BOOK OF ABSTRACTS

Editor: Gandolfo Dominici

IX Business Systems Laboratory International Symposium

TECHNOLOGY and SOCIETY: Boon or Bane?

January 23-24, 2025

UNIVERSITY OF INSUBRIA

Department of Economics

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SYMPOSIUM SCOPE

Technology has unequivocally transformed the dynamics of our interactions, lifestyles, work environments, social connections, and business operations. Playing a pivotal role in society, technology continues to evolve, promising novel advancements that will reshape our lives and professional landscapes.

While technology facilitates seamless communication, information access, travel, idea-sharing, and knowledge creation, there is a growing apprehension about its potential adverse impacts on society in the future. Notably, concerns have arisen regarding the potential negative consequences of artificial intelligence (AI) and automation. Additionally, the influence of social media on mental health and well-being, especially among younger generations, is a subject of heightened worry.

The societal effects of technology can be both beneficial and detrimental. Looking ahead, it becomes imperative to carefully consider the potential ramifications of emerging technological innovations and actively work towards mitigating any negative consequences while amplifying the positive outcomes. Ultimately, the responsibility lies with all of us to ensure that technology is harnessed for the collective benefit of society.

The BSLab Symposium 2025 endeavours to explore the positive and negative impacts of technology on society, aiming to chart a course for a more favourable future. Studying the impact of technology on society involves navigating a highly complex interplay of various realities, including individual cognition and affection, group dynamics, and societal structures. The symposium aims to engage in rigorous scientific discussions on the transformative effects of technology on society, seeking innovative approaches to address contemporary global economic and social challenges from systemic perspectives.

The event intends to illuminate the intricate interactions among natural, social, and economic systems, adopting a multidisciplinary perspective encompassing various fields such as management, economics, sociology, behavioural science, psychology, ethics, engineering, design, decision making and education, among others.

While emphasizing a systemic methodology, the symposium remains open to diverse scientific approaches, aiming to facilitate constructive debates and exchanges that pave the way for new avenues in research and practice.

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[Elite] Universities: the cradle of pending anomalies in various forms? DEI + Social Media /AI as "Explosive crisis"

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EXTENDED ABSTRACT

"*O Tempora, O Mores*" - "Oh the times! Oh the customs!", Cicero.

There is now globally:

- an official tendency to measure quality of knowledge of a country with the number of higher education graduates, and hence:
- a concept called DEI: 'diversity, equity, inclusion program' in the times of smaller numbers of potential students, including the elite Universities;
- growing application of artificial intelligence, including the danger of artificial rather than real knowledge, creativity, social responsibility, and innovation, leading to Innovative, Sustainable and Socially Responsible SOCIETY, enabling humankind's way out from the current global social and economic crisis.

The current era revealed the true dimensions of DEI in combination with the influence of social media in the sacred, secret/untouchable environments of elite Universities and beyond. While Youth is literally crying out for purpose and direction, social media and DEI quietly assume the role of false prophet, promising long lost everlasting justice, and righteousness. Social networks and artificial intelligence are teachers, friends, partners, comforters, plaintiffs, complainants and judges = complete alienation of the programmed generation to the world of the intangible and complete absence of sanctions/taking responsibility. Such "lethal" merger (DEI + social media) turns out to be the ad most prominent in universities campuses reflecting in poorest overall knowledge and skills outcomes.

Genderless (Gender Pronouns Can Be Tricky on Campus. Harvard Is Making Them Stick. The push for personal pronouns like "they/them" and "ze/hir" can ignite a power struggle in college classrooms), psyopless mass, dressed in and guided by destruction of existing i.e. the epitome of dystopia. Where equality is heretic and equity divine salvation. And less people forget: plagiarism (i.e. ex-President of Harvard; generated scientific essays by AI etc.) is celebrated and daltonism (the importance of race, where quotas are important rather than the actual knowledge, skills and excellence of individuals, i.e. Boeing, Armed service, Secret service, Olympics, Universities, Governments DEI commitment…) is lacking. Efforts fighting one-sidedness and fictitious expertise are very necessary.

The slogan: "*Diversity and meritocracy: a marriage made in hell?*" (Diversitas, 2024) sounds like an addictive mantra, celebrating the victory of mass mediocrity…

DEI can also mean - *Destroy, Eradicate et Impera* - with latent residua of sulphuric rain (Sodom and Gomorrah…) at the autonomous ground of Alma Mater.

"*Diversity and meritocracy: a bitter divorce creating hell?*" (Ivanuša, 2024).

Based on the research and use of Bogdanov's Essays in Tektology (1922) – Crises of Forms (as a methodological foundation), we used Bogdanov's consideration of two types of crises: ''Freezing'' and ''Explosive''. The "Freezing" brings equilibrium through crises resolution, and the ''Explosive'' destroy systems. Using the study of Tektology, one can not only study the crisis but also predict its occurrence. Some classes are collapsing, while the remaining ones are more viable. Such interpretation – using Bogdanov's Tektology – of Crisis management/tackling DEI is unique, revolutionary/controversial in some selected viewpoint, and beyond the state of art. Arguably, absolute perfection is out of reach (=inevitable existence of some uncertainties and nescience) and will always remain such.

University creation of Youth (= future educated elites) led/chased by social media and AI, being chosen by Identity and tendency to rule/imperare (both DEI) not Merritt = perfect, apathetic transformation of already complicated: complex/complexity is yet to come. It is plausible to conclude that Complexity theory may help since it restores the principles of General Systems theory (based on Tectonics) after the concept of requisite holism through interdisciplinary cooperation has essentially lost the competitive struggle with DEI/advanced Technologies' danger of narrow specialization.

Complexity theory developed five basic streams of Systems theory and Cybernetics as a Mathematical discipline it would fall into stream 1, as discipline about interdisciplinary treatment of complex

phenomena into stream 3, if it has a mathematical basis, or stream 5, if it has a philosophical one (EMCSR: Trappl, ed., 2004; Mulej & Potočan, 2006; Umpleby et al, 2018).

In addition, let's step back and recall facts about cybernetic systems by type of feedback loop: (1) automatic, (2) homeostatic, and (3) cybernetic (Mulej, 1979).

Positive & Negative Feedback and Mutual Causal Loops

Negative: absence of deviation; stabilizer of the system,

Positive: mismatch (behaviour: intended performance); initiator of modification. /…/ within highly complex systems, positive feedback can modify the goal(s), and hence the aim(s), of the overall system, itself.

Circulus Vitiosus? Mutual Causal Loops = Cybernetic Stability (System: Environment).

Feedback generates information, innovates novelty = elements within a system become informed and differentiated = are able to grow and evolve.

In essence, Universities should return to the ergodic system, since it is the only one that "captures" (in its definition), development, not just returning to an equilibrium state (ibidem).

"*Quod Nocet, Saepe Docet*" - "What harms, often teaches". Does it?

Keywords: DEI, advanced Technologies, Universities, Tektology, Cyber/Systemic

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Liquid intelligence

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EXTENDED ABSTRACT

Intelligence, understood as cognitive process, can be described both through a symbolic approach, which couples itself well with the adoption of technological elements such as the digital world, and through a continuum approach, more familiar with biology. The first one is known as algorithmic intelligence, and the second one as in materia (or embodied) intelligence. While "conventional" technology has deepened the study of the algorithmic intelligent systems, in materia intelligent systems have been studied mainly by biologist and ecologists. Current experiments performed with functional liquids highlight a possible route for the development of a continuum technology, in view of a bioinspired holonomic machine architecture implementation. Within this particular scheme the achievement of liquid state analogue memories, artificial neural networks and reservoir computers has been recently demonstrated. Liquid state, electrically programmable, in memory computing systems share with the biological brains an intrinsic plasticity and an amorphous architecture, where connections can be easily created and destroyed, mapping an instantaneous holographic volume state that resonates continuously under the external stimuli. Multi-particle entanglement effects have also been observed, showing that a liquid can be considered de facto a physical support for quantum phenomena in laboratory conditions. This incredible opportunity for the development of a new technology poses also critical questions about its exploitation for the sake of society.

Keywords: *In materia* intelligence, Colloids, Reservoir Computing, Liquid Robotics, Pavlovian Learning.

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The Internet of Things and the risk of Wishful Thinking in Management Sciences

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EXTENDED ABSTRACT

The spread of eclecticism in managerial sciences and the risk of wishful solutions can be illustrated by considering the recommendations contained in the "Internal Control: Integrated Framework" better known by the name of "CoSO Report", relating to the adoption of organizational and administrative adequate assets, also required in Italy by recent regulations regarding business activities.

The purpose of this contribution is to discuss whether greater attention to the criteria and applications of the IoT (Internet of Things) is preferable to the CoSO methodology, a technology more linked to concreteness and simplicity of management in which, to give an example, the complicated accounting of warehouse stocks is replaced by direct information deriving from the physical movement of stocks detected with special sensors.

For the moment, the attention of the IoT, as far as management is concerned, has focused on logistics, smart factories, healthcare, but the emerging needs in terms of management control envisage an extension to company control systems and the topic of adequate organizational, administrative and accounting structures. This call to concreteness could perhaps prevent the tools proposed by organizational theory in the face of the tumultuous evolution of business organizations from representing an unrealistic response to the real needs for control and the still current problems that characterize management.

Today, the need to certify the application of the legislation on Adequate Organizational Structures is pushing the entrepreneurs of these structures, whose certification is required both in the context of the Crisis Management Code and in the preparation of the report on the annual financial statements but also and for participation in international tenders or suppliers.

There is therefore a widespread need to make available to operators, auditors, auditors and certifiers, a suitable tool to overcome the limitations that currently exist of the practical tools to be used for this

purpose in companies and professions, taking into account the increasingly intense digitalization of organizations' activities.

In this regard, within the scope of the auditing tools that have been proposed to make the best use of techno-IT support, the CoSO Report (Committee of Sponsoring Organizations of the Treadway Commission) was developed in 1992 containing recommendations to companies to conceive, develop and take care of the internal control system effectively and efficiently. The report, which has been widely disseminated and received, represents a further step towards the creation of a complex system in which the ongoing digital revolution promises to provide even more data and possibilities for deeper analysis.

The philosophy of IoT is rather to simplify structures and procedures based mainly on the things or on the material evidence that current and upcoming technology make possible.

Could this be a way to overcome the wishful thinking that, together with eclecticism, seems to characterize the current moment in business science? This is what the paper aims to discuss and bring to the attention of scholars and operators.

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The Human Factor of AI: Implications for Critical Thinking and Societal Anxieties

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EXTENDED ABSTRACT

The rapid integration of Artificial Intelligence (AI) into various sectors of society has ushered in an era of unprecedented technological advancement. AI's ability to augment decision-making, automate routine tasks, and provide personalised services is transforming industries ranging from healthcare and finance to education and entertainment. However, alongside these benefits, AI also presents significant challenges, particularly concerning its impact on human cognition and the associated societal anxieties. This extended abstract synthesises findings from a series of studies exploring these issues through a combination of quantitative surveys, qualitative interviews, and experimental designs.

A central focus of this research is the relationship between AI tool usage and critical thinking skills, with particular attention to the phenomenon of cognitive offloading. Cognitive offloading refers to the process by which individuals delegate cognitive tasks to external tools, thereby reducing the cognitive load on their working memory. While cognitive offloading can enhance efficiency, it may also lead to a reduction in deep, reflective thinking, which is crucial for critical analysis and problem-solving.

In a comprehensive study involving 666 participants, a mixed-methods approach was employed to investigate how frequent usage of AI tools influences critical thinking. The quantitative component of this study utilised well-established instruments such as the Halpern Critical Thinking Assessment (HCTA) and Terenzini's self-reported measures of critical thinking to assess participants' cognitive abilities. Analysis of Variance (ANOVA) and correlation analyses revealed a significant negative correlation between frequent AI tool usage and critical thinking abilities, with cognitive offloading identified as a key mediating factor. Younger participants, particularly those aged 17-25, exhibited higher

dependency on AI tools, which corresponded with lower critical thinking scores. This finding underscores the cognitive cost associated with the convenience and accessibility of AI technologies, particularly for younger generations who are digital natives. Further qualitative insights were obtained through in-depth interviews with a subset of participants. These interviews provided a nuanced understanding of the cognitive impacts of AI, revealing that individuals frequently rely on AI for routine tasks such as information retrieval, decision-making, and even basic problem-solving. This reliance was often accompanied by a reduction in cognitive engagement, with participants expressing concerns about their declining ability to think critically and solve problems independently. The thematic analysis of the interview transcripts highlighted a growing trend of cognitive dependency on AI, which, while enhancing short-term efficiency, may undermine the development of essential cognitive skills over time. The implications of AI's impact on critical thinking extend beyond individual cognitive processes to influence educational practices and outcomes. Another study within this research series explored the role of AI in educational settings, focusing on the concept of digital dependence. This study combined experimental designs with longitudinal tracking to examine how AI tools, when integrated into learning environments, affect students' cognitive development. The results indicated that while AI tools can significantly enhance learning outcomes by providing personalised feedback and adaptive learning experiences, they also contribute to cognitive offloading, where students become less engaged in deep, reflective thinking. The study emphasised the need for balanced educational strategies that incorporate AI technologies in ways that support, rather than supplant, critical thinking. For instance, adaptive learning platforms and intelligent tutoring systems (ITS) were found to be particularly effective in improving basic skills and knowledge retention. However, there was a notable decline in students' engagement with complex problem-solving and analytical tasks when these tools were heavily relied upon. The findings suggest that while AI can be a valuable tool in education, its integration must be carefully managed to ensure that students continue to develop the critical thinking skills necessary for success in an increasingly AI-driven world. Educators are encouraged to design curricula that challenge students to critically engage with AI outputs, fostering an environment where AI serves as an aid to, rather than a replacement for, human cognition.

In addition to its cognitive effects, AI's integration into society has generated significant psychological responses, particularly in the form of anxiety. A separate study within this research series focused on the societal anxieties associated with AI, particularly in the context of employment and privacy. This study employed a mixed-methods approach, combining quantitative survey data (from 876 participants) with

qualitative interviews to explore the psychological impact of AI on different demographic groups. The quantitative data indicated that individuals employed in sectors vulnerable to automation, such as manufacturing and retail, expressed significantly higher levels of anxiety. This anxiety was not only related to fears of job displacement but also extended to concerns about the broader implications of AI for their personal autonomy and privacy. The qualitative interviews provided deeper insights into these anxieties, revealing that participants often felt a profound sense of uncertainty about their future roles in an AI-dominated world. Many expressed fears that AI could potentially replace their jobs, leaving them without the skills or opportunities needed to compete in an evolving labour market. This fear was particularly acute among older participants, who felt that their experience and skills might become obsolete in the face of AI-driven automation. Additionally, concerns about privacy were prevalent, with participants expressing discomfort with the increasing use of AI in monitoring and decision-making processes that directly affect their lives. The perceived lack of transparency in AI systems exacerbated these anxieties, as participants feared that decisions made by AI might be biased, incorrect, or beyond their understanding.

The role of trust in AI systems emerged as a critical factor influencing both cognitive offloading and societal anxieties. Trust in AI was found to be a significant predictor of cognitive offloading, with higher trust levels correlating with greater reliance on AI for decision-making tasks. However, this trust also had a paradoxical effect, exacerbating anxieties when AI systems were perceived as lacking transparency or when participants felt that AI decisions could negatively impact their lives. The qualitative data revealed that many participants were conflicted about their reliance on AI; while they appreciated the convenience and efficiency AI provided, they were also concerned about the potential consequences of trusting AI systems too much.

These findings have significant implications for policymakers, particularly in the areas of AI governance and ethical regulation. The research suggests that enhancing the transparency and accountability of AI systems is crucial for mitigating the anxieties associated with AI integration. Policies that promote explainable AI—systems that can clearly articulate the rationale behind their decisions—are essential for building public trust and reducing fears related to automation and privacy. Additionally, there is a need for public education initiatives that inform individuals about the capabilities and limitations of AI, empowering them to use AI tools effectively without becoming overly dependent on them. The cumulative findings from these studies underscore the complexity of AI's impact on human cognition and societal well-being. While AI offers numerous benefits, including enhanced efficiency and decision-

making capabilities, its potential to erode critical thinking skills and exacerbate societal anxieties cannot be overlooked. In educational settings, it is essential to develop strategies that ensure AI tools are used in ways that enhance, rather than hinder, cognitive development. Educators must be vigilant in designing curricula that encourage students to critically evaluate AI outputs and engage deeply with the material, even as AI becomes an increasingly integral part of the learning process. For policymakers, the findings highlight the importance of developing ethical frameworks that guide the integration of AI into society. Such frameworks should prioritise transparency, accountability, and the protection of human rights, ensuring that AI systems are designed and deployed in ways that respect individual autonomy and privacy. To build public trust in AI and address the anxieties associated with its use, policymakers can help create a more equitable and inclusive society where the benefits of AI are shared widely and fairly..

The human factor of AI encompasses both the cognitive and emotional dimensions of AI-human interaction. As AI technologies continue to permeate various aspects of life, their impact on critical thinking and societal anxieties must be carefully managed. The potential erosion of critical thinking skills, coupled with widespread anxiety about AI's role in society, underscores the need for a holistic approach to AI development and governance. Educational strategies that enhance critical thinking, alongside policies that promote ethical AI use, can be prioritized in order to harness the benefits of AI while mitigating its potential drawbacks. This research provides crucial insights for educators, policymakers, and technologists, offering a roadmap for navigating the challenges and opportunities presented by AI in an increasingly complex digital world.

Keywords: AI; artificial intelligence; critical thinking; cognitive offloading; anxieties; AI-anxieties; impact of AI.

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The role of Social Capital for Global Transformation

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EXTENDED ABSTRACT

Concerted endeavors of all sectors at all levels of society are required for its transformation towards a new stage of technological composition, and this new composition is closely related to societal change. A collective effort is, not the least, needed on a global scale, and it will only work with a unity of purpose. A unity of purpose would achieve that (see, e.g., Dahl, A. L. 2019)

- the world's businesses, public entities and third sector organizations work together to preserve and improve wellbeing of mankind,
- the controversy of arguments for or against non-market approaches to any economic activity, especially in the delivery of public goods is settled for good,
- a comprehensive agenda is set up a on all societal levels for maintaining and expanding public goods, whether tangible ones or intangible ones,
- decision-making support for communal efforts on public goods is built from whichever source,
- communal efforts are made visible and measurable through measuring and valuating public goods (as monetization will also contribute to ease funding decisions),
- the interdependencies and interrelationships of the SDGs are utilized as they are essential for the wellbeing and the survival of mankind.

The common good concept, hence, becomes the social compact binder that unites what has been generally confined either to the public or to the private sectors (Bürgenmeier 2012).

On a global scale, three perspectives come into mind: One is what has been called the transformation of issue spaces (Ruggie 2004 a), the other is globally active civil society organizations and the third is building and utilizing social capital.

Transformation of issue spaces

The international political world after World War II had a system of rules for problem-solving (global governance arrangements) that were designed to work between independent states, with some interference through the United Nations. Then, territorial associations were formed like the European Union, and trade agreements like NAFTA or the Mercosur in North and South America, and ASEAN in Southeast Asia. Another change was brought about by powerful non-state actors like multinational enterprises and global CSOs. This led to a transformation of political and economic relations – policy spaces were no longer either "internal" or "external", and public goods provision became dependent on issues inside a state and outside a state. The instruments to be deployed start with discourse and contestation. This must precede all action. An example is global health: The interaction of states, the healthcare and pharmaceutical industries as well as patients' representatives allows that a wide variety of human interests, not merely those interpreted and promoted by governments, can be expressed and pursued (Kickbusch 2013). Another case is the agreement on Trade-Related Aspects of Intellectual Property (TRIPS) of the World Trade Organization (WTO). It was devised and entered into the WTO negotiations by an independent team of twelve industry representatives (the Intellectual Property Committee[1]). It was industry that identified a trade problem, devised a solution, reduced it to a concrete proposal and advanced it to negotiations of governments. "In effect, twelve corporations made public law for the world" (Sell 2003, p. 96).

Control activities by the global non-profit sector

The non-profit sector (non-governmental organizations [NGOs], civil society organizations) have constantly increased their profiles at the international level throughout the last decades. The foremost field of international NGO activities is to support developing countries, whether through local projects or in transregional efforts. Many of them concentrate on monitoring the attitudes of multinational enterprises (MNEs), others scrutinize international financial institutions (IFIs) such as the World Bank, the International Monetary Fund, and transregional development banks (Lewis et al. 2020, pp. 155 f.). For their work they can use a knowledge device that was set up by the Division for Sustainable Development Goals in the United Nations' Department of Economic and Social Affairs (https://sustainable development. un.org). This is a platform to which citizens, private sector associations

[1] The committee was formed in 1986 by Bristol-Myers, DuPont, FMC Corporation, General Electric, General Motors, Hewlett-Packard, IBM, Merck, Monsanto, Pfizer, Rockwell and Warner Communications. Their work was finalized in 1994.

and businesses as well as local authorities upload information, and which is accessible to any user - a social capital network in itself.

Deployment of global social capital

A formidable leverage for social capital formation on a global scale is to be found in the United Nations Global Compact initiative which enlists corporate engagement in promoting fundamental principles on human rights, on rights at work and on environmental responsibility (https://unglobalcompact.org). The Global Compact has become a "values-based platform for bringing the relevant social actors together in seeking joint solutions to the imbalances and dislocations resulting from the gap between the global economy and national communities" (Ruggie 2004 b, p. 16). It is these imbalances and dislocations that hamper progress and transformation – whether societal or technological. With the three instruments employed by the Global Compact – information sharing and learning, policy dialogues and partnerships – solutions can be found where deployment of innovation is deficient, lagging behind schedule or quality, and not inclusive.

An example that combines the three instruments (decision-making by multiple players, CSO-watch and composite social capital) is "Green Shipping Africa" on which a partnership was built between the UN's International Maritime Organization, 17 maritime authorities from across Africa and several shipping companies. The onset was a conference held in Ghana in February of 2023, which was co-organized by the Danish Maritime Authority[2] and the Maritime Just Transition Task Force (https://unglobalcompact.org/take-action/think-labs/just-transition) whose aim is to support a just and human-centered decarbonization of the shipping industry. The members of the Maritime Just Transition Task Force are industry (the International Chamber of Shipping), labor (the International Transport Workers' Federation and the International Labour Organization) and the International Maritime Organization, representing national authorities worldwide. With these diverse memberships, the new venture is on the best way to secure progress in the effort to deploy technologies for getting the oceans clean, the atmosphere less burdened with carbon-dioxide and providing new jobs of which many will be available in Africa. It will contribute to avoid catastrophes on the oceans and on the seashores.

[2] The Danish involvement has its roots in the fact its maritime industries have a long history of social links. This nexus supports a common mentality and attitude towards shipping, with mutually accepted social norms, formal organizations and laws, codes, and regulations (Sornn-Friese and Iversen 2011)

A case where it was not possible to build social capital for remedying a catastrophic situation was the failure of the international community to provide aid to the victims of the February 2023 earthquake in Syria's northwest. There was a political background to this because the region is held by the opposition to Syria's regime that is backed by Russia. This motivated the UN relief agencies to not take the lead, and that prevented the other relief organizations from proceeding. One may see this as a moral obtuseness towards claiming the priority of saving human lives over all other considerations (Wintour 2023). Sadly, it seems there is no power in the Global Compact to overcome political obstruction, and the Syrian failure is one of the situations where good will is bluntly extinguished and all efforts of an operation to rescue minimal wellbeing are reduced to useless. There is some hope through the Global Compact being complemented by a "Global Compact on Refugees", established by the United Nations General Assembly on 17 December 2018 and which affirms a comprehensive, multi-stakeholder approach to refugee situations. But, as a commentator said, it will remain unfinished work if it only spells out new modalities for international cooperation and not specific commitments (Aleinikoff 2018). Harsh to say, but even the United Nations are ostensibly powerless against the realities of evil powers attacking the world order (as is also seen in Russia's attack on the Ukraine).

The gist of the United Nations' far-reaching power to create global social capital is much stronger in the activities of the World Trade Organization (WTO) and the United Nations Conference on Trade and Development (UNCTAD). Their main concern is building a better foundation for global wellbeing: The WTO mission statement says it is about "ensuring a level playing field for all, thus contributing to economic growth and development" and it clarifies that businesses, consumers and the state are all alike[3]. "Level playing field" is not merely a phrase. Arranging for equitable conditions is the quintessence of WTO corrective actions (see, e.g., Grané 2001). Without this, any endeavor to introduce new schemes (organizational, institutional or technological) will fail. Similarly, UNCTAD, one of whose primary roles is to provide investment treaties that warrant fair conditions for all parties, establishes level playing fields among national governments, enterprises, and civil society organizations. And UNHRC, the United Nations Human Rights Council, monitors whether businesses and states comply with thematic human rights issues like women's rights, freedom of belief and religion, freedom of expression, freedom of association and assembly, and the rights of racial and ethnic minorities.

[3] https://www.who.int/gho/publications/world_ health_statistics/2019/en

The quintessence of this paper is to show that all members of society, anywhere, do not act in isolation, whether individuals, businesses and state authorities, and that the pursuit of their own interest always crosses each other's paths in the process. Their common interest is securing progress of the global transformation – which also matches the global strife towards maximum fulfillment of the UN 2030 Agenda. Citizens, and this includes corporate citizens because businesses are members of society, must ask themselves, each of its own, what they can do to contribute to the effort. But they must also rely on worldwide institutions to "get it right", as per a statement of Nobel laureate Amartya Sen (Sen 2010, p. 57). When citizens trust in public institutions, they look for effectiveness, in the first place, Sen claims, not for a 'just'" institution, and he asks for policymakers to broaden their perspectives beyond national borders. This would produce new types of relations between state authorities and civil society (new social capital), a redefinition of intergenerational relations, better recognition for which priorities to set in technoloigal innovation and SDG implementation in order to make sure their benefits reach all.

Keywords: Social Capital, Global Transformation, Collective Action, Issue Spaces

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Action between urban and digital spaces. A philosophical reflection starting from the human body

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EXTENDED ABSTRACT

Objectives:

Some of the philosophical challenges posed by the most recent developments related to the fourth industrial revolution seem to concern the complex ethical category of responsibility, which requires to be re-examined also in light of the particular nature of actions performed online. In this regard, taking into account some specific elements that mark the digital spaces, including the use of Artificial Intelligence (AI), a philosophical reflection is presented in order to first recover the original theory on the structure of action, which finds in H. Arendt's thought the major referent, and then to compare it with actions performed in the digital world. In particular, the purpose is to reflect on these topics by paying more attention to the role assumed by the human body, whose absence or presence constitutes a conceptual pivot around which this comparison is developed. In conclusion, the results offer a particular key for reinterpreting the margins of responsibility of actions, and also some political categories, between urban and digital spaces.

Methods:

This contribution intends to address the social question of technology's influence on human systems from a philosophical point of view, employing the main conceptual categories from the ethical field. In particular, with regard to the part of the analysis dedicated to the use of AI and its ethical challenges, the theses sustained by L. Floridi, around which a large multidisciplinary debate has recently been created, will be examined. Subsequently, the results of these ideas will be compared with the main ethical theory on the structure of action, starting from the Arendtian analysis, within which the role assumed by the

component of the human body and the ethical values of the assembly of bodies will be shown, through the use of some classical concepts of ethics, such as plurality, responsibility and proximity, that also have sociological and psychological implications.

State of the art:

According to the thesis expressed by L. Floridi, AI does not coincide with a new model of intelligence, but represents an unprecedented form of acting. The term "action" is not accidental and evokes all the semantic nuances of the Western philosophical tradition, which is mainly based on the Aristotelian distinction between *praxis* and *poiēsis*. In particular, the AI's new form of action is based on the possibility of operating two "disconnections": the first is between the presence and the localisation, which means that an agent can be in a specific place and somewhere else at the same time, while the second arises between law and territoriality, due to the mismatch between the normative space of law, the geographical and the virtual one. In addition to these details, in an even more incisive way, AI demonstrates that it is not only possible, but above all useful, to complete an increasing number of tasks without the requirement for an agent to be intelligent. So, it is possible to perform an action by separating the ability to solve a problem from the intelligence, understood as an interweaving of acumen, awareness, feelings, concerns, experience: said otherwise, without a human body as a form of support for such actions. However, these conditions could not exist without a suitable environment for their implementation. Indeed, today's developments of AI emphasise that it only works successfully in spaces marked by high levels of order, organisation and control, in which the number of variables that the machine may encounter is reduced, thus decreasing the difficulty, and sometimes even the complexity, of its tasks. In other words, with reference to smart cities, for example, the proper functioning of these technologies depends on the level to which the environment is enveloped in what Floridi refers to as the "infosphere". This inscription of AI into the world accelerates the process of re-ontologisation of the reality by technology. Consequently, if social habitats are progressively transformed into environments within which robots can operate more and more easily, then the process of adaptation is accomplished by the world towards AI, and not vice versa. Through the narrowing of the distance between human and machine, in which the former is increasingly exposed to the latter, this contribution arrives at the heart of the matter in asking whether, precisely because of the ability of human intelligence to adapt to new circumstances, human being can start to act in accordance with the same disconnections. One of these forms is already a fact, identifiable in the experience of being elsewhere, while with regard to the disjunction between intelligence and action, the risk is that human beings may also inadvertently become

part of the mechanism itself, at least in two senses: that they become new means of digital production, so they have to adapt their activities to the rational, but not intelligent, logic of the machine, and that they become a data profile that could be manipulated and influenced.

In this regard, it may be useful to carry out a speculative operation in order to clarify what human action properly is, the morphology of which might be altered through the daily approach to bots, algorithms and interfaces. In reconstructing the concept of action, it is also necessary to include a reflection on the position attributed to the human body as an obvious support of action. In this direction, the analyses offered by H. Arendt not only constitute the main reference point for this type of study, but they also turn out to be useful for interpreting today's transformations of urban and digital spaces.

Starting from the Aristotelian tripartition of activities, in Arendt's thought only Action, conceived from an ethical and political point of view, emerges as the authentic human activity, the basis of which is conceptually expressed through the concept of plurality. This latter is then defined through the dual character of equality and distinction, which can best express the idea of the uniqueness of every human being, to which the philosophical categories of birth and freedom, equally indispensable for the occurrence of action, are also included. This brief reconstruction highlights that the structure of action is possible only within the direct relationship between humans, which together can configure the *in-between* ethical and political spaces. In other words, acting, in a complete sense, is always an "acting-with", in the proximity of others, that constitutes the space of action itself.

Among the components of action, one could intuitively include, as the last unavoidable element, the bodily dimension of the agent. In this regard, Arendt states that action is indeed bound up with the existence of a living body, but she deviates from this speculative direction when, in order to theoretically avoid any reifying drift towards the human being, she contrasts corporeity against action in terms of necessity against freedom. The Arendtian thought certainly does not intend to deny that a constitutive part of the human being is also his/her body, but since corporeal needs, which are pre-eminent, prevailing and common to all, represent a reason for the fusion and homologation of individuals in a single body and a single voice, this eventuality is strongly opposed to the cipher of freedom that must marks the ethical and political spheres, so the question on the body must be excluded from this kind of analysis.

Although Arendtian arguments are in favour of a bodiless representation of action, they outline a theoretical framework that allows us to overcome the original approach, through the category of plurality, which could include the corporeal dimension. This is precisely the thesis advocated recently by J. Butler

who, through a close comparison with Arendtian philosophy, does not aim to rehabilitate the "body of need", but to recognise the bodily existence as that which bears witness, materially and actively, to the human condition. Butler argues this point by recovering the intrinsically performative character of bodies, which appears, for example, in urban spaces with strong political values (streets, squares, halls, etc.). This "performativity" is the capacity to make things happen, through gestures, movements, physical presence, thanks to their aggregating power, derived precisely by the proximity of bodies in assembly's spaces. Thus, the body contributes to establishing the *in-between* condition of action and induces us to rethink even the classical forms of aggregation of bodies conceived by political theories, such as the mass or the crowd, which cannot be recognised in this concept of plurality. Consequently, the opposition between freedom and necessity is dissolved in favour of the idea of an "embodied freedom" and the authentic human action can only take place through the manifestation of bodies.

In light of these considerations, the hypothesis of the AI's new action cannot but result first and foremost from the substantial absence of the body within digital spaces that, in this sense, seem to structurally preclude the realisation of a real action, since the invisibility and isolation of the networked body preclude to enact its performative power.

In consideration of this link between body and the structure of action, it is proposed to rethink the question of responsibility, which is traditionally conceived through the same relational structure of action, in respect to which the presence or absence of corporeity should assume a fundamental role. In particular, the question is whether the call to responsibility could also lie in the body as a place elected to relationality, in the ethical terms of proximity, of being close to the Other's hand, which is an urgency less pressing in digital spaces, in which the incorporeal self becomes an image.

Expected results:

The inclusion of the body in the action theory clarifies and distinguishes a specific mode of acting in the digital world, through which the agent, incorporeal and converted into data, interfaces with an infinite series of entities, which are often beyond its control. In other words, the space of connection between users is marked by a profound heteronomy, which affects not only the freedom, but also the responsibilities attributable to agents. Moreover, there are also the ethical issues linked to the lack of transparency of the algorithms' mechanisms, which data are not always neutral, whose outcomes interact directly with users, exerting an influence capable of orienting their behaviour, to the point of inducing them to a sort of "decision-making atrophy". In this sense, the evidence of the body as an element that

brings with it a dimension of transcendence able to recall the principle of responsibility, closely connected to the conditions of proximity, seems decisive in order to understand the greater difficulties of finding an answer to the ethical appeal in digital spaces.

Keywords: Artificial Intelligence, Urban spaces, Digital spaces, Body, Responsibility.

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KNOWLEDGE MANAGEMENT AND TECHNOLOGY: NAVIGATING THE NEW PARADIGM

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The Challenge of Artificial Knowledge on Knowledge Management

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EXTENDED ABSTRACT

The purpose of this paper is to introduce the concept of artificial knowledge and to position it within the framework of knowledge management. There are no papers on artificial knowledge yet and no debates on it. When one searches on Google for artificial knowledge, the result is artificial intelligence, although they are distinct concepts.

Herbert Simon, Nobel Laureate in Economics, remarks that "certain phenomena are 'artificial' in a very specific sense: they are as they are only because of a system's being molded, by goals or purposes, to the environment in which it lives. If natural phenomena have an air of 'necessity' about them in their subservience to natural law, artificial phenomena have an air of

'contingency' in their malleability by environment" (Simon, 1996, p. XI). Technology can be a good example of using the science of artificial to create a new world of things and associated phenomena that amplify human efforts and offer solutions to our existential problems.

Artificial objects and phenomena do not reproduce their natural models but have the challenge of reproducing their specific functionalities. For example, an airplane does not reproduce a bird but its capability to fly. Similarly, artificial intelligence does not reproduce human intelligence but tries to imitate its functions. We call artificial intelligence all those software programs which are capable of passing the famous Turing test (Majumder & Dey, 2023; Russell & Norvig, 2022). Artificial intelligence consists of a series of research domains, amongst which the most important are natural language processing, knowledge representation, automated reasoning, machine learning, computer vision, and robotics (Dwivedi et al., 2019; Loureiro, Guerreiro & Tussyadiah,

2021; Russell & Norvig, 2002). ChatGPT is a new family of artificial intelligence that gained exponential attention from users due to its capacity to generate text, images, sounds, and any combinations of these. Therefore, ChatGPT is a generative artificial intelligence instrument that is capable of having a dialogue with humans using natural or symbolic languages. That explains its explosive success.

Regardless of its specific form, artificial intelligence is processing data, information and knowledge. The result is knowledge. What kind of knowledge? Nobody answered this implicit

question. We answer this question by introducing the new concept of artificial knowledge. Situating our conceptual framework within a knowledge management system, artificial knowledge is an outcome of the work performed by artificial intelligence on data and information. Unlike human knowledge that reflects our natural environment (Audi, 2011; Nonaka & Takeuchi, 2019), artificial knowledge is generated only from data, without any direct connection with the natural environment. It reflects new structures of information and new correlations between different data sets.

The theory of knowledge fields and knowledge dynamics (Bratianu & Bejinaru, 2019, 2020) shows that we use in knowledge management an integrated spectrum of rational knowledge, emotional knowledge, and spiritual knowledge. Also, we understand that there is a continuous transformation of one form of knowledge into another form (i.e. transformation of rational knowledge into emotional knowledge, or into spiritual knowledge). Artificial knowledge has only one field: rational knowledge. The challenge of artificial knowledge for knowledge management is to be considered complementary to human knowledge and not as its substitute. Artificial knowledge cannot be explained using the paradigm of "true justified belief" (Audi, 2011; Massingham, 2020; Nonaka & Takeuchi, 2019). Therefore, the challenge of this new concept is to find a new paradigm, but compatible with that used for human knowledge. Also, a new imperative is to understand the ethical dimensions of both artificial knowledge and artificial intelligence (Floridi, 2023). The paper will discuss some of these challenging issues.

Keywords: artificial knowledge, human knowledge, artificial intelligence, human intelligence, knowledge management

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Transforming "Digital Transformation": Knowledge Co-Creation Application Development from a Start-up Perspective

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EXTENDED ABSTRACT

The follow-up chapter of BS-Lab-2024's contribution "Living the Reality of Digital Start-ups' Social and System Entrepreneurship" (Schmitt and Jolicoeur 2024b) laid out a hierarchy of entrepreneurial 'altitudes' depicting seven start-up-project complexity levels (table 1, (Schmitt and Jolicoeur 2024a)).

As we are experiencing the transition from (pre-web) information scarcity to an era of accelerating '*extelligence*[1]' abundance enabled by the spreading digital "boon" technologies, we are also witnessing their "banes" of widening opportunity divides as the "digital dividends" are not spreading as initially anticipated (World Bank Group 2016).

Start-up ideations of transforming conventional 'digital transformation' agendas into novel world-making realities are, hence, facing the 'full music' of the entrepreneurial 'altitudes' presented (table 1).

In the case of the 'Knowcations' project, this type of undertaking initiated as academic design science research (DSR) conceptualizing Personal Knowledge Management Systems (KMS). In contrast to organizational high-investment/maintenance KMS with their centralized, top-down approaches and fairly homogeneous user base, Knowcations aims for affordable decentralized client applications serving members with diverse skills, ambitions, means, and contexts. Its knowledge-worker-centric approach

[1] Extelligence refers to the world's externally stored information; it represents any cumulative archive of human cultural experience and know-how. As the external counterpart to the intelligence of human brains/minds, it provides information for the intelligences' understanding in a complicit process of accelerating interactive co-evolution to be accessible and augmentable by any individual who knows how (Stewart and Cohen 1999).

focusses on personalization, mobility, generativity, and the reducing of entropy (e.g., replication, fragmentation, disconnectivity, outdatedness, falsification).

Not unusual for "longitudinal streams of [DSR] research", a series of multi-disciplinary indexed publications were disseminated along continually evolving design concepts and artefacts. This contribution adds to its paper segments benchmarking external notions and approaches to reflect on aspects of feasibility, suitability, acceptability, and theory effectiveness (O'Raghallaigh, Sammon, and Murphy 2011). They were presented and published at appropriate times "in terms of the continually evolving artifacts and design theories, [including reporting on] early visions of technology impact [and] studies of [applied] technology impact on users, organizations and society" (Baskerville et al., 2018, p. 369).

Table 1 Entrepreneurial 'altitudes' of start-up-project complexity levels

Phase	Characteristics of Complexities potentially to be encountered
1. Initial Ideation	Subsistence, Tinkering, Bricolage
2. Niche Slots	Incremental Change & Innovations; Need to increase Absorptive Capacities
3. Advancing into Complex Territories	Predictable New Features & Functionalities (engineering & market-pull) and/or novel & unique Meanings (design-driven)
4. 'Wicked' Territories & Radical Change	'Wickedness' or Technological Lock-ins in need to navigate/overcome despite possible Ideation constraints and despite unaccustomed/unfamiliar new user experiences (technology-push or 'epiphanies', vision-driven).
5. SES: Social Entrepreneurship & Transformations	Normative and ethical variables to be under consideration where interdependent and conflicting social impacts may derail any systemic approach assumed at the outset to be sustainable and/or transformative.
6. SE: System Entrepreneurs & System Evolution[7]	Advancing technological and economic purposes for eliciting transformative paradigm shifts and sustainability issues often requires system interventions typified by radical change and high uncertainties of decision situations, subjective possibilities of affording disruptive remedies to systemic dilemmas, potential emerging co-creating opportunities, and need to attract critical mass of cooperating committing stakeholders to reach tipping point.
7. Entrepreneurial Stage-Growth Barriers	Covering potentially all prior six 'altitudes' are start-up internal challenges to overcome inherent stage-growth-related barriers affecting creativity, direction, delegation, coordination, collaboration, and networking issues (as detailed in 'Stage-Growth Models' and 'Dynamic States') (Garnsey 1998; Greiner 1998; Levie and Lichtenstein 2009; Schmitt 2018)

Source: (Schlaile and Ehrenberger 2016; Schlaile et al. 2021; Norman and Verganti 2014; Schmitt 2019)

With its complementing transition from academia to a Mauritian start-up venture, Knowcations perspective expanded towards a digital community platform for knowledge co-creation as further detailed in three recent publications (Schmitt 2022; 2023; 2024).

The focus of this upcoming paper is on transforming conventional "Digital Transformation (DT)" with an emphasis on the entrepreneurial 'altitudes' hierarchy and system development. As presented in the last BS-Lab symposium, Knowcations is complementing its authorship functionalities with a set of templates supported by examples, criteria, and instructions to assist in creating more complex documents. The elements and iterative process steps involved align well to a recently published article and heuristic: "The digital transformation canvas [DTC]: A conceptual framework for leading the digital transformation process" (Elia et al. 2024). The DTC's building blocks cover (1)

DT Strategy [Purpose], (2) DT Operational Pillars [People, Process, Platform, Partner, Project], (3) DT Value [Product, Performance, Planet], and (4) DT Pitfalls [Privacy, Protection].

This contribution follows other similar 'benchmarking' publications as alluded to for the benefit of Knowcations further progression and of entrepreneurs, researchers, and practitioners engaging in DT spaces and opportunities as well as of the external authors' proposed 'benchmark' DT notion (via feedback and testing of its application and scope). Elia et al. invite, for example, further validation of their literature-derived DT elements in different empirical contexts for potential customizations as well as seek practice-oriented augmentations related to managerial guidelines and methodological aspects, while acknowledging that (just like Knowcations) any "generic, valid framework needs further investigation to generate more customized or organization-dependent models" (Elia et al. 2024).

Keywords: Digital Transformation, System Development, Social Entrepreneurship, System Entrepreneurship, Digital Entrepreneurship Ecosystem, Knowledge Management, Knowledge Co-Creation.

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The role of Knowledge Dynamics in improving Customer Engagement and Customer Knowledge-Sharing

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EXTENDED ABSTRACT

An enterprise's knowledge is its most valuable strategic resource today. Knowledge management is a complex system that is difficult to implement and duplicate, yet it can provide a persistent competitive advantage and improve organizations' performance (Iranmanesh et al., 2021). When we refer to knowledge, we need to understand the complexity of the domain by referring to metaphorical thinking. The domain has been explored and discussed in the literature from the iceberg metaphor perspective by Nonaka and Takeuchi (1995), explaining tacit and explicit knowledge, and then refined by Bratianu, and Andriessen (2008) who introduced the metaphor "knowledge as energy" as an application of metaphorical thinking in knowledge management (Bratianu & Andriessen, 2008; Bratianu & Bejinaru, 2020). The present research is centered on Bratianu's view which perceives the domain of knowledge in terms of three fundamental dimensions: rational knowledge (RK), emotional knowledge (EK), and spiritual knowledge (SK) (Bratianu, 2015; Bratianu & Bejinaru, 2020; Bratianu et al., 2021). At the individual, as well as at the organizational level, these three domains coexist and interact in a perpetual dynamic. Rational knowledge is the result of logical and structural thinking and is also understood as explicit knowledge. This is the knowledge that individuals express most easily and frequently, as it can be articulated and shared through language or symbols (Bratianu 2015; Bratianu & Vătămănescu, 2018). Emotions and feelings fall under EK (Bratianu, 2015; Gladwell, 2005; Hill, 2008; Damasio, 2012). This type of knowledge is processed by emotional intelligence and contributes to the development of emotional competence, they influence a person's ability to relate and manage social interactions (Bratianu et al., 2021; Sparrow & Knight, 2006). The SK field is the most difficult to formalize and transmit. This

type of knowledge is based on personal values and beliefs that define how we relate to the world around us. This knowledge is processed through what Gardner (2006) calls spiritual or existential intelligence and is conducive to increased wisdom (Bratianu & Bejinaru, 2023; Maxwell, 2007). SK together with EK constitute tacit knowledge. Hard to transmit or capture but with the greatest transformative potential. All these types of knowledge are held by each individual; they constitute individual knowledge (Bhatt, 2002). The balance between the rational, emotional, and spiritual within individual knowledge determines how a person makes decisions, acts, develops attitudes, performs, or communicates. (Bratianu et al., 2021, Vătămănescu et. al., 2023). Given the fact that the consumer is always a person or a group of people, whether B2B or B2C, in essence, it is always People to People (P2P). We extend this insight to the organizational level and argue that a balance between the rational, emotional, and spiritual knowledge in communicating with customers results in the long term in improved customer engagement index, improved customer relationships, increased customer loyalty, and improved performance. New or potential customers make purchasing decisions based on social evidence (Vivek, et. al., 2012), seeing how people like them have experienced a product or service, this can be illustrated by rational or emotional knowledge. Existing customers make renewal decisions based on their own experience, trust, transparency, and results, (Cramer, et al., 2008) also illustrated by rational, emotional, or spiritual knowledge.

Paying attention to customer needs and building a relationship with customers is insufficient for long-term success. A deepening of customer relationships and an integration of knowledge about and from customers into management and communication processes is needed (Dawson, 1999). For most companies, it is becoming increasingly difficult to develop long-term strategies as they navigate a more competitive, uncertain, and deeply scarred business reality marked by digital change and the impact of AI on traditional ways of working. Customers today are increasingly looking for ways to self-serve, and organizations need to provide them with a constant dynamic of communication knowledge that facilitates self-service (Stone, 2009). While AI offers solutions to this challenge, its capabilities to do so depend entirely on the quality and quantity of knowledge from and about customers. Organizations need to look for solutions to capture spiritual and emotional knowledge that involves experiences, feelings, expertise, etc.

Both in literature and in business practices, the impact of RK, EK, and SK in communication with consumers is insufficiently explored. Knowledge Dynamics (KD) offers a strategy to optimize knowledge flows from the customer to the organization and vice versa, contributing to innovation and

better use of internal resources. The present research aims to analyze how KD by using RK, EK, and SK in digital communication can lead to an improvement in consumer engagement by generating new knowledge flows from consumers to the organization. Thus, facilitating the sustainability and growth of organizations in a competitive environment. It also aims to highlight beneficial practices in engaging with consumers to leverage behaviors that foster knowledge exchange and knowledge sharing from consumers to the organization. The study aims to provide concrete recommendations for improving company-consumer interactions by stimulating these processes.

Researchers launched an online survey in October 2024 using a sample of 200 consumers. These participants were asked to fill in anonymously how the messages transmitted on digital networks influence them, what type of messages instigate them to various actions, inspire them, what feelings they experience, what experiences impact them, and what reactions are generated by each type of message received. The method used allows us to analyze the impact of emotional, rational, and spiritual messages as well as the impact of KD on the degree of consumer engagement and knowledge sharing of customers. The set of questions included in the questionnaire comprises open-ended questions, scale questions as well as questions based on comparative images, video, and text. The selection of questions allows us to analyze the impact of RK, EK, and SK based messages on consumers. Each answer will be scored on a scale from 1 to 5 to allow further analysis of the results. PLS-SEM software was chosen to test and validate the research model, in line with the updates by Hair et al. (2017). However, the interpretation of the results will take into account both the resulting data and the wider context of the study, including its limitations. The results will reflect actual consumer behaviors.

One of the potential limitations of the study may be related to the structure of the survey used. The desire to obtain as many results as possible has led to a relatively restricted set of questions, which could reduce the detail and depth of the responses. However, this limitation is partly compensated for by the high relevance of the chosen questions to the topic under investigation, ensuring that each question contributes meaningfully to the objectives of the study. Another limitation could be in the way the data collected is interpreted and integrated into the calculation of the consumer engagement index. This may pose challenges to the validity of the findings. Therefore, more attention needs to be paid to the processing of the data obtained in order to minimize the risks of biasing the results.

Keywords: knowledge, rational knowledge, spiritual knowledge, emotional knowledge, knowledge dynamics, customer engagement.

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The Relationship between Knowledge Management Practice and Product Competitive Advantage: Mediating effect of Corporate Social Responsibility

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EXTENDED ABSTRACT

In the era of globalization, where companies are increasingly digitally oriented, knowledge management is a key resource for achieving competitive advantage. The effects of knowledge management on business performance are of great importance for organizations, and a large number of studies have found that using knowledge management techniques to optimize business performance leads to a competitive advantage in the market (Breznik, 2017; Bolisani & Bratianu, 2018; Yusr et al., 2017). Knowledge management can be conceptually defined in several ways, and common to most definitions is the emphasis on the processes and elements of knowledge management (Yu et al., 2022). Knowledge management is the process of Acquisition, Creation, Refinement, Storage, Transfer, Sharing and Re-Use of information and knowledge within an organization (Davenport et al., 1998). The problem with many

organizations operating in developing countries striving for competitive advantage is that they invest more effort in identifying knowledge than in understanding how to create, share and use it (Argote & Ingram, 2000). Therefore organizations must design and implement activities that can help them leverage their value-creating capabilities, focusing on knowledge management (Bratianu, 2020). The main purpose of this study was to analyze the impact of knowledge management (KM) practice on product competitive advantage, with the mediating effect of corporate social responsibility (CSR). The Partial Least Square (PLS) approach to Structural Equation Modelling (SEM) was used to analyze the relationship between the observed variables. The authors personally conducted the interviews targeting senior managers in different organizations in Serbia. A total of 240 respondents participated, all questionnaires were properly completed. The questionnaire was designed and modified based on the questionnaires from similar studies (Lee & Wong, 2015; Wong, 2013; Kam-sing Wong, 2012; Turker, 2009; Wang et al., 2008; Darroch, 2003) and it contained 31 questions, divided into six groups: Knowledge Acquisition - KAq (7 questions), Knowledge Creation - KC (4 questions), Knowledge Transfer -KT (4 questions), Knowledge Application- KAp (6 questions), Corporate Social Responsibility – CSR (5 questions) and Product Competitive Advantage - PCA (5 questions). The results suggest that the direct effect of variables Knowledge Acquisition ($\beta = 0.344$, $p = 0.000$) and Knowledge Transfer ($\beta = 0.410$, $p = 0.000$) on Product Competitive Advantage is both positive and statistically significant. In addition, the bootstrapping method confirmed that Knowledge Acquisition and Knowledge Transfer also enhance Product Competitive Advantage through the partial mediation of CSR. However, the effect (both direct and indirect) of other two KM elements (Knowledge Creation and Knowledge Application) on PCA is statistically insignificant which doesn't support the proposed hypothesis. This study has both theoretical and practical implications. It contributes to very scarce results regarding the effects of knowledge management practice in Serbia. The practical implication for managers (especially in studied organizations) could be that they need to make more effort to create a culture that promotes and supports KM and CSR if they want to achieve a competitive advantage. The study also has some limitations. They are reflected in the small sample size, the fact that data from only one country was used and the measurement scale which was based on respondents' perceptions and evaluations. Future research will attempt to minimize all of these limitations.

Keywords: knowledge management, corporate social responsibility, competitive advantage, structural model

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The Anti-intellectualism and the Artificial Intelligence

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EXTENDED ABSTRACT

This essay explores one of the unintended consequences of artificial intelligence (AI) app usage: the rise of anti-intellectualism. This "unwelcome phenomenon" is characterized by a disinterest in "knowledge for its own sake" (Hofstadter, 1963, p. 16), a "fear of the critical mind," and opposition against intellectuals and universities. It also reflects the "businessman's distrust of experts working in any field outside his control, whether in scientific laboratories, universities, or diplomatic corps" (p. 11). Anti-intellectualism opposes intellectual endeavours that involve theories, research, and hypotheses, and is dismissive of the humanities—such as history, literature, and philosophy—which are viewed as irrelevant to the "real world" (Eigenberger & Sealander, 2001; Cobb, 2015)). Notable examples of anti-intellectual sentiment include the slogans "We work, we don't think" and "Death to intellectuals," chanted by some of the miners who were brought to Bucharest in June 1990 to suppress the students' anti-communist protests in University Square (Ilieșiu & Rus, 2010, p.10). It is important to emphasize that anti-intellectualism is not opposed to knowledge in general, but rather to knowledge that lacks immediate practical utility. As Hofstadter (1963, pp. 26-27) noted, doctors or engineers who are solely focused on job-specific knowledge, without cultivating a broader, disinterested intellectual curiosity, cannot be considered true intellectuals. From this perspective, the definition of anti-intellectualism becomes rather restrictive, as it revolves around three key dimensions: the belief in the uselessness of intellectuals, the devaluation of the humanities, and the dismissal of knowledge pursued for its own sake.

Numerous studies have highlighted the negative consequences of anti-intellectualism, particularly in relation to the attitudes and behaviours of higher education students and political actors. Eliaz (2008,

2009) demonstrates that students with higher levels of anti-intellectualism exhibit lower academic self-efficacy and are less likely to perceive academic cheating as unethical. Additionally, students' valuation of soft skills, their unrealistic job expectations, materialistic values, and overall satisfaction with college education are significantly related to anti-intellectualism (Frunzaru et al., 2018). Furthermore, students with higher levels of anti-intellectualism show less interest in lifelong learning and are less inclined to fact-check the accuracy of online information (Frunzaru & Corbu, 2020).

Regarding political attitudes and behaviours, Merkley (2020) indicates that anti-intellectualism contributes to populism and opposition to expert opinions on topics such as climate change, nuclear power, and genetically modified organisms (GMOs). Pedroso (2019) links anti-intellectualism to the philosophy of anarchist Bakunin, whose concept of "true-seeking" is fundamentally anti-elitist, as "Bakunin promoted a healthy suspicion of all 'intellectual authority'" (p. 84). Bristow and Robinson (2018) interpret Brexit as a popular rebellion against the elites in the United Kingdom, which involved elements of racism, xenophobia, and anti-intellectualism. In light of this, it can be concluded that anti-intellectualism has significant negative consequences for higher education, the labour market, and the political sphere. Therefore, it is essential to explore all possible factors that could contribute to an increase in anti-intellectualism, and one potential cause that should be considered is the use of AI.

A survey conducted by the Pew Research Center found that approximately one in four U.S. 11th and 12th-grade students who are aware of ChatGPT use this AI tool for schoolwork (Sidoti & Gottfried, 2023). The survey also revealed that a higher percentage of students who have heard of ChatGPT are white (72%) and come from higher-income households (75%). Similarly, most of the high school teachers believe that the use of AI tools in education brings more harm than benefits.

This raises an important question: Does artificial intelligence contribute to an increase in anti-intellectualism? Leonard (2013) argues that AI can undermine the culture of learning, as students may question, 'Why should I learn this if a computer can do it for me?' In this context, Zhai et al. (2024) note, based on a literature review, that students' over-reliance on AI dialogue systems negatively impacts cognitive abilities, including creativity and critical thinking. Moreover, Ju (2023) provides experimental evidence for the detrimental effect of AI applications on students' scientific learning outcomes. Similarly, Alasgarova and Rzayev (2024) found that AI usage can undermine students' autonomy, relatedness, and intrinsic motivation to learn. Therefore, while AI offers benefits in education, such as personalized learning, which can enhance student engagement and academic success (Zhai et al., 2024; Raja et al.,

2024), it may also lead to reduced intrinsic motivation for learning and critical thinking, potentially fostering anti-intellectualism.

Keywords: anti-intellectualism, knowledge, artificial intelligence, unintended effects, education.

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Knowledge management in the digital transformation era to enhance organizational resilience

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EXTENDED ABSTRACT

Knowledge in the knowledge economy becomes the primary source of sustainable competitive advantage, especially for organizations who not only acquire and share knowledge but also create knowledge. Knowledge is considered by Bratianu, C., & Orzea, I. (2013) as the core constituent of intellectual capital, and digital transformation is led by intellectual capital,

Knowledge management involves four processes: acquisition, creation, sharing, and transfer. Regarding how knowledge is created, shared, stored, and used within organizations, Bratianu, C., & Bejinaru, R. (2019) suggest that an analogy with thermodynamic principles can be made. The authors argue that knowledge fields and dynamics should be viewed as transformational processes, akin to energy.

Digital transformation is defined by Fitzgerald, M., Kruschwitz, N., Bonnet, D., & Welch, M. (2014) as "the use of new digital technologies (social media, mobile, analytics or embedded devices) to enable major business improvements (such as enhancing customer experience, streamlining operations or creating new business models)". Of the multiple aspects that are encompassed by digital transformation, digital knowledge management is considered to be the most important by Shao, B., Kuang, X., & Wang, H. (2024). Authors consider that digital knowledge management represents the foundation and the starting point for digital transformation. Bibliometric analysis performed by Yan, W. et al. (2023) concluded that digital knowledge management's outcomes generally affect organizational innovational capacity, capabilities and performance.

The boundary between tacit and explicit knowledge has become increasingly difficult to identify as digital technologies have evolved. Thus, computers, through their high storage capacity, data analysis and especially learning algorithms, can perform tasks that previously required human learning (Ciarli, T., Kenney, M., Massini, S., & Piscitello, L., 2021). The development of artificial intelligence allows computers, based on known information, to generate new information (Agrawal, A., Gans, J. S., & Goldfarb, A., 2018). Fakhar Manesh, M. et al. (2021) consider that organizations need to change how they approach knowledge management, so that they can reap the benefits of digital transformation and use knowledge more effectively.

Lengnick-Hall, C. A., Beck, T. E., & Lengnick-Hall, M. L. (2011) define organizational resilience as "a firm's ability to effectively absorb, develop situation-specific responses to, and ultimately engage in transformative activities to capitalize on disruptive surprises that potentially threaten organization survival" and Denyer, D. (2017) considers that organizational resilience represents "the ability of an organization to anticipate, prepare for, respond and adapt to incremental change and sudden disruptions to survive and prosper". The definition given to resilience by Koronis, E., & Ponis, S. (2018) is "the accumulated cultural capacity of an organization to make sense of risks and negative events, to absorb the pressure and ultimately protect the organization's social capital and reputation" and the authors consider that it is based on four pillars: the accumulated cultural capacity of an organization to make sense of risks and negative events, to absorb the pressure and ultimately protect the organization's social capital and reputation. Duchek, S. (2020) considers that the resilience process contains three phases: detection and activation, response, and organizational learning.

The conference paper will analyze the relations between knowledge management and digital transformation and research how this interplay influences organizational resilience. The research will be based on a literature review, a bibliometric analysis, using VOSviewer and a content analysis using ATLAS.ti. For our research papers from Web of Science and Scopus will be used.

Keywords: digital transformation, knowledge management, organizational resilience, knowledge creation, knowledge sharing.

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Knowledge Vulnerability. Representation using Tree Diagrams. A Method for Identifying Causes of Knowledge Risks.

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EXTENDED ABSTRACT

While there are numerous valuable papers addressing knowledge risks, very few delve into knowledge vulnerabilities. Furthermore, even less papers discuss the relationship between knowledge vulnerabilities and knowledge management risks as well as knowledge management systems. Our research on identifying knowledge vulnerabilities reveals that this topic is nearly absent from academic research.

There is a significant gap in the literature regarding knowledge vulnerabilities and their relevance, meaning, significance, and role in knowledge management risks and the knowledge management system (Bratianu & Bejinaru, 2022). One of our goals is to address this gap by explaining their meaning and designing tree diagrams that may be very useful for researchers and practitioners to visualize knowledge vulnerability connections and interconnections with knowledge risks, making it easier to mitigate the causes of risks generated.

This analysis is extremely useful for managers and strategists as it helps identify knowledge gaps in research and guides future research to cover these gaps. Vulnerabilities in any system are the main sources of potential risks, and this holds true for knowledge management systems as well (Bratianu, Bejinaru & Ursache, 2024). A good strategy would be to integrate the knowledge vulnerabilities system as one of the components of a knowledge management system, in order to reduce the likelihood of negative consequences resulting from risk occurrences (Bejinaru, 2022).

Considering that knowledge management systems are complex human creations designed to efficiently manage organizational intangible resources, analyzing and identifying knowledge vulnerabilities will create a notable advantage. The organization strategy may be settled and adapted based on the analysis result and depending on the goals pursued.

It is known that knowledge management systems operate within a dynamic economic and social environment with fast and unpredictable changes, which generate a high level of uncertainty (Bratianu & Bejinaru, 2022), and particular attention should be paid to managing knowledge risks. In the process of managing a system, knowledge vulnerabilities must inevitably be considered in managing knowledge risks because they reveal the weak spots that need to be covered and mitigated. We consider to be a necessity to focus on the process for managing knowledge vulnerabilities in the specialized literature on managing knowledge risks and the processes used to analyze knowledge risks.

During periods of economic instability or complex crisis situations, researchers and practitioners are drawn to vulnerabilities and risks. In critical moments, they are interested in understanding the causes that generate these risks, especially in relation to knowledge management. Identifying these causes may be done throughout a knowledge management system, because it is essential to assess the potential impact of knowledge risks on an organization and its knowledge management system. With events such as the COVID-19 pandemic, global military conflicts, and supply chain crises, organizations should prioritize research, budget and resilience efforts to mitigate the impact of these risks before they become critical and unavoidable.

The main purpose of this research paper is to analyze and identify knowledge vulnerabilities and to illustrate their connections and dependencies with knowledge risk management in a tree diagram format. Additionally, we conducted several analyses to delve deeply into how researchers have explored the concepts of "knowledge vulnerability" and "knowledge risk" in the context of knowledge management risks and other systems reflecting the real meaning of these concepts. It is widely acknowledged that a high level of risk with numerous potential negative consequences can impact an organization's performance. To reduce these negative consequences, managers should be able to identify all potential causes of knowledge risks and implement measures to either eliminate them or significantly mitigate their impact. We promote that one critical strategy which should be used to represent knowledge risk sources is depicting knowledge vulnerability in a tree diagram format.

To deal more efficiently with knowledge management risks, researchers must include further analyses even upon knowledge vulnerabilities system and their connections with knowledge risk management. Our research shows a clear knowledge gap between the generic knowledge risk management theory and knowledge management systems with respect to knowledge vulnerabilities and to knowledge vulnerabilities system that may be approached in future research papers. The contribution of this paper comes from identifying and revealing this knowledge gap, presenting a new potential direction for future research in knowledge management systems. Another contribution is the author's presentation in a tree diagram format of correlations between knowledge vulnerabilities and knowledge risks, analyzing the dependencies between these two domains.

Managing knowledge for an organization in today's world context has become a real challenge. Knowledge management has also become increasingly important in today's business environment, as organizations are facing more significant pressures to innovate and improve performance to keep up with all the changes happening in the world. Organizations that can effectively manage their knowledge can compete and adapt to changing market conditions. Managing knowledge vulnerabilities and assessing knowledge risks will give organizations a new competitive advantage that will make a difference between strong and weak organizations.

In the tree diagram, presented in figure 1, we analyzed "poorly paid employees" as a knowledge vulnerability, main purpose is to identify the knowledge risks and the final impact that might have for an organization if this vulnerability is not strategically managed.

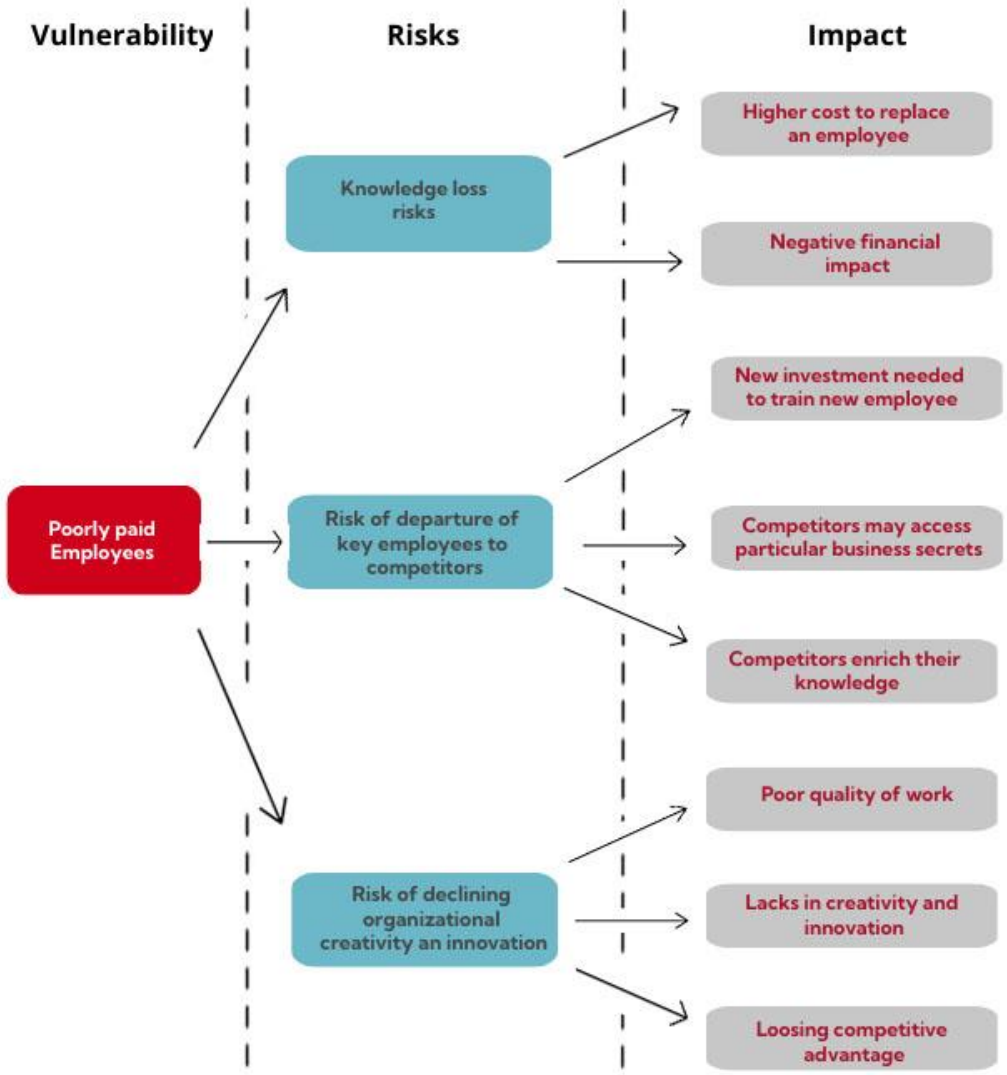

Figure 1. *Tree diagram for risks and impact generated by "poorly paid employees" knowledge vulnerability*

Keywords: Vulnerabilities, Risks, Knowledge Vulnerabilities, Knowledge Risks, Knowledge Management System

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Strengthening Knowledge Management for Resilient and Sustainable Transport Systems: Insights from the KEYSTONE Project

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EXTENDED ABSTRACT

The ongoing push for sustainable and resilient multimodal transport systems requires an innovative approach to managing knowledge within and between organisations, optimising the use of human resources, improving the social and working conditions of transport workforce, and addressing long-standing inefficiencies. The Horizon Europe KEYSTONE project tackles these challenges by developing a data, information and knowledge management framework designed to enhance operational efficiency, collaboration, and sustainability across the European logistics and transport sectors, while also empowering human resources in public control authorities and transport operators by reducing administrative burdens and increasing efficiency, consistency, and safety.

The KEYSTONE strategy focuses not only on streamlining knowledge flows between diverse stakeholders, including logistics operators, enforcement authorities, and infrastructure managers, but also on enhancing human decision-making and collaboration across those networks. Its primary innovation lies in the development of secure, standardised processes for knowledge sharing that promote transparency, collaboration, optimised operations, and cross-border compliance. These processes address

a critical gap in the logistics sector: the fragmentation of data, information, and knowledge across geographical and organisational boundaries, which often leads to inefficiencies and operational delays.

This paper will describe the core KM methodologies employed by the KEYSTONE project, particularly focusing on how data, information, and knowledge are created, transferred, and utilised within complex transport networks. The project leverages real-time, actionable data from logistics operators and authorities to inform decision-making, optimise resource use, and improve compliance with cross-border regulations. By providing a standardised data-sharing infrastructure, KEYSTONE enables faster, more informed decision-making, ultimately reducing transit times and operational costs while improving sustainability outcomes and enhancing the working-social conditions of personnel in both law enforcement and transport sectors.

In addition to facilitating knowledge flows, the KEYSTONE project addresses common KM challenges such as knowledge hoarding, data silos, and knowledge vulnerabilities. These risks are mitigated through the project's emphasis on secure data sharing and transparent communication channels, ensuring that knowledge is accessible to all relevant stakeholders in real time. By doing so, KEYSTONE promotes not only operational efficiency but also the resilience of transport networks in the face of disruptions.

The paper draws on initial findings from more than one year of engagement with stakeholders across the European transport and logistics ecosystem, which show that effective KM can lead to measurable improvements in transport efficiency and sustainability. These findings demonstrate significant reductions in transit times, lower energy consumption, and improved coordination across national borders. Through the integration of KM strategies into transport operations, the project offers a blueprint for how data, information, and knowledge can be harnessed to build more collaborative, sustainable, and resilient logistics systems unburdening human workers and enabling them to focus on higher-level tasks that require human insight and decision-making, thus elevating their status and improving working conditions.

The KEYSTONE project is an EU HORIZON-CL5-2022-D6-02 Research and Innovation Action. It has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101103740, managed by the European Climate, Infrastructure and Environment Executive Agency (CINEA). The content of this paper reflects only the authors' views, and the European Union is not responsible for any use that may be made of the information it contains.

Keywords: Knowledge management, Multimodal transport systems, Sustainable transport, Logistics optimisation, Cross-border compliance, Operational efficiency, Transport sustainability, Resilience, Standardisation, Data Sharing, Stakeholders engagement.

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Enhancing Resilience to Fake News through the Promotion of Trust in Science

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EXTENDED ABSTRACT

Recent shifts in the media ecosystem raise new concerns about the vulnerability of democratic societies to fake news and decreased trust in science. The spread of disinformation can have a devastating impact on our societies, undermining a broad range of human rights.

Traditional mass media organisations (press, radio, television) solve the problem of fake news with the use of good journalist practice: through verification of presented information. This research delves into the domain of science communication, exploring the strategic deployment of knowledge, media channels, and dialogue to foster scientific awareness, attention, and engagement among the general population. Recognizing the paramount significance of science represents a fundamental requirement for societal progress. Timely and appropriate reactions are imperative during geopolitical and health crises. While both journalists and scientists have established traditions of fact verification, the rapid evolution of communication technology necessitates the adaptation of new communication strategies and solutions

(Edelman, 2019). In developed media systems, basic sources of information are social media and search engines which find answers to the questions posed by users and provide such answers in accordance with the accepted and corrected programs that segregate and present media content. Fake news as a form of misinformation benefits from the speed of communication in today's media ecosystem, in particular across social media platforms.

Counteracting fake news by bolstering trust in science serves as a potential response to the evolving dynamics within the contemporary media landscape. For now, the predominant approach to combating fake news primarily relies on technological solutions, particularly algorithms facilitating knowledge verification. This research's novel contribution to the scientific discourse is a heightened focus on social and human factors that encourage societal collaboration to nurture trust in science and effectively disseminate scientific knowledge. Such collaboration as a social phenomenon remains an underexplored territory, warranting comprehensive research efforts (Combating Fake News: An Agenda for Research and Action, Harvard University, 2017). A recent discussion paper by the Pan-European Academies (ALLEA, 2022) has spotlighted this subject. Experts engaged in the ALLEA discussion advocate for active participation of scientists in online discourse, wherein they unveil and deconstruct fake news. This necessitates the synergy of their expertise with that of journalists, community representatives, and other stakeholders to reinforce trust in science as a cornerstone of an advanced society, anchored in the human right to access truth.

Current research shows (Besley, 2020) that there is a particular lack of up-to-date information on how to effectively reach scientific audiences using new communication technologies, as traditional communication channels (scientific press and TV), which produce quality content, have a limited, specific audience. Studies reveal that skepticism towards scientific knowledge and the media itself can lead to adverse mental health outcomes (Thomson et al., 2017), encompassing anxiety and anger, ultimately diminishing risk perception (Slovic & Peters, 2006). Such stressors exert enduring detrimental effects on public health, increasing instances of mental illnesses, mortality rates, family conflicts, and societal polarization (Thomson et al., 2017).

Research Questions: Key inquiries arising from this research initiative encompass the following: How can scientific knowledge be disseminated more expeditiously, reliably, and comprehensibly? How can the public be rendered more resilient to fake news and misinformation while facilitating improved dialogues between the public and scientists? How can institutions better collaborate in sharing

information, enhancing the accessibility of scientific knowledge, and optimizing existing communication channels? The wider interdisciplinary research on public attitudes, awareness, capacity and willingness to collaborate planned in this project is needed to increase public trust in science and to involve wider segments of society in the process of identifying and eliminating fake news.

In the context of media, reliability is one of the most important factors of perceiving information, however it is difficult to find explicit and undisputed reliability, because it depends on receivers' perception, their competences and critical attitudes. **The main objective** of this research is to assess science audience in Lithuania by conducting a segmental analysis of the Lithuanian population (representative sample (n=1000)) and to formulate science communication strategies targeting newly constructed science audience segments, linked to user profiles. Studies examining attitudes towards science have been routinely conducted in numerous countries (Eurobarometer, 2005; OST and Wellcome Trust, 2000), revealing that trust in science as an information source depends on citizens' political beliefs, economic and social statuses (Funk, 2017). Further differentiation is observed between urban and rural populations (Kawamoto et al., 2013), variations in knowledge across scientific disciplines in response to sociodemographic characteristics (Kristiansen et al., 2016), and a positive correlation between interest in science and the intensity of online science knowledge seeking activities (Nisbet et al., 2002). Additionally, research indicates that the ability to distinguish between scientific and fake news is positively correlated with critical thinking skills, the capacity to verify information, and the selection of reliable information sources (Wagner, Boczkowski, 2019). Despite compelling evidence illustrating significant differences among science audiences with respect to age, gender, education, and other factors, there is a paucity of research focusing on their organization into scientifically valid segments. Moreover, research shows that in order to ensure effective science communication and education, it is important to take into account the importance of the population's cognitive (Tang, 2017), developmental (Blumberg, Brooks. 2017), motivational, and experiential (Burch et al, 2019), and even personality and emotional (Eligio, 2017) factors.

The originality of this research stems from its emphasis on segmenting the science audience based not only on sociodemographic characteristics but also on cognitive, personality, and behavioral variables (Lotenberg et al., 2011). This approach to clustering has been applied only s in the international context (Guenther and Weingart, 2017; Kawamoto et al., 2013). Moreover, it identifies factors that either strengthen or weaken constructive attitudes towards science and critical attitudes towards fake news. Following the development and adaptation of a multidimensional research instrument, four population

segments were defined and the user profiles created by linking 3 components: cognitive factors (attitudes towards science, attitudes towards fake news), behavioural factors (information search and media use) and personality variables. This analysis, uncovering relatively stable associations between subjects' attitudes toward scientific knowledge and their cognitive, personal, and behavioral characteristics (Roser-Renou, 2016), represents a novel, valuable, and informative contribution for shaping science communication and education policies for counteracting fake news.

Methodology: To comprehend public attitudes toward science, a representative quantitative survey (with a representative sample of n=1000) was conducted. The methodology for this quantitative research was based on the concept that segmentation according to attitudes towards science, linked with the specific characteristics of media consumption among the identified segments, can provide valuable insights for targeted science communication. Many research studies have indicated that communication tailored to specific segments enhances meaningfully audience understanding (Guenther, Weingart, 2017; Nisbet, Markowitz, 2014; Kawamoto et al., 2013; Schafer et al., 2018). The survey instrument incorporated elements from three measurement tools. The Swiss Science Audience Cluster Analysis tool, which segments the population based on attitudes toward science and evaluates information-seeking and media usage patterns (Schafer et al., 2018), was chosen due to the socio-demographic similarities with Lithuania and its innovative approach linking segments to media consumption habits. Cross-cultural research methodologies were employed to translate this research instrument into Lithuanian (Brislin, 1980). Another tool for assessing attitudes toward fake news, developed through a representative survey in Germany (Reuter et al., 2019), was included because of its unique combination of research variables: attitudes toward fake news, experience with fake news exposure, and the ability to combat fake news. Lastly, The Big Five-2 (Soto, 2017), a personality trait assessment tool, was adapted for this research (Sindermann, Cooper and Montag, 2020).

The first outcomes of the research summarize the recent experience of science communication in Lithuania and other countries, based on the analysis of the most relevant scientific sources and best practices. The second part provides the results of segmentation analysis of science audience in Lithuania. Based on the research results, four science audience profiles were constructed and new science communication strategies formulated. In addition, recommendations on organizational, communication and educational measures were formulated. Implemented measures could increase citizens' trust in science and strengthen the public's resilience towards fake news.

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Keywords: Fake news, science communication, disinformation, trust in science.

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The Role of Non-Profit Organizations in Driving Net Zero Initiatives in the Food Industry

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EXTENDED ABSTRACT

This study aims to investigate the role of Non-Profit Organizations (NPOs) in order to have a more in-depth understanding of the relationship between the activity carried out by these organizations, the commitment towards Net Zero in the food industry and the propensity to consumer purchasing.
The article will first analyze the need for corporate social responsibility (CSR) in the food industry. Subsequently, using a theoretical approach, a literature review will be performed to describe the role of NPOs and why they are important to pursue the Net Zero. The paper aims to answer two research questions: What is the propensity of consumers to purchase products from companies active towards Net Zero? How does consumers' propensity to purchase vary when they learn of a scandal relating to the emission of climate-altering gases reported by an NPO?

The paper reports preliminary results from which it emerged that consumers have different reactions to the scandals reported by NPOs. Food companies should pay more attention to CSR activities and reduce the level of greenhouse gas emissions to remain competitive in the long term. With their activity, NPOs play a role in contributing to the achievement of the Net Zero 2050 objective because they put pressure on food companies to reduce climate-changing gas emissions along the entire supply chain.

Keywords: Non-Profit Organizations, Net Zero, Food industry, Sustainability.

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The Current Global Migration and Technological challenges: Advantages or Threat to the European Union Social Security

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EXRTENDED ABSTRACT

This paper discusses the current issue of migration in the modern global landscape, which is a subject of intense interest for almost all countries. In the modern world, migration has a significant impact on the technological capabilities of both receiving and sending countries. The paper also focuses on the impact of migration on the demographic development of the European Union (EU) and its connection with sustainable development, which is considered through the prism of the tasks of the 2030 Agenda. In our paper, we will mainly analyze the processes taking place in the EU countries from the perspective of sustainable development.

Migration has always been the subject of intense debate. It brings positive benefits to the receiving country, for example, strengthening the workforce, new skills, investments, cultural diversity, etc. In general, the changes caused by migration represent both opportunities and challenges for the social security systems of the EU. These forces affect the sustainability, equity and effectiveness of social security in the EU Member States. These aspects are often closely interrelated, as the directions of migration flows and their causes, among other factors, are significantly influenced by technological progress and vice versa. The paper also analyses global trends in modern migration, the diversity of flows, ethnic and national origins, as well as the motives and enabling factors for migration. Attention is also focused on the multifaceted nature of the impact of migration.

The analysis concludes that, if managed correctly and effectively, the changes resulting from migration and technological changes can be positive factors for the EU social security system, strengthening its sustainability. Accordingly, the social security system becomes more resilient to future challenges. On the other hand, the existence of accompanying problems and obstacles creates social tension, to which the state must respond by developing and implementing appropriate policies.

Keywords*:* Migration, Demographic Landscape, Sustainable Development, European Union (EU)

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Integrating Sentiment Analysis in Tourism: A Data-Driven Approach for Lake Como's Sustainable Development

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EXTENDED ABSTRACT

Large-scale data have progressively become common information sources in tourism sector for policymakers and local planners who aim at monitoring tourism flows, forecasting the number of arrivals and overnight stays in touristic destinations and estimating tourists' expenditures. See García-Madurga and Grilló-Méndez (2023), Chen et al. (2022) and Samara et al. (2020) for recent overviews. This data-driven approach also helps to prevent and manage a series of phenomena, including overtourism, promoting a more equitable distribution of tourists across different seasons or lesser-known locations, all while protecting local communities and preserving the cultural and natural heritage of the most sensitive destinations.

A part of these big data comes as pieces of objective information collected for administrative purposes; another part is made by subjective measures conveyed through the internet in the form of personal experiences, comments and opinions expressed by tourists and professional operators.

That is the reason why an increasing number of tools for semantic and sentiment analysis has been made available to investigate the opinion of actual or potential tourists (and operators) about specific

destinations or hospitality structures. See, as an example among others, the rich bunch of studies about the opinion of Airbnb users (Cheng and Jin 2019; Lee et al. 2020; Thomsen and Jeong 2021).

The time seems ripe to integrate the instruments for sentiment and opinion analysis into the toolkit of local decision makers in the tourism sector, giving them an adequate role in the destination branding process, both on the public and private side.

From a methodological point of view, this study will extract the aggregate meaning from the opinion expressed by tourists on publicly available platforms, using Google Maps Reviews, with the help of natural language processing (NLP) algorithms.

Google reviews are user-generated ratings that evaluate a place based on the user's experience interacting with it. These reviews serve a dual purpose: for consumers, they function as a guide, helping to clear doubts when engaging with a brand or business they are unfamiliar with. For businesses, they are a tool to assess performance and a motivator to improve products, services, and customer relations. Some examples can be found checking Alzboun, et al., 2023 or Riswanto et al., 2023.

The scraper tool used to collect all reviews pertaining to the Lake Como area (https://maps.app.goo.gl/F3s1bsW4UwfEsrxp6) was sourced from a GitHub repository created by Omkarcloud and last updated in March 2024. Approximately 10,000 reviews were extracted, comprising textual content, a star grading system ranging from 1 to 5, the number of likes received by each review, and the date of publication.

Both sentiment (positive, neutral, negative feelings) and semantic (or opinion) analysis will be performed, in order to evaluate how tourists appreciate the features of the destination and of the hospitality network and what they regard as more relevant in their own experience.

Moreover, social network sites will also be considered as possible data sources, in order to investigate also the opinion of potential tourists.

Large language models (LLM) recently provided by Artificial Intelligence developers will be taken into consideration as possible analytical instruments.

In the context of a tourist destination, the evaluation of feedback from tourists is relevant for the optimization of visitor flows and the development of sustainable tourism. It is very important to identify which topics are most frequently discussed by tourists within that destination in order to fully evaluate its strengths and weaknesses.

For this reason, we want to perform some experiments of text mining and meaning extraction from publicly available large-scale datasets containing the tourists' opinion about different kinds of experiences in the Lake Como district.

The aim is twofold:

a) giving a contribution to the definition of the place identity – in terms of perceptions of tourists - of a local area which is strongly characterized by almost unique tourism resources and related activities;

b) providing the public and private decision-makers of the Lake Como district with a first sketch of a tool for monitoring strengths and weaknesses of the Lake Como destination, as perceived by current and potential visitors of the area and possible critical issues raised by residents.

Considering the project, we will expect to achieve a significant landscape of the features of the Lake Como district, as perceived and evaluated by tourists and operators.

A list of the strengths and weaknesses of the Lake Como district as a touristic destination can also be drawn up, estimating their own relative weights in the evaluation of the touristic experience. One potential finding to be verified, given the current context, could be the phenomenon of overtourism, which has been particularly evident in recent times in the Lake Como area.

This work has also several practical and policy implications, in fact, the research framework will constitute a first sketch of a tool made available to private and public decision makers. The tool will make sentiment and opinion analysis available in real time, exploiting the well-known four main features of large-scale datasets (volume, velocity, variety and veracity).

In particular, entrepreneurs and marketing operators will be able to finalize the destination branding step taking advantage of what tourists show to appreciate and what potential customers would like to find in the destination. On the other side, policymakers will integrate subjective evaluations from the current and potential demand side with the more familiar and objective information from supply side, improving monitoring, forecasting and planning activities.

Keywords: Tourism, Lake Como District, Scraping, Large language models (LLM), Sentiment Analysis

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Sustainable Food Consumption Habits among University Students Aged 18 to 26

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EXTENDED ABSTRACT

The growing awareness of sustainability, health and ethical issues has profoundly influenced consumer behaviour worldwide, particularly among the younger generation. Food consumption is closely linked to cultural, economic and environmental contexts. In recent decades, food safety crises such as avian influenza, mad cow disease and contamination scandals have led to growing scepticism about industrial food production (Haddock, 2005). These crises, together with increasing awareness of issues such as pesticide use, GMOs, animal welfare and climate change, have motivated a shift to more informed consumption practices (Heyder & Theuvsen, 2012; Jongman & Fisher, 2021). University students aged 18-26, as emerging consumers, are a critical population for defining future food consumption trends (Nemeth et.al., 2019). University students, often in a life transition phase, are particularly open to adopting new habits. However, their choices are mediated by cultural norms, economic constraints and global influences, making this demographic a valid target for understanding sustainable consumption (Holotová et al., 2021). This study aims to explore the factors influencing sustainable eating habits among university students. This study aims to answer the following questions:

- What are the main factors influencing the eating intentions and habits of university students?
- How do perceptions of health and environmental impacts influence their choices?
- What are the intercultural differences in food consumption habits?

Through qualitative interviews, the study will examine the socio-cultural, health and environmental factors that determine food choices.

Research indicates that a blend of personal values, cultural contexts, and external pressures shapes food consumption decisions. Haddock (2005) highlights that repeated food safety crises have eroded trust in industrial food systems, leading consumers to prioritize transparency and local sourcing. Ethical concerns, such as mass culling practices and greenhouse gas emissions, are further driving a shift toward plant-based diets and sustainable food systems (Richards & Friess, 2016; Jongman & Fisher, 2021).

Health is another pivotal factor. Studies reveal that young adults increasingly view processed foods as detrimental to long-term well-being due to high sugar content, preservatives, and other additives (Heyder & Theuvsen, 2012). Additionally, environmental awareness has surged in the wake of climate change discussions, with students increasingly recognizing the ecological footprint of long-distance food transportation and unsustainable agricultural practices (Eskola et al., 2020). However, despite these trends, economic and cultural constraints often limit students' ability to align their behaviors with their values. For instance, Passet (2021) notes that while local food sources gained traction during the COVID-19 pandemic, affordability remains a significant barrier for many. Understanding these nuances requires a multi-dimensional and interdisciplinary approach.

This descriptive research uses a qualitative approach to capture the nuances of university students' perspectives in different cultural contexts. Fourteen open-ended interviews were conducted with participants aged 18-26 from France, Italy, Mexico, Pakistan, Spain, South Africa, Macedonia, Turkey and the United States. Specifically, the study targeted students enrolled in higher education institutions, ensuring a mix of genders, disciplines and socioeconomic backgrounds. Participants were recruited through university networks and social media, with the aim of capturing different points of view, so as to also take into account different social and religious backgrounds. The instrument used for data collection was a semi-structured interview with 73 questions to explore students' eating habits, perceptions of health and sustainability, and external influences on their choices. Questions ranged from personal reflections on food preferences to broader views on the ethical and environmental implications of consumption patterns. Data analysis was conducted by analysing the participants' responses, which were systematically transcribed and coded using thematic analysis. Key themes were identified, including consumption habits, health considerations and environmental awareness. The data were further analysed to highlight patterns and contrasts across countries, providing a comprehensive view of cross-

national differences. In short, the results showed that students often emphasised the role of family traditions and social norms in shaping their food preferences. For example, Mediterranean students emphasised the cultural importance of communal meals and fresh produce, while South African participants noted the prevalence of meat-based diets rooted in cultural celebrations.

On the other hand, many participants expressed concern about the health impact of processed foods, citing the high sugar content and artificial additives. However, awareness varies, with European students demonstrating a greater focus on organic and locally sourced foods than their counterparts in developing countries. Regarding environmental awareness, it was found that students increasingly recognise the ecological implications of their choices, such as the carbon footprint of imported products. However, this awareness often comes up against economic constraints, as sustainable options are perceived as more expensive. Furthermore, the students interviewed recognise the balanced diet as one containing a proportion of animal protein. Although common themes emerged, cultural differences were evident. For example, Sub-African students prioritised affordability over sustainability, while the Italian students showed a greater willingness to pay for organic products. Similarly, environmental awareness was more pronounced in countries with a strong public discourse on climate change, such as the United States.

The results highlight the complexity of university students' food consumption habits, which are determined by a combination of cultural, social and economic factors. In particular, students' heightened awareness of health and the environment reflects a generational shift towards more conscious consumption. However, this shift is mitigated by practical constraints such as cost and accessibility. These findings are in line with previous studies (Haddock, 2005; Richards & Friess, 2016), which highlight the tension between consumer values and systemic barriers. Furthermore, the observed cross-national differences reinforce the importance of adapting policy interventions to local contexts. For example, promoting sustainable practices in developing countries may require addressing economic barriers, whereas in developed countries one may focus on education and awareness.

This study is not without limitations. The small sample size and the use of qualitative methods may limit the generalisability of the results. Furthermore, the study focuses on self-reported data, which may be subject to biases such as social desirability. Future research could address these limitations by using mixed methods and larger, more diverse samples.

Based on this study, future research could explore:

- Quantitative analyses to validate the themes identified in this study and assess their prevalence in larger populations.

- Longitudinal studies to examine how food consumption habits evolve over time, particularly as students transition to different life stages.

The research highlights both the opportunities and challenges of promoting sustainable eating practices among young consumers. The findings emphasise the importance of addressing systemic barriers to sustainability, from affordability to accessibility, by leveraging growing awareness of ethical and environmental issues.

***Keywords*:** Sustainable consumption, University students, food habits, environmental awareness, health perceptions.

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Examining the Impact of Environmental Information on Food Decision-Making of Consumers

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EXTENDED ABSTRACT

The key research questions of accounting and disclosure are a growing line of research. Consumers, in particular, influence companies' product ranges and, consequently, their environmental impact. In their review of corporate social responsibility (CSR) studies, Christensen et al. (2021) and Grewal and Serafeim (2020) identify consumers as a stakeholder group that could drive the potential impacts of a CSR reporting mandate on the transition to a more environmentally sustainable economy and society. Proposals by the SEC, the European Commission, the European Financial Reporting Advisory Group (EFRAG) and the new International Sustainability Standard Council (ISSB) require disclosure of CO2 emissions and carbon intensity, as well as the integration of elements of existing water reporting standards. These requirements are not only aimed at meeting the information needs of investors, but also, more generally, at supporting climate change mitigation and adaptation. In accounting and finance, information processing, judgement and decision-making by investors have been extensively studied (see Blankespooret al., 2020) for a recent overview), but relatively little attention has been paid to consumers so far. Outside of accounting, however, there is an active debate about the effect of food labels on consumer decisions (see Bleichet al., 2017) and Swifts and Fat (2021) for reviews but also Plamondon et al., (2022). Only recently, researchers have begun to evaluate the role of information contextualization in this regard (e.g., Camilleri et al., 2019, Hahnel et al., 2020). The research aims to contribute to this transdisciplinary debate with insights informed by, and relevant to, an accounting perspective.

The primary aim is to assess the impact of environmental labeling on consumer choices, with specific hypotheses addressing:

- H1: Inclusion of environmental impact information for food menu items triggers greater selection of items with lower environmental impact.

- H2: Inclusion of environmental impact information for food menu items triggers greater selection of items with lower environmental impact, whereby the impact is more profound among customers with stronger environmental attitudes.

- H3: Inclusion of environmental impact information for food menu items triggers greater selection of items with lower environmental impact, whereby the impact is more profound among customers who are (a) younger, (b) female and (c) higher educated.

- H4: There are significant differences in food choices between consumers who prioritize environmental sustainability and those who do not when provided with environmental impact information.

The experiment took place at "La Locanda del Pastaio", a Mediterranean restaurant specialising in fresh handmade pasta and locally sourced ingredients. An intergroup design was used in which consumers were randomly assigned to receive a menu with an environmental impact label, which included CO_2 emissions and water consumptionor a standard menu.

The experiment was conducted over a period of 10 days and involved 300 customers.

Data collection included:

- Observation for monitoring of food choices;

- Post-meal surveys to assess attitudes and motivation; and

- Quantitative analysis uses statistical methods to evaluate hypotheses.

The findings support H1, confirming that environmental labeling has a significant impact on consumer behavior. This aligns with previous studies, such as Garnett et al. (2019), which reported similar effects in university cafeterias. The correlation analysis reveals significant associations between environmental attitudes and food choices. The Pearson correlation matrix demonstrates that individuals with stronger environmental awareness are more likely to select sustainable food options.

H2 is also supported, emphasizing the need to consider attitudinal components in designing interventions. The contingency table analysis and chi-square tests show significant differences in food choices between those who prioritize sustainability and those who do not. Specifically, the chi-square test indicates that

individuals who value sustainability are significantly more likely to choose low-impact food items. Cross-tabulation data reveals that 58.9% of participants prioritizing sustainability in the experimental group chose low-impact dishes, compared to only 41.1% in the control group.

Regarding H3, which explores the role of age in food choices, the chi-square test results ($p = 0.779$) suggest that age does not have a significant influence on consumers' food decisions in this sample. On the other hand, gender shows a notable effect, with females demonstrating a higher sensitivity to environmental factors when making food choices. This finding is consistent with existing literature, which suggests that women are generally more environmentally conscious. The significant mean difference between male ($M = 2.00$) and female ($F = 0.66$) participants ($p < 0.001$) supports this. Education emerges as a key determinant in food choices, particularly in relation to sustainability. The chi-square test ($p = 0.020$) confirms that there is a significant relationship between educational level and sustainable food choices. The ANOVA test further highlights significant differences between education groups ($p = 0.013$), with individuals holding higher educational qualifications more inclined to select low environmental impact options.

H4 is reinforced by these findings, as prioritization of sustainability significantly shapes food choices. The results underscore the importance of sustainability prioritization in moderating the effect of environmental labeling, suggesting that this factor is crucial in influencing consumer behavior.

These results affirm that environmental labeling can effectively alter consumer behavior, particularly among those with strong environmental attitudes or who prioritize sustainability. The integration of environmental information in consumer environments can thus serve as a potent tool for promoting sustainable consumption. The study’s naturalistic experimental design demonstrates the practical benefits of such interventions, suggesting that both governmental bodies and businesses can leverage environmental labels to drive demand for low-impact food options.

The research also makes a contribution to the environmental accounting literature by emphasizing the role of non-financial disclosure in shaping consumer decisions, an area that has received less attention in prior studies. This highlights the potential for environmental labels, paired with consumer education, to create broader shifts toward sustainability goals.

In conclusion, the study confirms that environmental labeling is a powerful tool for promoting sustainable food choices, particularly when combined with supportive consumer attitudes and prioritization of sustainability. As companies and governments strive to enhance their environmental responsibility, such

interventions are likely to play a crucial role in aligning individual consumer choices with global sustainability objectives. However, there are limitations, including the specific restaurant setting of this study, which may impact the generalizability of the findings. Future research could expand to other contexts, such as online platforms, to assess the broader applicability of these results. Additionally, longitudinal studies could provide insights into the long-term effects of repeated exposure to environmental labeling.

Keywords: Accounting and Disclosure; Consumer Behavior; Food Experiment; CO2 Emissions and Water Waste; Information Contextualization.

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Sustainable tourism and technology: the case of glamping in the Puglia Region

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EXTENDED ABSTRACT

In response to the many challenges of the changed competitive scenario, tourism has had to adapt and innovate, bringing out new trends that highlight a significant transition towards more conscious and sustainable forms of tourism. This transformation is not only an immediate response to the challenges of the external environment, but represents a deeper change in the approach of tourism and tourist players to travel. In this context, Glamping short for "glamorous camping" stands out as a unique and fascinating alternative. It fits harmoniously between contemporary needs for comfort and the aspiration for a more authentic experience in contact with nature. This form of tourism allows travelers to enjoy the services and comforts offered by sophisticated accommodations, while experiencing a return to their origins, immersing themselves in the beauty and serenity of unspoiled natural environments. In this way, Glamping presents itself as an alternative response, fitting perfectly into the emerging narrative of more responsible and environmentally conscious tourism, reflecting the new perspectives of travelers eager to connect more meaningfully with the world around them. This essay aims to analyze the major trends of sustainable tourism in Italy, with a look at the market and the development opportunities of Glamping, which is taking on interesting dimensions. The presentation of a case study will give a concrete and applicative slant to this paper. This case study concerns a Glamping project (still in its infancy), located

in the rural area of the Umbra Forest in Puglia. Through direct interviews and interviews with the creator and director of the project, we will obtain a practical and detailed view of the challenges and opportunities faced in the implementation of a sustainable tourism project. In order to generate sustainable project development, technology plays a key role. The case study demonstrates how by combining a direct and tangible approach focused on 'face-to-face' interaction with the public with a strategic digital approach (based on the publication of digital content promoting the tourist facility and communicating its values), it is possible to generate value and contribute to sustainable tourism development. The case study not only represents a tangible example of eco-friendly tourism but is organically part of the regional strategy aimed at promoting responsible tourism and counteracting seasonality.

Keywords: eco-friendly tourism, glamping, responsible tourism, sustainable tourism, tourism, technology, digital strategy.

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Sustainable Dining Dynamics: Consumer Perceptions in Traditional and Rural Restaurants

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EXTENDED ABSTRACT

The Ho.Re.Ca. sector, particularly through rural and traditional restaurants, presents a compelling avenue for implementing sustainable practices in the food service industry. While traditional restaurants operate within conventional business models, rural establishments offer unique opportunities to promote environmental sustainability through shortened supply chains and local sourcing (Gazzola et al., 2023). Consumer awareness of environmental and social impacts has increased significantly, driving businesses to adapt their practices accordingly (Gazzola et al., 2022). Rural restaurants, especially, demonstrate potential for balancing traditional dining activities with sustainability goals, promoting both environmental stewardship and local economic development (Yang, 2012). The landscape of modern dining establishments presents a fascinating dichotomy between traditional restaurants and rural restaurants within agritourism settings, each offering distinct experiences and operational models. Traditional restaurants, predominantly situated in urban environments, emphasize culinary diversity and sophisticated dining experiences, featuring menus that draw from various international influences and maintain consistent offerings year-round (Lepkowska-White, 2017; Walker, 2021). In contrast, rural restaurants embedded within agritourism establishments represent a more territorially rooted approach

to dining, where menus are intrinsically linked to local agricultural production and seasonal availability (Mahaliyanaarachchi, 2015). These establishments not only serve as dining venues but also function as cultural bridges, offering visitors immersive experiences that connect them directly with food producers and agricultural practices (Che, 2008). While traditional restaurants prioritize menu variety and rapid customer turnover to maximize profitability, agritourism restaurants operate under specific regulations requiring a substantial portion of their ingredients to be sourced from their own production or local farms (Morales-Zamorano et al., 2020). This fundamental difference in sourcing and operational philosophy extends to the overall business model, where agritourism restaurants integrate dining services with lodging and agricultural activities, creating a comprehensive rural experience rather than focusing on culinary offerings (Brune et al., 2021). The sector's growing significance is evidenced by recent statistics, with ISTAT reporting 25,849 active agritourism businesses in 2022, marking a 1.8% increase from the previous year and generating a production value of 1.5 billion euros. This growth suggests an increasing appreciation for authentic, sustainable dining experiences that celebrate local traditions and maintain direct connections to agricultural origins. Despite extensive research on agritourism and traditional dining, a notable gap exists in understanding consumer perceptions of rural restaurants compared to traditional establishments. This study aims to investigate consumer preferences and attitudes toward sustainability practices in both settings, with particular attention to willingness to pay and the influence of urban proximity on dining choices (Yang & Luo, 2021).

The analysis is based on a questionnaire administered to more than 600 people in 2023, and the data were processed using descriptive and inferential methods.

The results of this study reveal significant distinctions in how consumers perceive sustainability practices between traditional and rural restaurants across five key dimensions: Local Products, Biological Products, Renewable Energy, Sustainable Material, and Food Waste Minimization. The findings indicate that sustainability perceptions are primarily linked to restaurant typology rather than demographic characteristics, with the notable exception of vegetarian options. While consumers demonstrate willingness to pay an 8-9% premium for sustainable practices, the absence of significant demographic variations challenges existing assumptions about gender-based sustainability preferences. Geographical accessibility emerges as a crucial factor, particularly for Generation Z, suggesting that physical distance may override sustainability considerations for younger consumers. The study reveals that rural restaurant’s customers consider sustainability as more important than urban restaurant’s customers regardless of demographic features. Concerning implications, rural restaurants should invest in

sustainability strategies and improve accessibility. The findings contribute to both theoretical frameworks and practical applications in sustainable rural dining management.

Keywords: Agritourism - Rural Restaurant - Sustainability - Consumer Preferences.

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Strategic innovation in the Italian cyber security startups

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EXTENDED ABSTRACT

The paper explores the complex interaction between strategic innovation, increasing market complexity and cybersecurity, focusing in particular on Italian startups that operate in the cybersecurity sector.

Italian cybersecurity startups operate in a global landscape characterized by escalating complexity and volatility, driven by an interplay of geopolitical instability, economic uncertainty, and rapid technological advancements.

Positioned strategically in the Euro-Mediterranean region, Italy finds itself at a crossroads of Europe, Asia, and Africa, which amplifies its significance as a key player in global economic and security dynamics. This unique position creates substantial opportunities for the nation and its businesses, especially in the burgeoning cybersecurity sector, while simultaneously exposing them to multifaceted challenges. For Italian cybersecurity startups, these dynamics demand not only resilience but also strategic innovation to remain competitive and relevant in an increasingly interconnected and digitalized global economy.

Geopolitical instability has emerged as a defining feature of the modern era, with cyberspace becoming a critical domain for economic, military, and political interactions. The rise of "fourth-generation conflicts," characterized by asymmetric power struggles, highlights the growing importance of digital

tools in shaping global affairs. Italy, as a key actor in the Euro-Mediterranean region, must navigate these challenges while capitalizing on its geographic and strategic advantages.

For cybersecurity startups, the intersection of geopolitics and digitalization presents both risks and opportunities. On one hand, startups must contend with rapidly evolving threats, including state-sponsored cyberattacks, misinformation campaigns, and the weaponization of digital platforms. On the other hand, they are uniquely positioned to develop innovative solutions that address these challenges, enhancing both national and global resilience.

Economic instability, exacerbated by the COVID-19 pandemic, has placed unprecedented pressure on global markets and supply chains. The pandemic accelerated digital transformation across industries, forcing businesses to adopt new technologies at a breakneck pace. While this shift created opportunities for innovation and efficiency, it also exposed vulnerabilities in digital infrastructures, underscoring the critical role of cybersecurity. Italian startups, already operating with limited resources and constrained access to capital, faced additional hurdles as they sought to adapt to this new reality.

The economic turbulence highlighted the importance of agility, as businesses had to reassess their priorities and strategies to survive. For cybersecurity startups, this meant not only developing cutting-edge solutions to emerging threats but also finding ways to scale their operations sustainably in a highly competitive market.

One significant trend that has gained prominence in the wake of global disruptions is back-reshoring, where companies relocate production and operational activities closer to home to mitigate risks and enhance value chain control. This trend aligns with broader efforts to increase economic resilience and sustainability.

For Italian cybersecurity startups, back-reshoring offers opportunities to provide localized, customized solutions that address the specific needs of domestic and regional clients.

By bringing critical processes under local oversight, businesses can reduce their exposure to geopolitical tensions, supply chain disruptions, and cyber espionage. Additionally, back-reshoring creates a favorable environment for collaboration between startups, established firms, and government agencies, fostering an ecosystem of innovation and security.

The role of political factors in shaping market dynamics is particularly pronounced in the cybersecurity sector. Disinformation and misinformation campaigns, often orchestrated by state or non-state actors,

have become pervasive, eroding public trust and destabilizing institutions. Italian cybersecurity startups are well-equipped to address these challenges, given their expertise in developing tailored solutions that respond to specific security needs. However, succeeding in this domain requires more than technical expertise.

Startups must build strong partnerships with government bodies, research institutions, and private-sector stakeholders to create a unified approach to combating cyber threats. Such collaboration is essential for fostering trust, ensuring regulatory compliance, and supporting the development of robust security frameworks that can withstand the pressures of an evolving threat landscape.

Technological advancements, such as artificial intelligence (AI), blockchain, and automation, are redefining the cybersecurity landscape. These innovations offer transformative potential, enabling businesses to enhance efficiency, scalability, and decision-making capabilities.

However, they also introduce new vulnerabilities that must be addressed proactively. For example, while AI can be used to detect and respond to cyber threats in real-time, it can also be exploited by malicious actors to launch more sophisticated attacks.

Similarly, blockchain technologies, which provide unprecedented transparency and security, are not immune to emerging risks, such as vulnerabilities in smart contracts or decentralized applications. Italian cybersecurity startups must navigate these complexities by integrating cutting-edge technologies into their solutions while maintaining a strong focus on risk management and resilience.

The internationalization of business strategies further underscores the importance of cybersecurity for Italian startups. Expanding into foreign markets requires navigating a complex web of geopolitical, economic, and regulatory factors, where cybersecurity compliance often serves as a prerequisite for market entry.

Startups must balance the demands of international clients with the need to protect their intellectual property and maintain operational integrity. Effective internationalization strategies involve embedding cybersecurity into every aspect of the business, from product development to customer engagement. This comprehensive approach not only reduces risk but also enhances the scalability and resilience of operations, positioning startups as credible and reliable players in the global market.

Cybersecurity is increasingly recognized as a cornerstone of global competitiveness. Businesses that prioritize cybersecurity not only protect their digital assets but also build trust with clients, partners, and stakeholders.

For Italian startups, leveraging cybersecurity as a strategic asset offers a pathway to differentiation in the crowded international marketplace. Startups that integrate robust security measures into their core operations can position themselves as leaders in the field, offering innovative solutions that address the unique challenges of a digitized and interconnected world. This is particularly relevant in industries where data protection and operational continuity are critical, such as finance, healthcare, and critical infrastructure.

Despite these opportunities, Italian cybersecurity startups face significant obstacles. Limited access to funding and investment capital restricts their ability to scale operations and compete with established global players.

The cybersecurity market is dominated by multinational firms with extensive research budgets, well-established client networks, and the ability to invest in large-scale innovation initiatives. To thrive in this environment, Italian startups must adopt agile business models that enable them to respond quickly to market demands and technological changes.

Collaboration with academic institutions, participation in international research consortia, and strategic alliances with larger industry players can help startups overcome these barriers and enhance their competitive positioning. The evolving nature of global threats and the increasing digitization of economies demand proactive and forward-looking strategies.

For Italian cybersecurity startups, success hinges on their ability to innovate, collaborate, and adapt to the rapidly changing landscape. By leveraging their unique position in the Euro-Mediterranean region, fostering partnerships with key stakeholders, and investing in cutting-edge technologies, these startups can play a pivotal role in shaping the future of cybersecurity. In an interconnected world where digital risks transcend borders, the ability to protect and innovate is not just a competitive advantage but a critical necessity.

Keywords: Cybersecurity, Italian Startups, Geopolitical Instability, Digital Transformation, Back-reshoring, Technological Innovation

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Digitalization and Sustainability in the Fashion Industry: consumer perspective

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EXTENDED ABSTRACT

The fashion industry is undergoing a significant transition towards sustainability and circular economy principles, driven by shifts in customer behavior and the growing influence of digitalization. These transition processes hinges on the strategic reconsideration of customer value creation, which plays a pivotal role in ensuring long-term organizational sustainability of fashion companies. The companies' focus on customer value extends beyond traditional metrics of quality and satisfaction, incorporating a broader understanding of value that includes social, ecological, and utility-based benefits. The transition of customer behavior towards sustainability and circularity in the textile industry is increasingly influenced by co-creation and customer participation. Embedding of customer perceptions and expectations into strategic communication frameworks provides companies with ability to drive circular economy principles in textile production, fostering environmentally conscious consumption patterns. Hence, the study on how to effectively communicate the sustainability from the consumer perspective is vital to develop strategic communication of fashion companies with customers towards circular economy transition. This paper seeks to explore the current state of art of the integration of sustainability-related customer-perceived value within the value chain formation in fashion industry context, filling the

conceptual gap in consideration of the potential of digitalization to promote sustainability-oriented consumption among customers. Applying the survey-based method paper examines the sustainability-related factors, such as sustainability awareness, visibility and occurrence frequency of eco-factors information which consumers consider in their purchasing decisions., and the role of digital instruments in fostering sustainable consumption practices, enabling customers to participate in product and service development. Key aspects, such as the impact of eco-labels on consumer choice and the increasing digital nature of communication between companies and consumers, are explored to understand how digitalization supports sustainable behavior. Digital facilitation of customer participation in the fashion industry context encourages more sustainable and conscious consumption, driving the shift towards a circular economy while enhancing overall customer satisfaction and loyalty. Circular transition in fashion industry context is increasingly driven by changing customer behavior, influenced by digitalization and stakeholder engagement placing greater emphasis on ecological, social, and ethical outcomes alongside economic value. Suchwise, this paper investigates the transition of customer behavior towards sustainability and circular economy principles in the textile industry, focusing on the role of customer value perception in digitally-driven business environment. The analysis highlights the increasing prominence of digital instruments as sources of sustainable habits and knowledge, shaping consumer decisions and fostering transparency in the textile supply chain. By assessing the profile of consumers sustainability-consciousness and their decision-making processes, this study provides insights into the evolving dynamics of customer behavior, underscoring the need for businesses to align with sustainability expectations in the digital age. The findings highlight the importance of integrating digital strategies to foster sustainable customer behavior, promoting sustainable consumption patterns and supporting the transition towards a circular economy in the fashion industry. The integration of digital tools enhances stakeholder involvement in co-creating value, aligning both business objectives with the expectations of sustainability-conscious customers, and customer value creation with ecological and social outcomes, fostering co-creation and stakeholder engagement. The customer perspective disclosure allows providing the theoretical and practical implications to build-up the “fashion companies – customer” sustainability-oriented communication strategy to foster sustainable business practices.

Keywords: sustainable consumption, sustainable customer behavior, digitalization, fashion companies, value creation.

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The Role of Blockchain Technology within Circularity. Oriented Transition at Industrial Level

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EXTENDED ABSTRACT

The integration of blockchain technology within the framework of the circular economy is an emerging field with profound implications for sustainable development. The nature and drivers of its interaction has attracted growing interest from policymakers, industry practitioners, and academics, highlighting the need for its deeper exploration. Despite a substantial number of studies devoted to the digitalization processes within the sustainability challenges framework, limited attention has been given to the disclosure of the circularity-oriented transformative potential of the particular digital technologies' engagement, for instance blockchain technology. The integration of blockchain technology as a disruptive digital innovation, with the principles of the circular economy presents a promising intersection for advancing sustainability and social responsibility across diverse industries. As a decentralized ledger technology, blockchain demonstrates substantial potential to reshape production processes and promote sustainable business practices, especially in product lifecycle management and supply chain traceability. Blockchain potential spans various industries, including energy, textile, agri-food, etc., where it supports circular economy strategies such as resource regeneration, asset sharing, and process optimization. Its application is particularly impactful in addressing cross-industry challenges, such as reducing CO_2 emissions and improving energy efficiency. Moreover, blockchain's ability to

facilitate real-time data management and secure transactions makes it a critical infrastructure for transparent and efficient resource management. This paper addresses this research gap by investigating blockchain technology's role in achieving sustainability goals across different industrial sectors. The study examines industrial applications of blockchain, such as data notarization, traceability, emission trading, and carbon offsetting, emphasizing its capacity to drive circular economy objectives. It further introduces a conceptual framework to illustrate the interaction between blockchain and circular economy principles, while discussing industry-specific challenges and barriers to adoption. The adaptability of blockchain across different industrial contexts is underscored by its varying types—public permissionless, public permissioned, consortium, and private permissioned—each offering tailored solutions for specific applications. The digital capabilities inherent for the blockchain technologies are investigated within the study, including its decentralized and tamper-resistant features, tokenization and smart contracts application that are aimed to enhance cooperation among stakeholders in circular systems, promoting fair and sustainable practices, incentivizing the sustainable behaviors and streamline operations, further embedding circular economy principles into economic activities. Moreover, blockchain's role as a social technology in coordination of the complex networks of stakeholders is also discussed as such coordination fosters collaboration and competition within circular systems, ensuring the integrity and transparency, promoting trust and security. In such a way, the convergence of blockchain technology and the circular economy offers substantial potential to enhance transparency, efficiency, and sustainability across industrial processes. Blockchain's decentralized and automated platforms provide a robust foundation for implementing circular economy principles, driving resource conservation, waste minimization, and equitable resource distribution. This synergy not only represents a transformative pathway for industries but also contributes to broader sustainable development goals by embedding sustainability and social responsibility into the core of economic systems. Through a combination of theoretical analysis and sectoral insights, the study contributes to understanding blockchain's transformative potential in fostering sustainable industrial practices. The findings provide valuable perspectives for scholars, practitioners, and policymakers seeking to leverage blockchain as a pivotal tool for integrating digitalization and circularity within industrial ecosystems.

Keywords: blockchain, circular economy, digitalization, industrial context, resource management, sustainability, circularity.

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The application of virtual reality and augmented reality technologies by businesses in Kosova and their effects on consumer purchases

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EXTENDED ABSTRACT

The world is undergoing transformative changes driven by the dynamic technologies of marketing innovation. Artificial Intelligence (AI) technologies, particularly Virtual Reality (VR) and Augmented Reality (AR) tools, have revolutionized numerous business processes by mitigating human errors, generating high-quality data, streamlining purchasing processes, and predicting consumer preferences. VR and AR have precipitated significant shifts across various industries, enhancing product dimensions to foster stronger connections with consumers.

At a time when Virtual Reality (VR) and Augmented Reality (AR) technologies are becoming more and more present in the global technology market, Kosovo is still experiencing an initial phase of their adaptation in the industry and business market. A limited number of companies have experimented with these technologies, but their presence is not yet massive. This has caused a clear lack of information and direct experience for consumers in Kosovo. This lack of use of VR and AR technologies by businesses has led to consumers not being well-informed and not having enough experience with them, thus fostering a culture of skepticism and mistrust. In this context, a critical question that stands out is how consumers in Kosovo will accept these new and innovative experiences. This study aims to address this fundamental question, namely through this paper, it would be analyzed the willingness of consumers to adopt VR and AR technologies. Hence, through the research conducted in this paper, the difficulties and limitations that consumers may face regarding the use of these technologies as well as expectations for the future, would be identified.

To comprehend the role and impact of VR and AR tools on businesses and their influence on purchasing habits, this study selected 30 companies of diverse profiles and sizes operating in Kosovo, along with over 150 consumer respondents, as case studies.

This paper comprises two main components: the theoretical segment, which entails a literature analysis drawing upon various authors and scientific publications to understand, define, and analyze the implications of applying VR and AR tools to businesses in Kosova and their effects on consumer purchases.

The second segment adopts a practical approach, utilizing survey questionnaires to investigate selected businesses' utilization and implementation of VR and AR tools tailored to their respective natures, alongside consumer-oriented questionnaires aimed at assessing the impact of these tools on consumer purchasing behavior. The research aims to gather data to discern the impact of VR and AR tool adoption in Kosovo businesses and their effects on consumer purchases.

Ultimately, conclusions and recommendations drawn from both theoretical and practical data will be presented, serving as a guide for companies across diverse sectors in Kosovo.

Keywords: Artificial Intelligence (AI), VR and AR technologies, buying behaviors, consumer behavior, E-Marketing.

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TECHNOLOGY IN ORGANIZATIONS

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"Technology and Society: Boon or Bane?"

Unlocking technological innovation. The mediating role of employee engagement in organizational innovation

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EXTENDED ABSTRACT

Organizational innovation, which manifests as a predisposition to embrace change, is a critical factor in driving the evolution of work processes, services, and overall outcomes within organizations. This study explores the inherent connection between organizational innovation and technological innovation, proposing that an organization's approach to change naturally leads to the adoption and implementation of new technologies. A key element in this dynamic is Employee Engagement, which plays a crucial mediating role between organizational innovation and technological innovation.

In organizations that foster a culture of innovation, employees are encouraged to actively participate and contribute their ideas, fostering a sense of ownership and engagement. The openness to innovation creates a work environment where employees feel empowered to take initiatives, which, in turn, strengthens their engagement. This study argues that Employee Engagement not only contributes to organizational innovation but also acts as a bridge to technological innovation, enhancing the impact of innovation strategies within organizations.

To investigate these relationships, this study utilized structural equation modeling (SEM) to analyze data collected from a sample of Italian employees working in private companies across various sectors, including manufacturing, IT, finance, retail and service. The aim was to examine how organizational

innovation influences both employee engagement and technological innovation, and to assess the mediating role of employee engagement in the innovation process.

The results of the study reveal a significant positive relationship between organizational innovation and technological innovation, with a path coefficient of 0.434. This finding confirms that organizations with a strong orientation towards innovation are more likely to adopt new technologies, improving both their internal processes and external outputs. Furthermore, the study highlights the crucial role of employee engagement, demonstrating that organizational innovation has a strong impact on employee engagement, with a path coefficient of 0.741. This indicates that fostering a culture of innovation significantly enhances employees' motivation, commitment, and active participation in the innovation process.

Most importantly, the study demonstrates the mediating role of employee engagement in the relationship between organizational innovation and technological innovation. The findings show that employee engagement partially mediates this relationship, with a path coefficient of 0.276. This suggests that organizations that not only focus on innovation but also prioritize employee engagement are more likely to see successful technological adoption and innovation outcomes. Engaged employees, empowered by a culture of innovation, are more likely to support and drive technological changes, thus reinforcing the overall innovation capacity of the organization.

The novelty of the study lies in its exploration of the mediating role of Employee Engagement in the relationship between organizational innovation and technological innovation. By highlighting the dual impact of innovation culture—both in fostering employee engagement and driving technological advancements—the study provides fresh insights into how organizations can better leverage their workforce to amplify innovation outcome.

Keywords: Organizational Innovation, Employee Engagement, Technological Innovation, organizational culture.

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Cybersecurity Risks Management in the Conditions of Digital Transformation (Case of Georgia)

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EXTENDED ABSTRACT

In the modern era, digital transformation is vitally necessary for the successful functioning of the private or public sector. This process is irreversible and it depends on overcoming the challenges of the modern market and gaining a competitive advantage in this or that sector. Cloud and mobile technologies, robotic process automation, IoT, Ai, and machine learning – these are the technologies that have made significant changes in the modern business environment (Chartered Financial Analyst Institute, 2022).

Digital transformation is a multiple event, it is a continuous process. Future development directions are based on digitization. The transformation process is accompanied by a number of challenges, among which the mismatch of IT infrastructure and cyber security issues are important.

The digital world brings with it a multitude of innovations, micro-threats for businesses and citizens (Boholm et al., 2016), and macro-threats for public policy and national security. These threats are unpredictable (Engemann & Witty, 2024). There is no dividing line between external and internal security in cyberspace. Information security of information systems is one of the decisive factors in the organization's affairs.

The financial sector is one of the high-risk sectors of the economy in terms of cyber-attacks, and risk mitigation is often not the solution to the problem, so systemic issues need to be addressed to get results. As the European Central Bank points out, the risk of cyberattacks is exacerbated by the financial system's high reliance on digital technologies, the difficulty of defending against rapidly changing threats, and the fact that they are borderless (What is cyber resilience, 2024).

The research aims to analyze the threats and peculiarities faced by modern financial companies in Georgia in the conditions of digital transformation, as well as present ways of solving them and effective

ways of implementing security systems. Through the holistic approach in our research we aim to identify all data sources, classify the data based on sensitivity, and implement appropriate cyber security measures.

When studying the issue, relevant research results and practical guidelines are analyzed, among which it is worth noting publications of World Bank and National Institute of Standards and Technology, also, Cyber-Risk Oversight Toolkit (2022) developed by the Allianz für Cyber-Sicherheit and recommendations of Deloitte Global organization.

The paper presents the results of qualitative analysis in the financial sector. Based on the research, several potential reasons for the increase in cyber incidents were identified:

- Insufficient incident detection and response capabilities;
- Failure to properly identify cyber risks, unclear governance of cyber communities, and employee cybersecurity protections.
- Implementation of cloud systems (Dropbox, G Suite, Microsoft Office 365, Slack and Citrix Content Collaboration, etc.) in the cyber security system.

Based on the conducted research, it was established that in order to manage cyber risks, it is appropriate to implement the following processes:

- Finding cyber security specialists, continuous training of employees;
- intensive use of reliable anti-virus programs;
- Use of web application firewalls. By implementing a WAF, financial institutions can prevent common web-based attacks such as cross-site scripting (XSS), SQL injection, and brute force attacks;
- DDoS protection solutions that help financial institutions mitigate the risk of DDoS attacks;
- Implement anti-fraud and online fraud prevention;
- Implement Identity and Access Management (IAM);
- Implement advanced threat protection solutions (ATP);
- Conduct vulnerability assessment and penetration testing (VAPT);
- Monitor data activity;
- Intensive data risk analytics and use artificial intelligence (AI)
- Use of licensed software;
- Implementation of password policy;
- Encryption of hard drives;

- User rights management and more;
- To create a universal information sharing platform and
- to increase financing of cyber risk protection mechanisms;
- Maintain DLP systems.

The study presents the best scenarios for detecting and preventing cyber risks. Paper develops conclusions and recommendations for the development of an effective way of cyber risks management in digital transformation process.

Keywords: Cybersecurity risks, digital transformation, financial sector risks.

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Oil & gas industry and technical metamorphosis generated by energy transition. Romanian experience

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EXTENDED ABSTRACT

The last decades have been marked by substantial transformations in all industrial fields, with technologies being the gear that drives the speed with which changes occur at the level of the national economy and, of course, at the world level. From the desire to respond to the demands of the market - both in terms of volume and diversity - manufacturers looked for solutions in modern, efficient and flexible technologies. In this sense, the standardization, robotization and automation of production processes were noted, all of them having specific advantages and disadvantages. The oil and gas industry has not been an exception to the trends in the field, although unlike other industries, oil companies have shown some delay in responding to the challenges. For a long time, oil companies shaped their strategies according to the market, putting profit preservation first and waiting for the increase in the selling price.

The accentuation of climate change has intensified international concerns regarding the decarbonization of the world economy. The use of new energy sources is a solution that must be accompanied by changes in the behavior of consumers, by increasing the interest of companies to limit negative externalities on the environment, by the collaboration of stakeholders considering the complexity of the situation. The new energy transition comes with numerous economic, social and technological challenges (Khan et al., 2022; Panait et al., 2022). New technologies for producing energy from renewable sources are being

tested, but their implementation is a complex process considering the need to record profitability and identify funding sources (Nižetić et al., 2023). In addition, the implementation of new technologies sometimes generates the reluctance of the population which can be combined with the negative attitude towards the excessive regulation of environmental protection and which leads to protest movements like greenlash.

Oil and gas companies are also involved in the energy transition, financing and implementing contracting projects for the production of energy from renewable sources (Pasman et al., 2023; Yang et al., 2024). In the Romanian economy Oil and gas companies are important players, the most important being listed on the Bucharest Stock Exchange and included in the BET-NG sector index. The existence of legal regulations regarding non-financial performance obliges the players on the oil and gas market to publish detailed sustainability/corporate social responsibility reports and the environmental aspects are presented in detail.

The content analysis of the sustainability reports in the period 2013-2023 reveals the gradual involvement of these companies in the energy transition. The financed projects are increasingly complex and cover different processes related to energy storage, digitalization of production using and increasing energy efficiency. artificial intelligence (AI), and the Industrial Internet of Things (IIoT) are the new instruments used by these companies in order To remain competitive, The authors identify the main factors that have contributed to the improvement of the behavior of oil and gas companies in terms of protecting the environment: the legal regulations regarding non-financial performance, the stock market listing of some of these companies, the attitude of consumers, the existence of majority foreign capital.

So, twin transition generated the changes in operations and business models for oil and gas industry taking in account technical progress but also increasing social and environmental pressure. Developing low-carbon technologies is a new challenge for these companies and financial solutions offered by credit institutions are vital.

***Keywords*:** oil and gas companies, energy transition, technical metamorphosis, low-carbon technologies, non-financial performance.

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Green Digital Divide in European Countries: Outlook to Danube Region

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EXTENDED ABSTRACT

The environmental impact of technology usage has grown significantly in recent decades, highlighting the increasing relevance of green computing (Raza et al., 2012). Despite the potential benefits of information and communication technologies (ICT), such as paperless offices and green computing, these practices have yet to be widely adopted (Briscoe, 2022). The ICT sector is currently one of the most ecologically damaging industries, facing sustainability challenges at various stages of the product lifecycle. Additionally, companies in other sectors contribute significantly to environmental degradation through routine business activities like printing, copying, and the energy consumption of ICT equipment. While the impact of these activities might seem negligible at the level of an individual enterprise, their cumulative effect is substantial.

The European Union (EU) is prioritising two key areas: (i) environmental protection, as outlined in its Green Deal, and (ii) the advancement of digital technologies, as defined by the EU4Digital initiative. The EU's climate plan is increasingly concerned about the environmental impact of the growing digital industry (Acrosslimits, n.d.). However, a review of the EU Digital Economy and Society Index (DESI), which measures digital development across EU countries (Bánhidi et al., 2020), reveals that DESI does not directly account for the environmental impact of ICT.

The term "digital divide" refers to the disparities between countries in terms of their technology usage (Pejic Bach et al., 2013). In this context, we introduce the term "green digital divide," which describes the differences between countries in the adoption of environmental practices related to ICT equipment, services, and the use of paper for printing and copying. Countries in the Danube region notably lag behind other European nations in the implementation of digital technologies.

The goal of this study is to examine the extent of the green digital divide among European countries, focusing on the adoption of environmentally conscious practices by enterprises in their daily operations. To achieve this objective, we employ K-means cluster analysis (Hartigan & Wong, 1979), a method that has been widely used to assess the digital divide in various areas, including e-government (Seljan et al., 2020), enterprise digital divide (Jaković et al., 2021), and labour digital divide (Calderón-Gómez et al., 2020).

To achieve this goal, we utilised data from Eurostat collected in 2022, focusing on the following variables: (i) the percentage of enterprises implementing measures to reduce paper usage for printing and copying, (ii) the percentage of enterprises adopting measures to reduce the energy consumption of ICT equipment, (iii) the percentage of enterprises applying measures to lower both paper and energy consumption related to ICT equipment, and (iv) the percentage of enterprises considering the environmental impact of ICT services or equipment before making selections. The data was gathered from companies with more than 10 employees.

K-means cluster analysis was employed to assess the green digital divide among European countries based on these variables, using the StatSoft Statistica™ software. The number of clusters was determined using the elbow method (Kodinariya et al., 2013), and the cluster solution was validated through V-fold analysis (Jung, 2018). The average values of the observed variables were compared across: (i) the extracted clusters, (ii) specific industries, such as manufacturing, construction, wholesale and retail trade, transportation and storage, accommodation and food service activities, and others, and (iii) countries within the Danube region.

The results of this study reveal a significant green digital divide among enterprises in European countries, with the Danube region particularly lagging in the implementation of environmentally friendly practices, a finding that raises serious concerns. Bridging this gap among EU countries requires a systematic approach to measurement, improvement, and management. As the primary outcome of this research, we propose integrating green computing statistic into the DESI index. For instance, a metric like “Percentage

of enterprises implementing measures to reduce paper or energy consumption of ICT equipment" could be included. This addition would enable the longitudinal tracking of the green digital divide across EU countries.

Such statistics would guide the development of practices that encourage enterprises to adopt more sustainable approaches to their operations, with a focus on the responsible use and management of ICT equipment. This, in turn, would help companies contribute to environmental protection in their day-to-day activities. Implementing this systemic approach would also create a vital feedback loop between the Green Deal and EU4Digital, a connection that is currently lacking.

Keywords: Artificial Intelligence, productivity, economic growth, societal impact, policy recommendations, Danube region.

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The Impact of Technological Capabilities on Organizational Performance and Attractiveness for FDI

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EXTENDED ABSTRACT

In the contemporary business landscape, the technological capabilities of organizations have emerged as a critical determinant of their performance and competitive advantage, influencing not only internal processes but also their attractiveness to foreign direct investment (FDI). As firms navigate an increasingly complex and dynamic environment, the ability to leverage technology effectively can significantly influence operational efficiency, innovation, and overall market success, while also serving as a magnet for international investors seeking technologically advanced, high-growth opportunities. This review explores the multifaceted relationship between technological capabilities, FDI inflows, and organizational performance, drawing on theoretical frameworks and empirical evidence to elucidate the mechanisms through which technology impacts various performance metrics and FDI attraction.

Technological capabilities encompass a range of competencies, including the ability to develop, implement, and utilize advanced technologies effectively. These capabilities are not merely about possessing cutting-edge tools or systems; they also involve the organizational processes, knowledge, and skills necessary to harness technology for strategic purposes. The Resource-Based View (RBV) of the firm posits that unique resources and capabilities, such as technological expertise, can provide a sustainable competitive advantage. Organizations that invest in building robust technological capabilities are better positioned to respond to market changes, innovate, enhance their productivity, and attract FDI,

as international investors often seek firms that demonstrate advanced technological competencies and innovation potential.

One of the primary ways in which technological capabilities influence organizational performance and FDI attraction is through improved operational efficiency. Advanced technologies, such as automation, artificial intelligence, and data analytics, enable firms to streamline processes, reduce costs, and minimize errors. For instance, organizations that adopt automation technologies can achieve higher production rates and lower labor costs, leading to enhanced profitability. These efficiencies make such firms more appealing to foreign investors, who are increasingly looking for efficient and technologically advanced operations to ensure higher returns on investment. Furthermore, data analytics allows firms to make informed decisions based on real-time insights, optimizing resource allocation and improving overall operational effectiveness, which can further enhance their profile for FDI.

Innovation is another critical area where technological capabilities play a pivotal role in both organizational performance and attracting FDI. Organizations that foster a culture of innovation and invest in research and development (R&D) are more likely to introduce new products and services that meet evolving customer needs. The integration of technology into the innovation process facilitates the rapid prototyping of ideas, accelerates time-to-market, and enhances the quality of offerings. This not only drives revenue growth and market leadership but also attracts FDI, as investors seek companies with a strong innovation track record and the potential for sustainable growth. For example, countries and regions with a concentration of innovative, technologically advanced firms, such as Silicon Valley, often experience higher levels of FDI due to the perceived growth potential and technological sophistication.

Moreover, technological capabilities can enhance an organization’s adaptability and responsiveness to external changes, which is an essential attribute for attracting FDI in a rapidly evolving global market. In an era characterized by rapid technological advancements and shifting consumer preferences, firms must be agile in their operations. Organizations with strong technological capabilities can pivot quickly, adopting new technologies and processes that align with market demands. This adaptability is particularly crucial in industries such as retail and manufacturing, where consumer behavior and technological trends can change rapidly. Companies that fail to adapt risk losing market share to more technologically adept competitors and may also find themselves less attractive to foreign investors who prioritize agile and future-ready firms.

The relationship between technological capabilities, FDI, and performance is also influenced by external factors, such as market conditions, regulatory environments, and the broader technological ecosystem. For instance, firms operating in highly regulated industries may face challenges in adopting new technologies due to compliance requirements, which can affect their ability to attract FDI. Conversely, supportive regulatory frameworks can encourage innovation and investment in technology, making a region or country more attractive to foreign investors. Additionally, collaboration with external partners, such as technology providers, research institutions, and foreign investors themselves, can bolster a firm's technological capabilities, leading to improved performance outcomes and further enhancing FDI attraction.

However, it is essential to recognize that merely possessing technological capabilities does not guarantee superior performance or FDI inflows. Organizations must also cultivate a culture that embraces change, encourages continuous learning, and aligns technological investments with strategic objectives. Leadership plays a crucial role in fostering this culture, as leaders must champion technological initiatives and ensure that employees are equipped with the necessary skills to leverage new technologies effectively.

The impact of technological capabilities on organizational performance and FDI is profound and multifaceted. By enhancing operational efficiency, driving innovation, enabling adaptability, and positioning themselves as attractive investment opportunities, technological capabilities serve as a cornerstone of competitive advantage in today's business environment. As organizations continue to navigate the challenges and opportunities presented by technological advancements, those that prioritize the development and integration of technological capabilities are likely to achieve superior performance, attract more FDI, and ensure long-term success. Future research should further explore the interplay between technological capabilities, FDI, and other organizational factors, such as culture and leadership, to provide a more comprehensive understanding of their collective impact on performance and investment attraction.

Keywords: technologies, FDI, innovation, performance, organization.

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How technology affects the use of ESG in SMEs in the V4 countries

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EXTENDED ABSTRACT

Environmental, Social, and Governance (ESG) principles have become increasingly crucial for Small and Medium Enterprises (SMEs) as they navigate the demands of sustainability, ethical operations, and regulatory compliance. Technology plays a transformative role in helping SMEs integrate and manage ESG practices effectively, leading to operational efficiencies, transparency, and improved stakeholder engagement. We delve into how technology impacts ESG application in SMEs, its role in management, and the benefits it offers.

Technology has a profound impact on ESG application in SMEs through enhanced data collection and analytics. By utilizing technology, SMEs can collect real-time data from multiple sources such as IoT sensors, ERP systems, and CRM software, which significantly improves the accuracy of their ESG metrics. Advanced analytics tools further help in analyzing vast datasets, allowing SMEs to identify trends, measure ESG performance, and predict future risks or opportunities. This data-driven approach not only facilitates more informed decision-making but also ensures more transparent reporting, enhancing the credibility of ESG initiatives. Automation also plays a crucial role in the ESG journey of SMEs. Automation tools can manage repetitive tasks such as data entry, ESG reporting, and compliance monitoring, which reduces human error and allows resources to be allocated to more strategic initiatives. These technologies, such as AI (Artificial Intelligence) and RPA (Robotic Process Automation), enable SMEs to optimize resource use, reduce waste, and increase overall operational efficiency, directly contributing to environmental sustainability.

In terms of compliance and risk management, technology allows SMEs to monitor regulatory changes and ESG requirements in real-time, ensuring they remain compliant with laws and standards. AI and

machine learning algorithms also provide tools for risk assessment related to ESG factors, enabling SMEs to proactively address potential issues before they escalate into larger problems.

In the social dimension of ESG, technology helps manage employee well-being and ensure ethical supply chains. For example, HR software and applications can track employee engagement, health, and well-being, ensuring that SMEs maintain a positive work environment and adhere to labor standards. Blockchain technology, on the other hand, provides transparency and traceability in supply chains, ensuring that products and services are sourced ethically and sustainably, thereby enhancing the social responsibility aspect of SMEs.

For governance and compliance, technology solutions help SMEs maintain compliance with ESG regulations by automating tasks such as data collection, reporting, and auditing. This makes it easier for SMEs to track and adhere to governance standards. Moreover, digital platforms and communication tools facilitate better engagement with stakeholders, investors, and customers, fostering greater trust and accountability in their ESG practices.

The benefits of technology for ESG in SMEs are substantial. One of the key advantages is cost savings, as automation and optimized resources reduce operational expenses, making ESG implementation more financially sustainable. However, SMEs face some challenges in using technology for ESG management. The cost of implementing technological solutions can be a financial burden for many SMEs, especially those with limited budgets. Additionally, the process of collecting and managing large volumes of data can expose SMEs to cybersecurity risks, necessitating robust data protection measures. SMEs may also lack the technical expertise needed to implement and manage advanced technologies, which means they may need to invest in training or hiring skilled personnel to handle these systems.

The aim was to examine how SMEs in V4 are using technologies in order to ensure or help in the application of ESG in practice. In this context study utilized linear regression modelling (LRM) and correlation analysis to analyze data collected from a sample of V4 SMEs.

The results of the study reveal a significant positive relationship between technology adoption and ESG implementation and preparation for ESG reporting in V4 SMEs. Emerging technologies will continue to play a significant role in ESG management for SMEs. Technology serves as a powerful enabler for SMEs in their journey to implement and manage ESG practices. Our research discovered the benefits in V4 SMEs field of using technologies in ESG. There is a positive and significant effect of technological innovation on the intention to adopt ESG practices, indicating that technology adoption is a key factor in

driving ESG management in SMEs, nevertheless technology adoption, and management practices indirectly and positively impact ESG performance in SMEs. Furthermore, the study highlights the crucial role of ESG in the future.

In conclusion, technology serves as a powerful enabler for V4 SMEs in their journey to implement and manage ESG practices. It offers tools helping SMEs align with sustainability goals. While there are challenges associated with technology adoption, the benefits far outweigh the costs, positioning SMEs to thrive in an increasingly sustainability-focused business landscape. By leveraging technology, SMEs can not only meet ESG standards but also gain a competitive advantage, gain access to capital, and achieve long-term sustainability.

The novelty of the study lies in its relationship exploration in the case of ESG (which is a current and hot topic in European Union) and technological usage and adoption to the firm practice. The data collection took place in January 2024, so the results are up to date.

Keywords: ESG, SMEs, technology adoption, V4 countries

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Skills for the Future of Work in Times of Technological Disruption

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EXTENDED ABSTRACT

The global economy and society face disruptions that necessitate the development of new skills in citizens. Due to the complex environments experienced in recent years, such as the exponential development of emerging technologies, the social and economic impacts caused by the COVID-19 pandemic, and the need for human capital prepared to meet the demands of economic sectors, it has become essential to develop upskilling and reskilling processes for the formation of new skills (Fung et al., 2020). There is a need for individuals who develop critical thinking skills that enable them to address the complex problems faced by organizations (Portuguez-Castro, 2024). Additionally, it is necessary to develop other soft skills such as adaptability, creativity, and lifelong learning (Trevelin, 2023). However, gaps are found between training programs and the skills demanded by organizations, making it imperative to adjust teaching methods to effectively close these gaps.

Several published reports acknowledge the existing skills gap, which is widening. As digital technologies evolve, an individual's ability to learn, acquire new skills, and expand their capabilities is vital (Kar et al., 2021). A report from the World Economic Forum (2023) points out the existence of income and employment inequalities, especially in low and middle-income countries and among workers with low educational levels, where automation is expected to increase, leading to high rates of staff turnover. On the other hand, it is recognized that the spread of digital technologies is impacting the types of capabilities needed for the economy and society (European Commission, 2023). However, although more than 90% of jobs require some level of digital competence, there is still a significant gap between what employers expect and what workers can do (Coursera, 2024). Given this reality, it is imperative that business, educational, and government leaders collaborate closely and coordinately to expand the available talent pool and equip the workforce with the skills today's organizations need (King et al., 2017).

This study will present the results of a Systematic Literature Review (SLR) aimed at identifying the new skills required by citizens to navigate the current digital disruption environment. This review will seek to determine the characteristics of business environments that generate new capabilities in workers. Additionally, emerging technological trends, such as generative artificial intelligence, which are revolutionizing the way things are done, will be identified. Finally, the skills required by employers that facilitate an effective transition to ethical and inclusive workplaces will be identified. It is expected that this study will interest managers, decision-makers, and industry stakeholders in driving the future of work within an era of innovation and technological disruption.

Keywords: future skills, generative artificial intelligence, business environments, labor transformation innovation.

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Examining the Implications of Artificial Intelligence on Labor and the Economy: A Complex and Multifaceted Issue

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EXTENDED ABSTRACT

The 21st century has seen the rise of artificial intelligence (AI), sparking a paradigm shift in various industries (Das et al., 2023). This study aims to comprehensively analyse AI's multifaceted impacts, elucidating how its integration can catalyse productivity, spur economic expansion, and engender fresh job prospects.

The study will also scrutinise potential societal challenges, such as job displacement, skills gaps, and economic inequalities, to devise strategies to optimise AI's benefits while mitigating its adverse effects (Agrawal et al., 2019; Brynjolfsson & McAfee, 2014).

Specifically, the study seeks to pinpoint ways AI can augment productivity and elucidate how it can streamline processes, boost efficiency, and kindle innovation across diverse sectors. Additionally, the study will explore AI's capacity to generate employment and its role in fostering economic growth.

Furthermore, the study will evaluate AI's harmful impacts, encompassing job displacement, skills mismatches, and the exacerbation of economic inequality. The intent is to formulate evidence-based strategies and policies to amplify AI's positive impacts while minimising its negative ramifications.

Study purpose

The study aims to achieve the following key objectives:

1. Identify potential applications of AI to enhance productivity by streamlining processes, improving efficiency, and fostering innovation across various sectors.

2. Examine AI's potential contribution to job creation by analysing its ability to lead to the emergence of new industries and roles, thereby promoting economic growth.

3. Evaluate AI's societal challenges, including potential negative impacts such as job displacement, skills mismatches, and widening economic inequality.

4. Develop evidence-based strategies and policies and formulate recommendations to maximise AI's positive impacts while mitigating its negative consequences.

Research Methodology

This study will employ the Delphi method, a structured communication technique that entails consulting a panel of experts. The Delphi method is particularly well-suited to this research due to its iterative process and capacity to reach a consensus on complex issues (Roblek et al., 2021; Roblek et al., 2024). Empirically, to address our research question, we employed the policy-directed Delphi technique as one of the various qualitative forecasting techniques (Dunn, 2015). The chosen methodology let us identify the implications of artificial intelligence on the labor market and economic structures. Policy-directed Delphi technique is defined by rigor-relevance debate in which the knowledge of a group of experts is combined through an iterative process spanning two or more rounds of data collection. Three rounds of data collection will be organized in the form of semistructured in-depth interviews to bring in the multifaceted aspects of artificial intelligence on economic structures, followed by a collective panel to elicit further in-depth discussion.

Delphi study research process (Beiderbeck et al., 2021):

The panel selection process will proceed as follows: An expert panel will be formed, representing various disciplines involved in the field, such as artificial intelligence researchers, economists, industry leaders, policymakers, and social scientists.

1. Round one: The initial phase of the study will involve presenting open-ended questions to the panel to gain a comprehensive understanding of AI's impact on productivity, job creation, and societal challenges.

2. Data Analysis: Responses from the first round will be analysed to identify common themes and areas of difference.

3. Round two: The panel will be provided with a summary of the initial findings from the first round and asked to evaluate the significance and feasibility of the various AI impacts and proposed strategies.

4. Round Three: In the final round, the panel will refine their consensus on key issues and strategies, resulting in actionable recommendations.

The goal of the Delphi study is to achieve the following outcomes:

1. To conduct an in-depth analysis of the impact of AI on productivity and economic growth, including the specific conditions that optimise these benefits.

2. To identify and assess the potential job opportunities that will emerge with the integration of AI, along with an evaluation of the skills required for these new roles.

3. To comprehensively analyse the societal challenges and potential negative consequences of integrating AI into workforce and economic structures.

4. Develop evidence-based policy recommendations that maximise AI's positive impacts while minimising its adverse effects, leading to a balanced approach to AI integration.

Conclusion

This Delphi study will offer a nuanced understanding of the complex relationship between AI and workforce dynamics, providing valuable insights for policymakers, industry leaders, and researchers. This study aims to identify the opportunities and challenges presented by AI and propose evidence-based strategies for the sustainable and inclusive integration of AI in the economy.

Keywords: Delfi study, artificial intelligence, industry, labour, economy.

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Technology-Driven Economic Inequality: A Ensemble Keyword Community Detection Approach of the Literature

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EXTENDED ABSTRACT

The impact of technological progress on income inequality in industrialized and developing countries is very profound (Jaumotte et al., 2013). In this respect, technological progress and income inequality are intertwined with labor market dynamics, skill acquisition, the institutional framework, and global economic integration (for instance, see Dabla-Norris et al. 2015). In addition to the discussion of the literature's empirical evidence and theoretical frameworks using bibliometric analysis, this work examines the relevant channels through which technological change can cause or mitigate income inequality (see Deskoska and Vlčková 2018). Technological progress changes the production structure and increases efficiency and productivity (Acemoglu, 2002). However, this is often accompanied by an asymmetric distribution of benefits, especially between different segments of the labor force (Osório & Pinto, 2020). Skill-biased technological change is one of the most important ways technology affects income inequality (Ferreira, 2020). In this context, technology disproportionately rewards highly skilled workers who can complement and leverage these advances, while low-skilled workers are displaced by automation and digitalization (Schwabe & Castellacci, 2020). In this respect, as the demand for skilled labor increases, wages for highly skilled workers increase, exacerbating wage differentials and income inequality (Autor et al., 2006). At the same time, Due to the unequal distribution of productivity gains, societies experience an increased rate of inequality, more significant resource pressure, and more poverty (Mirza et al., 2019). Overall, the effects show that income inequality has increased in many countries due to technological progress, particularly in wealthier countries, and to a greater extent than in poorer countries due to advances in information and communication technology and transportation technology (Santos et al., 2017). At the same time, some technologies can be aimed at higher education inclusion, for instance, so it could be possible to reduce economic inequality (see Asongu et al. 2019).

In this respect, a bibliometric analysis is conducted to analyze the impact of technological advances on income inequality. In particular, these was the query considered:

TITLE-ABS-KEY (technology AND "Income Inequality")

The bibliometric analysis is conducted on a procedure that allows the exploration of the bibliometric literature, considering firstly an exploratory approach and then mapping the most relevant concepts of the literature in order to identify the most relevant concepts in the literature (see Aria and Cuccurullo 2017 Drago et al. 2023; Gatto et al., 2023). In order to consider the network of the different concepts, the approach considers an ensemble of different keyword community detection approaches (about community detection, see Fortunato 2010), which are combined by using multiple correspondence analysis and then a hierarchical clustering algorithm validating the final results obtained (see Drago 2018 but also Drago & Balzanella 2015). This method is very reliable since using just one community detection method might provide biased findings (Leskovec et al., 2010) and require considering other algorithms. Various algorithms may reduce bias by offering various results on the data patterns and structures. We may better comprehend the network and underlying data structure by integrating these different outcomes from the different algorithms.

Keywords: Technology, Inequality, Bibliometric Analysis, Ensemble Community Detection,

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Bridging the Gap: Digital Skills for Digital Transformation

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EXTENDED ABSTRACT

This work aims to investigate the impact of digital skills on digital transformation through the lens of the digital divide. It also seeks to develop recommendations for a relevant skills development strategy to mitigate digital inequality.

The global nature of digital transformation has a large-scale impact on development processes in almost every country in the world and, with many benefits, contributes to the growth of disproportionate development. The issue has been a focal point of scientific discussion multiple times, as the irreversible processes of digitalization can exacerbate inequality and hinder socio-economic progress. The connection between the digital divide, digital development, and digital capabilities is of great interest, as evidenced by modern scientific studies that are being conducted to better understand these interrelated phenomena.

The digital divide refers to the gap between individuals who have access to modern information and communication technology (ICT) and those who do not (Vassilakopoulou & Hustad, 2023; Bentley et al., 2024; Adam & Dzang Alhassan, 2021; Bezuidenhout et al., 2017). This divide is not merely about access to technology but also encompasses disparities in the ability to effectively use digital tools and resources. Digital development, on the other hand, involves the integration of digital technologies into all aspects of society, driving economic growth, innovation, and improved quality of life (Dionisio et al., 2024; He et al., 2024; Xu et al., 2024). Digital development is a critical driver of economic and social progress. It encompasses the deployment of digital infrastructure, the adoption of digital technologies by businesses and governments, and the integration of digital solutions into everyday life. Countries with

higher levels of digital development tend to exhibit stronger economic performance, greater innovation, and improved public services (Miras et al., 2023). However, the benefits of digital development are not evenly distributed, often exacerbating existing inequalities (Qureshi, 2023).

Digital skills are the competencies required to effectively use digital technologies, ranging from basic computer literacy to advanced technical skills (DigComp, 2024; Wu, 2024; Schulz et al., 2022; OECD, 2022).

Understanding this complex relationship and identifying and analyzing influencing factors that may contribute significantly to mitigating this divide remains a future task.

This led us to the need to analyze the impact of the most important factor - digital skills - on digital transformation and to think about the means of narrowing the digital divide and mitigating the related challenges.

The study attempts to answer the following research questions:

(1) Is the world's digital divide deepening?

(2) What is the role of digital skills in digital transformation?

(3) Do digital skills have an impact on a country's digital development?

Theoretical analysis of these issues is based on studies of relevant scientific literature and reports of international organizations.

(1) To study the digital divide, statistical analysis was carried out based on the databases of the International Technological Union (ITU), which systematically publishes the evaluation indexes of information communication and technological development of countries. Regional analysis revealed different digitalization progress among low-income, lower-middle-income, upper-middle-income, high-income, least developed, landlocked and small island developing countries.

Despite the successful implementation of digital transformation processes in some countries, less developed countries are lagging behind.

It is worth noting the limitations of the given statistical data, which is also revealed by familiarization with other databases (World Bank, Eurostat). Therefore, the statistical analysis of the global digital divide in this study is limited to the years 2015-2023.

(2) Digital expansion is influenced by various factors, including societal attitudes toward technology, government regulations, economic conditions, educational systems, and technological advancements. These factors interact intricately, influencing the pace and direction of the digital revolution. Effective digital transformation requires essential infrastructure and human resources with the necessary expertise and skills.

Despite some research, the impact of digital skills on digital transformation remains largely unexplored, likely due to challenges in measuring these skills. We assume that this is due to the limitation of categorized databases by countries.

(3) With this research, we aim to fill this gap. The paper analyzes the impact of digital skills on digital development and reveals correlations with the following factors: information and data literacy, problem-solving, safety skills, communication and collaboration, and digital content creation. Considering the available data on digital skills, we selected the countries of the European Union and the European Free Trade Association as our research base. Databases of digital skills are compiled from statistical data provided by Eurostat, ITU, and the Organization for Economic Cooperation and Development.

Research indicates a strong correlation between digital development and digital skills. Countries with higher levels of digital development tend to have populations with higher digital skills, which in turn drives further digital development. Conversely, the digital divide can hinder digital development by limiting access to digital skills and technologies. Efforts to bridge the digital divide must therefore focus on both improving access to ICT and enhancing digital skills.

Bridging the digital divide and developing global digital skills is one of the major challenges of the 21st century. This study highlights the need for a complex, multispectral approach that includes reforming the education system, targeting policies for vulnerable groups, and strengthening international cooperation.

Future research should focus on evaluating the long-term effects of skills development policies, the role of AI in developing digital skills, and analyzing new forms of the digital divide (for instance, the AI divide). It is also important to pay more attention to the experiences of developing countries and innovative approaches that can be applied in a global context.

Keywords: digital divide, digital skills, global inequality, digital policy, skills development strategy.

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Worker coops and environmental awareness

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EXTENDED ABSTRACT

The main role played by cooperatives in fulfilling the SDGs has recently been recognized, in the institutional context, by the United Nations Task Force on Social and Solidarity Economy and the International Co-operative Alliance's Cooperatives Europe. Economic literature also show that cooperatives are particularly aligned with the SDGs (Fernandez-Guadaño J, Lopez-Millan M, Sarria-Pedroza J., 2020). In recent years, various studies have highlighted the value of these companies for improving the business sector in local areas and boosting economic development. Starting by this perspective, cooperatives could represent a paradigmatic model of management and business in line with the new conception of the economy, where production is way of satisfying human and planetary needs (Manera and Serrano, 2022). The International Labor Organization affirms that cooperatives meet sustainability per se, due their own principles and values, and are well placed to contribute to the triple bottom line of economic, social, and environmental objectives. Furthermore, the International Cooperative Alliance (ICA) asserted that "the co-operative model of business is based on ethics, values and principles that put the needs and aspirations of their members above the simple goal of maximizing profit".

The aim of the research is to analyze the relationship between the presence of worker cooperatives and sustainable development by an environmental point of view. The starting point of the analysis is that worker cooperatives, by providing institutions in which employees control most aspects of their job and firm strategy, internalize the SDGs more than the traditional firms. By a methodological point of view, we create a utility function of workers where is included a variable related to environmental awareness and its weight on the total utility evaluation. If this value is positive, workers/producers of cooperatives prefer cleaner production technologies. In this perspective, they provide sustainable and local development starting by their governance model and are likely to have several positive effects on their communities' economies and health. Furthermore, they can contribute to building a sustainable future society and the production of social value in favor of future generations (Sacchetti and Borzaga, 2021).

Indeed, the intergenerational nature of cooperatives is a stronger guarantee of sustainable development if compared with traditional capitalistic firms not only in environmental terms, but also by a social and economic point of view.

Keywords: worker cooperatives; employee ownership, environmental awareness, sustainable development, green production

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Workforce impact of Artificial Intelligence: a Bibliometric Analysis

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EXTENDED ABSTRACT

Artificial intelligence and digital transformation are redefining business and employment paradigms in the 21st century, bringing enormous opportunities and challenges (Fang 2023). The speed at which the world and the economy are moving has meant that Digital Transformation (DT) and Artificial Intelligence (AI) have become "mandatory" choices for companies' survival and growth.

The introduction of AI still raises particular concerns among employees. Workers fear being replaced by technology. This fear relates to trying to react to something unknown. Data published by the EUROSTAT (2023) shows that 44% of EU citizens need to gain basic digital skills. According to the EUROSTAT's interactive publication, by 2023, over 90% of people in the EU will use the internet at least once a week, and only 56% will have basic or higher digital skills.

This study's findings are based on a bibliometric analysis of the scientific literature (see Aria & Cuccurullo 2017; Drago et al., 2023; Gatto et al. 2023, Drago & Aliberti 2019). It aims to identify and explore the most relevant literature results. It provides a roadmap for government and market policies and research.

The concept of Artificial Intelligence has been in a constant process of definition from its inception (McCarthy, 1956) to the present day, but the basic ideology found in the various explanations of the term AI includes the following key concepts:

- Developing computers (Minsky 1968; Stanley and Aggarwal 2019);

- Performing tasks that normally require human cognition, including decision-making (Cappelli et al., 2019)

- Systems that exhibit intelligent behavior (Paesano, 2021).

The different types of AI are then analyzed, and the impact on the economy, the labor market, and society is presented. In 2017, the McKinsey Global Institute (MGI) published a study highlighting the possibility of eliminating more than 800 million jobs through automation. In the same report, MGI estimates that artificial intelligence could create up to 555 million new jobs. The same perspective is highlighted in the World Economic Forum's Future of Jobs Report 2020, where AI could eliminate 85 million jobs and create 97 million new ones by 2025.

These figures underline the ambivalent nature of AI's impact: as a threat to the potential elimination of millions of jobs and as an opportunity for the creation of new business models.

According to Nissim and Simon (2021), the massive deployment and rapid implementation of technologies to facilitate remote connection and automation of business processes during COVID-19 has determined rapid growth for digital transformation in business competitions for workers and companies.

Numerous studies show that the most significant gap is in employee skills.

According to the 2023 ISTAT report, this gap is 55.1% of workers in companies that have considered using AI technologies. Putri and Meria (2022) show a correlation between Organizational Commitment (OC) and Digital Transformation (DT). Organizational commitment is a psychological state that influences employees' decisions about how much effort, dedication, and productivity they want to bring to their company.

The foundation of OC is the organization's mission, vision, and value proposition. Organizational commitment is closely related to the level of trust between employees and the company.

Digital transformation is critical in driving employee engagement with the organization (Alojail; Khan, 2023). Digital transformation significantly impacts making work faster and more effective by reducing errors and making information easily accessible. It also has the potential to create a positive impact on employees.

A study by Ganz et al. (2018) shows the impact of digitalization on employees' new skills in the workplace and highlights the collaborative approach between people and technology. The work of H. Wilson and Daugherty (2019) from the MIT Institute also goes in this direction, in which the symbiosis between people and technology is seen as the key to creating more excellent business value and a new way of innovating.

Muehlemann (2024), who analyzes the impact of technological innovation in the world of work and examines the dynamics between 1940 and 2018, distinguishes between "automation" and "augmentation".

Following the work of Schmidpeter and Winter-Ebmer (2021), they state that "automation" can replace human labor by using machines that can perform tasks previously done by humans.

While it is true that the use of artificial intelligence can negatively impact the demand for labor, and this affects certain professions, augmentation innovations create new job opportunities, new career paths, and a continuous increase in skills and competencies.

Palos-Sànchez, Baena-Luna, Badicu, and Infante-Moro (2022) conducted a bibliometric analysis of the implementation of Artificial Intelligence in human resource management and emphasized the potential benefits of AI for employees, companies, and society in terms of developing value-added skills, reducing time-consuming tasks and errors, improving business performance and promoting technological literacy with significant returns in the public sphere.

Of course, alongside the benefits, there are also risks and challenges that employees, companies, and corporations face. Most of these difficulties concern the uncertainty about the future of workers' careers, the increase in the cost of highly skilled labor and the system for companies, and the reinforcement of the digital divide.

In this context, we note that European and national policies have considered these challenges by providing macroeconomic investment plans for implementing digital transformation in both the public and private sectors. The European Commission sees among its policy initiatives a people-centered approach to digital technologies, including artificial intelligence and the education and training of European workers, especially in digital skills. The training program for workers is essential to AI implementation and the digital transformation process. Schmidpeter and Winter-Ebmer (2021) state that training programs for the unemployed help mitigate these effects by improving the chances of re-

employment. According to Muehlemann (2024), AI as an augmentation innovation will require the creation of new profiles and, thus, an increase in upskilling and reskilling, which will expand training activities in companies and academia (e.g., high schools and universities). The research article by Gonience and Titko (2024) states that retraining and upskilling are relevant components of the current and future workforce.

Therefore, AI's high potential depends on the terrain in which it is deployed and on the system, not only in terms of the technological apparatus but also the learning into which it is inserted.

A critical study by the Organization for Economic Cooperation and Development (OECDC), published in 2023, shows that implementing AI in companies leads to different results regarding new job opportunities, new tasks, job losses, and task composition. This qualitative analysis is based on 100 case studies in eight countries from the manufacturing and financial sectors.

The article aims to focus on the new figure of the "AI trainer," analyze the definition of digital competence characterized by five domains identified by the European Commission, understand how AI is being used so far, and review current policies for human resource training with a view to future opportunities.

Keywords: artificial intelligence, digital transformation, upskilling, reskilling, training, technology gap, policy, augmentation.

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ZEV-UP's Prototype Vehicle and its Reclamation for Urban Space Through Parking Optimization: A Framework for Small Parking Lots Introduction

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EXTENDED ABSTRACT

Urban areas are increasingly challenged by traffic congestion and pollution, prompting efforts to reclaim space for sustainable mobility. Under this lent, ZEV-UP project, a EU-funded project is creating a small, compact and more affordable battery-electric vehicle which implies small space in the urban ecosystem, to analyze its impact this study proposes a methodology to assess the potential impact of small parking lots designed for quadricycles and A-segment passenger cars, which are becoming feasible options due to their lower capital and maintenance costs, as well as their dynamism and versality

The methodology proposes the division of the study area into small polygons, the size of which is determined by the walking distance preferences and the type of surrounding activities, such as large and small commercial areas, residential areas, and production, including working places and offices. These areas are analyzed using three key metrics: Parking Area Length (PAL), Parking Area Capacity (PAC), and Parking Daily Rate of Utilization (PDRU). These metrics guide decision-making for the placement of small parking lots. Additionally, a scenario matrix was developed using real-world data on the market representation of A-segment passenger cars and their specific dimensions, allowing for a flexible analysis of alternatives parking strategies.

The methodology was applied to a case study in Budapest, Hungary, where A-segment vehicles represent approximately 6% of the market. Nine scenarios were tested, varying in vehicle length and market share, based on pessimistic, moderate, and optimistic projections. The results indicate that large, densely

populated commercial and productive areas can free up significant space for urban activities, such as green areas, by reallocating parking for smaller vehicles. Smaller zones also benefit, but to a lesser extent. In residential areas, the benefits are more limited due to smaller walking distances and lower population density, which reduces the effectiveness of introducing smaller parking spaces.

Additionally, the market share of small vehicles plays a crucial role, as a higher presence of these vehicles leads to a more significant impact when introducing smaller parking areas. The scalability of the methodology also suggests its potential application in other European countries, with higher presence of A-segment passenger cars.

The study concludes that reallocating parking space for smaller vehicles can optimize urban areas, enhance mobility, and promote sustainability. The study highlights the importance of tailoring solutions to local conditions and vehicle market trends to maximize the benefits of such initiatives.

Keywords: urban space, electric vehicles, parking optimization, car-free cities, urban mobility, traffic congestion, pollution, sustainable mobility, quadricycles, sustainability.

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Rethinking intelligent cities as socially innovative urban communities

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EXTENDED ABSTRACT

As intelligent communities, cities of the future use technologies to drive innovation-led urban growth, constructing a wealthy progressive future (Martinez, Mikkelsen & Phillips, 2021; Hollands, 2008). Intelligent cities are rethinking urban planning by identifying a smart city vision to urban growth for community engagement and social innovation. The study elucidates that intelligent cities aim at rethinking the city an engine of collaborative and innovative spaces. Intelligent cities are rethinking on smart city urban planning, leading to responsible urban future and community by using the potential of technologies to drive community socially innovation (Yigitcanlar, 2018, 2021), developing smartness to improve collaborative frameworks for multi-actor innovation, and encouraging private-public partnerships, and advancing towards social innovation (Meijer & Thaens, 2018; Sørensen & Torfing, 2018; Komninos, 2015; Costales, 2022). Intelligent and innovative cities are following knowledge-led pathways, leading to technology-driven and social innovation and development, driving urban innovation and promoting collaborations, empowering the urban community (Martin, Evans & Karvonen, 2018), meeting grand societal challenges, and improving the urban quality of life in long-term horizon (Appio, Lima & Paroutis, 2019; Paskaleva, 2011). The study analyses intelligent cities are going smart developing collaboration to drive urban social and responsible innovation and refers to the analysis pf case studies related to some European cities that are following a smart city responsible way to improve the quality of urban life and growth.

Keywords: urban innovation, intelligent cities, smart cities and communities.

ORGANIZATIONAL AGILITY AND PERFORMANCE THROUGH THE LENS OF TECHNOLOGY

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Gliding between team members' similarity versus diversity toward performance: the role of technological advancements

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EXTENDED ABSTRACT

The current endeavor aims to provide preliminary insights into the dyad similarity – diversity of team members by considering two main factors, that is, performance achievement (as outcome) and technological advancements (as potential moderator). To this end, the remainder of the extended abstract will briefly look at the benefits of similarity versus the benefits of diversity among team members from the group and organizational perspectives, also introducing the role of technological advancements in the overall analytical framework.

The composition of a team can significantly impact its overall performance and the success of the organization it serves. Researchers have identified factors like leadership, empowerment, and team structure as contributors to team effectiveness (Chen et al., 2005; MacMillan et al., 2002) Nevertheless, one factor garnering growing attention is the role of team member similarity in enhancing business performance (Vătămănescu & Mitan, 2023).

Existing research suggests that teams with members sharing similar backgrounds, experiences, and characteristics may be more cohesive and effective in achieving their goals (Yeager & Nafukho, 2012). This is because individuals with similar attributes tend to better understand each other's perspectives, facilitating effective communication, coordination, and decision-making within the team. Furthermore, perceptions of differences among team members can negatively impact trust development and team

cohesion, ultimately hindering individual and team performance (Vătămănescu et al., 2018). Perceptions of differences will negatively affect the development of trust among team members, adversely affect team cohesion, and ultimately hinder individual performance. This aligns with the notion that team synergy and performance are the compilation of individual contributions, and maximizing individual performance is key to optimizing team outcomes.

Team member similarity can enhance effectiveness in a few ways: improved communication, increased cohesion, and enhanced coordination. When team members share similar backgrounds or experiences, they often find it easier to understand each other's perspectives and communicate more effectively (Mas, 2009), leading to fewer misunderstandings and quicker decision-making. Similarity can also foster a sense of camaraderie and unity, motivating members to work together and support each other. Shared understanding and mental models, often present among similar individuals, can streamline task coordination, resulting in smoother workflows and increased efficiency.

Conversely, the literature also indicates that diverse teams can bring a wider range of skills, knowledge, and perspectives, leading to more innovative solutions and better problem-solving. Diverse teams, with their broader range of skills and knowledge, may be better equipped to handle intricate problems. Therefore, it is important to strike a balance between member similarity and diversity. Highly diverse teams may face challenges in coordination and communication, potentially offsetting the benefits of diverse perspectives (Jehn et al., 2008).

When placing the technological advancements into the equation, it may be observed that technological developments are able to influence the similarity or diversity of team members in an organization in several ways. On the one hand, rapid technological advancements often create a demand for specialized skills and knowledge. Organizations may need to recruit individuals with specific technical expertise, potentially leading to teams with higher similarity in terms of educational backgrounds and skill sets. On the other hand, technology has enabled remote work and virtual teams, allowing organizations to assemble teams with geographically diverse members. This can increase diversity in terms of cultural backgrounds, perspectives, and experiences. Ultimately, as automation and AI become more prevalent, certain job roles may become obsolete, while new ones emerge. This can lead to a shift in the required skills and potentially increase diversity within teams as organizations seek individuals with expertise in emerging technologies. Still, it is important to note that the relationship between technological

advancements and team composition is complex and can vary depending on the specific industry, organizational culture, and the nature of the technological change.

Keywords: team members, similarity, diversity, performance, technological advancement.

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Managing AI-driven innovation in tech companies: integrating generative AI, automation, and human-AI collaboration for product innovation and organizational efficiency

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EXTENDED ABSTRACT

This study aims to examine the relationships between innovation management, product innovation, and organizational efficiency in the context of the integration of generative artificial intelligence (AI), automation, and human-AI collaboration within the tech industry. By developing a theoretical framework, the research seeks to discover the connections between these elements and their collective impact on contemporary technology companies. It aspires to contribute to a deeper understanding of the evolving dynamics within organizations, particularly as they adopt emerging technologies.

The theoretical contribution of this research lies in extending existing knowledge on innovation management, product innovation, and organizational efficiency through the incorporation of advanced technologies into established theoretical frameworks. Traditional theories of innovation management, while multidisciplinary and comprehensive, tend to focus on static conceptualizations, often specific to particular industries or economic contexts. Although some studies have explored leadership, team creativity, and diversity as factors influencing innovation management, these frameworks may now be outdated, given the rapid evolution of generative AI and automation technologies. While recent research has addressed AI integration in business contexts, the pace of technological advancement creates a need for more innovative approaches. This study aims to address this gap by revising management frameworks

to account for AI-driven innovation and its implications for competitive strategies, organizational structures, and user interaction with AI.

Furthermore, the interdisciplinary nature of the research, at the intersection of management with technology, provides a comprehensive perspective on the impact of AI-driven innovation on organizational practices, blending theoretical rigor with practical insights. The study aligns with contemporary trends, as emerging technologies like generative AI and automation shift the innovation paradigm towards a more integrative approach, combining human creativity with machine efficiency. By addressing these gaps in the literature, the research offers a comparative analysis of traditional and emerging innovation frameworks based on the integration of AI, making a timely and relevant contribution to current academic and industry debates.

The integration of AI and automation into product development and organizational processes is increasingly recognized as a critical determinant for sustaining competitive advantage within the tech industry. Generative AI, automation, and human-AI collaboration have the potential to drive substantial advancements in product innovation, organizational efficiency, and overall business growth. This research aims to examine the practical applications of these technologies, providing valuable insights for technology companies seeking to leverage AI for strategic innovation and process optimization.

In light of the rapid advancements and rapid adoption of AI, this research holds significant relevance. Numerous start-ups are either centering their business models around AI or striving to incorporate AI into their product offerings, reflecting a broader industry trend. Established companies are also seeking to enhance their organizational efficiency through the integration of AI within their workflows. Leading organizations such as OpenAI, Google DeepMind, Meta, Databricks, Cohere, and Mistral AI are at the forefront of developing solutions that enhance product development and organizational processes.

Moreover, a comprehensive understanding of human-AI collaboration is essential in order to explore the dynamics of how such collaboration occurs and its implications for creativity, decision-making, and organizational efficiency. This research will investigate the complementary roles of AI and human expertise, aiming to identify innovative solutions and more effective integration strategies. Additionally, the study will address the broader implications of AI advancements, including their potential effects on industry practices, strategic directions, and ethical considerations. The integration of responsible AI practices is crucial, as ensuring fairness, transparency, and accountability in AI systems is fundamental

in supporting sustainable innovation. By approaching these dimensions, the research aims to offer actionable insights into best practices for AI integration while adhering to ethical standards.

The literature review covers several key areas, including innovation management, product innovation, organizational efficiency, generative AI, automation, process optimization, human-AI collaboration, ethical considerations, responsible AI, and AI governance. These areas collectively establish a framework for understanding the integration of emerging technologies within the tech industry and their impact on innovation practices and organizational efficiency. By summarizing insights from these domains, the literature review highlights the importance of adapting to rapid technological advancements and supporting collaborative interactions between humans and AI systems, while also addressing the ethical implications of AI integration in business operations.

The research adopts a mixed-methods approach, integrating both quantitative and qualitative methods to provide a comprehensive understanding of the subject matter. Data collection encompasses multiple sources to enhance reliability and validity, such as: surveys via questionnaires, semi-structured interviews, case studies, and document analysis.

The challenges of this research include maintaining a relevant theoretical framework given the rapidly evolving nature of AI technology, navigating the technical complexities associated with generative AI and automation, and dealing with limited access to relevant data from tech companies. These challenges are addressed by continuously monitoring industry developments to ensure the theoretical framework remains relevant, collaborating with technical experts to navigate the complexities of generative AI and automation, and utilizing diverse data sources to mitigate access limitations. Additionally, an interdisciplinary approach integrates insights from management, technology, and human-computer interaction to fill gaps in the existing literature.

Keywords: generative artificial intelligence, automation, human-AI collaboration, product innovation, organizational efficiency.

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Pillars of Progress: Navigating Innovation and Sustainability in Romania's IT Landscape

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EXTENDED ABSTRACT

This research initiative titled "Pillars of Progress: Navigating Innovation and Sustainability in Romania's IT Landscape" delves into a significant and multifaceted issue within management and organizational development, focusing specifically on the Romanian IT sector.

The goal is to unravel the complex relationships among innovation, sustainability, and organizational performance, particularly within integrative management models that enhance competitive advantage in a rapidly evolving industry. By emphasizing the synergy among these three core elements, the research showcases how organizations can leverage them to generate considerable added value.

Employing a mixed-methods approach, it incorporates both qualitative and quantitative methodologies to provide a comprehensive understanding of the interconnectedness of innovation, sustainability, and organizational performance. Qualitative insights are gathered through semi-structured interviews with industry leaders and decision-makers, exploring the challenges, strategies, and perceptions surrounding these crucial themes.

This qualitative data will complement the quantitative findings from surveys, ensuring a well-rounded analysis. The study identifies three primary clusters within Romania's IT landscape: (1) sustainability, (2) innovation, and (3) sustainable development. These clusters not only broaden research avenues for scholars but also heighten awareness among practitioners about the growing importance of these constructs. This alignment is vital for organizations striving to positively impact society by adopting sustainable practices such as responsible resource use, investment in recycling initiatives, and the transition to renewable energy sources.

While the findings aim to enhance theoretical knowledge and practical applications, the research acknowledges its limitations, including a reliance on a single database (Scopus) and a relatively short study timeframe (2019-2024). Future investigations are encouraged to expand the scope by including other bibliographic databases, such as Web of Science and Google Scholar, enriching the available literature. An extended temporal analysis could yield a more comprehensive understanding of trends and developments in sustainability and organizational innovation, assisting in identifying pivotal shifts and significant changes in academic approaches.

This study promises numerous contributions. By analyzing the current managerial models utilized in Romania's IT industry, it aims to pinpoint critical success factors and challenges organizations encounter when implementing integrative management frameworks. Understanding how these frameworks can effectively respond to the demands of a competitive marketplace is essential. Moreover, the study seeks to identify key elements that drive innovation and sustainability, presenting strategies to enhance these processes. Additionally, the research evaluates how integrative management models interact with organizational learning, proposing effective strategies to promote continuous improvement and innovation.

This assessment is crucial for ensuring the long-term sustainability of IT firms in a landscape marked by rapid technological change. The research further presents the benefits linked to these managerial models, including increased operational efficiency and enhanced market competitiveness.

Ultimately, the insights and recommendations derived from this study will serve as practical tools for managers in Romania's IT sector, guiding them toward adopting integrative management models that bolster innovation, sustainability, and organizational performance. By merging theoretical insights with empirical data, the research aspires to deepen the understanding of the intricate interplay among these critical areas, aiming to foster responsible and sustainable practices that yield long-term benefits for both organizations and society. In conclusion, this research represents a significant addition to the academic and practical dialogue regarding innovation, sustainability, and organizational performance in Romania's IT sector.

By integrating modern research methodologies and emphasizing adaptability in the post-pandemic context, the study highlights the importance of flexibility and responsiveness in implementing integrative management models. Through expert interviews and quantitative surveys, it captures the unique

challenges and strategies pertinent to this dynamic industry, enriching the existing body of knowledge and paving the way for future research initiatives.

Keywords: Organizational innovation; Sustainability in the IT industry; Organizational performance; Integrative managerial models; Organizational Learning.

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Exploring the Impact of Intellectual Capital on Organizational Performance and Agility: Insights from Romanian SMEs

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EXTENDED ABSTRACT

In today`s continuously changing environment and highly competitive market, small and medium-sized enterprises (SMEs) are under a growing pressure to maintain their agility and boost performance, as this being the only way to survive and grow (Meyer, Prescott & Sheng, 2022; Vătămănescu & Dinu, 2023). SMEs must depend on their internal strengths—particularly their intellectual capital—to adapt swiftly and maintain competitive advantages as market conditions change, globalization picks up speed, and technology advances (Kiyabo & Isaga, 2020). Intellectual capital is the aggregate knowledge, skills, procedures, relationships, and capacity for creativity inside an organization and it includes human capital, structural capital, and relational capital (Habib & Dalwai, 2024). By handling these intangible assets well, businesses may streamline processes and continue to adapt to changing market conditions (Chaudhary et al., 2023).

This abstract offers significant insights from a qualitative analysis on the relationship between intellectual capital and the performance and agility of Romanian SMEs. The research relies on semi-structured interviews with ten managers of Romanian SMEs who operate in a range of sectors, such as IT and Software Development, Educational Services, Creative Industries, Health Services, and Retail and Wholesale Trade. These industries were chosen in order to offer a wide view of the management and use of intellectual capital in many organizational contexts.

This study's main goal was to find out how organizational performance and agility are shaped by the three types of intellectual capital: human capital, structural capital and relational capital. The abilities, know-how, and creative potential of employees are referred to as human capital (Paoloni et al., 2023;

Wei et al., 2023); internal procedures, frameworks, and technological advancements that enable productive operations are referred to as structural capital (Pangidoan & Nawangsari, 2022); and an organization's relationships with partners, suppliers, and customers are referred to as relational capital (Ryu, Baek & Yoon, 2021). These elements work together to provide a company the strength to innovate, adapt quickly to changes in the market, and perform consistently (Alhosani & Ahmad, 2024).

Methodology

The analysis followed a structured approach, using content analysis techniques that aim to examine the data collected from the interviews and to identify recurring themes. The five main components were used to categorize the data, allowing for a complete investigation of the relationship between intellectual capital and the performance and agility of the businesses. The AtlasTI software played a crucial role in exposing these connections by producing mind maps and word clouds that improved comprehension of the interactions between human, structural and relational capital.

First, a word cloud was created, highlighting the words that were most frequently used in the interviews, in order to determine the most significant themes in the data. The visual representation offered a preliminary a description of the key concepts that had the most impact for the managers who were interviewed. The frequency of terms highlighted the critical role that intellectual capital plays in enhancing operational performance and facilitating flexibility in response to shifting market conditions.

Following this, mind maps were generated with the software AtlasTI in order to examine the connections between the study's main concepts. These mind maps demonstrated the relationships between relational capital management, structural capital investments, and human capital development to boost organizational performance and agility. For instance, the analysis indicated that ongoing investments in human capital—the development of employees skills and competences—are directly related to the effective adoption of new technologies—the structural capital—which in turn improves the organization's agility, or its capacity to react swiftly to changes in the market. The mind maps also made clear how crucial it is to have strong relationships in order to promote cooperation and information sharing among internal and external stakeholders. It was discovered that this kind of cooperation is essential to keeping organizations flexible and adaptable to changing circumstances.

Key Findings

The results of the study demonstrate how different aspects of intellectual capital are interrelated and influence organizational performance. Managers have emphasized the significance of ongoing staff

development through regular training and skill improvement programs, with human capital emerging as a critical engine of innovation and flexibility. A company's ability to innovate and adapt to market changes was closely correlated with its ability to maintain agile employees.

Another important aspect that was highlighted to have an impact on both performance and agility was structural capital. Organizations that made investments in digitization (Mihu & Herciu, 2024), efficient workflows, and adaptable organizational structures were better able to sustain operational effectiveness and make adjustments in response to external environment changes (Stratone, 2023). The results indicated that digital transformation is a driver of organizational creativity and agility in addition to being a tool for operational success (Cubillas-Para, Cegarra-Navarro, & Vătămănescu, 2024).

The third pillar of intellectual capital, relational capital, has been proven to be essential for increasing organizational agility. Building trustworthy relationships with suppliers, consumers, and other outside stakeholders was thought to be crucial for obtaining market data, seeing changes in demand, and working together to develop creative solutions. sustaining organizational agility also requires sustaining internal connections, such as teamwork and departmental collaboration (Vătămănescu et al., 2024).

Conclusions

The study's conclusions highlight how crucial it is for Romanian SMEs to manage their intellectual capital well in order to improve organizational performance and agility. Each of the three capitals—human, structural, and relational—contributes differently to the organization's potential to compete in a market that is changing quickly (Al-Omoush, 2022). SMEs may make sure they are flexible enough to respond to new possibilities and challenges by investing in ongoing staff development, streamlining internal procedures, and cultivating strong external partnerships (Phonthanukitithaworn, 2023).

For SME managers looking to increase their performance and agility through intellectual capital management, this research has important implications. It also creates opportunities for more study on how to best use intellectual capital to optimize organizational outcomes within certain markets and sectors.

Keywords: intellectual capital, small and medium-sized organizations, organizational performance, agility.

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Leveraging Professional Social Networks: Enhancing Managerial Competitiveness in SMEs

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EXTENDED ABSTRACT

In the contemporary business landscape, small and medium-sized enterprises (SMEs) face significant challenges in maintaining competitiveness and achieving sustainable growth. One of the critical factors influencing their success is the effective leveraging of professional social networks. This study investigates how SMEs can enhance their managerial competitiveness through the strategic utilization of social networks, emphasizing the role of social capital in facilitating access to resources, knowledge sharing, and innovation. The research begins by defining professional social networks as interconnected relationships among individuals and organizations that facilitate the exchange of information, resources, and support. These networks are essential for SMEs, particularly in overcoming barriers to market entry and enhancing competitive positioning. Previous studies have shown that participation in social business networks can significantly improve SMEs' performance by providing access to critical resources and opportunities for collaboration (Turker, 2018; Eggers et al., 2017). For instance, Turker (2018) highlights that social business networks enable small businesses to penetrate international markets, thereby enhancing their competitiveness in export markets (Turker, 2018). Moreover, the advent of social media has transformed the dynamics of professional networking. Platforms such as LinkedIn, Facebook, and Twitter allow SMEs to engage with a broader audience, fostering relationships that can lead to new business opportunities and partnerships. Research indicates that entrepreneurial orientation positively correlates with social network usage, suggesting that SMEs with a proactive approach to networking are better positioned to leverage these platforms for market development (Eggers et al., 2017). Additionally, Scheers (2016) notes that social media serves as a vital tool for SMEs to promote their products and services, enabling them to reach potential customers more effectively than traditional marketing methods (Scheers, 2016). The interplay between managerial ties and social media usage is particularly significant

in resource-constrained environments. Managers who actively engage in social networks can access valuable information and resources that enhance their decision-making capabilities and overall organizational performance (Li & Zhou, 2010; Wong & Boh, 2014). For example, Li & Zhou (2010) demonstrate that managerial ties improve performance by providing institutional advantages, such as securing scarce resources and institutional support (Li & Zhou, 2010). This institutional advantage can lead to differentiation and cost advantages, ultimately resulting in superior performance for SMEs. However, the effectiveness of networking is not uniform across all contexts. Factors such as competitive intensity and organizational culture can moderate the impact of social networks on managerial performance. Mulyungi et al. (2022) argue that organizations must utilize network resources effectively to adapt and thrive in competitive environments (Mulyungi et al., 2022). Furthermore, disparities in access to professional networks can limit the competitiveness of certain managerial endeavors, underscoring the need for inclusive networking strategies that ensure all managers can leverage social capital for their professional growth (Mulyungi et al., 2022; Mahar & Ghumro, 2020). The findings of this study contribute to the understanding of how professional social networks facilitate knowledge exchange and serve as a determinant of managerial competitiveness in an increasingly interconnected business landscape. By examining the dynamics of social networks, this research addresses existing gaps in the literature regarding the interplay between social networks and managerial performance, particularly in the context of SMEs. The implications of this research are twofold: it provides valuable insights for managers seeking to enhance their competitiveness through strategic networking and informs policymakers about the importance of fostering an environment conducive to networking and collaboration. In conclusion, leveraging professional social networks is essential for enhancing managerial competitiveness in SMEs. As organizations navigate the complexities of a digital and globalized world, understanding the impact of social networks becomes increasingly critical. This study serves as a valuable resource for practitioners aiming to utilize social networks as a strategic asset in their managerial toolkit, ultimately driving organizational performance and sustained competitive advantage.

Keywords: Professional social networks; managerial competitiveness; small and medium-sized enterprises (SMEs); organizational performance; social media.

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Telecom Practices for Achieving Organizational Performance and Driving International Expansion

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EXTENDED ABSTRACT

This paper examines the influence of tailored communication solutions on organizational performance and international expansion in the telecommunications sector. It highlights how customized services can significantly improve customer satisfaction and loyalty, underscoring the importance of maintaining competitive pricing and high service quality. Additionally, the discussion addresses the role of proprietary infrastructure in enabling quick problem resolution, which, in turn, fosters a strong brand identity and builds consumer trust. The study emphasizes the necessity of a long-term vision in telecommunications development, demonstrating how strategies based on these principles can lead to sustainable success.

In the rapidly evolving telecommunications sector, companies encounter significant sustainability challenges driven by continuous technological advancements and shifting customer demands (Arisar, Lian-Ju, & Jokhio, 2024). These dynamics compel organizations to consistently reassess and refine their business strategies to effectively capture sustainable market share (Orieno et al., 2024). As competitors implement varied tactics to navigate this complex landscape, the need for regular evaluation and adaptation of business practices emerges as a critical factor for ensuring long-term success and revenue generation.

In the opinion of Bargoni et al. (2023), the integration of tailored communication solutions into strategies not only meets the demands of diverse customer bases but also facilitates organizational performance and international market penetration. To maintain a competitive advantage in the telecommunications sector, it is imperative for companies to invest in advanced technologies, particularly in high-quality fiber

optic infrastructure and state-of-the-art equipment. Such investments are essential for the deployment of next-generation services, including 5G networks and the Internet of Things (IoT). Emami et al. (2022) assert that investing substantially in advanced technology is not just a strategic move; it serves as a catalyst for transformative organizational performance in the telecommunications sector. As Johanson and Oliveira (2024) highlight, the effectiveness of decision-making strategies in internationalization is significantly influenced by the institutional development of the host market, underscoring the importance of adapting business strategies to local contexts.

Sacco (2020) emphasizes that the incredible potential of the growing telecom market creates challenges for telecom infrastructure that cannot be resolved within the traditional industry framework. This context further underscores the need for innovative solutions and strategic foresight.

Moreover, a healthy organizational culture plays a pivotal role in facilitating successful expansion and enhancing performance. A strong culture fosters collaboration, innovation, and adaptability, enabling teams to respond effectively to new market challenges. When employees are engaged and aligned with the company's vision, they are more likely to embrace change and contribute to the organization's goals. The findings of Gyemang and Emeagwali (2019) emphasize the critical importance of transferring knowledge acquired in successful markets to new market environments within the telecommunications industry. As firms navigate the complexities of entering new markets, leveraging existing expertise becomes essential for adapting strategies and driving success in unfamiliar territories. According to Vatamanescu et al. (2020), this knowledge transfer not only enhances dynamic capabilities but also fosters organizational agility and competitive performance. Thus, effective knowledge management practices are vital for ensuring that valuable insights and best practices are seamlessly integrated, enabling telecommunications companies to replicate their achievements in new contexts.

In summary, the integration of tailored communication solutions, investment in advanced technologies, and a strong organizational culture are essential drivers of performance and international expansion in the telecommunications sector. These elements collectively enable companies to enhance customer satisfaction, adapt to market dynamics, and achieve sustainable growth in an increasingly competitive landscape.

Keywords: adaptability, business strategy, competitive advantage, customized communication solutions, customer satisfaction, international expansion, knowledge transfer, organizational performance, telecommunications.

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Strategic Management of Intellectual Capital for Agility in BPOs: Driving Competitive Advantage Through Technology

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EXTENDED ABSTRACT

With the ever-changing needs of the market and the rapid evolution of technology, Business Process Outsourcing (BPO) organizations are finding that organizational agility is a critical factor in maintaining their competitive edge. In order to understand how to be more agile in the BPO industry, this study looks at the strategic management of intellectual capital, which includes relational, structural, and human capital. When used successfully, intellectual capital helps businesses adapt quickly to changes in technology, streamline decision-making, and improve interactions with customers — all of which helps them stay competitive in an increasingly digital environment.

The study explores the complex ways in which technology influences strategies for managing intellectual capital. It explores how traditional business process outsourcing (BPO) models are being reshaped by digital transformation, automation, and artificial intelligence (AI). It highlights the potential benefits of increased operational efficiency, but it also highlights the hazards of workforce displacement and rigid process. This study investigates how BPO companies may strategically manage and build their knowledge resources to generate resilience, responsiveness, and innovation by focusing on the symbiotic relationship between intellectual capital and technology innovation.

This research shows that intellectual capital, when linked with agile organizational methods, boosts a company's ability to navigate complex technology landscapes using a combination of case studies and theoretical frameworks. It is shown that technology can be a disruptive force as well as a catalyst for agility, which emphasizes the need for BPO organizations to take a balanced approach that makes use of intellectual resources while reducing the dangers associated with relying too much on automated solutions.

The study also discusses the broader ramifications of these dynamics for the business process outsourcing (BPO) sector. In order to provide BPO companies with a sustainable competitive advantage, this research suggests a strategy framework that combines fast technical adoption with intellectual capital management. The conversation focusses on how this approach helps businesses protect their intellectual property while averting the possible "scare" that comes with technological changes.

In conclusion, this study adds to the conversation about intellectual capital, organizational agility, and the changing role of technology in company strategy. It also provides BPO companies with practical advice on how to prosper in a technologically advanced world.

Keywords: organizational agility, BPO, intellectual capital, strategic management, competitive advantage, technology integration, technological adaption

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Technology-Driven Agility in Sustainable Management: Romanian Corporate Perspectives on Technology as a Societal Boon or Bane

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EXTENDED ABSTRACT

Romanian companies face unique challenges in achieving sustainable performance in a fast-paced, technologically driven global economy. Technology's role in enhancing organizational agility—empowering companies to adapt quickly and stay competitive—raises the question: Does technology truly care for organizational goals by fostering sustainable agility, or does it present risks that may scare companies into unsustainable practices? This study intends to explore these complex dynamics within the Romanian corporate sector, evaluating technology's capacity to drive both organizational agility and sustainable performance. Our research aims to assess whether technology serves as a genuine boon or a potential bane, ultimately revealing insights into how companies can responsibly harness its power (Almeida, Gohr, & Santos, 2020; Stoian, Șimon, & Gherheș, 2021).

As the theoretical framework clearly sketches, the relationship between technological adoption and sustainable management is multifaceted. While technology promises agility and operational efficiency, it may simultaneously introduce dependency risks, undermine flexibility, and challenge sustainable outcomes (Landrum & Ohsowski, 2017; Chong, Momin, & Narayan, 2022). To investigate these dual possibilities, this study will be articulated on the following presumed hypotheses:

1. **H1**: Higher levels of managerial awareness and strategic planning will enable Romanian companies to use technology in a way that enhances organizational agility without compromising sustainable performance.

2. **H2**: A strong regulatory framework is essential to balance the caring and scaring potential of technology, ensuring sustainable benefits without unintended risks.

3. **H3**: Technology-driven sustainable management strategies can improve organizational reputation and competitive advantage if transparency and flexibility are prioritized (Martínez Azúa & Sama-Berrocal, 2022).

Following these presumptions, the methodology we hereby advance is a mixed-methods approach, combining qualitative insights and quantitative analysis. Through planned interviews with Romanian corporate managers, we aim to gain in-depth perspectives on technology's perceived impact on organizational agility and sustainable practices. A supplementary survey will be administered to collect quantitative data, enabling us to identify broader trends in technology adoption and organizational flexibility. This dual approach is expected to provide a nuanced view of how technology can serve as a caring or scaring force within sustainable management frameworks (Haţegan, Curea-Pitorac, & Milu, 2021).

Focusing on the anticipated analysis and further discussion, our research will seek to reveal both potential advantages and risks associated with technology adoption in sustainable management, particularly its impact on organizational agility.

1. **Technology as a Catalyst for Agility and Caring Flexibility:** We anticipate that advanced digital tools—such as predictive analytics and real-time monitoring—will emerge as critical enablers of responsive, agile organizational models. By allowing companies to adapt quickly to market and regulatory changes, these technologies are expected to enhance corporate resilience and provide caring flexibility for sustainable management (Landrum & Ohsowski, 2017).

2. **Scaring Effects of Technological Dependency and Regulatory Ambiguity:** Preliminary considerations suggest that technology may also pose risks, creating potential dependency that could limit organizational flexibility. Additionally, without clear regulatory guidance, there is a possibility that technology-driven practices may lead to unintended social and environmental impacts, potentially "scaring" companies from fully committing to sustainable practices (Chong, Momin, & Narayan, 2022).

3. **Influence on Reputation and Competitive Advantage:** We anticipate that an agile, technology-enabled approach to sustainability will enhance corporate reputation and appeal to socially conscious stakeholders. However, we intend to examine whether these reputational benefits may be undermined if

companies overly rely on technology, potentially triggering societal concerns regarding transparency and responsibility (Martínez Azúa & Sama-Berrocal, 2022).

In terms of expected contributions, through this study, we aim to provide insights into the dual nature of technology in enhancing organizational agility within sustainable management practices. By examining the caring aspects of technology that drive corporate agility and the scaring aspects that present operational risks, this research will contribute to the broader discourse on responsible technological adoption in corporate sustainability (Almeida et al., 2020; Ulvenblad, Ulvenblad, & Tell, 2018). Future directions will explore how cross-sector collaborations and policy innovations might mitigate technology's scaring effects, reinforcing its role as a constructive force for agility and performance in sustainable management.

Keywords*:* organizational agility, sustainable management, technological adoption, Romanian companies, corporate reputation.

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Corporate governance and open innovation: A systematic exploration of emerging trends and impact

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EXTENDED ABSTRACT

This study aims to conduct a systematic review of the literature exploring the relationship between corporate governance and open innovation, utilizing a bibliometric analysis framework guided by the PRISMA methodology. By adhering to these guidelines, the review ensures transparency and rigor in the process of identifying, selecting, and analyzing relevant studies. The research leverages data extracted from the Scopus database, which consolidates over 87 million documents from more than 7,000 international publishers. A total of 17 publications, spanning journal articles, conference papers, and review articles, were analyzed, covering the timespan 2020–2024. The findings indicate that this research field is relatively new, with the earliest studies emerging in 2020 and the highest publication output occurring in 2023. Despite its recent emergence, the topic shows significant diversity in publication types, although the majority of contributions are concentrated in disciplines such as business, management, accounting, economics, and social sciences, with only limited exploration in engineering and computer science.

The bibliometric analysis reveals key trends and impacts, including an average citation rate of 14.88 per document and a growing interest in studying how corporate governance practices influence open innovation processes. Prominent journals, such as the *Journal of Open Innovation: Technology, Market, and Complexity*, have contributed significantly, accounting for 24% of the analyzed studies. The review also highlights the scientific impact of key articles, such as Shaikh (2022) and Belyaeva (2020), which lead in citation counts, reflecting their influence in shaping the discourse on corporate governance and innovation.

Thematic mapping, generated through *Bibliometrix* software, identifies two central clusters linking corporate governance with managerial behavior and open innovation. The central theme of "corporate governance" acts as a hub, demonstrating its critical role in fostering open innovation while addressing organizational challenges and stakeholder engagement. The analysis further employs Bradford's and Lotka's laws to evaluate the distribution of publications and authorship patterns, revealing a balanced distribution of research sources and an active but diverse academic community with no clear dominance by individual researchers or institutions.

This study's originality lies in its comprehensive bibliometric approach, which systematically synthesizes existing knowledge while identifying gaps and emerging trends in the field. However, the research is limited by its reliance on the Scopus database, which may exclude relevant studies from alternative sources, and by the inherent challenges of assessing a relatively nascent area of research.

Overall, the findings indicate that while the relationship between corporate governance and open innovation remains underexplored, it is a growing area of interest with significant transdisciplinary potential. The upward trend in publication activity, coupled with the increasing integration of corporate governance principles into innovation strategies, underscores the importance of further research in this field. Future studies should aim to deepen the understanding of this dynamic interplay by incorporating diverse methodological approaches and exploring its implications across broader organizational and economic contexts.

Keywords: corporate governance, open innovation, bibliometric analysis, Emerging research trends.

TRANSITIONING TO INDUSTRY 5.0 AND SOCIETY 5.0

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Characterizing Industry 5.0 and Society 5.0: Convergences and Divergences

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EXTENDED ABSTRACT

The scientific literature presents information on the different industrial revolutions including Industry 5.0, however, there is little discussion on the correlation with the social evolution of Society 5.0. For the most part, both constructs are studied separately, approaching their union fragmentarily. This has meant that their relationship has not been studied in depth. That is why the purpose of this study is to characterize their interrelationship and to achieve this end the PRISMA method was applied. The findings show that Industry 5.0 constitutes a break with the chronological continuity of its predecessor Industry 4.0, being rather a subset of Society 5.0, which can improve the lives of human beings and the planet through a symbiotic vision of collaboration between people and technology. It is also evident that to achieve Society 5.0, humanity will face a transformative journey towards an innovative era in which economic progress extends to environmental progress and the generation of well-being in people's lives.

At the academic level, it is expected to enrich the understanding of both constructs by presenting divergences and convergences, definitions, relationships, gaps, challenges, opportunities, and future lines of research. At the business level, it is expected that decision-makers will understand the relevance of both constructs, contextualize them, and design strategies to help them manage the human-machine symbiosis. At the societal level it contributes to SDGs 3, 8, 9, and 11.

Keywords: Society 5.0, Industry5.0, human-machine symbiosis, divergences and convergences, future scenarios.

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AI-Integrated Future and its Impact on New Pedagogical Frameworks in Education

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EXTENDED ABSTRACT

The emergence of tools like ChatGPT by *OpenAI,* has catapulted the public interface with generative AI. All areas are affected by AI, education is not an exception, because students will be entering a profoundly changed labor market. However, Artificial Intelligence has not made it into the curricula of most countries in Europe. There is a necessity equip students with the knowledge to navigate, critically assess, and ethically employ AI—skills imperative for future careers and discerning the authenticity of information in an era fraught with misinformation. AI technologies call for the design and development of AI literacy curricula (Wang, Lester, 2023).

The goal of this research is to develop the initial version of the pedagogical framework, which is rooted in a comprehensive approach to prepare students and teachers effectively for a future deeply intertwined with artificial intelligence. Pedagogical models can vary widely, ranging from traditional lecture-based approaches to more contemporary, student-centered methods like project-based learning or inquiry-based learning (Subramanian et al., 2012; Evans & Matthew, 2012, Hafeez, 2021). The choice of a pedagogical model depends on various factors including educational goals, student needs, subject matter, and the educational philosophy of the institution or educator (Malicky et al., 2007, Huang et al., 2006). In the context of AI education, a pedagogical model is pivotal for several reasons. AI is a complex and rapidly evolving field, requiring educational approaches that not only impart technical knowledge but also foster

critical thinking, problem-solving, and ethical understanding. A well-designed pedagogical model ensures that AI concepts are taught in a way that is accessible, engaging, and relevant to students, preparing them for a future where AI plays a significant role in various aspects of life.

In case of pedagogical approaches focused on integration of AI, Yue et al. (2022) conducted systematic literature review on the most recent empirical studies on AI teaching programs in K-12 contexts. The authors suggest that an increasing number of studies have focused on AI education at the K-12 stage, but most of them have a small sample size or focus on qualitative data collection methods and self-reporting. Extensive study across Finland, Germany, Greece, and Lithuania has highlighted several obstacles impeding AI's full integration into education. Challenges such as insufficient teacher training in AI, budgetary constraints, job security fears among educators, privacy and data security, an over-reliance on AI, and misconceptions about its capabilities and role in academic integrity are prevalent.

The Design Science Research Methodology (DSRM) was chosen in this research for its systematic approach to problem-solving and its effectiveness in developing practical solutions (Peffers et al., 2007; Venable et al., 2016). In the context of creating a pedagogical framework, DSRM allows for a structured yet flexible process that combines theoretical understanding with practical application. Based on the principles of the SAMR model by Puentedura (2010) and the TPACK framework by Mishra and Koehler (2006), there had been designed a model that centers on real-life problem solving, cross-subject learning, and addressing social implications.

Real-life problems-based pedagogy emphasizes the creation of authentic learning environments where students engage in meaningful tasks that mirror real-world challenges. According to Jonassen and Hung (2008), authentic learning environments provide students with opportunities to apply their knowledge and skills to solve complex problems. The literature emphasizes the effectiveness of project-based and inquiry-based learning in addressing real-life problems (Yue et al., 2022). These approaches foster an environment where students can engage directly with real-world issues, applying AI solutions in a meaningful context. Such models not only enhance student engagement but also improve their problem-solving skills and understanding of AI’s practical impact.

Goodyear et al. (2014) emphasize the importance of pedagogical alignment in the design and implementation of educational technologies, including AI. Interdisciplinary approach is needed when incorporating AI into various subjects. Hmelo-Silver et al. (2007) stated that interdisciplinary learning fosters connections between different fields of knowledge, promoting a deeper understanding of complex

issues. Social implications refer to bias and fairness: AI systems used in education can perpetuate and amplify biases presented in the data used for training. This can result in unfair treatment or discrimination against certain groups of students. As highlighted by Diakopoulos (2016), AI algorithms can inherit biases from the data they are trained on, leading to unequal opportunities for students from diverse backgrounds. The use of AI in education often involves the collection and analysis of sensitive student data. Ensuring the privacy and security of this data is crucial to protect students' rights and prevent unauthorized access. Research by Dennen and Burner (2017) emphasizes the importance of implementing robust data protection measures in educational AI systems. Warschauer (2016) emphasizes the importance of addressing digital inequalities to ensure equitable access to AI-enabled educational resources and opportunities. Floridi et al. (2018) highlight the need for ethical frameworks to guide the development and deployment of AI technologies in educational settings, ensuring that they prioritize the well-being and rights of students.

Recognizing the influence of AI across various sectors, pedagogical framework is designed not only to impart technical knowledge but also to integrate AI education within broader, real-world contexts. Centered around three foundational aspects—real-life problems, cross-subject learning, and social implications—the pedagogical framework aims to provide a holistic, interdisciplinary, and ethically grounded educational experience. These dimensions are integral to developing students' capabilities to navigate and shape the future AI-driven landscape confidently and responsibly.

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Keywords: AI literacy, AI education, pedagogical framework.

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Knowledge and Innovation Management to Measure Performance of Large Companies in Developing Countries: The Case of Ecuador

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EXTENDED ABSTRACT

Recently, innovation has become a key driver of economic growth across regions, countries, and industries. A company's ability to take risks and foster innovation is now more important than its mere presence in the market. Innovation has become a central component of business competitiveness and sustainable development. Effective knowledge management within organizations, encompassing creation, acquisition, storage, transfer, and application, is therefore essential. However, significant innovation gaps exist globally, driven by both internal and external factors. Developing nations, particularly Latin America, face socioeconomic and political challenges that hinder the development and adoption of industrial and technological innovation. These countries often struggle with insufficient data for innovation research and face challenges in implementing public innovation policies. Therefore, this study examines the relationship between external and internal knowledge resources and their effects on innovation outcomes in large companies within a developing country context. The research employs a Structural Equation Model (PLS-SEM) to analyze data from a sample of 380 Ecuadorian firms. Results indicate that external knowledge resources influence both technological innovation outcomes ($\beta = 0.116$, $p = 0.043$) and non-technological innovation outcomes ($\beta = 0.173$, $p = 0.001$). Internal knowledge resources similarly affect technological innovation outcomes ($\beta = 0.582$, $p < 0.001$) and non-technological innovation outcomes ($\beta = 0.542$, $p < 0.001$). The study also demonstrates a positive effect of external knowledge resources on internal knowledge resources ($\beta = 0.310$, $p < 0.001$). The research

provides evidence for the mediating effect of internal knowledge resources on the relationship between external knowledge resources and both technological and non-technological innovation outcomes. However, the hypothesized moderating effect of company age on the proposed relationships was not support by the data. These findings have implications for innovation policies and business strategies, suggesting the need to consider both the absorption of external knowledge and development of internal resources. This study contributes to the understanding of knowledge management's role in innovation within developing countries, highlighting the function of internal resources in the assimilation of external knowledge for innovation purposes.

Keywords: Knowledge management, innovation management, external knowledge resources, internal knowledge resources, technological innovation outcomes, non-technological innovation outcomes, innovation in large companies.

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The Electrification of Passenger Transport for Sustainable Mobility: Challenges and Opportunities from the Perspective of Key Stakeholders

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EXTENDED ABSTRACT

Technology plays a crucial role in urban mobility in terms of sustainable development. From the premise that connecting technology with low-carbon transport improves the quality of life, this benefit extends to society across major cities worldwide. Governments in all countries are pressuring key mobility stakeholders to implement actions to contribute to achieving the Sustainable Development Goals, which presents significant challenges. These range from the execution of long-term planning at the government level to investments focused on adopting new technologies at the business level. Due to these challenges, most key stakeholders are rethinking the scope of technology use in the electrification of transport. This article aims to analyze the challenges, explore opportunities within the industry, and highlight new lines of research in the electrification of public transport, particularly in the case of Mexico City. To achieve this, we reviewed the input from seven experts during the roundtable discussion "Transport Electrification: Challenges, Opportunities, and New Research Lines" through a qualitative, cross-sectional, and exploratory approach to gain an in-depth understanding of the challenges in managing electromobility projects. Recurrent themes were identified using the constant comparison method, an essential technique in Grounded Theory. The results were analyzed from the perspective of sustainability strategies, which generate many synergistic effects for companies working collaboratively and benefit society. The advantages of sustainability are associated with challenges, such as 1) Reducing emissions, 2) Innovating business models through collaboration, 3) Integrating sustainable practices into the supply

chain business models to address the sustainable management of the industry's supply chain and 4) We are investing in technology to minimize the negative environmental externalities associated with the use of fossil fuels. The findings highlight the importance of placing business model innovation at the center to improve infrastructure, develop talent for managing technological projects, establish a strategic plan for preventing operational disruptions in public passenger transport, mitigate the risks associated with electrification, adopt technologies such as AI and automation, reduce the use of energy from fossil sources, and implement innovative actions for the recovery and reuse of waste flows; all from a systemic vision that considers both the positive and negative effects on passenger transport companies as a pathway towards sustainability.

Introduction: Considering this, the electrification of transport represents an alternative to reduce air pollution caused by suspended particles, such as PM10 and PM2.5, which are emitted by vehicles using fossil fuels. This has implications such as drastically reducing the amount of particulate matter released into the air, improving air quality, and reducing public health risks associated with pollution. The electrification of transport not only sets the path toward the energy transition but also redefines supply chain management with a sustainable approach that influences the dynamics of the electricity market, fosters applied research and promotes technology transfer.

Research Question and Objective: This article aims to analyze the actions driving the integration of technology in the electrification of passenger and freight transport, which, from the perspective of key stakeholders, has a high potential to reduce the carbon footprint and transform models towards sustainability. In this logic, the article is divided into four sections.

Methodology: A qualitative analysis of the data collected was conducted using Atlas-ti software to identify patterns, relationships, and strategies mentioned by the experts. These strategies were then coded, and their frequency was recorded. The quantitative indication of which topics the participants prioritized. Subsequently, the roundtable discussion content was initially coded to identify relevant concepts or ideas. Followed by a comparison of all codes to assess whether the experts agreed or if there were differences in their perspectives. Finally, the relationships and interdependencies between codes were identified. The findings from the roundtable discussion were synthesized into a report highlighting the main challenges in implementing electromobility, along with the experts' recommendations and proposals

Results: The results of the analysis reveal that the strategies most frequently mentioned by the experts during the roundtable discussion focus on strategic planning to prevent disruptions (10.56%) and infrastructure challenges (10%), highlighting the importance of robust infrastructure and adequate planning to ensure a smooth transition to electromobility. Similarly, innovation in business models (9.44%) and cost-benefit evaluation (8.89%) are vital aspects that the experts deem essential for driving the adoption of clean and sustainable technologies. Public-private partnerships (8.33%) and technological advances and innovations (7.78%) stand out among the identified opportunities. In comparison, the need for specialized talent development (7.22%) and the provision of fiscal incentives (6.67%) are fundamental to ensure electric vehicle adoption. However, challenges persist concerning energy cost management (3.33%) and consumer awareness and education (2.78%), underscoring the need to overcome economic and social perception barriers. These findings highlight the importance of continuing research into developing innovative business models and talent formation to strengthen the transition towards more sustainable transport.

Discussion: The integration of electromobility in transport offers significant benefits, including emissions reduction, economic savings, improved gender equity, and the promotion of policies for infrastructure development. However, overcoming the dependency on economic factors and the lack of robust infrastructure is crucial, and it must align with environmental and market policies that encourage the adoption of clean technologies. Therefore, the experts' conclusions highlight the importance of strategic planning, public-private partnerships, talent development, and innovation in business models as essential components to ensure a successful transition towards more sustainable transport. The findings from expert discussions provide

actionable insights into the factors necessary for this transition, particularly emphasizing collaborative efforts between stakeholders, long-term planning, and adapting business and technological frameworks to meet sustainability goals.

Limitations and Future Research: To advance the transition to electromobility within a sustainability strategy, key research areas should focus on:

1. Developing new business models for clean technology adoption, especially in fossil fuel-dependent sectors.
2. Building scalable infrastructure for electric vehicles (EVs), including charging stations and energy storage.

3. Managing energy costs through optimization and smart technologies.
4. Creating specialized training programs for the workforce to support the EV transition.
5. Analyzing incentives and subsidies' economic and regulatory effects on EV adoption.
6. Improving energy storage and managing renewable energy intermittency.
7. Exploring consumer perceptions and barriers to EV adoption, focusing on education and awareness.

Conclusion: This study demonstrates that the success of transport electrification and its integration into a sustainable business model will depend on a strategic approach that anticipates future market conditions and adapts to them, minimizing social and environmental risks, such as dependency on fossil fuels. This approach will enable companies to be more agile in addressing local markets, specialized sectors, and technological niches, supported by organizational structures that now view sustainability as a critical factor in business performance. Moreover, by incorporating circular economy principles into the business strategy, companies will be better equipped to assess the risks and benefits of disruptive technologies in the electrification of passenger transport in Mexico City.

According to experts, companies adopting a long-term planning approach must explicitly integrate sustainability into public policies to seize emerging opportunities in the sustainable management of supply chains within the electric transport sector. This approach will strengthen their competitiveness in changing markets and address challenges throughout the product lifecycle, with particular attention to the supply of materials and resources. Thus, it will contribute to the advancement of more sustainable and equitable mobility that meets the needs of new consumers and ensures long-term growth.

Keywords: Sustainable mobility, business model, electromobility.

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NAVIGATING THE FUTURE: THE ECONOMIC IMPACT OF EMERGING TECHNOLOGIES

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Emerging Technologies – Challenges for the Education System

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EXTENDED ABSTRACT

As a result of the Fourth and Fifth Industrial Revolutions (Industry 4.0 and Industry 5.0), the global economy is experiencing a period of rapid development. Consequently, the introduction of emerging technologies is a significant modern challenge. The anticipated changes in workplaces due to digital transformation will impact not only the younger generation but also the workforce across all age groups. Therefore, the preparation of updated curricula, new teaching methods, and relevant training programmes presents a challenge for educational institutions and the education system as a whole. Reforms should be initiated simultaneously at all levels of the education system.

This work is based on research and reports from globally recognised organisations. The rationale for this is that forecasting requires extensive efforts. Such studies necessitate a broad, robust network of researchers and substantial funding, which only globally recognised and large organisations can provide. Initially, the author discusses the expected fluctuations in the labour market. According to one study, "by 2030, in a midpoint adoption scenario, up to 30 percent of current hours worked could be automated, accelerated by generative AI. By 2030, Europe could require up to 12 million occupational transitions, double the prepandemic pace. In the United States, required transitions could reach almost 12 million, in line with the prepandemic norm" (McKinsey Global Institute, 2024, p.3). According to another report "92 million potential global digital jobs will emerge in 2030" (WEF, 2024a, p.4). "Based on data from the OECD and the European Union, there has been a 188% rise in job vacancies in upper-middle-income and high-income countries during over the last ten years (WEF, 2024b, p.5).

WEFs' another report brings together the perspectives of 803 companies – collectively employing more than 11,3 million workers – across 27 industry clusters and 45 economies from all world regions. The author outlines the most relevant key findings from this report, namely:

✓ "Employers estimate that 44% of workers' skills will be disrupted in the next five years;

✓ Six in 10 workers will require training before 2027, but only half of workers are seen to have access to adequate training opportunities today;

✓ The human-machine frontier has shifted, with businesses introducing automation into their operations at a slower pace than previously anticipated;

✓ Respondents express confidence in developing their existing workforce, however, they are less optimistic regarding the outlook for talent availability in the next five years (WEF, 2023a, pp.5-8).

Education systems must adapt to prepare young people for tomorrow's technology-driven economies and to help students learn alongside these emerging technologies. The World Economic Forum refers to the teaching and learning of abilities, skills, attitudes and values that are fit for the future as "Education 4.0" (WEF, 2024c, p.4). "Skill development begins at a young age. Research suggests that early-childhood schooling and primary education have a large positive effect on critical cognitive development, building skills which are then multiplied through learning later in life… investing in just one important skill area – collaborative problem-solving – could add as much as $2.54 trillion to global GDP" (WEF, 2023b, p.4). "A single $1 investment in a child's education yields as much as $5 in returns over a lifetime. An additional year of education on average translates to 9% higher lifetime earnings, and in some cases, up to 15% higher. The returns in lower-income countries are even higher than those in higher-income countries" (WEF, 2022, p. 4).

However, such estimates rely on the assumption that individuals, teams and organizations will have the ability and willingness to use AI and other technology tools effectively. According to another report "three key challenges faced by the education sector that may be addressed through greater integration of technology, including AI. First, the global shortage of teachers presents a significant obstacle to improving education outcomes and the demand for educators is only expected to grow in the upcoming years. Second, teachers spend significant time on administrative tasks… Third, most education systems are lagging in closing the digital skills gap" ... The report gives "4 Promises of AI in education:1) Supporting teachers' role: augmentation and automation; 2) Refining assessment and decision-making in education; 3) Supporting AI and digital literacy; 4) Personalizing learning content and experience" (WEF, 2024c, pp. 6; 9).

If managed well, technology – particularly artificial intelligence (AI) – offers a unique opportunity to help education systems enable Education 4.0 – teaching and learning approach that focuses on providing learners with the abilities, skills, attitudes and values fit for the future. In the opinion of the author, it is

challenging to address the impact of new technologies and the issues related to training appropriate personnel across various domains. Therefore, the discussion will proceed by focusing on the case of the cybersecurity workforce.

The supply of emerging technology entering the digital ecosystem will continue to significantly intensify the demand for skilled professionals. Year on year, more organizations lack the right number of people with the right skills to meet their cyber-resilience objectives. "In 2022, 6% of leaders reported that they were missing the skills and people they needed to respond to a cyber incident (WEF, 2024d, p.18). "ISC2 estimates the global cybersecurity workforce at 5.5 million, representing an 8.7% increase year over year and nearly 440,000 new jobs" (ISC2, 2023, p.9).

According to WEF report "training in cybersecurity may begin in primary and secondary schools and continues in universities, vocational schools, online learning platforms, cybersecurity academies established by the public or private sector, on-the job training and other formal and informal educational settings" (WEF, 2024e, p. 12). Based on the common definition of Education 4.0 skills provided in the taxonomy, business leaders, investors, governments and educators will need to work together to foster and scale opportunities for children to develop these skills from childhood through to working life (WEF, 2023b, p.16).

Based on the above, it can be concluded that the aforementioned stakeholders are analogous to cluster actors (Porter, 1990; Solvell, 2009). Furthermore, as clusters represent the most organised networks and systems (Gagnidze, 2023), they can share experiences in a highly efficient and effective manner. Additionally, clusters possess unique social capital (Gagnidze, 2018), which facilitates the unification of individuals to achieve common goals.

It therefore follows that, on the one hand, the demand of the era is digital transformation. On the other hand, as previously mentioned, employed individuals exhibit less enthusiasm towards technological innovations; this opinion also applies to the unemployed; otherwise, there would not be so many digital vacancies globally. To address this issue, it is necessary to stimulate group interest to enable individuals to overcome this lack of enthusiasm, an interest inherent in clusters. It should also be noted that progress in this direction can be conducted remotely. Consequently, clusters remain one of the most effective tools for economic development.

Under such conditions, educational institutions face two significant obstacles. Firstly, they must become flexible to provide opportunities for upskilling and reskilling across all generations (Dominici and Gagnidze, 2021). Secondly, it is imperative for educational institutions to revise their training

programmes, gradually phasing out specialties that will become obsolete due to digital transformation, while introducing new specialties. In this regard, large research organisations can conduct studies and develop forecasts. Indeed, such studies already exist (McKinsey & Company, 2023; Nutall, 2018, etc.); however, their implementation needs to be more intensive. This approach will ensure that the funds invested in the education system are utilised effectively.

Keywords: emerging technologies, education system, labour market, clusters.

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Artificial Intelligence for Higher Education Institutions and their Students: A Bibliometric Systematic Literature Review

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EXTENDED ABSTRACT

Artificial intelligence (AI) is rapidly changing the landscape of higher education, ushering in an era of unprecedented possibilities for enriching and personalizing the student learning experience. While the concept of AI in education is not new (Chen et al., 2020), its practical applications and integration into learning environments have accelerated significantly in recent years, fueled by advancements in computing power, data availability, and algorithmic sophistication. Early explorations into the potential of AI in education can be traced back to visionary work on intelligent tutoring systems (ITS) (Carbonell, 1970; Sleeman & Brown, 1982), which laid the groundwork for computer-based systems capable of providing personalized instruction and feedback to learners. Further advancements led to the development of cognitive tutors (Koedinger & Corbett, 2006), sophisticated ITS rooted in cognitive science principles, demonstrating the potential of AI to enhance learning aligned with human cognition.

Today, the field extends far beyond these early innovations, encompassing a wide spectrum of AI-powered tools and applications, from adaptive learning platforms and intelligent assessment systems to virtual teaching assistants and personalized learning pathways. This surge in AI adoption is driven by the potential to address persistent challenges in higher education, such as personalizing learning at scale (Zawacki-Richter et al., 2019), providing timely and effective student support (Zawacki-Richter et al., 2019), improving assessment practices(Kamalov et al., 2023), and creating more equitable and accessible learning environments for diverse student populations (Choudhury & Batista, 2018).

This growth is accompanied by growing attention to the ethical dimensions and student perspectives surrounding AI in education. Researchers emphasize the importance of responsible AI development and deployment (Holmes et al., 2021), addressing potential biases, ensuring data privacy, and considering the impact of AI on educators' roles. Furthermore, understanding how students interact with AI tools and adapt their learning strategies in technology-enhanced environments is crucial (Kizilcec et al., 2017).

More recently, the advent of large language models (LLMs), exemplified by ChatGPT, has further ignited interest in AI's potential to revolutionize education. LLMs, with their remarkable ability to process and generate human-like text, have sparked both excitement and concern within educational circles. While offering potential benefits for personalized learning, automated feedback, and enhanced student engagement, the emergence of LLMs also raises critical questions about academic integrity, the ethical implications of their use (Farhi et al., 2023; Yu, 2023), and the evolving role of educators in AI-augmented learning environments. Emerging research has begun exploring multifaceted student perceptions of LLMs, including their views, concerns, and perceived ethics (Farhi et al., 2023), the overall impact of LLMs on educational practices (Lo, 2023), and in-depth thematic analyses of student experiences with ChatGPT (Shoufan, 2023). Further studies investigate the factors influencing student adoption and use of these technologies (Tiwari et al., 2024). These investigations highlight the need for continued research to guide the responsible innovation and implementation of LLMs in higher education.

This contribution will present a Systematic Literature Review (SLR) created adopting a blibiometric approach and consindering peer-reviewed articles published from 2014 onwards, a period marked by significant growth in AI technologies for education, from two prominent academic databases: Scopus and Web of Science. These databases were chosen for their extensive coverage of scholarly literature in computer science, education, and related interdisciplinary fields. The search strategy employed a broad set of relevant keywords, including but not limited to, "artificial intelligence," "higher education," "students," "learning," "teaching," and specific AI technologies such as "machine learning," "deep learning," "natural language processing," and emerging applications like "ChatGPT" and "large language models."

Leveraging the functionalities of R-cran and the bibliometrix package, this SLR will delve into various aspects of the collected literature. Recognizing the rapid pace of development and the growing volume of scholarly output in this domain, this review employs a rigorous quantitative approach to map the existing knowledge base, identify influential authors and institutions, uncover prominent research

themes, and highlight potential areas for future investigation. It will analyze the annual publication volume, citation patterns, and the growth trajectory of the field to understand research intensity and impact over time. The identification of the most prolific authors, co-authorship networks, and leading institutions at the forefront of AI research in higher education will illuminate key individuals and collaborations shaping the field. Furthermore, this study will employ keyword co-occurrence analysis to reveal prominent research themes, emerging trends, and potential areas for future exploration. Additionally, citation network analysis will be conducted to uncover the intellectual structure of the field, identify foundational works, and trace the evolution of research ideas.

Through these robust bibliometric techniques offered by R-cran and bibliometrix, this review aims to provide a structured and data-driven overview of the evolving field of AI in higher education for students. The findings will offer valuable insights for researchers, educators, policymakers, and technology developers seeking to understand the current state of the art and to shape the future direction of AI applications for student success. This analysis ultimately strives to contribute to the development of effective, evidence-based practices and innovative AI-driven tools tailored to the evolving needs of higher education in the digital age and to inform the development of effective, ethical, and student-centered AI applications that may contribute to a more equitable and engaging learning experience for all.

Keywords: Artificial Intelligence, Higher Education, Ethics, Attitude, Innovation, Systematic Literature Review.

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Utilization of ICT Systems and Innovations in Enterprises of Georgia

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EXTENDED ABSTRACT

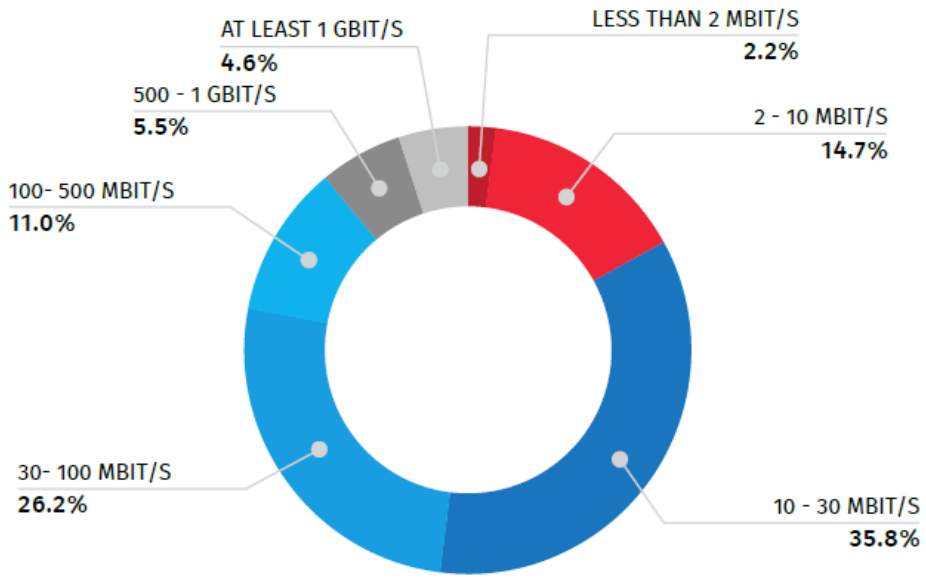
The ICT industry is defined by globalized innovation, modular product designs, and the widespread integration of intelligent technologies. In recent years, ICT has significantly driven the growth of the global digital economy. However, the global innovation strategies of ICT companies have faced inevitable challenges and scrutiny, raising widespread concerns in both practice and academia.

Today, computer systems play a crucial role in everyday life, impacting not just enterprises but every sector of the economy. Information and communication technology (ICT) is extensively used across various fields, with education serving as the foundation for the advancement of information technologies.

The rise of emerging information and communication technologies is propelling modernization and innovation in public administration, fostering the development of digital, smart, agile, and sustainable governance. Following both a service logic view to public value creation (Osborne, 2018) and a public value management view (Stoker, 2006), public organisations are rethinking how to develop a smart view in order to achieve sustainability as a vision for change, driving public decision-making, management and governance (Goodsell, 2006; Fiorino, 2010), promoting cooperation and social exchange with civil society and governance networks within social ecosystems (Dumay, Guthrie and Farneti, 2010), driving innovative collaboration as a key source of public innovation (Törfing, 2019; Törfing, 2016) (Mauro Romanelli, 2024).

What shows survey results for the use of ICT systems in enterprises? Survey results show that as of January 1, 2024, 94.4 percent of enterprises had internet access. Additionally, 72.6 percent of these enterprises used fixed-line technologies, such as fiber-optic (FTTH), cable, or DSL connections (ADSL, SDSL, VDSL), to establish their internet connections.

Chart 1. ERAGE SPEED OF INTERNET CONNECTION IN ENTERPRISES, 2023



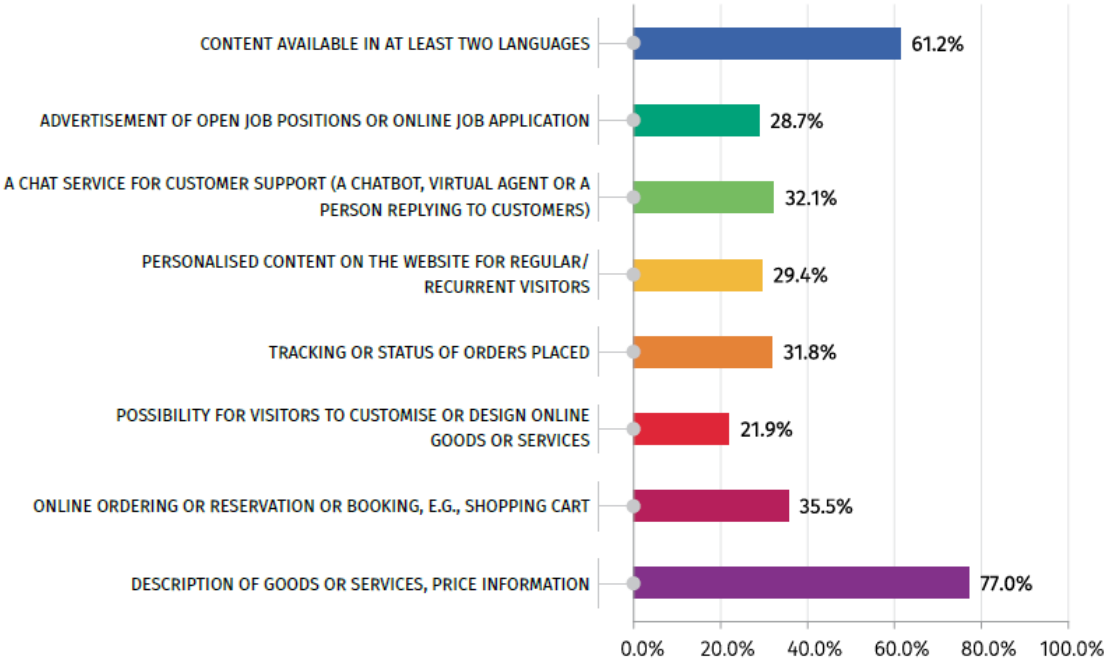
By January 1, 2024, 21.4 percent of employees used portable computers or smartphones provided by the enterprise that allowed the internet connection (for business use only), while the share of enterprises using web-page or web-site was 13.2 percent.

As the foundation of innovation, ICT offers advanced tools such as cloud computing, data analytics, and artificial intelligence. These tools enable businesses to streamline operations, optimize decision-making, and gain deep insights into customer behavior, fostering ongoing innovation. However, to fully harness ICT's potential, businesses must navigate challenges like cyber security and invest in technology infrastructure and employee training to maintain their competitive edge.

Most enterprises primarily used social media platforms like Facebook and LinkedIn, with 29.6 percent engaging in these networks. Meanwhile, 70.0 percent of enterprises did not use any form of social media.

According to survey results, in 2023, 6.8 percent of enterprises introduced new or significantly improved goods on the market, while share of enterprises, that introduced new or significantly improved service during this period, was 6.2 percent. Innovations of goods and services in most cases were originally developed by the enterprises (accordingly 75.8 percent and 63.5 percent). In other cases they received support from other enterprises or institutions. 56.7percent of implemented innovations were new to enterprises, while 43.3 percent were new to market.

Chart 2. FACILITIES OF WEB-PAGES AND WEB-SITES OF ENTERPRISES, 2023



Innovations of business processes in most cases were originally developed by the enterprises, accordingly 82.1 percent. In other cases 24.0 percent were developed with other enterprises or organisations, 22.9 percent were developed by enterprises by adapting or modifying processes originally developed by other enterprises or organisations and 18.9 percent by other enterprises or organisations.

According to economic activity strategies, focusing on high quality was rated as high degree of importance by 47.9 percent of enterprises, 35.7 percent of enterprises rated focusing on improving existing goods / services as high degree of importance, while 35.3 percent of enterprises rated focusing on satisfying established customer groups.

According to business environment, the main challenge was price increases in goods and services, which leads to the loss of customers.

In the evolving landscape of digital globalization, innovation in the ICT industry offers boundless opportunities alongside significant challenges.

Keywords: Statistics, Digitalization, ICT, Management, Enterprise.

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Assessing Youth Entrepreneurship in Italy: The Development of a Density Based Composite Youth Entrepreneurial Opportunity Interest Index

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EXTENDED ABSTRACT

Promoting youth entrepreneurship in Italy is a crucial element as it has the potential to alleviate high youth unemployment and boost economic growth (see Meyer and Jongh 2018, Nungsari et al. 2021). In this respect, it is possible to observe the inequalities uncovered by the analysis of the different levels of youth entrepreneurship, which show that regional inequalities may persist or even worsen without targeted policy action (Doran et al. 2016). Understanding these dynamics is critical to creating inclusive economic opportunities and harnessing the innovative skills of the younger generation. In addition, promoting youth entrepreneurship contributes to achieving several Sustainable Development Goals, including decent work and economic growth (SDG 8) and reducing inequalities (SDG 10). See about this concept Shabbir, M. S. (2023).

In this regard, it is particularly important to analyze the behavior of young people in order to identify new opportunities (see also Sharma, 2018). Understanding the motivations, preferences and challenges of youth is critical to fostering an environment that is conducive to entrepreneurial activity. By examining how young people interact with new technologies, societal trends and economic conditions, we can gain insights into potential markets and innovative business models that match their interests and skills.

Analyzing young people's behavior helps identify gaps in the current entrepreneurial ecosystem that could hinder their participation. For example, if young entrepreneurs are deterred by complex regulatory frameworks or lack access to finance, identifying these issues enables the development of targeted interventions and support mechanisms (see Sharma 2018). By harnessing the creativity and adaptability of the younger generation, we can

use their unique perspectives to drive innovation in traditional industries and foster growth in new sectors such as digital services, sustainable technologies and the creative industries.

In the Italian context, where there are regional differences in entrepreneurial opportunities for young people, understanding young people's behavior is even more important (see also Bosma & Schutjens, 2011). This allows stakeholders to tailor interventions to specific regional needs, cultural nuances and economic conditions. For example, in regions where entrepreneurship is driven by need, support programs could focus on providing key resources and training. In contrast, areas with lower levels of entrepreneurial activity among young people could benefit from initiatives that promote entrepreneurship as a viable and attractive career path.

Ultimately, analyzing the behavior of young people is not just about identifying new business opportunities, but also about empowering a generation to contribute meaningfully to the economy and society. By aligning entrepreneurial initiatives with the aspirations and talents of young people, we can create a more inclusive and dynamic economic landscape that harnesses the full potential of Italy's youth.

In order to analyze comparatively, we consider three relevant queries collecting the data by Google Trends ("bandi per giovani imprenditori," "finanziamenti per giovani imprenditori," "formazione imprenditoriale"), then we build a composite indicator density-based. In this respect, composite indicators are critical because they allow us to compare different statistical units over space and identify relevant problems by considering some relevant benchmarks. In order to mitigate the subjectivity as the known problem of the composite indicator construction (see about composite indicators European Union, & Joint Research Centre 2008 and Nazeer and Bork 2019), we have used an approach based on Monte-Carlo Simulation of the different parameterizations considered (in particular the weightings of the indicator) then we represent the final data by using a kernel density estimation of the different obtained results (see in this respect also Drago et al. 2015 and also Drago & Scepi 2011). The final visualization was obtained by considering the ridgeplots (see Drago 2024, where for an interval representation of the composite indicators, see Drago 2021; Drago & Gatto, 2022; and finally, for the quantile representation, see Drago 2023).

Keywords: Youth Entrepreneurship, Entrepreneurship, Composite Indicators, Kernel Density Estimation, Density-Based Composite Indicators.

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Enhancing Economic Growth Through AI: Focusing on e-Tax Services

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EXTENDED ABSTRACT

The present study explores the role of Artificial Intelligence (AI) in promoting economic growth, particularly in the critical domain of integrating electronic tax services into the public sector. As part of the modernization of tax administration, AI-powered digital solutions have emerged as key tools to streamline tax collection processes, reduce administrative burdens, and enhance taxpayer compliance. This paper specifically examines the impact of these technological advancements through a survey conducted among legal entities and individuals actively engaged with the electronic tax services offered by the Revenue Service.

Effective governance not only fosters AI integration but also formulates policies that ensure the technology aligns with national values (Margetts, 2022). Enhancing economic growth through AI-driven electronic tax services presents multifaceted opportunities. AI integration has the potential to simplify tax processes, improve service delivery, and build public trust, ultimately contributing to greater economic efficiency. AI can automate complex tax calculations and filing processes, reducing the time and effort required by taxpayers (Aghion et al., 2017). Furthermore, electronic tax services can leverage AI to provide personalized assistance, improving user satisfaction and engagement (Zaidi, 2017).

The E-Government Service Effectiveness Evaluation Framework (E-GEEF) emphasizes the importance of citizen trust and service quality in evaluating electronic tax services, which can lead to higher adoption rates and economic benefits (Zaidi, 2017). While AI's potential to enhance e-tax services is significant,

challenges such as data privacy concerns and the digital divide must be addressed to ensure equal access and benefits across all demographic groups.

The country's economic growth is directly influenced by tax revenue, as demonstrated by an analysis of Georgia's unified budget over the past 22 years. A detailed examination of tax revenue trends, including Income tax, Profit tax, Value added tax (VAT), Excise tax, Property tax, and Import (Customs) tax, illustrates how external factors such as economic crises, political changes, tax policy reforms, and shifts in global markets have impacted the country's budget. This analysis provides insights into how Georgia's tax revenue has evolved over the years, highlighting the influence of both external and internal factors on the nation's economic progress.

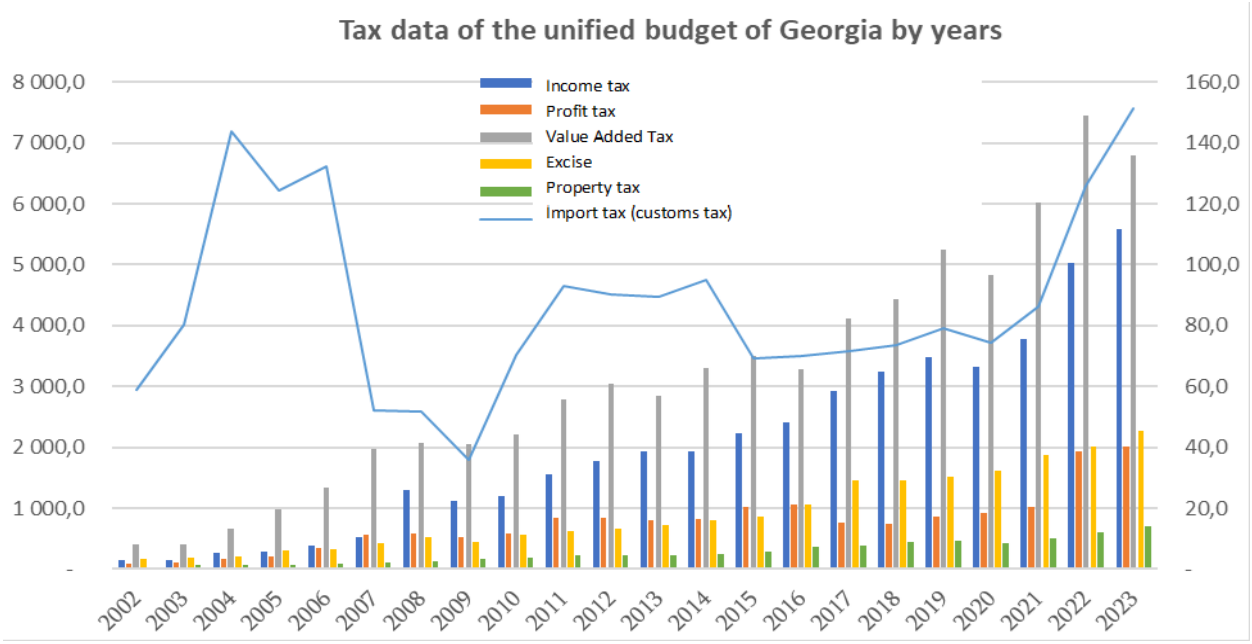

Figure 1. Tax data of the unified budget of Georgia by years. Source: The diagram has been created by the authors.

The results of this study demonstrate that the integration of Artificial Intelligence (AI) into tax administrations significantly enhances operational efficiency, particularly through automated processes such as error detection, real-time data processing, and predictive analytics. These advancements reduce the time required for tax filings, minimize the potential for human error, and offer taxpayers a more personalized and user-friendly platform. Additionally, the study reveals a strong correlation between the adoption of electronic tax services and improved tax compliance. AI-based systems provide superior

tracking and reporting mechanisms, making it easier for both individuals and businesses to meet their tax obligations in a timely manner.

Moreover, respondents reported increased transparency and trust in the tax system due to the seamless integration of AI, which has improved communication between tax authorities and taxpayers. This has led to a reduction in compliance costs and the creation of a more inclusive and supportive environment for businesses, particularly small and medium enterprises (SMEs).

These findings underscore the transformative potential of AI in the public sector, especially in tax administration. By enhancing the effectiveness of electronic tax services, these innovations contribute to broader economic growth by ensuring that tax revenues are collected efficiently, compliance is increased, and public trust in digital governance systems is strengthened. AI facilitates the optimization, automation, and security of electronic tax services, ensuring greater efficiency, cost reduction, and improved user experience.

Keywords: Artificial Intelligence (AI), Tax Administration, e-Tax Services, Economic Growth, Digital Technologies.

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The socio-economic impacts of Sustainable solid waste management and Technological innovation for transition into a circular economy in sub-Saharan Africa: A Literature review study from the Ghanaian perspective

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EXTENDED ABSTRACT

Purpose: In navigating through the sub-Saharan Africa industrial revolution era, sustainable waste management has been the main challenge for Cities and industries. This is due to the increasing population growth, industrialization, and urbanization. The impacts of waste on communities include choking of drainage systems because of poor collection- leading to flooding, improper disposal at the dump site resulting in burning which releases polluted gases adverse to human health, high cost of collection by the municipal or city authorities, serving as breeding grounds for insects and diseases. However, with the exhaustibility properties of waste as resources, the circular economy through recycled products, energy generation, and services seeks to improve resource use efficiency through waste recycling, reuse, and recovery.

The capital demand for waste management situations in Africa has resulted in the misuse of strategic financial resources meant for development into a linear waste management system where waste generated is transported into a landfill site and is either burned or left there for natural decomposition. Navigating through this dilemma, this study focussed on the socio-economic impacts of Sustainable solid waste management and Technological innovation for transition into a circular economy in sub-Saharan Africa: a Literature review study from the Ghanaian perspective.

The research seeks to achieve this objective by evaluating the economic impacts of waste management systems on the emerging economy especially Ghana and the adoption of innovative technology to ensure a transition into the circular economy under sustainable waste management. Finally, the study aims to analyze the impacts of waste management practices on health and economic development. The research

reviewed literature by grounding on the theory of technology adoption and the resource-based theory. The study relied on literature from Web of Science, Scopus, and Science Direct journals with high standards traversing from 2021 to 2024.

The results suggested that environmentally friendly technological innovation investments for sustainable waste management are boosting many developed countries to recycle, reuse, and recover waste, resulting in reduced cost of waste management and increased wealth from waste through energy and recycled products.

However, waste management situations in Ghana remain disastrous due to increased waste generation volumes with less sustainable management practices and poor collections despite the inventions of private companies in waste management, there is still a lacuna leading to choking of drains forcing public call for the state of emergencies, the ritual health and sanitation diseases leading to loss of life and the environmental pollution effects of waste in various areas.

Given the global emphasis on renewable energy sources, waste as a resource offers another avenue for renewable energy investments. Additionally, for effective monitoring of waste generation an advanced waste monitoring technology including sensors, RFID (radio frequency identification), geographic information systems, and a global framework for GSM/GPRS (Mobile/general radio packet service). Earlier studies by Armoo, et al., (2024) in Ghana recommended future research to consider, investigating the environmental, economic, and social impacts of managing waste, and improved waste management technology for global society. The research objective is to examine the socioeconomic impact of sustainable waste management in transitioning to the circular economy in Ghana.

A study by Adanu, et al., (2020) in Ghana affirmed that sustainable waste management is the best way of ensuring workers' and community safety from the hazardous impacts of waste dumping and open burning of e-waste.

Methodology

The study sampled Web of Science, Scopus, Science Direct, and Google Scholar literature. The literature was searched using the keywords in the theme. The literature obtained was screened for relatedness since some of the literature was not related, and then the literature was scanned by reading through the abstracts. Relevant literature of 30 research works from impacts peer-reviewed journal articles. These 30 articles were evaluated, and the outcomes are summarised in the findings.

Findings

The findings of this research chronicled the various technological impacts on sustainable waste management and affirmed that investment in technology is the best solution to influencing sustainable waste management.

After reviewing the journals from QI and Q2 ranked, the study proposes that for Africa to achieve SDG goals on waste management and curtail the continual health hazards aligned to proper waste disposal, sustainable waste, and technology innovations that ensure zero waste highly influence circular economy transition.

The study outcomes affirmed that effective waste management processes lead to revenue generation from the recycling of products, and waste-to-energy practices and ensure the supply of organic fertilizer for plant growth.

In conclusion, the study revealed that if sustainable waste and technological innovation practices are not adopted, waste generation volumes will triple to overwhelm developing nations, causing the usage of their loans and various revenue sources into Linear waste management rather than developmental issues demanded, resulting in various socio-economic situations for international assistance.

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Evaluating Digital Transformation: The Case of Georgian SMEs

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EXTENDED ABSTRACT

The global economy is undergoing a rapid transformation due to the use of digital technologies. Their application, in turn, provides the opportunity for the development and expansion of production. Digital transformation offers both promise and peril for small and medium-sized enterprises (SMEs). These businesses are vital to economic growth and job creation, but they often struggle to keep pace with larger corporations in adopting digital technologie (Thrassou et al., 2020). Understanding the impact of digitalization on SMEs is crucial for assessing their performance, competitiveness, and long-term viability.

SMEs may also encounter difficulties integrating new technologies with their existing systems and ensuring data security. Despite the challenges, digitalization can offer substantial benefits. It can boost operational efficiency, enhance customer engagement, and open up new markets. Evaluating digitalization efforts helps identify successful strategies, inform policy decisions, and support SMEs in their digital journey. Ultimately, this can foster innovation and strengthen the economy.

This study aims to evaluate the extent of digital transformation of small and medium-sized enterprises (SMEs) in Georgia.

In recent years, many studies have been concerned with determining the level of digitalization in organizations, although the methodological challenges of the assessment remain in the field of scientific research.

Researchers highlight the difficulties in evaluating digital transformation in small and medium-sized enterprises (SMEs). Methodological challenges often hinder the measurement of digital maturity in this sector, highlighting the need for appropriate framework guidelines.

It is also important to note that SMEs exhibit varying levels of technological acceptance and digital capabilities, and these challenges are evident in cross-country comparisons. The case of Georgia,

considered within the framework of this study, and the index developed for assessing digital transformation, as well as the measured level of transformation in the country's SMEs, create an interesting precedent for cross-country comparison and future research. This has practical implications for developing effective strategies to support SMEs in their digitization efforts.

In Georgia, small and medium-sized enterprises (SMEs) account for 99.7% of active businesses (Small and Medium Enterprise Development Strategy of Georgia 2021-2025, p. 22) clearly indicating their significant role and importance from many perspectives. The business model altered by digital transformation helps SMEs improve efficiency, introduce new activities, or change existing ones (Guidebook on SME, 2020). Digital development is an essential tool for any modern enterprise seeking to survive and achieve targeted improvements in its operations in this competitive and constantly changing world (EU Support for SME Innovation, 2019).

Among the methodologies for assessing the digitalization of companies, the new method for assessing the digitalization of the SME sector stands out, according to which the level of digitalization is calculated based on the evaluation of various dimensions, indicators, and criteria. (Nedelko, 2021; Silva R., 2022). To assess digital maturity, the tools for assessing strengths and weaknesses in the digitalization process developed by European Digital Innovation Hubs (EDIHs) should be highlighted.

Digital maturity assessment has not yet been conducted in Georgia. Given that the primary objective of this study was to determine the level of digitization in small and medium-sized enterprises, we developed a methodology by harmonizing various theoretical approaches. We developed a digitalization index (IDSME index), and in the paper, the digitalization level of small and medium-sized businesses in Georgia is calculated and compared based on the IDSME index, using statistical data from the National Statistics Office of Georgia (National Statistics Office of Georgia Database).

Based on the statistical data from the National Statistics Office of Georgia, we present the calculation of the digitalization index for Georgia's SME sector, which takes into account various theoretical approaches and methods for assessing the readiness of organizations for digital transformation, however, the primary focus is on the "IDSME Index – a new method for assessing the digitalization of small and medium-sized enterprises" (Bogavac&Cekerevac, 2019). Each dimension and sub-dimension in the index is assigned a corresponding percentage value, which ultimately allows for the assessment of the sector's digitalization level. Specific indicators were determined for Georgia's small and medium-sized enterprises. Specifically, the calculation of the digitization level of small and medium-sized businesses

of Georgia was carried out based on the following pillars: connection to the Internet, digital skills, integration of digital technologies, and internet usage.

Sub-indexdimension=∑(indicator score×indicator weight)/Total weight of indicators

Sub-index 1 = ((79.05 * 0,25) + (29 * 0,15) + (40,2 * 0,3) + (92.3 * 0,3)) / 100 = 0,66

Sub-index 2 = ((86 * 0,35) + (3,3 * 0,65)) / 100 = 0,3405

Sub-index 3 = (11,9 * 1) / 100 = 0,119

Sub-index 4 = ((87 *0,5) + (3,4 * 0,5)) / 100 = 0,452

Digitalization Index=∑(Sub-indexdimension×Dimension weight)

Digitalization Index = (0,15 * 0,66) + (0,15 * 0,3405) + (0,119 * 0,45) + (0,25 * 0,452) = **0,32**

According to the calculations, the digitalization index for small enterprises in Georgia is 0.32.

As for medium-sized enterprises:

Sub-indexdimension=∑(indicator score×indicator weight)/Total weight of indicators

Sub-index 1 = ((96,3 * 0,25) + (45,8 * 0,15) + (28,9 * 0,3) + (87,7 * 0,3))/100 = 0, 65925

Sub-index 2 = ((85,3 * 0,35) + (29,4 * 0,65)) / 100 = 0,48965

Sub-index 3 = (29,5 * 1) /100 = 0, 295

Sub-index 4 = ((80 * 0,5) + (12,7 * 0,5)) / 100 = 0,4635

Digitalization Index=∑(Sub-indexdimension×Dimension weight)

Digitalization Index =

(0,15 * 0,65925) + (0,15 * 0,48965) + (0,45 * 0,295) + (0,25 * 0, 4635) = **0,415**

According to the calculations, the digitalization index for medium-sized enterprises in Georgia is 0.415.

As the results show, medium-sized enterprises in Georgia (0.415) are undergoing a more advanced digital transformation process compared to small enterprises (0.32), as their index value is closer to 1. This indicates that the digital transformation process is progressing more effectively in medium-sized enterprises. These results highlight that digital development challenges are on the agenda of economic development in Georgia, particularly for small and medium-sized companies facing obstacles in the digitalization process. This suggests the need for changes and support to enhance business efficiency.

The findings reveal that although Georgian SMEs are increasingly integrating digital technologies, there are notable obstacles to digital transformation such as lack of digital skills, financial limitations, and

concerns about data security. However, SMEs that have successfully adopted digital technologies report improvements in efficiency, customer satisfaction, and market reach.

Digitization of SMEs provides a path to increased competitiveness, innovation, and customer engagement. But it also has many difficulties, especially when it comes to the resource constraints, and regulatory hurdles.

Policymakers, industry stakeholders, and SMEs themselves must work together to address these issues and create an environment that supports digital transformation.

To encourage digital transformation among Georgian SMEs, the study suggests targeted policy measures such as digital skills training programs, affordable financing options, and supportive regulatory frameworks. Additionally, promoting collaboration between SMEs and technology providers can help accelerate the adoption of innovative digital solutions.

Keywords: digital transformation index, small and medium enterprises, IDSME, SMEs.

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"Technology and Society: Boon or Bane?"

Human trafficking in the "digital age": New challenges and old shadows

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EXTENDED ABSTRACT

Trafficking in human beings is a crime that involves the exploitation of vulnerable people through abuses for the purpose of economic gain. Trafficking in human being is the evidence that slavery has never been eradicate. The economic profit generated by trafficking in human beings far exceeds that generated by any other criminal activity. People can be subjected to different forms of exploitation: sexual, labor, organs, recently skin trafficking, child pornography, illegal adoptions and any other form of gain that the creative criminal networks present everywhere and perfectly organized can detect.

Criminal networks have access to and use of the most advanced tools in the digital realm, in light of the economic power that they have. Criminal networks use more and more social media to attract, monitor and control victims, and also, they use data profiles to identify the best victims for their business.

The so-called rule of law legal systems have always been totally incapable of dealing with this phenomenon: the disconnection of the various victim protection agencies, the lack of instruments that guarantee the effective prosecution of criminals are the constant shadows that repeat themselves in time and that remain ever present, immensely so, because there is a lack of will to face the phenomenon of human trafficking in its truly terrible and monstrous size and in its proliferation capacity.

Digital technologies certainly represent a new means of identifying and controlling victims, often by removing the physical link and compromising the ability to prosecute offenders.

The problem of the lack of resources available to those charged with protecting the victims and providing them with an effective means of redress remains the same, regardless of the advent of the digital age, since it is linked to the reluctance to truly eradicate the phenomenon of this "new form of slavery", which is infinitely more convenient for the business groups running it.

Despite the increasing challenges posed by the use of technological tools, the difficulties to fight the phenomenon of human trafficking remain the same, the shadows and lights do not change. Indeed, there are many contexts where some digital tools can also help for example to identify criminal networks and to find, even years later, victims who were trafficked as children, thanks also to facial recognition. In some cases, social media has been a tool that has allowed real communication about trafficking to Europe and death through Libya, preventing some people from falling into the trap of traffickers' extortion and allowing some victims to be geolocated and rescued in time by actors of protection.

Human trafficking illustrates that technology is neither a blessing nor a curse in itself: the real issue is providing effective and best tools to those who must protect victims and prevent the phenomenon, to truly fight human trafficking slavery.

Keywords: human trafficking; crimes; rule of law; human dignity; new technologies; profiling victims; protection; prevention; prosecution.

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Infiltration of Organised Crime within Organisations in the Era of Artificial Intelligence: The Implementation of Predictive Indicators in Government Strategies

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EXTENDED ABSTRACT

Organised Crime (OC) and its infiltration into the legal economy have garnered significant attention within the academic community over recent decades, primarily due to its substantial negative consequences (D'Angelo & Musumeci, 2016; Mocetti & Rizzica, 2021). This is because it reduces a nation's capacity for growth and socio - economic development (Champeyrache, 2018; Fourie et al., 2023). Overall, it has been observed that OC can erode social trust, increase risk and uncertainty in the business environment, discourage foreign investment, and distort market dynamics (Pinotti, 2015).

The academic literature contains numerous definitions of OC. This study employs the definition of "Mafia-Type Association", as delineated in Article 416-bis of the Italian Penal Code. This definition emphasises the structured and hierarchical nature of OC, its precise internal regulations (Catino, 2015), its strong culture of secrecy (Catino, 2014a), and the use of intimidation and coercion (Catino,2014b), which are implemented with the specific aim of committing crimes in order to pursue their illicit objectives (Dalla Chiesa, 2012).

Given this definition and the phenomenon's relevance, a considerable body of literature has identified several methodologies employed by OC to infiltrate the legal economy (Beare, 2017; Caneppele & Calderoni, 2013; Le Moglie & Sorrenti, 2022; Rey, 2017; Santoro, 2015; Sergi, 2017). This research examines organisational infiltration as a strategy to penetrate the legal economy, which is one of the most prevalent techniques used by OC (Catino, 2020; Castellano et al., 2021; Mirenda et al., 2022). Organisations serve as an unethical "vehicle" for pursuing OC's illicit economic goals (Fabrizi & Parbonetti, 2021; Parbonetti, 2021), while providing a veneer of legitimacy, which broadens their

influence into the political and social spheres to consolidate their control over territories (Riccardi, 2014; Savona et al., 2016). Furthermore, it allows them to expand their operations and establish a network of illicit activities that are interconnected on a global scale (Calderoni et al., 2015; Dalla Chiesa, 2017; Savona & Riccardi, 2015). Broadly, it may be argued that OC introduces distinctive features to the infiltrated organisation (De Simoni, 2022). This is evident from its perceived legitimacy allowing integration into the legal economy, which is also facilitated by manipulated financial statements (Ravenda et al., 2015). This aligns with previous studies, which highlight how infiltrated organisations adopt accounting and management practices aimed at camouflaging their activities within market dynamics (Bianchi et al., 2022; Chircop et al., 2023; Ravenda et al., 2018a). In addition, the illicit business models of OC evolve over time. In light of their strong resilience and ability to adapt to different economic and social contexts (Villani et al., 2019), such studies are becoming an increasingly sought-after subject of study with the aim of understanding how to mitigate this phenomenon.

For decades, scholars from various disciplines have contributed significantly to the study of OC and its infiltration into the legal economy. Nevertheless, the analysis of OC infiltration dynamics within organisations has received only limited attention, with reference to the strategies adopted to run such organisations as instruments for gaining access to the legal economy (Savona et al., 2016), as well as the investigation of the intrinsic characteristics of infiltrated organisations, starting from the analysis of their financial statements (Fabrizi et al., 2017). This is a crucial avenue to identify the warning signals and risk factors that facilitate such infiltration (Ravenda et al., 2018b). In accordance with this scenario, recent contributions to academic literature have indicated that research within the Business, Management and Accounting (BMA) domains about these issues remains in embryonic stages (Cincimino et al., 2024).

As a result, it is paramount to further investigations into the infiltrated organisations, particularly within the BMA fields, as they represent an invaluable source of knowledge for developing effective prevention and intervention strategies, particularly from the perspective of law enforcement authorities. This is particularly relevant in view of the dynamic nature of OC, which can reinvent itself and taking advantage of all the opportunities offered by the economic and business environment (Arlacchi, 2007; Savona & Berlusconi, 2015). This also enables it to create sophisticated corporate structures using of frontmen (Billings et al., 2021; Catino, 2018) and establish nuanced relationships with stakeholders who may be directly or indirectly connected to OC's activities and influence (Fantò, 1999).

The vulnerability of organisations to OC infiltration is a multifaceted issue influenced by the interplay of economic, regulatory, and cultural factors. These elements interact to facilitate and amplify the penetration of OC into the legal economic fabric (Arellano-Bover et al., 2024). First, specific economic sectors are particularly susceptible to infiltration due to their structural characteristics (Transcrime, 2013; 2015). Among these, sectors with high liquidity levels, low specialisation and low barriers to entry, such as construction, hospitality, catering and waste management, provide a particularly conducive environment for activities like money laundering and concealing illicit proceeds (Nazzari & Riccardi, 2024; Riccardi & Maggioni, 2024). Additionally, the preference for certain legal forms, such as capital firms with limited liability, which have less stringent incorporation requirements and fewer transparency and control obligations compared to other corporate forms (e.g., joint-stock firms), represents an additional vulnerability exploited by OC (La Rosa & Paternostro, 2015).

In light of this scenario, OC frequently exploits these configurations, employing a multitude of strategies, including incorporating new organisations. This context reveals two main categories of organisations commonly used by OC: "Shell Organisations" and "Front Organisations". The first category typically consists of a set of false documents that do not engage in any economic activities or operations within the market (Pacini et al., 2018). The second category, on the other hand, engages in a screen economic activity, such as restaurants or bars, while concealing their true criminal activities (Bivona, 2012). Both cases share the same primary objective: laundering money derived from illegal activities and falsifying corporate financial statements (Riccardi & Reuter, 2024). In other cases, OC "capture" existing organisations, often with the assistance of unwitting front men, and employ intimidation or violence to force entrepreneurs to relinquish a portion of their ownership or control over their organisations (Riccardi et al., 2016).

Moreover, the geographical and cultural roots of OC contribute to further intensifying the phenomenon, particularly in areas with a high incidence of criminal activity. In such contexts, the spread of a climate of fear and reticence discourages recourse to the authorities, encourages collusive behaviour and strengthens the presence of OC within the legal economic system (Calderoni, 2014).

In light of the aforementioned threat, which has the potential to compromise economic and social stability (Slutzky & Zeume, 2024), well-targeted interventions are necessary to mitigate the phenomenon. Integrating advanced tools based on Artificial Intelligence (AI) into government prevention and counteraction policies represents a noteworthy innovative strategy. The use of AI enables the analysis of

vast amounts of data, encompassing both financial and non-financial information, with greater temporal precision and accuracy than traditional methods. This allows for the proactive identification of risk indicators and anomalous behaviours associated with OC infiltration.

Recent scientific contributions, such as those of Ambrosini et al. (2024) and Cariello et al. (2024), have demonstrated the effectiveness of the application of Machine Learning Algorithms (ML) through the analysis of large and intricate datasets in order to detect OC infiltration within organisations. These studies, drawing on accumulated knowledge of the characteristics of infiltrated organisations, have established the foundation for the development of sophisticated predictive models. It may, therefore, be posited that the holistic integration of studies on OC infiltration within organisations — when coupled with the strategic introduction of advanced AI technologies, underpinned by a comprehensive and coordinated normative framework — has the potential to significantly enhance the operational effectiveness of law enforcement authorities, while concurrently optimising response times and strengthening the overall capacity and responsiveness of the relevant institutions.

P1: The implementation of AI-Powered predictive models in government strategies is positively correlated with increased accuracy and quickness in detecting the infiltration of OC within organisations.

In this context, the application of a theoretical perspective, such as the TOE (Technology – Organisation - Environment) model by Tornatzky & Fleischer (1990), could assist in the examination of the factors that influence the effective implementation of these studies through the implementation of a new AI-Detection tool of infiltrated organisations within government strategies, and subsequently in law enforcement operations (Figure 1).

This approach allows for the explanation of the adoption and implementation of technological innovations within organisations (Baker, 2012). In this case, the organisation is represented by the nation of reference, encompassing all its public apparatus: from the ministries down to the law enforcement agencies. The primary research objective is to investigate how the organisational context influences the integration and application of AI tools with the aim of identifying the infiltrated organisations. This involves an analysis of the technological, organisational and environmental dimensions and identifying the relative risks, benefits and limitations of using the AI-Powered predictive models.

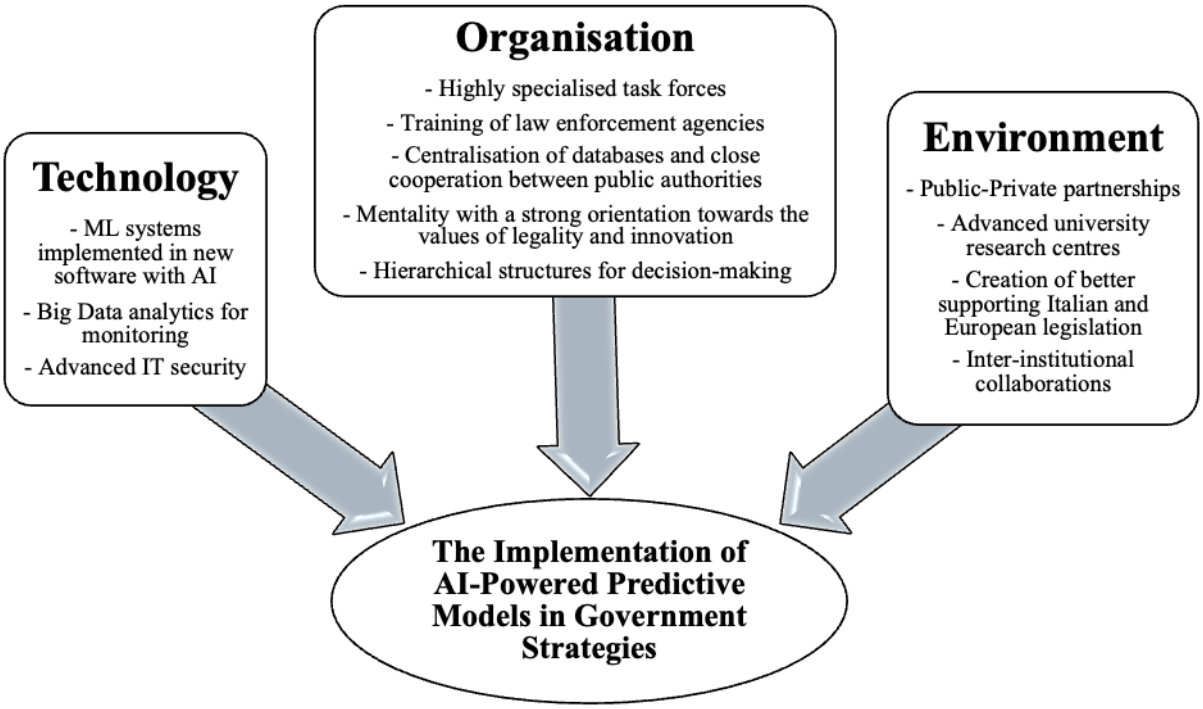

Figure 1. The TOE Framework in the implementation of AI-Powered predictive models in governance strategies to mitigate the phenomenon of OC infiltration within organisations.

However, the deployment of AI entails several critical issues. A significant challenge arises from the quality and completeness of the data used (Calamunci, 2022). Algorithms' results depend on the accuracy and comprehensiveness of training datasets. Incomplete or inaccurate datasets may lead to the generation of unreliable results (Jamarani et al., 2024).

Moreover, ethical concerns pertaining to the protection of personal data and privacy have prompted scrutiny of the rationale behind the extensive use of digital surveillance for crime prevention (Mühlhoff, 2023). Other issues include the high costs associated with training and implementation, as well as the necessity for advanced technical expertise within public and private institutions involved.

Notwithstanding these constraints, it is contended that the deployment of predictive models to identify organisations that have been infiltrated by OC, with the assistance of sophisticated technological instruments such as AI, represents a strategic decision to counter the incursion of OC. It can be argued that the implementation of AI has the potential to alter the risk-benefit balance perceived by criminal

networks, increasing the probability of detection and, consequently, deterring illicit activities. This effect is closely related to the economic theory of crime proposed by Becker (1968).

P2: The use of AI-Powered predictive models in law enforcement actions is negatively correlated with OC activity, reconfiguring the risk - benefit dynamic in favour of the former.

P3: The adoption of AI-Powered predictive models in government strategies to detect organisations infiltrated by OC is positively correlated with the socio-economic development of the community concerned.

In light of the above, the implementation of governmental mitigation measures with the support of AI will significantly increase the likelihood of intercepting OC within organisations. Consequently, the attractiveness and benefits of pursuing OC activities will be reduced. In order to better explain this aforementioned scenario, this research will address three key questions: **Q1:** How effectively does the current BMA doctrine provide a comprehensive overview of indicators signaling OC infiltration within organisations?; **Q2:** What roles, challenges, and limitations exist in using AI as a predictive analysis tool for detecting anomalies in organisational data and forecasting OC behavior?; **Q3:** How does an effective implementation of AI tools affect prevention of the infiltration of OC within organisations?. The study will employ an interpretative lens, drawing upon the TOE theoretical model.

This study holds the potential to offer contributions and practical implications for policymakers and scholars alike. It seeks to demonstrate that the integration of predictive models into governmental strategies represents a substantial opportunity to counteract the infiltration of OC into organisations. Furthermore, the research will critically examine why and how such integration is imperative, advocating for investments in AI-Powered solutions.

The analysis will also highlight the organisational, environmental, and technological challenges associated with implementing these predictive models, proposing strategies to establish the necessary foundations for their effective adoption. Finally, this research aims to foster a deeper understanding of the prerequisites for integrating AI-Powered tools to combat OC groups. This approach could pave the way for aligning community values with socio-economic development in affected regions while reinforcing adherence to the ethical principles of legality (Vaccaro and Palazzo, 2015).

Keywords: Organised Crime; Artificial Intelligence; AI Detection; Government Strategies; Policy Intervention; TOE Framework; Criminal Theory.

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Cooperative finance and capital structure in worker cooperatives: divisible reserves, cooperative shares, and paid dividends

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EXTENDED ABSTRACT

This paper considers cooperative finance institutions as social technologies in heterodox business organizations such as worker cooperatives (Nelson and Winter, 2000). Cooperative finance, especially worker cooperative self-finance, has been beset by serious difficulties since its origins. Early scientific contributions evidenced the negative efficiency effects of underinvestment and undercapitalization in the presence of socialization of capital resources in the former Republic of Yugoslavia (Furubotn and Pejovich, 1970; Vanek, 1970, 1977; Furubotn, 1976). Since then, several reform proposals have been put forward to improve or renew cooperative finance and capital structure, especially in the case of worker cooperatives. These proposals range from full divisibility and saleability of capital reserves and shares to collective ownership of capital to intermediate mixed and hybrid solutions. The best-known proposals for fully divisible and saleable equity stakes in cooperatives are found in the study of U.S. worker cooperatives (cfr. the market for membership rights in the lumberjack cooperatives that spread in the US Pacific Northwest in the middle decades of the 20th century; Pencavel, 2001; Dow, 2003; 2018; Perotin, 2013) and in U.S. new generation producer cooperatives (Grashius and Cook, 2018). Other authors envisage the introduction of fully saleable equity stakes (shares or social participations) in a modality similar to market capitalism (cf. for example the labor-capital partnership in Meade, 1972, 1980; Major, 2006). Divisible reserves and saleable shares have also been proposed to study the functioning of consumer and worker cooperatives in Japan (Mikami, 2013, 2016). At the opposite extreme can be placed those proposals that strive to develop worker cooperative capital structures based on collective and indivisible reserves, which are considered the best guarantee of financial stability and resilience (Tortia, 2018; 2021; George, Fontanari and Tortia, 2021). Finally, mixed solutions refer to combinations of

divisible and indivisible reserves, as in the Mondragon system of capital accounts in Spain (Ellerman, 1986; White and White, 1991), while hybrid solutions refer to the introduction of divisible reserves that, nevertheless, can't be sold on the market as stocks, but must be paid to worker-members based on the value of realized, not prospective, profits (Ellerman, 1986, 2018; Ellerman, Gonza and Berkopec, 2023). These authors propose divisible reserves held in trust funds, similar to the John Lewis Partnership model of employee ownership in the United Kingdom. The individual capital accounts would provide a reinvestment mechanism that would allow returning the invested funds to the incumbent members according to realized profits, while, at the same time, the incoming members would accumulate new reserves with the same mechanism. On the other hand, the organization is fully governed as a worker cooperative in which each worker-member has only one vote in ordinary and extraordinary assemblies. The work of Galor (2015; cf. also Galor and Sofer, 2019) studying producer cooperatives and kibbutz in Israel follows a similar line of institutional design of capital accumulation.

This paper builds on existing literature and attempts to develop a new model of cooperative self-finance and capital structure adapted to worker cooperatives' characteristics and financial needs. In this model, divisible reserves are introduced to create sufficient financial incentives for worker-members. The capital structure is similar to that found in employee-owned companies, such as John Lewis, where members own the shares of the enterprise and can earn dividends at the end of each accounting period, but cannot sell the shares while they are full members. On leaving the cooperative through retirement or resignation, members retain full ownership of their shares, which become saleable, but lose their rights as members, hence, for example, the right to receive new shares and other financial incentives such as stock options. Dividends paid function as labor income, coherently with Ward's (1958) theoretical model of the labor-managed firm. Some relevant parts of the total capital of cooperatives can in principle (but not necessarily) be sold in the market as private equity or outstanding public shares. Some restrictions may be imposed on the minimum percentage of the total capital stock to be held by worker-owned members. The organization is governed and managed as a full-fledged worker-owned cooperative in which only worker-members have membership rights based on the "one member, one vote" rule. This governance model may be open to multi-stakeholder governance mechanisms, for example, due to the need to allow external financial investors to monitor due diligence on the cooperative's financial policies. This model of cooperative capital structure is also open to making some parts of the total capital indivisible. Socially oriented types of cooperatives, such as community cooperatives or social cooperatives, may continue to be obliged or may freely choose to keep some parts of their capital reserves indivisible (for example, if

they want to have access to tax benefits granted to non-profit organizations) to increase patrimonial stability and support the achievement of public and social (or environmental) benefit objectives.

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Can Corporate Governance Factors Influence Eco-Efficiency?

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EXTENDED ABSTRACT

1. Introduction

In recent years, discussions about the role of businesses in promoting sustainability have significantly increased, particularly in response to the Sustainable Development Goals outlined by the United Nations (UN). Within this context, Environmental, Social, and Governance (ESG) factors have gained particular significance. ESG performance plays a crucial role in establishing a framework that encourages green development and transformation within firms. The growing importance of ESG performance strengthens the connection between companies and the market by enhancing the dissemination of information from firms. In our study, we primarily focused on the Governance and Environmental pillars of ESG. The Governance pillar assesses corporate governance, including the protection of shareholders' rights, board composition, the inclusion of independent directors, board diversity, executive compensation, and measures against corruption and forgery (Wang et al., 2024). We chose to emphasize the Governance pillar because numerous studies have indicated that strengthening corporate governance mechanisms is vital for achieving sustainability goals (Oyewo et al., 2023). Specifically, our focus is on board characteristics, such as size, independence, and the proportion of women, as well as board activity, represented by the frequency of meetings. A larger board size can enhance ESG expertise (Menicucci

and Paolucci, 2022), especially when it includes a significant proportion of women, who are often perceived to have a more ethical mindset. Independent directors advocate for the implementation of environmental and social initiatives, as well as for communicating the company's commitment to societal well-being. More frequent board meetings promote transparency and support good governance principles, allowing for more extensive discussions and the implementation of additional ESG strategies. While extensive research has explored the relationship between various board characteristics and sustainability performance, little is known about what drives firms' eco-efficiency. Eco-efficiency, which combines economic and ecological efficiency, has been popularized by the World Business Council for Sustainable Development (WBCSD) as a management philosophy aimed at achieving a balance between environmental and economic performance, thereby stimulating innovation, growth, and competitiveness. We define eco-efficiency as a company's ability to achieve strong financial performance while minimizing its environmental impact. This concept aligns with the broader objectives of sustainable development by considering economic, environmental, and social factors in business decision-making. The aim of this paper is to identify how governance factors (i.e., board characteristics and board activity) influence eco-efficiency in two distinct geographical contexts - Europe and the USA - to assess potential differences between an environmentally regulated context (i.e., Europe) and a non-regulated one (i.e., USA).

2. Relevance of the research

In this study, we examined the drivers of ESG performance by analyzing the factors that determine a company's eco-efficiency. Eco-efficiency serves as a tool for evaluating sustainability, reflecting the relationship between a firm's economic value and its environmental impacts. The theoretical foundations of eco-efficiency are rooted in ecological economics (Lahouel, 2016), a discipline that explores the interplay between economics and ecology, particularly how economic activities affect and are affected by the natural environment. It posits that environmentally friendly initiatives, such as reducing water and energy consumption, can yield economic benefits for companies alongside a diminished environmental impact. Our framework draws on resource-dependence theory (Iannuzzi et al., 2023; Menicucci and Paolucci, 2023). This theoretical framework is relevant for explaining how board characteristics influence sustainability performance (Haque and Jones, 2020). Through the lens of resource-dependence theory, the board of directors is seen as a vital source of resources, offering expert guidance, objective recommendations, problem-solving abilities, and enhanced connections to external networks (Iannuzzi et al., 2023). Features of the board significantly impact firms' non-financial performance and their

capacity to implement sustainable initiatives that also yield economic benefits. Broadstock et al. (2019) found that boards of directors can significantly influence firms' eco-efficiency. The size of a board serves as an indicator of diversity; larger boards bring a broader range of expertise and diverse management perspectives (Husted and de Sousa-Filho, 2019). In contrast, smaller boards tend to face fewer decision-making challenges, benefiting from reduced internal conflict and improved coordination and teamwork (Menicucci and Paolucci, 2023). Larger boards encourage firms to adopt sustainability practices and provide a wider array of ESG expertise compared to smaller boards (Menicucci and Paolucci, 2022). Evidence suggests a positive correlation between board size and technical efficiency, as well as ESG performance. However, larger boards can also lead to increased conflicts in the decision-making process, potentially resulting in poorer environmental performance (Muktadir-Al-Mukit and Bhaiyat, 2024). Advocates of resource-dependence theory contend that relationship-oriented resources, such as gender diversity on the board, enhance management's ability to navigate ambiguity and scarcity. The effectiveness of a firm's board and governance structure is significantly impacted by independent directors (Baalouch et al., 2019). These directors enhance the board's objectivity, monitor the company's activities, and contribute to improved performance. Previous research has demonstrated a positive relationship between independent directors and sustainability performance (Menicucci and Paolucci, 2023), particularly regarding environmental performance and carbon reduction initiatives (Disli et al., 2022). In this context, frequent board meetings enable boards to review and monitor the organization's ESG initiatives and performance. They help mitigate ESG risks by addressing emerging sustainability issues, considering evolving stakeholder expectations, and evaluating how to integrate ESG goals into the firm's strategy. Additionally, these meetings allow boards to monitor the effectiveness of implemented ESG initiatives and set new goals for continuous improvement. While some studies have examined the relationship between the frequency of board meetings and sustainability disclosure, few have analyzed its impact on environmental performance (Nguyen et al., 2021). Some research indicates that increased meeting frequency reduces sustainability issues (Disli et al., 2022) or enhances environmental performance (Nguyen et al., 2021). Our study aimed to investigate how board composition - characterized by factors such as board size, independence, and gender diversity - and board activities, reflected in the frequency of board meetings, influence the company's Eco-efficiency. Therefore, we test the following hypothesis:

H1: Board composition/activities affect firms' Eco-efficiency.

3. Contribution

Based on the resource-dependence theory, this study investigates how board composition - characterized by factors such as board size, independence, and gender diversity - as well as board activities, reflected in the frequency of board meetings, influence firm eco-efficiency in the fiscal year 2021. This research contributes to both the corporate governance and ESG literatures. The findings enhance our understanding of governance by revealing whether specific board characteristics, related to either composition or activity, positively impact firms' efficiency. In terms of ESG practices, examining eco-efficiency not only enriches the literature with insights on reducing firms' environmental impacts but also contributes to the discussion on the economic advantages associated with eco-friendly practices. We analyzed the relationship between eco-efficiency and board characteristics across two distinct geographical contexts: Europe, characterized by stringent environmental regulations, and the USA, which operates in a less regulated environment. This comparative approach not only deepens our research findings but also offers valuable insights into the efficacy and adaptability of eco-efficiency practices in varying regulatory settings. Our study presents several practical implications, underscoring the importance for firms to implement eco-friendly practices effectively.

4. Methodology

We conduct a comparative analysis in two different geographical contexts - Europe and the USA - to evaluate differences between an environmentally regulated context (Europe) and a non-regulated context (USA). For this purpose, we select firms from the Europe Stoxx 600 index and the US S&P 500, focusing only on those for which complete data is available to construct the eco-efficiency index. Including US companies enriches our study by enabling a comparison of eco-efficiency practices across varying regulatory environments. We measure eco-efficiency, our dependent variable, using Data Envelopment Analysis (DEA), a widely used methodology in financial applications (Bruni et al., 2014), guided by previous studies (e.g., Janicka and Sajnó, 2023; Lahouel, 2016). In this study, we employ an input-oriented Constant Returns to Scale (CRS) model. This approach allows us to assess economic efficiency by minimizing specific inputs, such as resource consumption and pollutant emissions, which are crucial factors affecting ecological efficiency. Specifically, we use CO_2 emissions, energy use, water consumption, and total waste as inputs, with Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA) designated as the output. For the regression model, in line with prior studies investigating the drivers of technical efficiency (Amornkitvikai and Charoenrat, 2024), we have decided

to use the beta regression model (Cribari-Neto and Zeileis, 2010). This model assumes that the response variable follows a beta distribution and lies between 0 and 1, allowing us to interpret the observations as probabilities. The goal of the study is to identify the factors influencing the likelihood of firms achieving higher or lower eco-efficiency scores. We specifically analyze Eco-efficiency as the dependent variable, with Board Size, Board Gender Diversity, Board Independence, and Frequency of Board Meetings as independent variables. Additionally, we incorporate three control variables.

5. Results

Our analysis reveals a significant negative relationship between board size and Eco-efficiency among STOXX600 companies. This finding aligns with the research of Olthuis and Van den Oever (2020), which indicates that larger boards often overlook environmental regulations, negatively impacting overall ESG performance and the environmental pillar. In contrast, we found no significant association between board size and eco-efficiency among S&P 500 companies. Regarding board gender diversity, our results demonstrate a significant positive effect on Eco-efficiency, suggesting that the presence of female directors enhances boards' responsiveness to social and environmental issues. This effect is particularly pronounced in the STOXX600 sample compared to the S&P 500 group. This finding reinforces the notion that, regardless of the regulatory environment concerning ESG practices, women on boards are a valuable asset, contributing empathy, collaboration, and long-term thinking - qualities that align well with sustainability goals. Board independence negatively impacts eco-efficiency for S&P 500 companies. This finding aligns with Naciti's (2019) study, which suggests that information provided to independent directors by management may be biased or misleading, hindering the adoption of sustainable practices. Additionally, our analysis indicates a negative relationship between board meeting frequency and eco-efficiency within the STOXX600 sample, contradicting existing literature that typically links board meeting frequency with improved sustainability performance (Menicucci and Paolucci, 2023). We did not observe variations between Europe and the USA regarding the influence of the examined variables. While we identified a favorable influence of board gender diversity on firm eco-efficiency, other board characteristics did not contribute to its enhancement. Notably, although we found no significant impact of board independence on European companies, a significant negative impact was evident for US firms. This raises the possibility that directors may not be truly independent; personal or professional connections might influence their decisions regarding Eco-efficiency initiatives. Furthermore, independent directors often adopt a conservative approach focused on risk mitigation, potentially leading them to oppose Eco-efficient initiatives that require initial investments or involve

uncertain outcomes. For European companies, a larger board size and more frequent board meetings correlate with lower Eco-efficiency. The negative impact of board size may stem from slower decision-making processes, as reaching consensus among a larger number of directors can complicate the implementation of eco-friendly initiatives. Consequently, the findings highlight issues associated with large boards, such as free-rider tendencies, communication breakdowns, and coordination difficulties, all of which can exacerbate conflicts over environmental decisions. While regular board meetings can facilitate timely discussions on organizational matters and serve as an effective strategy for enhancing environmental performance (Oyewo, 2023), our findings indicate that for European companies, increased meeting frequency negatively affects eco-efficiency. This suggests that the costs associated with board meetings - including managerial time, travel expenses, and directors' fees - may outweigh their benefits. Additionally, frequent meetings may result from ineffective management (Disli et al., 2022).

Keywords: ESG, DEA, Eco-efficiency, Board features, Beta regression model.

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The Importance and Implications of Central Bank Digital Currency (CBDC) Implementation in Small Open Economies

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EXTENDED ABSTRACT

The purpose of the work is to determine the significance, consider the possibilities, advantages and risks of introducing a digital currency of the Central Bank in a small open economy.

In recent years, the modernization of human activity through the introduction of digitalization in all spheres of society has transformed the market of uncontrolled capital and payments. This is changing the patterns of consumer demand, consumption and behavior of the population. The use of non-cash means of payment is increasing worldwide. To develop business and meet the demand for various kinds of products, the population needs much less money in banks. The digitalization of the economies of the world is developing at a rapid pace. According to research on the digital asset market, it has grown more than fourfold (compared to the final value of 2020). Joanna Ossinger, (2021)

Investing in established tokens such as Bitcoin, and the cryptocurrency ecosystems of Ethereum and Solana, which have their advantages for attracting investors, are also facing increasing competition. The emergence of metaverses and the desire to use such advanced technologies in the scientific and educational sphere, medicine and not only in these areas raises concerns about the possibilities of using decentralized finance and non-fungible tokens. In the last few years, the trend of memecoins such as Dogecoin (DOGE) and Shiba Inu (SHIB) has been gaining popularity, which do not carry anything useful or valuable, but are simply associated with jokes and popular memes.

In the modern world, the problem of introducing digital currency is widely discussed. It is an additional form of money, and it is used along with traditional means of payment - cash and non-cash forms of banknotes.

Central banks around the world are stepping up efforts to prepare the ground for central bank digital currencies (CBDC), either as digital money (retail) or tokenized reserves (wholesale). CBDCs are government-backed digital currencies that use blockchain or distributed ledger technology. Their goal is to expand access to financial services and reduce the costs of maintaining current monetary systems. As of June 2024, regulations regarding virtual currencies, tokens and assets are still emerging around the world. In 2023, the European Union published a broad definition in its Markets In Crypto Assets (MiCA) regulation. "Cryptoassets are digital representations of value or rights that can provide significant benefit to market participants, including retail holders of cryptoassets." Under this regulation, a virtual currency may not fall under the EU's MiCA jurisdiction, but it could be if it meets this very vague definition.

The US Internal Revenue Service (IRS) describes virtual currencies as "digital representations of value, other than a representation of the US dollar or a foreign currency ("real currency"), that function as a unit of account, a store of value, and a medium of exchange." It also taxes transactions in certain types of virtual currencies, such as cryptocurrencies. The Securities and Exchange Commission (SEC) has taken over US cryptocurrency exchanges and continues to scrutinize all cryptocurrency-related products, services, and providers. Michael Faulkender, David Vasquez, (2023).There are two types of CBDCs: wholesale and retail. Financial institutions are the primary users of wholesale CBDCs, while consumers and businesses use retail CBDCs.

Wholesale CBDCs - function similarly to holding reserves at a central bank. The central bank provides an account for the institution to deposit funds into or use to make interbank transfers. Central banks can then use monetary policy tools, such as reserve requirements or interest on reserve balances, to set interest rates and influence lending.

Retail CBDCs are government-backed digital currencies used by consumers and businesses. Retail CBDCs eliminate intermediary risk, which refers to the risk that private digital currency issuers could go bankrupt and lose customers' assets.In a press release in May 2021, the National Bank of Georgia (NBG) announced that it would begin exploring the prospects of a digital lari. The NBG announced that it would develop the CBDC through a public-private partnership and is currently in the process of working with fintech companies to address the complexities. In the same announcement, the NBG listed several features of its future CBDC, including a modular approach, low cost, retail friendliness, and interoperability. In November 2022, the central bank confirmed its intention to launch a CBDC pilot program to gather additional information on potential use cases and benefits. In February 2023, the NBG

called on all fintech companies interested in participating in the digital lari project to take part in the study. In November 2023, the NBG announced that it had selected Ripple as its technology partner for the digital lari pilot project.

One way to reduce the risks associated with security issues is to issue a relatively small amount of CBDCs for parallel circulation with existing fiat money in order to test the security check and other characteristics of CBDCs.

Keywords: Central Bank digital currency, crypto currency, Central Bank, financial innovations

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Youth Unemployment in Georgia and Contemporary Global Challenges

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EXTENDED ABSTRACT

Young people are the greatest asset to society, capable of making substantial contributions to a country's social and economic development and ensuring future progress. Therefore, governments must create an environment that addresses youth challenges and enables the implementation of effective employment policies based on human rights and the principles of citizenship and gender equality.Youth employment, along with providing decent wages and working conditions, remains one of Georgia's biggest challenges. Limited employment opportunities, low wages, and unfair working conditions often push Georgian youth to seek work abroad.

In Georgia, there has been insufficient research into the factors influencing youth participation in the labor market, the root causes of youth unemployment, and strategies to address these issues. This gap in knowledge prompted our interest in studying these topics, forming the basis of this paper. This paper's aim is to analyze youth unemployment in Georgia and develop recommendations to mitigate its severity. The urgency of this research is highlighted by alarming statistics. The existing data highlights the critical unemployment situation among young people aged 15–29 in Georgia: as of 2023, the total population in this age group was 576,300, of which 186,800 - or 32.4% of the population aged 15-29 - were unemployed. according to 2023 data from the National Statistical Service of Georgia, the unemployment rate among 15–19-year-olds is 44%, 20–24-year-olds is 31.9%, and 25–29-year-olds is 20.1%.

A particularly concerning challenge in Georgia is the growing number of NEET youth (Not in Employment, Education, or Training). This inactivity negatively impacts their skills and future prospects. In 2023, 26.9% of 15–29-year-olds in Georgia were NEET, compared to 11.2% in EU countries. State support is especially critical for unemployed groups whose knowledge and skills do not meet modern labor market demands, leaving them less competitive.

The persistently high youth unemployment rate poses long-term risks for the country. Institutional labor market regulations are crucial in addressing this issue. However, Georgia's underdeveloped labor market infrastructure limits young people's access to essential resources, such as information on job opportunities, career development, and skill-building. As a result, many youths who are willing to work stop actively job-seeking due to losing hope, leading to the widespread problem of long-term youth unemployment.

In this context, the study conducted by the authors on youth attitudes toward employment is significant. This research provides insights into the aspirations and expectations of young people, allowing us to draw conclusions that could enhance their motivation to develop skills and improve employment prospects.

Managing youth employment at the state level should be seen as a large-scale socio-economic initiative. This involves using targeted marketing strategies and modernizing social management to adapt young people to market conditions, enabling them to contribute to the country's development. Such efforts would ensure sustainable socio-economic progress in both the short and long term.

Educational systems must play a pivotal role in addressing youth unemployment by preparing young people for knowledge-based economies and the changing realities of the labor market. Improving the quality of education and vocational training is essential to bridge the gap between youth skills and market demands. Balancing labor supply and demand quantitatively and qualitatively requires a comprehensive system of regulation in education. To support young specialists and provide decent living conditions, the government should encourage business involvement and increase motivation by developing effective youth employment policies and programs. This could include preferential tax policies and long-term, low-interest loans for companies that employ 15–29-year-old specialists.

Keywords: Labor market, Youth unemployment, Youth employment, NEET, Youth Employment Policy.

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Digitisation of cultural heritage of minority communities for equity and citizen engagement: aspect of funding and legislation

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EXTENDED ABSTRACT

Extensive research has demonstrated the critical role of digital technologies in preserving, maintaining, and promoting cultural heritage (CH). Technologies such as 3D modeling have been particularly influential in this domain and have been explored in various EU research initiatives (e.g., ViMM, VIGIE, 5Dculture, EIT KIC CCIS, Europeana Tender, and Time Machine), national projects (e.g., German national research infrastructures NFDI4Culture and NFDI4Memory, German workgroup for digital reconstruction, and DFG Network for 3D reconstruction of architectural history), and scientific studies (Klinke, 2018; Kuroczynski et al., 2019; Muenster, 2022; Muenster et al., 2023). From an innovation perspective, digitization of CH has been the focus of numerous funding and R&D efforts (Ulutas Aydogan et al., 2021). However, the cultural heritage sector still lacks effective tools and frameworks to monitor and leverage project outcomes in an inclusive, diverse, and convergent manner. There remains an insufficient holistic understanding of the challenges and opportunities associated with existing legal, policy, socioeconomic, and technological structures, which hinders the promotion of equity, inclusion,

and stakeholder participation within the digital CH ecosystem. This fragmented knowledge base poses significant challenges for informed policy-making.

The goal of this research is to re-visit and provide new understandings on the key legal and policy, socio-economic and technological factors that drive the digitisation of cultural minorities' cultural heritage in order to develop a novel validated scalable framework, designed via user-centric approaches, to promote equitable, diverse and inclusive practices. This will be elaborated through pilots from three representative minority groups in Europe, namely the Sámi, the Jewish people and the Ladin people.

EU funding for cultural heritage and its digitization encompasses a diverse array of programs, grants, and initiatives from both EU and international sources. These sources aim to support projects that safeguard, restore, and innovate within the field of cultural heritage. International Funding Sources include EU Funding Programs (Horizon Europe, Creative Europe, Erasmus+, and Digital Europe). International Funding Beyond the EU (Europa Nostra and Europeana) are committed to preserving European cultural sites and digitizing heritage content. Bilateral and Multinational EU Funding (programs like EEA Grants, Interreg, and the Visegrad Fund) promote collaborative cultural projects among EU countries or between the EU and non-EU partners. Non-EU Funding Programs (UNESCO's initiatives, World Monuments Fund, Global Heritage Fund) facilitate global heritage conservation and digitization. National funding sources also play a vital role in supporting cultural heritage and digitization initiatives. These programs can be government-led, regional, or even local in scope.

Citizen engagement is an important part of any funding program focused on CH. Creative Europe has significantly bolstered citizen engagement in cultural heritage, transforming it from a top-down approach into a collaborative effort. Creative Europe strongly supports citizen engagement, although it is not strictly required to secure funding. The degree of citizen involvement can enhance a project's chances of success, especially when it aligns with broader EU goals of inclusivity, innovation, and cultural preservation. In Erasmus+ projects focusing on cultural heritage, citizen engagement plays a crucial role in both the implementation and outcomes of funded initiatives.

Another tool that has been driving developments in digital CH has been law and policies. On this regard, the EC has consistently underscored that public sector information should remain in the public domain also once digitized (Open Data Directive (2019/1024), Digital Single Market (DSM) Directive (2019/790), The Commission Recommendation of 10 November 2021 on a common European data space). The EU's digitisation efforts for cultural heritage are underpinned by a robust and evolving

framework that integrates ethical practices, accessibility, innovation, and sustainability. Documents like the DSM Directive and the European Framework for Digitization focus on creating high-quality digital representations of cultural heritage, ensuring both the preservation of tangible and intangible assets and their accessibility to a global audience. Strategies like the Council Conclusions (2014) highlight the importance of collaboration across EU member states, fostering innovation and sharing best practices in cultural heritage digitisation. The Declaration on Green and Digital Transformation emphasizes the need for energy-efficient and environmentally responsible digitisation processes, aligning cultural heritage initiatives with broader EU sustainability goals. The Digital Services Act (DSA) and Digital Markets Act (DMA) ensure transparency in algorithms and digital platforms, fostering trust and inclusivity. Overall, the EU's strategy balances technological advancement with ethical, legal, and sustainability considerations, ensuring that the digitisation of cultural heritage serves both present and future generations while promoting a shared European identity. But when we look at all these issues from the point of view of cultural minorities, research has pointed out that the use and re-use of their CH in line with open data related policies as well as in relation to intellectual property rights presents several pitfalls (Ballardini, et al., 2021; Hossain, Ballardini, 2021) that deserve closer attention (Fiorentini, et al., 2021).

While analyzing the digitisation of the cultural heritage of cultural minority communities for equity and citizen engagement and building on such a framework, it is possible to prepare knowledge-based recommendations for policy and decision-makers, as well as CH institutions, for mainstreaming equity, diversity and inclusiveness of minority groups through participation and engagement in CH digitisation processes. It also delivers methodologies for decision support to enable decision makers to monitor the field of digital heritage with specific regards to its diversity long-term.

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Keywords: Cultural heritage digitisation, EU and national funding, cultural heritage, citizen engagement.

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