuring Directive can further stimulate and accelerate the use of AI-based systems in the area of insolvency law. As the Commission notes in its proposal, “the digitalisation of all insolvency proceedings will help to reduce the duration of proceedings and increase their efficiency, which would translate into lower restructuring costs and higher recovery rates for creditors”.

The role of technology in insolvency is multifaceted and complex, the transformative technology accelerating the processing time of insolvency cases, facilitating international cooperation, but also a much more transparent assessment of the financial situation of a company through advanced data analysis tools, providing real-time insights. At the same time, the technology has also greatly improved the possibility of identifying and tracking the assets of the insolvent debtor spread across different jurisdictions, so as to ensure a fair distribution among creditors.

There are three trends that will influence and revolutionize cross-border insolvency: digital assets and cryptocurrencies, technological tools such as AI and Blockchain, which will help analyze large volumes of data, identify hidden assets of debtors in financial difficulty or fraudulent transactions and, last but not least, cyber security, a concern that will result from the other “facet” of AI, which besides facilities and creating technological dependence, can also generate risks regarding data security. AI is certainly on the “stage” of the global re-establishment of society and economy.

Under the “dome” of these considerations and trends, we will try to outline the answer to some questions: *Can AI prevent financial, economic crises? How much has “embraced” this “insolvency world” of the benefits of AI to date, and what is the plus value for the future of insolvency in an era of digitalisation and globalization? Can AI*

become an “ally” of the debtor for the successful implementation of a judicial reorganization plan or for making a correct decision, in the sense of reorganization or liquidation of their business, anticipating economic changes and potential profit results? Can AI increase the effectiveness of early warning tools on the difficulties a company may face? Is AI able to provide tailored specialist assistance to a debtor in financial difficulty, so that it adopts the optimal solutions for the recovery of the business in a timely manner? Can AI become a real support in the work of insolvency practitioners? Can AI provide the necessary support in the (r)evolution and success of insolvency practices, with an impact on the effervescence of restructuring and reorganization cases?⁷⁵ If all the answers are in the affirmative, there remains only the global challenge in building trust in generative AI, but also in identifying the balance between performance, evolution, digitalisation, security and ethics.

In essence, the chance of survival of companies will depend on the speed with which they react to warning signals, to the options offered by legislation and more recently by AI systems, using the opportunities of permanent connection to information and evolving rapidly, vibrating in unison with technology, this being the path to performance and economic stability.

Gradually, AI will replace traditional statistical techniques in all jurisdictions as tools for failure prediction and financial decision making, the future being the use of algorithms that involve the use of historical datasets about companies that have failed or managed to maintain their business, so machine learning will be able to provide predictions for making smart decisions. Insolvency prediction and the ability to anticipate bankruptcy are highly sensitive stakes due to the “wave effect” and the unique characteristics of this field, through the potential for destabilization “in dominoes” of an entire economic and social sector.

“Unveiling” entire research pages of recent years, we find with joy that there is a great interest in this area, having carried out numerous studies and experiments to identify models of prediction of insolvency of a company, under certain conditions, industries, countries and various businesses. We are talking on the one hand about systems and models of insolvency prediction such as those based on logistic regression (LR), on support vector machines - SVM⁷⁶, decision trees - DTs⁷⁷, finally catching

⁷⁵ See Ionel Didea, Diana Maria Ilie, „(R)evolution of insolvency law under the impact of Artificial Intelligence (AI). Transformative technologies - challenges and perspectives”, *Legal and Administrative Studies*, Supplement 2024, p. 508-547. https://www.upit.ro/_document/306048/jlas_supplement_2024.pdf

⁷⁶ The method constitutes a supervised learning algorithm that classifies the samples into two groups – bankruptcy and non-bankruptcy, with the maximum possible gap between these categories based on the training samples. The total accuracy obtained was 96.1% for the one-year interval and 95% for the two-year interval - see Klietnik, Tomas, Marek Nagy, and Katarina Valaskova. 2023. "Global Value Chains and Industry 4.0 in the Context of Lean Workplaces for Enhancing Company Performance and Its Comprehension via the Digital Readiness and Expertise of Workforce in the V4 Nations" *Mathematics* 11, no. 3: 601. <https://doi.org/10.3390/math11030601>.

⁷⁷ This approach is not based on coefficients or calculations, but only on the rules of division. The main challenge is the risk of overadaptation, its strengths include results that are easy to interpret, model flexibility, insensitivity to missing data, and no requirement for a normal distribution (Ptak-Chmielewska, Aneta. 2019. "Predicting Micro-Enterprise Failures Using Data Mining Techniques" *Journal of Risk and*

contour and AI techniques based on artificial neural networks (ANN⁷⁸). Such mechanisms will be “rolled” in the future by the new AI systems, which will have to identify complex models, handling a huge number of data, due to the very wide spectrum of factors that can influence the activity of a company, the exact forecast of its evolution and path being almost impossible to achieve.

There are also researchers⁷⁹ who proposed hybrid models that combine ANNs (artificial neural networks) and a self-organizing map (SOM), model that allows bankruptcy warning one year before, the self-organizing map also providing a visual representation of data from 2-3 years before the onset of insolvency. At the same time, in 2019 a model was introduced for companies in the EU that compares *fuzzy sets*, ANN and DT methods, which allows some prediction of a decline in business efficiency up to 10 years prior to insolvency⁸⁰.

In a recent study⁸¹ conducted at a University in Slovakia, insolvency prediction models were outlined for the Slovak chemical industry, based both on classical methods and on the perspective of new AI technologies, using a series of financial and economic indicators frequently used and considered essential for prediction, analyzed on 1221 companies operating in the chemical industry. The study concluded that all the methods used led to a good prediction, stating that AI will create the possibility of providing faster, safer and covering results over a larger time horizon, since in current methods a noticeable decrease in prediction accuracy was identified as the prediction time horizon expanded. Careful predictive analysis to identify opportunities to reduce costs through supply chain optimization and the possibility of renegotiating contracts can lead to a successful pre-emptive restructuring of the debtor.

The reality is that avoiding insolvency can be reduced to the speed of reaction,

Financial Management 12, no. 1: 30. <https://doi.org/10.3390/jrfm12010030>).

⁷⁸ A neural network is a type of mathematical model that is inspired by the structure and functioning of the human brain. *Neural networks* are used to achieve various types of machine learning, such as supervised learning, unsupervised learning. Artificial neural networks characterize assemblies of simple processing elements, strongly interconnected and operating in parallel, which aim to interact with the environment in a way similar to biological brains and which exhibit the ability to learn. They are composed of artificial neurons, are part of artificial intelligence and have, conceptually, their origin as artificial neurons, in biology. Such implementations of neural networks related to the business sector are found in: financial forecasts, market research, data validations based on classifications and patterns, risk management or marketing forecasts - https://ro.wikipedia.org/wiki/Re%C8%9Bea_neural%C4%83, accessed on 1.09.2024. ANN-based models are often referred to as “black boxes” because of their inability to explain the rationale behind classifying a sample viewed as insolvent or not, a critical aspect of such classification. However, these models achieve high accuracy and have gained increased use with technological advances. The basis of these models is the neuron that converts inputs into outputs through activation functions. For development see (Félix J. López Iturriaga, Iván Pastor Sanz, „Bankruptcy visualization and prediction using neural networks: A study of U.S. commercial banks”, *Expert Systems with Applications*, Volume 42, Issue 6, 15 April 2015, p. 2857-2869, <https://doi.org/10.1016/j.eswa.2014.11.025>).

⁷⁹ Félix J. López Iturriaga, Iván Pastor Sanz, *op. cit.*, p. 2860 et seq.

⁸⁰ Korol, Tomasz. 2019. "Dynamic Bankruptcy Prediction Models for European Enterprises" *Journal of Risk and Financial Management* 12, no. 4: 185. <https://doi.org/10.3390/jrfm12040185>.

⁸¹ Letkovský, Stanislav, Sylvia Jenčová, and Petra Vašaničová. 2024. "Is Artificial Intelligence Really More Accurate in Predicting Bankruptcy?" *International Journal of Financial Studies* 12, no. 1: 8. <https://doi.org/10.3390/ijfs12010008>.

and technology can help accelerate the action of the “actors” in this “thorny” process, by quickly connecting to market trends by developing algorithms for trading, risk management and quality control, prospects for action and recovery, “juggling” with AI algorithms capable of timely handling an impressive number of data.

Let’s not forget about the advent of digital technologies such as *blockchain* or *smart contracts*, which have certainly simplified the tasks of the administrators, improving and accelerating the decision-making process. Thus, Blockchain technology⁸² provides a transparent and secure record, which can influence and revolutionize, for example, the asset tracking procedure or influence the vote of creditors. Blockchain has huge potential to transform long-term business models and certainly strategies for managing and responding to financial difficulties and insolvency, constantly generating new foundations for global economic and social systems. As for smart contracts, they are defined by the literature as “a computer code that creates an agreement that executes and applies itself, being automatic and enforceable”. The traditional legal contract is thus transformed into types of smart contracts, such as the one located in the Blockchain network, which gain legal force through data and its rules, and can be generated in the future even by AI through the interpretation and application of the principles of common law.⁸³

Such technologies certainly represent a major opportunity for insolvent debtors, managers in general and SMEs in particular, as they help to lower the costs of contracting, consulting and negotiating, increase the speed at which contractual relations can be executed, eliminate the risk of a particular clause being annulled or misinterpreted by the court, ensure certainty, transparency of clauses and reduce potential disputes related to the interpretation of the contract, thereby facilitating day-to-day trade.⁸⁴

Algorithms play a central role in insolvency proceedings, in the sense that companies can analyze historical financial data, perform predictive analytics, analyze customer behaviour and market trends, so as to make informed decisions before deciding on the next step, namely whether or not to assume a recovery plan, judicial reorganization or directly bankruptcy. At the same time, in the context of insolvency, AI contributes to the use of machine learning algorithms (MLAs) and other forms of AI

⁸² A blockchain is a decentralized, distributed and public “book of accounts” consisting of a list of chained “blocks”. The blockchain is used to record transactions and the records cannot be changed retroactively without altering subsequent blocks. The first blockchain was conceptualized in 2008 by an anonymous person who identified himself as Satoshi Nakamoto. In 2009 it was implemented in the cryptocurrency bitcoin, serving as a public and decentralized registry for all transactions. Blockchain is a technology for storing and transmitting information, which is based on the principle of distribution and security and which records transactions and events on a permanent basis. At the same time, it can secure cryptocurrency storage, transactions between cryptocurrencies and its relationships that support the purpose of each cryptographic project. - <https://ro.wikipedia.org/wiki/Blockchain>.

⁸³ Vos, Geoffrey, *The Launch of the Legal Statement on the Status of Cryptoassets and Smart Contracts*, 2019 - https://www.judiciary.uk/wp-content/uploads/2019/11/LegalStatementLaunch.GV_2.pdf.

⁸⁴ Marcusohn, Victor, *Contractele inteligente, o nouă etapă în cadrul dreptului contractelor?* [Smart contracts, a new stage in contract law?], 2022 - <https://www.juridice.ro/496182/contractele-inteligente-o-noua-etapa-in-cadrul-dreptului-contractelor.html>, accessed on 1.09.2024.

to analyze data, identify patterns and make predictions, with MLAs using historical data to identify factors likely to influence insolvency risk, such as financial performance, market trends and economic conditions, which can help insolvency practitioners make more informed decisions on how to handle cases and develop recovery strategies. The examples are countless. Thus, when a professional goes through a reorganization procedure, he can use an automated system to track creditors' claims, monitor court hearings and ensure that the deadlines for filing documents are met. Or, for example, when a professional goes bankrupt, blockchain technology can guarantee transparent verification of property transfers, with the adoption of technological advances no longer an option. AI can help insolvency practitioners find cases, statutes and regulations more quickly, by MLA identifying key concepts and extracting relevant information from legal documents.

AI can also evaluate assets accurately and efficiently, by MLA analyzing market trends, historical sales data and other factors, automate the process of checking creditors' claims, using MLA to review claims and identify potential errors or inconsistencies, which reduces the risk of errors and saves time, detect potential fraud in a liquidation, by MLA identifying suspicious patterns and behaviour such as unusual transactions or changes of ownership and flag them for investigation, identify and recover assets that have been hidden or transferred to avoid recovery in a liquidation, identify and recover a liquidation, MLA analyzing financial data and identifying patterns of suspicious activity, allowing liquidators to recover more assets. At the same time, AI can automate the process of distributing payments to creditors. MLA analyzes creditors' claims and determines the appropriate distribution of funds, reducing the risk of errors and improving efficiency, can optimize investment portfolios, by MLA analyzing market trends, historical data and other factors to determine the best investment strategies, can develop trading algorithms that analyze market trends and execute trades automatically, which improves the accuracy and efficiency of trading while reducing the risk of human error.⁸⁵

If we are talking about quality control, AI can ensure the quality of evaluations by analyzing the data, identifying potential errors or inconsistencies and flagging them for review. Important is awareness, access to AI and the desire to act, to identify real solutions.⁸⁶

Let's not forget also the impact of AI in the restructuring or reorganization strategies of a company, among which the need for "digital maturity assessment", respectively the technological infrastructure, data management practices and the digital culture of the organization. Only agile professionals can quickly reorient themselves when they fall into financial difficulty, and making informed decisions based on relevant data, automation (*due diligence*) and process optimization becomes crucial. The way forward remains, of course, to "absorb" technology wherever possible, this is

⁸⁵ „The Impact of AI on the Insolvency Industry”, <https://www.cornwalls.com.au/the-impact-of-ai-on-the-insolvency-industry/>, accessed on 1.09.2024.

⁸⁶ For development see Ionel Didea, Diana Maria Ilie, „Artificial Intelligence (AI) - "ally" in the success of insolvency and restructuring practices”, in *Legal and Administrative Studies* 1/2024, pp. 92-108 - https://www.upit.ro/_document/304683/jlas_1_2024.pdf.

also the only one in our opinion.

According to a study by insolvency experts of the *Insol International*⁸⁷ a real, tangible transformation due to AI could most likely occur only among large companies, but also large companies of insolvency professionals, it is important to identify at the level of each jurisdiction ways of government support, through technology and innovation funds allocated especially to SMEs, but also through programs to educate insolvency practitioners.

In terms of AI support in the work of insolvency practitioners, the use of machine learning algorithms can contribute to the rapid identification of similar cases, international regulations or useful examples in the motivation and management of the insolvency case. At the same time, AI can prepare a memorandum of information and optimize the workflow, ultimately reducing delays and costs, which is actually the expected goal for the success of a judicial restructuring or reorganization⁸⁸. And Technology Assisted Revue - *TAR* is a mechanism that deserves to be defined here, in the sense of support for insolvency professionals at the level of reviewing and coding documents, registers or records, being able to digitize large amounts of data. *TAR* is already part of the landscape of electronic document communication approaches, thus saving valuable time and costs, and according to studies conducted, 35% of insolvency professionals already enjoy *TAR* technology.⁸⁹ The doctrine stated not long ago that “the profession of insolvency practitioner will be digital or will not be at all”⁹⁰, and this statement must trigger a careful consideration in the consciousness of insolvency practitioners, who are forced to assimilate AI into their “life” and accept it in order to climb the “wave” of progress of the digital economy. In any case, AI can also be used to automate routine tasks and improve efficiency, freeing up time for insolvency professionals to focus on more complex and strategic activities.

Communication with stakeholders is crucial in insolvency proceedings and digital platforms can facilitate such interactions in real time, allowing close collaboration between the debtor and other stakeholders. Collaboration tools based on *cloud* for example, they can facilitate collaboration between creditors, the debtor, insolvency professionals, potential funders and courts on reorganisation plans, terms and votes in the case, asset tracking and recovery, in particular in cross-border

⁸⁷ Jane Colston, *INSOL International: the Role of Artificial Intelligence (AI) and Technology in Global banking and Restructuring Practices*, 2019 - <https://brownrudnick.com/article/insol-international-the-role-of-artificial-intelligence-ai-and-technology-in-global-bankruptcy-and-restructuring-practices/>, accessed on 1.09.2024.

⁸⁸ *How artificial intelligence can assist insolvency practitioners in India*, November 2023 - <https://www.aarnalaw.com/how-artificial-intelligence-can-assist-insolvency-practitioners/>, accessed on 1.09.2024.

⁸⁹ Kamalnath, Akshaya, „The Future of Corporate Insolvency Law – A Review of Technology and AI Powered Changes” (July 20, 2023). *Forthcoming in the International Insolvency Review*, Available at SSRN: <https://ssrn.com/abstract=4532286>.

⁹⁰ Vasile Godinca-Herlea, *Profesia de practician în insolvență va fi digitală sau nu va fi deloc* [The profession of insolvency practitioner will be digital or will not be at all], 14 October 2024 - <https://www.juridice.ro/755603/profesia-de-practician-in-insolventa-va-fi-digitala-sau-nu-va-fi-deloc.html>, accessed on 1.09.2024.

insolvency proceedings⁹¹.

AI tools have been met with increasing public and investor interest, including in the context of cyber risk, emerging opportunities for cyber defense where AI can be useful, for example, for analyzing large amounts of security signals, allowing real-time monitoring of network activity. However, cyber threats could also increase because AI can broaden the pool of potential cyber criminals as well as victims, while improving the efficiency and effectiveness of the underlying techniques. For example, AI models could be used to research potential target and victim systems or to aid in coding. It shows that generative AI could add the equivalent of economic value between \$ 2.6 trillion and \$ 4.4 trillion annually. The pace and scale of AI, like any large-scale innovation, is likely to bring benefits but could also pose risks to financial stability, which is why international standard-setting and regulatory authorities have stepped up their efforts on the consequences of AI.⁹²

In any case, a recent survey of law firms in the city of London showed that almost 70% of them were already using or trying to use AI systems, and such trends are likely to be reflected in other professional sectors, including insolvency. Here, too, we are talking about the explosive growth of AI and TAR systems that will allow for faster and easier identification of key information, evidence and themes, the more precise construction of a picture that controls the behaviour of directors at the pre-insolvency stage, the creation of key evidence-based performance measures that could help to provide advance warning signs to external administrations, systems that can advise SMEs, for example, on forms to be submitted or an analysis of the performance of firms and liquidators in terms of the number and nature of matters they have dealt with, the average duration of costs incurred and the level of achievements/profitability, etc.

In today's dynamic and highly competitive business landscape, accurate prediction of financial difficulties and insolvency is becoming a critical concern for several stakeholders, including investors, creditors, regulators and managers. Why? Because, as we said, the consequences of insolvency are far-reaching, leading to significant economic losses, job cuts and financial instability. Therefore, the impact of AI in insolvency dynamics is of paramount importance for effective financial decision-making, risk management and the overall health of the economy.

Studies show a prevailing trend of using the PRISMA method in insolvency prediction, but also a current trend towards the development of hybrid models that combine methodologies and multiple variables to improve the accuracy of bankruptcy prediction. At the same time, the inclusion of non-financial indicators that capture qualitative and intangible factors such as management competence, corporate

⁹¹ *Innovation en matiere de faillite Naviguer dans la faillite a l ere numerique strategies innovantes pour les entreprises en difficulte*, 14 March 2024, <https://fastercapital.com/fr/contenu/Innovation-en-matiere-de-faillite-Naviguer-dans-la-faillite-a-l-ere-numerique---strategies-innovantes-pour-les-entreprises-en-difficulte.html>.

⁹² Georg Leitner, Jaspal Singh, Anton van der Kraaij and Balázs Zsámboki, *The rise of artificial intelligence: benefits and risks for financial stability*, Financial Stability Review, May 2024 - https://www.ecb.europa.eu/press/financial-stability-publications/fsr/special/html/ecb.fsrart202405_02~58c3ce5246.en.html.

governance practices and market reputation, along with financial indicators in hybrid models, allows a more comprehensive assessment of a firm's financial health and improves the accuracy of bankruptcy predictions.⁹³

Perhaps most relevant is the potential of AI in resolving restructuring agreements, or pre-reorganization negotiations, by resolving disputes online, on certain platforms and without human intervention. These arrangements are particularly useful for SMEs, which cannot afford additional costs for expert advice, travel or long-term formal procedures. AI will thus provide a “personalized diagnosis”, which can be “concluded” or not later by the court, depending on the decisions of the parties involved. Moreover, the simplification of insolvency procedures for SMEs is a subject that has been hotly debated by Union and international bodies in recent years, and AI could be one of the solutions. And pre-insolvency procedures can be supported by AI technology, of course, while maintaining the possibility of challenging some measures/decisions taken by AI in the management of such a procedure, the confidentiality and data security remaining also major problems.

8. Conclusions

Reflecting on our findings, we could state strongly that digital technologies are today analogous to natural resources such as air and water.

We are living a remarkable chapter of the existence of humanity, a chapter imprinted by the fulminant evolution of technology and the unknown and exploring the advantages of strengthening the bridge between insolvency and cross-border technology becomes a necessity, because yes, it is its time, of artificial intelligence. But let's not forget about moral anchors such as empathy, solidarity and dignity. The responsibility of all of us is the key to a future in which we all find ourselves, in which human rights are respected, business thrives, and technology is directed towards the common good.

As Socrates stated, “technology without moral understanding can lead to neglect of fundamental human values”, while Heidegger argued that “modern technology can alienate us from our essence, transforming human nature and relationships into mere objects of exploitation”.

Let us not alienate ourselves from the essence of ourselves, of humanity, and let us “direct” with patience, mastery, openness but also responsibility the “orchestra of re-establishment” of the legislation, in which we are already talking about the stakes of shaping new laws, such as the law of the internet, the law of online networks, the law of cyberspace, the law of information or even digital law, which “merge” in the need for inter-and transdisciplinary analysis towards a common vision for an open, free, secure and centered on the human being digital future.

⁹³ See Apostolos Dasilas, Anna Rigani, „Machine learning techniques in bankruptcy prediction: A systematic literature review”, *Expert Systems with Applications* Volume 255, Part C, 1 December 2024, 124761, <https://doi.org/10.1016/j.eswa.2024.124761>.

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