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Keynote Speakers

Hannes Raffasaeder, Lead Coordinator European University E³UDRES², on the topic "Open Innovation and Collaboration for Resilient and Sustainable Regions"

Antje Disterheft, Researcher and Integrated Member at CENSE/NOVA School of Science and Technology, on the topic "Resilience from within - why our inner worlds matter for transformative change"

Pedro Dominginhos, President of the National Recovery and Resilience Plan (RRP) Monitoring Commission, "Contribuição do PRR para os Objetivos de Desenvolvimento Sustentável"



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EDITORIAL

Editorial

Research on sustainability has gained relevance in recent decades. Since the 1980s, the awareness in the management of human, social, and ecological systems have increased. Being a transdisciplinary theme, it relates to the most varied topics, namely resilient economy, entrepreneurship and innovation, collaboration, governance and networks, technological, engineering and environmental solutions, which are transversal to different sectors such as agriculture, fisheries, tourism, or other services. The contribution of these topics to regional development and sustainability is consensual. In fact, and regarding research on sustainable development goals (SDG), and business, management, and innovation, it is evident the increased attention of research not only on themes of economic growth and consumption, but also of social development and environmental protection.

These proceedings represent the work of contributors to the 1st **International Conference on Resilience and Sustainable Regions (ICRSR24)**, hosted by Instituto Politécnico de Setúbal, Portugal. The conference Chair is Professor Maria Teresa Costa and Nelson Carriço, from Business School and School of Technology of Barreiro respectively. This work refers to several contributions from academics and researchers from 9 countries (Austria, Belgium, Brazil, Check Republic, Germany, Italy, Netherlands, Poland, and Portugal).

The success of the conference was a result of several important participations and commissions.

Contributions

Authors with different backgrounds and institutions joined efforts to reflect, discuss, and share advances and trends on different scientific areas that contribute to the social development and environmental protection and consequently to the development and sustainability of the regions. These contributions were organized by topics, on two types of sessions, parallel and special, as shown below.



Parallel sessions

Topic: Regional Development and Sustainability

- Ludovico-Marques, Marco A; Paz, Maria Catarina. Source of stones on walls of Santiago fortress in Sesimbra
- Medeiros, Eduardo. How impactful was the period 2014-20 towards environmentally sustainable regions in Portugal?
- Ludovico-Marques, Marco A; Castro, Marcela S. Leveraging portuguese higher education institutions for regional development through decarbonization
- Mourato, Fausto; Martins, Helena G; Piteira, Martinha; Moreira, Sandrina B. Playing for the planet: a state of the art on gamification and serious games for raising awareness about responsible use of natural resources
- Simões, Luis; Reis, Leonilde; Galvão, Susana; Couto, Maria; Mata, Carlos; Caria, Maria Helena. Sustainability and regional development@IPS: a pilot experience
- Quintela, Joana; Costa, Carlos; Correia, Anabela. Sustainability in health and wellness tourism – the creation of health regions
- Carla Viana; Duarte Xara Brasil. Digital Transformation in Healthcare: Consumer Experience in Portugal's Health Sector
- Esengulova, Nazgul; Paziienza, Pasquale; Lopolito, Antonio; Morsilli, Michele; Balena, Pasquale. UNESCO Geopark to boost regional development?: A scenario for the marginal area of Gargano Promontory, Italy
- Fernandes, Mauro; Neves, Rui D. Assessment of mechanical performance of corroded steel fiber reinforced concrete
- Porcaro, Angelo. Blockchain and Tourism in rural areas: Its Potential and Implementation in the Gargano National Park
- Salah Uddin, Muhammad; Kabasakal, Ali; Lucia, Caterina De; Pasquale, Paziienza. Drivers and barriers to the shadow economy: do natural resource endowment and institutional quality matter
- Ranieri F., Santoro D., Grilli L., De Lucia C., Paziienza P. Evaluation of the tourism carrying capacity for sustainable management at the Tremiti Islands, Italy

**Topic: Resilient Economy, Entrepreneurship and Innovation**

- Pitacho, Liliana A; Cordeiro, João; Lima, Daniela; Martins, Helena G. Team Resilience Dynamics in High-Performance Teams: a systematic literature review
- Pedro Mares; Costa, Teresa Gomes da; Lima, Maria João. Antecedents of Entrepreneurial Intention in students of Polytechnic Institute of Setubal (Portugal).
- Ferreira, Inês A.; Mendes, Ana; Carriço, Nelson. Digital transformation in berth planning operations – a bibliometric analysis
- Teresa Gomes da Costa; Pedro Mares; Maria Lima. Entrepreneurship Education in International Context: Skills, Attitudes and Competencies that Promote Student Resilience
- Nuno Costa; João Lourenço. Process and product's resilience
- Dias, Rui Teixeira; Reis, Leonilde; Pardal, Pedro; Carvalho, Luísa; Russo, Nelson. Resilient companies in the region of Setúbal: an insightful reflection in times of uncertainty
- Duarte Xara Brasil; Pedro Pardal; João Pedro Cordeiro; Luísa Cagica Carvalho .Buying Local Products: Municipal Markets vs. Modern Trade. A Portuguese Case Study
- Baleizão, Ana Raquel; Miguel, Fernanda; Gomes, Ana Gabriela G.N.; Justino, Marta. Optimisation of viral RNA extraction with an extraction kit using sample poolings: case study for SARS-COV-2 Virus

Topic: Technological, Engineering and Environmental Solutions

- Rucha, Madalena; Piçarra, Susana; Sena da Fonseca, Bruno; Ferreira Pinto, Ana Paula; Mégre, Sofia. Advancing sustainability in built heritage conservation
- Piçarra, Susana; F. Silva, Hugo; Coelho, José; Araújo, Lara; Silva, Nelson; Oliveira, Cristina; Matos, Manuel; Barreiros, Ana. Circular use of water in agriculture: solution or threat?
- Santos, Carla A.; Coelho, Claudia; Gomes, Ana Gabriela G.N.; Tudella, Joana; Serralha, Maria Fátima; Dias, Nilmara; Santos, Sónia; Osório, Natália; Justino, Marta. Closing the loop: microalgae-based solutions for agroindustrial waste in Setúbal



- Castro, Marcela S; Lisboa, Leonardo; Barcaui, Andre; Navarro, Carlos. Unveiling the landscape of Artificial Intelligence in corporate management: insights from professionals
- Shabir, Maria. Does energy democracy really affect growth and environmental quality? early evidence from upper middle-income countries during 1997-2020
- Gameiro, Maria Lurdes; Gomes, Ana Gabriela G.N.; Justino, Marta; Serralha, Maria Fátima; Tudella, Joana. Recovery of precious metals from electronic wastes – a review
- Garcia, João Miranda; Soares, Aldina; Ruivo, Celestino. Smart solar vegetable desidration, a way to support a sustainable activity
- Lopes, Rodrigo; Reis, Leonilde; Dourado, Alcina. Technological solutions for a more resilient world: a contribution to responsible consumerism

Topic: Society, Education, People and Behaviour

- De Coninck, Sarah; Reulens, Ann. “Nothing about us without us”: results of a literature review and delphi study on engagement models for research
- Martins, Helena G; Rodrigues, Ana Cláudia; Lehmann, Melanie; Dolmann, Lisa Maria. From panic to panorama: globais insights into crisis training
- Lampreia, Paula; Martins, Helena G. Leading the charge: how workers’ views on leadership can shape culture shifts, a case study
- Martins, Helena G; Cordeiro, João Pedro; Carvalho, Luísa; Pitacho, Liliana A. Simmering success: a bibliometric approach to the literature and research agenda on entrepreneurial chefs
- Komino, Aline. The moral dimension in the consumption of organic foods

Topic: Finance, Investments and Funding

- Dias, Rui Teixeira; Chambino Ramos, Mariana. Analyzing The Nexus: Stock Indexes and Cryptocurrencies During the Russia-Ukraine War
- Bicho, Susana PR; Heliodoro, Paula A. Comparative Analysis of the Financial Performance of Companies in PSI20 and IBEX35, before and during Covid-19 Crisis



- Chambino Ramos, Mariana; Dias, Rui Teixeira. Interconnected markets: examining spillovers between stock indexes in the travel, hotels, restaurants, and leisure sector
- Chambino Ramos, Mariana; Dias, Rui Teixeira. Side effects and interactions: exploring the relationship between dirty and green cryptocurrencies and clean energy stock indexes

Special sessions

Topic: Entrepreneurship and Innovation

- Analice Barbosa Pereira Carvalho, Stélia Braga Castro, Bioeconomy in the Brazilian Amazon: Advances and Challenges in Innovation for Sustainability
- Bruno Cesar Porsini Mangili, Camila Keila Magno Leonel, Sustainability of Cultivated Meat Production
- Camila Keila Magno Leonel, Laís Marques da Silva, Relationship Between Entrepreneurship and Geographical Indications (IGs): A Literature Review
- Frederico Eugênio Fernandes Filho, Entrepreneurial Behavior reflexes in Effectuation on Dynamic Capabilities: A Bibliographic Review
- Mariana Cristina da Silva, Rafael Vieira Alves Pinto, Transformational Leadership as a Critical Success Factor in Organizations
- Rafael Christofletti, How to facilitate the Transfer of technology from the University to industry? A Systematic review
- Rosângela Monteiro, Bioplastic Reuse on Beaches
- Victor Haruo Nitatori Rodrigues Lourenço, the relationship Between Intellectual Capital and Financial Performance: A comparative analysis Between China and Japan
- Yan Figueiredo Foresti, Innovations on the Altitude Simulators Technologies: A Patent review

Topic: Resilience and Sustainability in Events: Innovative Approaches for Tourist Destinations

- Filipe Severino, ESTHE
- Franciso Silva, ESTHE



- Susana Gonçalves, ESTHE

Topic: Circular Economy

- Costa, Nuno RP; Santos, Carla A. Measurement system analysis of microalgae cell culture concentration – a contribution for innovative technologies
- Isabelle Lacourt, Accounting food waste composting GHG emissions and carbon in living soils in a fork to farm perspective

Topic: Network and Cooperation in Higher Education – IBW

- Danielle Bouwman, RUAS, IBW coordinator
- Martina Chalupová, College of Polytechnics Jihlava, IBW coordinator
- P.J.M. Koevoet-Sonneveld, RUAS, IBW coordinator
- Jaroslaw Tomaszewski, IWSB University, BW coordinator
- Stef Mannaerts, UCLL, IBW coordinator
- Teresa Costa, ESCE/IPS, IBW coordinator
- Tim Colberg Hochschule Kaiserslautern, in representation of IBW coordinator

Topic: Sustentabilidade e Resiliência

- Jorge Gaspar – Associação Industrial Portuguesa
- Mário Parra da Silva – APEE e UN Global Compact Network Portugal
- Paula Guimarães – The Navigator Company

Regional Development and Sustainability





SOURCE OF STONES ON WALLS OF SANTIAGO FORTRESS IN SESIMBRA

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EXTENDED ABSTRACT

Purpose

This study intends to identify the coeval quarries or the sites that can be used as source of stone materials similar to those found on Santiago fortress, Sesimbra, Portugal, in order to assure sustainable conservation works that require the future replacement of severe weathered dimension stones by sound blocks.

Theoretical framework

The consolidation of existent stone blocks is always preferable to the application of new extracted similar materials that never have the same original quality. In a general way the best materials were already used in ancient and sometimes recent constructions and if the safeguarding of areas that were source of building stones was not yet implemented, only by chance it is possible to find the same materials. However, the use of similar stone materials, perhaps not so good but adequate for being resistant to weathering and occurring in sites that can provide enough extraction volumes, is acceptable (Soares, 2001).

Design/methodology/approach

The overall methodology consisted in collect information about Santiago fortress, located in the center of Sesimbra bay, and closest constructions from the same period, the defensive wall of the medieval castle, at the north, and St. Teodósio fort, at west of the bay. An initial visual inspection of the stone blocks of Santiago and St. Teodósio fortresses, was conducted in situ to identify rock materials similar to them that can be found in nearby quarries or outcrops. A signature of these available sound rocks will be obtained, based on a petrographic study and their physical characterization (Chastre and Ludovico-Marques, 2018) in order to validate the future use of the selected materials. At the same time, literature and field surveys were performed to search for the location of the original quarry(ies). The field survey included a foot walk in the surroundings of Sesimbra, and meetings with the experts from the municipal Museu Marítimo museum and archive.

Findings

Santiago fortress, was built in the XVII century, between 1642 and 1649, over the construction site of Ancua Fort of XVI century (Ferreira, 2015; Pedrosa, 2020), with design of João Paschasio Cosmander. The defensive wall of the medieval castle and St. Teodósio fort were completed in 1653 and 1655 respectively.

The walls of the referred fortresses have stone blocks mostly of dolomitic limestones, sandstones and limestones, extracted probably from the many diverse quarries that can be close to them. In fact, historically, quarrying is one of Sesimbra's more prolific long



lasting economic activities supported on the extraction of various types of natural stones from hundreds of sites through the centuries.

Specifically, the building blocks used in the medieval walls and defensive walls built in XVII century came from several coeval quarries located at the north of the castle, in a distance up to 1.5 km (Cardoso, 2014) and also from the rock mass close to castle site.

The field survey indicates that the most probable location of quarries, that were the source of the stone materials of the fortresses of St. Teodósio and Santiago, are (1) the Ribeira de Cavalos area at west, and (2) the area close to the California beach, towards Serra da Achada, at the east, and not the areas at the north of the castle. In the past, the least energy consuming procedures would be, in the case of St. Teodósio fortress (altitude 35m), to quarry the stone blocks from Ribeira de Cavalos (altitude 120m), and carrying out their transportation downwards; and, in the case of Santiago fortress, to quarry the materials from the surrounding area of California beach and move them westwards. Their transportation by land from the steep south slope of the castle hill (altitude 240m) to the beach or from the more distanced Serra da Achada quarries were more unfavorable.

Research, practical & social implications

Development of best practices of conservation for historical buildings promotes the regional resilience linked to the awareness of a common identity, increasing sustainable tourism as a key driver of regional growth.

Originality/value

Knowledge about the origin of the materials of fortresses and other ancient buildings will contribute to the conservation improvement of cultural heritage and preservation of historical values in the Sesimbra area.

Keywords – Santiago fortress, Sesimbra, conservation, quarry, stones.

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We thank to archaeologist Andreia Conceição for the guided visit through the museum Museu Marítimo de Sesimbra, at Santiago fortress. We also thank to historian João Ventura and technician Ana Mourato for receiving us at Sesimbra's municipal archive.

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HOW IMPACTFUL WAS THE POSEUR 2014-20 TOWARDS ENVIRONMENTALLY SUSTAINABLE REGIONS IN PORTUGAL?

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EXTENDED ABSTRACT

Purpose

The analysis is particularly focused on assessing the main impacts of PO SEUR 2014–20 in the Portuguese mainland NUTS 2 (Norte, Centro, Lisbon Metropolitan area–AML, Alentejo, and Algarve in five distinct analytic dimensions: (i) economy with low emissions; (ii) adaptation to climate change; (iii) risk prevention and management; (iv) environmental protection and (v) resource efficiency. These five dimensions were mostly selected based on the main axis of the PO SEUR intervention and related policy goals, and also on current literature which, for instance, identifies five main specific sustainability objectives to foster ecological policy goals: (i) protection of natural spaces and biodiversity; (ii) responsible use of renewable energy; (iii) reduction of the use of non-renewable resources; (iv) protection of the natural environment; and (v) protection from environmental hazards and reduction of risks.

Theoretical framework

Humankind currently lives in an age of sustainable development. As the term implies, policies supporting sustainable development require the financing of policy measures toward environmental conservation, among several other dimensions. Indeed, globally, the United Nations (UN) 2030 Agenda is largely forged with several sustainable development goals (SDGs) which directly and indirectly target environmental conservation measures in several policy domains. In the EU territory, EU Cohesion Policy has served as a crucial policy tool to finance territorial development processes, which include support for environmental sustainability-related operational programmes (OP) or projects. In Portugal, a dedicated OP of the 2014–2020 Cohesion Policy Framework was fully dedicated to supporting policy measures aimed at promoting environmental sustainability: PO SEUR–Operational Programme for Sustainability and Efficient Use of Resources.

Design/methodology/approach

The research made use of a territorial impact assessment methodology named TARGET_TIA linked to a Impact_Web_GIS_Platform, because it has already been successfully used to assess the main impacts of EU Cohesion Policy in several EU Member States at the regional level.

Findings

In overall terms, PO SEUR produced low to moderate positive impacts in all NUTS II and analysed dimensions, but it was particularly positive in measures fostering adaptation to climate change, and less impactful in measures supporting an economy with low emissions and resource efficiency in Portugal.

**Research, practical & social implications**

The research provided adequate evidence that key public policies supporting environmental sustainability in Portugal are largely ineffective and inefficient in view of their policy goals and allocated funding.

Originality/value

The research applies an original WEB-GIS impact platform to facilitate the observation of the impacts of policies.

Keywords - PO SEUR; public policies; sustainable development; sustainability

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LEVERAGING PORTUGUESE HIGHER EDUCATION INSTITUTIONS FOR REGIONAL DEVELOPMENT THROUGH DECARBONIZATION

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EXTENDED ABSTRACT

Purpose

This study aims to elucidate the ways in which Portuguese Higher Education Institutions (HEIs), through their Research and Innovation (R&I) Centers, can contribute to regional development by supporting the transition towards a decarbonized economy.

Theoretical framework

Climate change is related to the phenomenon of carbon overload in the atmosphere (Van Vuuren et al., 2018). The decrease of the carbon dioxide (CO₂) due to the human emissions is carried out through decarbonization (Aleluia Reis et al., 2023). A world economy driving towards carbon neutrality is needed (Bataille et al., 2018) and could be achieved during the energy transition (Van Vuuren et al., 2018). Aside the development of carbon-zero or low-emission renewable energies, Carbon Capture, Utilization and Storage technologies (CCUS) are essential to reduce the amount of CO₂ in the atmosphere (Rockström et al., 2017). Many universities are making a range of internal initiatives towards decarbonization (Filho et al., 2023).

Design/methodology/approach

This study aims to explore Portuguese HEIs published researches on decarbonization and reveal the contribution on regional decarbonization. The methodology employed in this research involves a systematic exploration of existing literature, published at Scopus Indexed Journals, between 2020 and 2023. We used VOSviewer and SPSS software for analyses.

Findings

A first conclusion which can be drawn is that the number of research on decarbonization has grown through the last three years. Our investigation has revealed a spectrum of independent and collaborative initiatives. Most of them national alliances, in comparison to international partnerships. We could also observe the increasing public funding to support the initiatives. Lastly, we highlight the reduced number of studies with direct and practical application in communities.



Research, practical & social implications

This study reinforces the Portuguese HEIs importance and describes the current efforts toward decarbonization process. As a social and practical implication, we could point out the contributions and also the gaps with the aim of guiding future researchers on effective future contributions.

Keywords - Higher Education Institutions (HEIs), Research and Innovation (R&I) Centers, Regional Development, Decarbonization, Sustainability, Climate Change.

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PLAYING FOR THE PLANET: A STATE OF THE ART ON GAMIFICATION AND SERIOUS GAMES FOR RAISING AWARENESS ABOUT RESPONSIBLE USE OF NATURAL RESOURCES

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EXTENDED ABSTRACT

Purpose

This literature review aims to comprehensively investigate and synthesize existing research on the effectiveness of gamification and serious games in raising awareness about responsible use of natural resources. As environmental challenges become increasingly critical, the potential of gamification as an innovative strategy to promote eco-friendly behavior and foster environmental consciousness becomes more relevant.

Theoretical Framework

The review adopts the theoretical framework of game-based learning, including gamification and serious games to positively influence human behavior. By utilizing this framework, the review evaluates various gamification and serious games interventions applied in different studies and examines their impact on individuals' attitudes and behaviors concerning sustainable resource management.

Design/Methodology/Approach

A literature review methodology conducted based on searches conducted in the Web of Science, Google Scholar and Scopus databases. Inclusion criteria were set to ensure the selection of studies focused on serious games and gamified interventions related to environmental awareness and responsible natural resource use. Both qualitative and quantitative studies were considered to capture a broad spectrum of evidence.

Findings

The review revealed a growing body of literature exploring the efficacy of game-based learning in raising awareness about responsible use of natural resources. Encompassing diverse target populations, including students, employees, and community members from various geographical locations, the reviewed studies demonstrated promising results. The synthesis of findings demonstrated that game-based interventions positively influenced participants' environmental awareness. Participants exhibited improved



knowledge regarding sustainable resource management and a greater understanding of the consequences of their actions on the environment.

Research, Practical & Social Implications

The review provides valuable insights into the potential of gamification and serious games as persuasive tools for promoting environmental awareness and responsible resource use. By synthesizing existing evidence, this review contributes theoretically by consolidating findings from disparate studies and establishing a coherent knowledge base on the subject. Practically, the review offers guidance to policymakers, educators, and practitioners seeking evidence-based strategies to encourage sustainable behavior. The game-based approach can be integrated into environmental education programs, workplace sustainability initiatives, and public awareness campaigns, providing interactive and engaging means to drive positive change.

Originality/Value

This literature review presents a novel synthesis of empirical evidence on serious games' and gamification's role in raising awareness about responsible use of natural resources. It consolidates findings from diverse studies, offering a comprehensive understanding of the potential impact of gamification interventions on individuals' environmental consciousness. In conclusion, this literature review showcases the promising potential of gamification in promoting eco-friendly behavior and raising awareness about responsible resource use. By leveraging game elements, gamification and serious games can serve as a valuable tool in addressing environmental challenges and inspiring a collective commitment to sustainable living.

Keywords - Gamification, Natural Resources, Environmental Awareness, Sustainability, Literature Review.

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SUSTAINABILITY AND REGIONAL DEVELOPMENT@IPS: A PILOT EXPERIENCE

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EXTENDED ABSTRACT

Purpose

The main goal focuses on the presentation of a Web application (App) to be implemented at the Polytechnic Institute of Setúbal (IPS) contributing to the increase of the sustainability and wellbeing of the community. The App implements an information dissemination strategy and also enhances a healthy, cultural, environmental and social responsibility globally contributing for a sustainable approach. The App will have several functionalities, namely a link to the IPS+ initiatives; ability to read QR Codes; nutritionally balanced and low-cost recipes. It will also allow alerts in situations of waste or soil, sound or other form of pollution, relevant for the sustainability of the *Campi* (Costa, D et al, 2019), such as wasting water in a sudden rupture. As an example of initiatives that will be promoted and disseminated, we can mention the awareness for the value of the biodiversity @IPS campus, namely through suggestions for walking circuits to observe different species, and also to reinforce the community through a pioneer aromatic vertical garden to strengthen balanced human relationships @ *Campi*.

Theoretical framework

The concerns underlying the Sustainable Development Goals (SDGs) and the dimensions of sustainability have been widely studied (Nations, 2022; BCSD Portugal, 2021; Reis, L. et al, 2021; Reis, L. et al, 2020; Reis & Silveira, 2020; Shiroishi, Y. et al, 2018; Webster & Leleux, 2018) and the literature review shows that ICTs promote integrative solutions to improve efficiency of the institutions, thus, to promote the sustainable creation of value. Persuasive technology through web or mobile applications can be used to promote behaviors, motivations and habits that contribute to the health and well-being of users (Orji & Moffatt, 2018). The App would enhance information management by integrating Nutrition, Health, Physical Activity and Sports, Culture, Environment and Social Responsibility domains, allowing users to interact to promote sustainable wellbeing. Biodiversity increases wellbeing in cities and resilience to climate change and community/vegetable garden are being described as a solution to build healthier communities (Marselle, M et al, 2021). These communities gardens have been



associated to improvement of physical and mental health and to contribute for decarbonisation and raising awareness for sustainable environment in all dimensions (Lampert, T et al, 2021).

Methodology

The methodology underlying the study is Design Science Research (Hevner, A et al, 2004), used as theoretical basis of support it enhances scientific validation (Peffer, K et al, 2007), allowing to achieve the outlined objectives.

Findings

The App will be a strategic information disseminator allowing ubiquitous access by the IPS Community that would present an added value for the sustainability@IPS. The dissemination of the use of ICT by People following a digital transformation strategy ensures a more inclusive and participatory society. Technical dimension is relevant highlighting maintenance and evolution by making the source code available. Improvement at cultural and environment dimensions are achieved through engagement, eg the community aromatic garden and the reduction of water waste or others directly contributes to the wellbeing of the IPS Community. Lastly, our study promotes the SGD, specifically 3,4,11 and 15.

Research, practical & social implications

Practical implications and social impacts of the present study are related to improvement of multidisciplinary networks @IPS and also by improving sustainability within IPS community connected through the App and shared activities.

Originality/Value

Thus, the main contribution of the present study will be the sustainable development @IPS community achieved by strengths of relations due to higher activities engagement, rising awareness on biodiversity and providing a tool to real time information.

Keywords - Web application; Wellbeing; Information and Communication Technologies; Sustainable Development Goals; Sustainability.

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SUSTAINABILITY IN HEALTH AND WELLNESS TOURISM – THE CREATION OF HEALTH REGIONS

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EXTENDED ABSTRACT

Purpose

Health and wellness tourism has been an area of research with several approaches in different geographical contexts (Cooper et al., 2023; Letunovska et al., 2020), although not with a very clear link to sustainability or its potential for territorial development. From a perspective of sustainability, this type of tourism has the potential to facilitate and contribute to the quality of life of communities from the moment it combines their different interests with those of visitors and respects the natural, cultural and economic resources of the territories. This balanced combination of factors is crucial for local and regional development, which is even more important for inland regions. Based on this assumption and considering that the Central region of Portugal is a centre of attraction for health and wellness tourism - where 50% of the country's thermal spas are located - the main aim of this research is to highlight the potential of health and wellness tourism for local and regional development.

Theoretical framework

This research is based on the concept of 'health region', proposed by Pforr, Pechlaner, Locher, and Jochman (2014). Considering the demographic and psychographic changes point to growing awareness and concern with health issues, an emerging health tourism market that seeks new products and services related to health in a leisure environment (Pforr et al., 2014; Smith & Puczko, 2015). According to Illing (2009), the focal points for regional health-based development as a key competence factor do not have to be restricted to the areas of elderly care services, medical technology, rehabilitation, biotechnology or the pharmaceutical industry, as regional competence in health can also be built on prevention, medical tourism, sport and fitness, as well as wellness products and services. In this sense, health assumes strategic importance, not only for the development of Health and Wellness Tourism, or even for Medical Tourism, but also appears as a key element for regional development in Portugal (Mota et al., 2023). From this perspective, the concept of "health region" emerges.



Design/methodology/approach

This study consists of a theoretical and conceptual approach, based on an analysis of the characteristics of the Centro region destination, essentially in terms of its strategic location and the abundance of its thermal resources and respective exploitation structures. However, it is intended to contribute to the advancement of knowledge in the field of health and wellness tourism, demonstrating and providing evidence, in the future, through empirical research, of its potential for conversion into a 'health region'.

Findings

This study shows that the Centro region of Portugal, and others with similar characteristics in terms of endogenous resources, has the right conditions to become a 'health region'. However, for a 'health region' to emerge and develop, it will be necessary to offer a variety and quality of health products and services, as well as its resources and endogenous potentials to create a specific regional profile for health with a view to regional development. This development also depends on establishing a network of regional knowledge, skills, abilities, and resources focused on health, creating networks with both individual companies and public institutions.

Research, practical & social implications

In practical and social terms, this study can serve as a guiding thread for a more concerted policy among the various stakeholders to offer both residents and tourists an opportunity to safely access alternative healthcare, especially in a post-Covid-19 era when there are increasing concerns and constraints in the health sector. At the same time, this proposal serves as an alternative, promoting the sustainable development of the territory, both in terms of attracting visitors, promoting the quality of life, particularly of the older population that characterizes European demographics, and in terms of retaining the population in the territory through the creation of stable employment, which contrasts with the typical seasonality of health and wellness tourism. Besides that, according to Pforr et al. (2014), health regions that integrate a tourism dimension, other factors are considered to increase the attractiveness of a location, such as the natural landscape, clean air or a favourable climate can play an important role as factor conditions, complemented by local resources, the type, quality and cost of available infrastructure and also any cultural resources in the sense of heritage.

Originality/value

The main contribution of this study is to highlight the potential of a territorial development model for the development of a specific health region, founded on thermal and wellness tourism, demonstrating that, according to their local profiles and resources, regions can be seen as competitive units capable of attracting specific target markets (Beritelli, Reinhold & Laesser, 2014). Although not many studies have yet been carried out on the effectiveness of operations in these regions, Germany has been adopting this model since the early 2000s, with the *Kneipp- und Unterallgäu* health region in Bavaria being of particular interest, a model that can be replicated in similar territories, namely in the Central region of Portugal.

Keywords - tourism, sustainability, health and wellness, health regions.



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DIGITAL TRANSFORMATION IN HEALTHCARE: CONSUMER EXPERIENCE IN PORTUGAL'S HEALTH SECTOR

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EXTENDED ABSTRACT

Purpose

This research aims to analyze the potential benefits of digital transformation and digital marketing on customers' experiences with healthcare service providers.

Theoretical framework

Ziołkowska (2021) emphasizes the role of digital transformation in improving organizational processes and outcomes, focusing on the potential of technology to enhance customer experiences. Shankar et al. (2016) contributes to this framework by discussing the relevance of mobile shopper marketing and the need to understand consumer behavior in the digital age. Sujan, Scott, & Cresswell (2019) delve into the implications of digital health on patient safety, highlighting that technology should be viewed as a tool rather than a complete solution. Additionally, Tariq (2023) explores digital transformation's future and current state, underscoring its importance in organizational marketing performance.

Design/methodology/approach

This study employed a qualitative methodology - a focus group. Participants in each focus group ranged from 6 to 8 people. The focus groups were designed to understand the experience of using digital technologies in the healthcare sector from the consumers' perspective and their perceptions of the future use of digital technology. The participants selected for the focus groups included individuals with professional and academic backgrounds in digital marketing, not necessarily confined to the healthcare sector. This diverse group, consisting of 13 people of Portuguese nationality from various geographical and professional backgrounds, provided insights into the role of digital transformation and mobile apps in healthcare. The participants ranged from 19 to 55 years, contributing to a broad perspective.

Findings

The participants in the focus groups reported varying levels of experience with digital media in interacting with healthcare providers, ranging from simple to more complex interactions. Although not detailed in the cited section, users' fears likely include concerns about privacy, data security, and the effectiveness of digital health services. Similarly, while not explicitly outlined, users' expectations probably encompass desires for greater accessibility,



convenience, and personalization in healthcare services. These insights were gathered from focus group discussions and recorded with the participants' consent.

Research, practical & social implications

The research highlights the importance of integrating more technological solutions to improve user experience, particularly in service personalization and response quality. However, it also underscores challenges in personal interactions, especially in situations of dissatisfaction or among users with less digital expertise. These findings point towards the necessity of a balanced approach in digital healthcare, focusing on enhancing service quality while addressing user concerns and adapting to varying levels of digital proficiency.

Originality/value

This work has relevant contributions because it focuses on the significance of digital transformation in healthcare, emphasizing the benefits and challenges of digital tools consumers use. It serves as an initial step in broader research on digital technologies in healthcare, particularly about apps and websites and their role in enhancing service delivery and patient experience. The study, primarily qualitative, targets users with considerable digital literacy and acknowledges its limitations, suggesting the need for further research, including impacts on less digitally literate users and the potential role of artificial intelligence in healthcare.

Keywords - Digital Transformation, Marketing, Social Media, Consumer Behavior, Consumer Experiences, Digital Marketing, Technology.

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UNESCO GEOPARK TO BOOST REGIONAL DEVELOPMENT?: A SCENARIO FOR THE MARGINAL AREA OF GARGANO PROMONTORY, ITALY

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EXTENDED ABSTRACT

Purpose

This study aims to conduct comprehensive analysis of marginal area Gargano in the South of Italy to suggest a development model that can be both inclusive and sustainable as well as tailored to the area's unique socio-ecological characteristics. For this purpose, UNESCO Geopark framework is analyzed as a possible development model for marginal area Gargano.

Theoretical framework

Recently, 'place-based vision' or territory-based development has been promoted within European Union as an approach to sustainable regional development (Bachtler et al., 2014), in particular in regions, which are remote. Territory-based development emphasizes the importance of local context and place-specific strategies in fostering sustainable growth and resilience in marginalized areas. The study area, the Gargano Promontory, southern Italy is a marginal area, which is characterised by rich bio-cultural diversity, and in particular by unique geodiversity (Morsilli and Gianolla, 2022). The Gargano Promontory, in a relatively small and well-defined area, has geosites of international values and can be used as a tool for territory-based development following the rules adopted for UNESCO Global Geoparks. However, there is a lack of up-to-date scientific and economic analysis to develop a basis for this concept.

Design/methodology/approach

The research in the Gargano area used a mixed-methods approach, integrating quantitative and qualitative analysis. In particular territorial analysis was combined with the insights gathered during interviews with experts. This methodological convergence facilitates a nuanced understanding of the multifaceted socio-economic, environmental, and cultural dimensions underpinning regional development dynamics in the Gargano area.



Findings

As a result, we found that there are big disparities in demographic, social and economic parameters between the coastal and inland areas of the Gargano region. Coastal regions thrive due to tourism, whereas inland communities face population reduction, social issues, and economic stagnation. The study highlights the significance of addressing these issues and advocates for holistic regional development strategies to revitalize the overlooked inland municipalities of Gargano.

Against this backdrop, the potential establishment of a UNESCO Geopark emerges as a transformative strategy for harnessing the region's natural, historical, geological, and cultural assets to drive sustainable development in the Gargano region. By leveraging the Geopark designation, stakeholders can unlock new opportunities for other sustainable tourism forms like geo-tourism, improve local environmental education and science programs, and increase community-based enterprises that will use authentic local products, thereby diversifying income, fostering green economic development and resilience against external shocks.

Research, practical & social implications

The findings of this study carry significant implications for both academic research and practical policy-making. Firstly, the identification of development challenges in the Gargano region highlights the pressing need for a reevaluation of local development strategies in the Gargano area, which should be more holistic taking into account specifics of various municipalities within the Gargano. The findings of this study provide a scientific basis for the development of place-based visioned policies and strategies in a marginal area of Gargano as well as other socio-ecological systems with similar context.

Originality/value

This study is a novel attempt to fill a substantial gap in the literature on sustainable regional development approaches in the Gargano Promontory, with a focus on the potential establishment of a UNESCO Geopark. It provides academic insight into the intricate interplay between factors that affect the developmental environment of the Gargano region, contributing to the scholarly discourse on regional development strategies.

Keywords – UNESCO Geopark, Gargano, marginal area, territory-based development

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ASSESSMENT OF MECHANICAL PERFORMANCE OF CORRODED STEEL FIBER REINFORCED CONCRETE

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EXTENDED ABSTRACT

Purpose

This study aims at assessing the influence of steel fiber corrosion in the strength and ductility of steel fiber reinforced concrete (SFRC), by means of testing.

Theoretical framework

Steel fiber reinforced concrete presents some advantages compared with traditional reinforced concrete. The major mechanical features of SFRC are the toughness, ductility, as well as the resistance to impacts and cyclic loads (R. D. Neves, 2000). Its main fields of application are hydraulic structures, tunnels, industrial floors, airport runways, amongst others. As it is known that steel inside concrete is prone to corrosion, mechanical properties of SFRC are expected to deteriorate. Although it has been found that the incorporation of steel fibers does not jeopardize the concrete resistance against the ingress of aggressive species (R. Neves & Gonçalves, 2001), the fact that some fibers are quite close to the surface and thus more susceptible to corrosion, raises some doubt on the durability of SFRC.

Design/methodology/approach

The consequences of corrosion in SFRC mechanical properties were experimentally evaluated. A three-point bending test, run by displacement, was applied to corroded and uncorroded SFRC beams. Load and displacement were monitored and recorded. Further, two types of fiber geometry (aspect ratios of 65 and 80) and two fiber contents (40 and 80 kg/m³) were considered, resulting in a set of three beams for each corrosion condition (A: 80 kg/m³ of fiber with aspect ratio of 65; B: 40 kg/m³ of fiber with aspect ratio of 65; C: 40 kg/m³ of fiber with aspect ratio of 80). Test data was analyzed to find maximum load, toughness index and displacement ductility index.

Findings

It was found that severe corrosion may cause a loss of maximum bearing capacity up to 64%. On the displacement ductility index, computed according to Rakhshanimehr et al. (2014), the maximum loss was 67%. The toughness indexes, computed according to ASTM (1997) and to JSCE (JCI Standard SF4, 1984) presented maximum losses of 27 and 76%, respectively. Composite C showed the lowest losses of maximum bearing capacity and JSCE toughness index. The ASTM index was the least affected by fiber corrosion. For the remaining parameters the performance of any uncorroded composite was better than the best performing corroded composite.



Research, practical & social implications

This study proved that fiber corrosion may have a quite significant impact on mechanical behavior of SFRC, thus it is a factor that cannot be neglected. To enable an improved analysis, a quantitative level of fiber corrosion attained in this study will be further investigated. It is considered interesting to assess the implications of equivalent corrosion levels in the mechanical concrete reinforced with steel bars, having the same volume of steel.

Originality/value

Nowadays sustainability is a driver of decision-making in infrastructures construction. Durability, that can be understood as the resistance to degradation processes, is a pillar of sustainability. This study draws attention to the potential performance loss of SFRC due to steel fiber corrosion, a fact that shall be considered in sustainability studies and life cycle assessments.

Keywords - Sustainability; Durability; Chloride-Induced Corrosion; Steel Fiber Reinforced Concrete (SFRC); Mechanical Properties

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BLOCKCHAIN AND TOURISM IN RURAL AREAS: ITS POTENTIAL AND IMPLEMENTATION IN THE GARGANO NATIONAL PARK

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EXTENDED ABSTRACT

Purpose

This study delves into the burgeoning intersection of blockchain technology and tourism, with a special focus on the Gargano National Park. The primary aim is to meticulously analyze the attributes and potential impacts of blockchain technology, particularly in the context of rural areas like the Gargano. This research seeks to understand how blockchain can revolutionize the tourism sector, enhancing its efficiency, transparency, and overall appeal, especially in less developed regions.

Theoretical Framework

Anchored in the concept of 'intelligent tourist destinations', this research synthesizes traditional tourism strategies with cutting-edge technological advancements. It thoroughly examines the transformative role of blockchain technology in tourism, highlighting its potential to redefine the existing paradigms of security, sustainability, and operational transparency. The framework positions the Gargano National Park as a quintessential example of this synergy, offering a unique perspective on the integration of technology in a traditional tourism setting.

Design/Methodology/Approach

The study utilizes a dual-method approach: a Systematic Literature Review (SLR) adhering to PRISMA guidelines, and a Pilot Study on Blockchain Implementation within the Gargano National Park. The SLR methodically compiles and analyzes existing literature on blockchain in tourism, ensuring a comprehensive understanding of the current academic discourse. The pilot study bridges the gap between theory and practice, providing invaluable insights into the real-world application of blockchain in tourism.

Findings

The research identifies several challenges, potential limitations, and notable benefits of implementing blockchain technology in the tourism sector. It highlights the complexities involved in integrating such technology in rural and marginalized areas, while also pointing out the substantial advantages it can offer in terms of operational efficiency, customer satisfaction, and economic growth.



Research, Practical & Social Implications

The study proposes several strategic implications, including enhancing the value of rural regions through technology, boosting tourism demand, and improving accessibility. It discusses the potential of blockchain to foster tourist loyalty, mitigate seasonal fluctuations in tourist numbers, and facilitate the creation of collaborative networks among various stakeholders in the tourism industry. Additionally, it emphasizes the need to rethink the relationship between sustainable tourism practices and innovative technological solutions.

Originality/Value

This research represents a significant contribution to the ongoing discussion about the future of tourism. It positions blockchain as a pivotal element in the evolution of the sector, offering original insights into its application in a renowned yet underdeveloped tourist location. The study stands out for its focus on the unique challenges and opportunities presented by the Gargano National Park, demonstrating the transformative potential of blockchain technology in rural tourism settings.

Keywords -Tourism, blockchain, Gargano National Park, Intelligent tourist destinations, Sustainable development

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DRIVERS AND BARRIERS TO THE SHADOW ECONOMY: DO NATURAL RESOURCE ENDOWMENT AND INSTITUTIONAL QUALITY MATTER?

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EXTENDED ABSTRACT

Purpose

The shadow economy, defined as economic activities that are not reported or are underreported to the government, has been a persistent challenge for policymakers around the world. The size of the shadow economy can have important implications for government revenue, economic growth, and social welfare. While numerous studies have examined the drivers and barriers to the shadow economy, relatively little is known about the role of natural resource endowment and institutional quality in determining the size of the shadow economy. This study aims to fill this gap by exploring the relationship between natural resource endowment, institutional quality, and the size of the shadow economy.

Theoretical framework

The study aims to answer three key questions related to the shadow economy and determine the factors that contribute to its growth. Specifically, the research will examine the role of institutional qualities on the shadow economy, the influence of natural resources in driving the shadow economy, and whether natural resources affect the shadow economy differently when institutional qualities are moderated.

Findings

The study finds that institutional quality significantly reduces the shadow economy. On the other hand, natural resource rent, depending on the institutional quality, could increase or decrease the level of shadow economy (Khalil et al., 2022; Knack & Keefer, 1997; Gazdar & Cherif, 2015).



Design/methodology/approach

The present study intends to utilize quantile regression for panel data in order to analyze the drivers and barriers to the shadow economy. Unlike the traditional panel OLS model that only considers the conditional expectations of the regressand, the quantile regression accounts for unnoticed heterogeneity and its covariate effects, providing a more holistic picture of the conditional distributions.

Research, practical & social implications

It is worth noting that the study will solely focus on selected emerging countries and therefore, its findings cannot be generalized for all countries. The research will uncover the existing economic loopholes and provide a pathway of proper policy indications towards a more sustainable and equitable future.

Originality/value

Notably, no previous study has simultaneously identified the impacts of both institutional qualities and natural resource endowments on the shadow economy in emerging countries. Therefore, this study will contribute to adding new knowledge to the existing literature on this topic.

Keywords – Shadow Economy, Emerging Countries, Institutional Qualities, Natural Resources

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EVALUATION OF THE TOURISM CARRYING CAPACITY FOR SUSTAINABLE MANAGEMENT AT THE TREMITI ISLANDS, ITALY

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EXTENDED ABSTRACT

Purpose

The Tremiti Islands Marine Reserve, which is part of Gargano National Park, was established in 1989 with 1466 hectares (Iaffaldano & Ferrari, 2021), are among the most appreciated Apulian seaside tourism destination with a high seasonality peak in August. The present work analyzes the Tourism Carrying Capacity of the Tremiti Islands (South Italy) to evaluate the sustainability of the touristic fluxes and discusses ecological and fiscal measures to safeguard the marine protected area.

Theoretical framework

"Tourism Carrying Capacity" is defined by the World Tourism Organization as "The maximum number of people that may visit a tourist destination at the same time, without destroying the physical, economic, socio-cultural environment and an unacceptable decrease in the quality of visitors' satisfaction".

Some authors highlight the difficulty of determining the number of effective visitors since each sub-system – that is, physical, economic, and social environment – at the service of the tourist activity is characterized by separate carrying capacities (Saveriade, 2000; Pazienza, 2001). Canestrelli and Costa (1991) identify a measure of carrying capacity that translates into the computation of a financial flow that can be generated from the maximum number of tourists potentially able to be hosted in a destination location, identified based on a set of limits presented by the limited containment capacity of the infrastructure serving the area. The problem can be overcome by modeling the optimal number of visitors – rather than the maximum number of visitors – that can be accommodated in a tourist destination



calculated based on a series of representative constraints of every single resource at the service of the local tourism sector, their physical parameters of load capacity, the methods of use and/or management, or the expectations and preferences of users (Boyd & Butler, 1996).

Design/methodology/approach

The Tourist Carrying Capacity will be subsequently calculated using the MATLAB Optimization Toolbox to find the number of tourists accommodated in hotel (HT) and non-hotel facilities (NHT) that maximize the objective function. Linear mathematical programming can be used to solve a problem when the goal of the problem is to maximize some value, and there is a linear system of inequalities that defines the constraints on the problem.

Findings

The main results are based on an optimal number of 403 tourists who can sleep on the Tremiti Islands and the usefulness of a € 0.55 environmental tax for these tourists to safeguard the marine protected area.

Research, practical & social implications

Both strategies will help to understand the effects of tourism carrying capacity on the local economy better to define the sustainability and development of the islands.

Originality/value

The analysis will provide useful insights that can support local policy makers in promoting sustainable tourism policies in the Tremiti Islands. These policies can be replicated in similar areas of Italy or the Mediterranean.

Keywords: Sustainable Tourism, Carrying Capacity; Marine Reserve; Linear Mathematical Model

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TEAM RESILIENCE DYNAMICS IN HIGH-PERFORMANCE TEAMS: A SYSTEMATIC LITERATURE REVIEW

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EXTENDED ABSTRACT

Purpose

Resilience has been identified as greatly relevant for understanding how individuals and organizations overcome adversity. Despite the fact that teams also go through several adversities and are critical for organizational success, team resilience has not received adequate attention (Bowers et al., 2017). This has led several researchers (e.g., Gucciardi et al., 2018) to emphasize the importance of more studies on team resilience, highlighting that its understanding can enhance sustainability and organizational growth. Further, the existing research on team resilience has been hampered by fragmented theory development, conceptual ambiguity, and methodological limitations. Our aim is to bring together different points of view and achieve a clear and integrative picture of the dynamics and impacts of resilience in high-performance teams.

Theoretical framework

Resilience has been shown to be of great importance for teamwork outcomes. Evidence suggests that especially in complex, unpredictable and unstable environments, resilient teams are more likely to achieve better results and higher levels of innovation (Sharma & Sharma, 2016). This is particularly significant considering the prevalence of teams operating in organizations and the frequency with which they need to deal with adverse situations (Hartwig et al., 2020). Furthermore, team resilience has emerged as a critical resource that can optimize team members' psychological health and well-being, work efficiency, and organizational agility, while reducing burnout.

Design/methodology/approach

A bibliometric analysis was performed on the dynamics of resilience in high-performance teams as well as the research agenda in this field. This study included an examination of scholarly research from the Web of Science and Scopus databases. Using the Boolean expression "Team Resilience*" 154 papers were gathered and reduced to 47 papers after removing duplicates and scrutinizing abstracts' content through the SPIDER protocol. These results were evaluated to pinpoint trends, major themes, and future research directions.



Findings

Six main topics appear to dominate this field of research: (1) Team resilience as a process; (2) Affective, cognitive and behavioral factors of team resilience; (3) Training or intervention to build team resilience; (4) Antecedents or stressors; (5) Real or perceived impact of stressors; (6) Individual and organizational outcomes of team resilience. The reviewed studies mainly address high-performance teams from three areas: information technology, health and sport. Furthermore, most studies on team resilience are qualitative and cross-sectional (Çop et al., 2020).

Research, practical & social implications

This study sought to consolidate knowledge on the subject, namely, understand the dynamics of resilience in high-performance teams. This work offers practical implications for leaders and managers by leveraging the adoption of strategies to improve management of high-performance teams, enhancing their development and performance, in addition to contributing to identify research gaps in the area. Opportunities for future studies are suggested.

Originality/value

This research contributes to systematizing team resilience literature by identifying trends and topics and exploring its dynamics in high-performance teams. Studies from different organizational areas are incorporated, integrating knowledge and producing a robust theoretical body. The work seeks to develop a basis for the development of more innovative studies and for the practical work of team managers.

Keywords - Resilience, High-Performance Teams, Systematic Literature Review

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ENTREPRENEURSHIP EDUCATION IN INTERNATIONAL CONTEXT: SKILLS, ATTITUDES AND COMPETENCIES THAT PROMOTE STUDENT RESILIENCE

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EXTENDED ABSTRACT

Purpose

The main objective of this study is to present the EXIT program and confirm the impact of this program regarding the skills, attitudes and competencies acquired or developed by students.

Theoretical framework

Entrepreneurship education is a key factor for socio-economic and sustainable development (Gangji, 2017). Thus, education for entrepreneurship is becoming more and more important, and the acquisition of entrepreneurial attitudes and skills by students becomes a differentiating factor highly valued by the job market. On the other hand, international education is also crucial today, because it allows the students to overcome cultural and linguistic barriers and fosters knowledge and understanding of other cultures, languages, behaviors, and realities, increasing student's career opportunities (Knight, 2006; Powar, 2013; Sabet & Chapman, 2022).

Design/methodology/approach

This study used a case study design adopting a mixed research approach that includes qualitative and quantitative methods. Mixed methods research explicitly offers a framework for combining methods (Timans et al., 2019). The main advantage of use these mixed methods approaches is related to the possibility of using several data collection methods. This possibility can contribute to more robust research and minimize the weaknesses of a single-method research. Additionally, some experts believe that the mixed method approach improves the validity of the data collected and provides stronger evidence of the results obtained (Khoo-Lattimore et al., 2019).

For the quantitative study sample and data collection, a structured survey was applied. The survey consisted of Likert-scale and open-ended questions. The survey was conducted to assess the impact of the EXIT program on students.

For the qualitative study, a semi-structured group interview (focus group) was carried out. Through the focus group, it was intended to obtain more detailed information about the students' satisfaction regarding their participation in the project, as well as to identify positive and negative aspects of the project.



Findings

This paper presents an International Intensive Program on Entrepreneurship and underscores its significance in fostering the development of students' skills, behaviors, and attitudes. The program effectively met the motivations and expectations of students participating in EXIT. It provided them with the opportunity to enhance their skills, interact with diverse individuals, and collaborate in a multicultural environment.

EXIT program effectively contributes to the development of various attributes associated with student resilience. It notably boosts critical thinking, creativity, initiative, problem-solving, proactivity, responsibility, cooperation, social responsibility, and a balanced mix of ambition, optimism, and realism.

The evaluation of EXIT's impact on student skills development underscores its substantial positive influence, especially in domains like teamwork and communication.

Research, practical & social implications

The evaluation of EXIT program impact on student skills development underscores its substantial positive influence, especially in domains like teamwork and communication.

Feedback from the focus group discussions attested to the overall positive reception of EXIT by participants. The program demonstrated its effectiveness in improving their entrepreneurial skills, facilitating multicultural experiences, and encouraging collaborative efforts.

Originality/value

The paper highlights the importance of entrepreneurship programs in an international context, through the presentation of the EXIT program, allowing a comprehensive understanding of how such programs promote students' entrepreneurial skills and prepare them for success in a globalized world.

Keywords - Higher education, Entrepreneurship, International education, Blended Intensive Program.

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RESILIENT COMPANIES IN THE REGION OF SETÚBAL: AN INSIGHTFUL REFLECTION IN TIMES OF UNCERTAINTY

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Purpose

The aim of this study is to present evidence of resilience and sustainability in organizations in the Setúbal region during the events of 2020 and 2022, specifically the COVID-19 pandemic and the 2022 Russian invasion of Ukraine. To this end, we intend to provide an analysis of information related to the region's organizations across various dimensions.

Theoretical framework

Historically more resilient organizations tend to be those that navigate crisis situations better, such as the one triggered by the COVID-19 pandemic (Hadjielias et al., 2022). In this scenario, how organizations respond to supply chain disruptions typically is an inducer of their organizational resilience (Ambulkar et al., 2015). In the context of resilience, it is also considered crucial to have an effective risk management and recovery strategy to efficiently respond to stakeholders (Gölgeci & Kuivalainen, 2020). It is further advocated that organizations adopting Information and Communication Technologies enhance the development of increasingly automated production processes, allowing for greater productivity and consequently higher-quality products, thus optimizing organizational performance (Margherita & Braccini, 2023). The development of strategies underlying sustainability dimensions, especially technical, social, and human aspects, is also deemed essential.

Design/methodology/approach

This study draws information from the Iberian System database (SABI), which contains information on organizations in Portugal and Spain, including economic and financial dimensions, among others. However, this study focuses on analyzing the database centered on the Setúbal Region. For this purpose, the Analysis of Variance (ANOVA) method supported by SPSS Statistics 24 is employed.

Findings

Based on the underlying results, evidence emerges that regional organizations exhibit significant characteristics of resilience in the face of the aforementioned events between 2020 and 2022.

Research, practical & social implications

Given the evidence, it is considered that the practical and social implications lean toward an increased definition of sustainability strategies across various dimensions. This should



contribute to improving organizational practices in crisis scenarios, enhancing the resilience of both organizations and society.

Originality/value

It is considered that this study adds value in various dimensions, particularly in its contribution to the analysis and discussion of factors that can characterize resilient regions. Additionally, it suggests pathways related to public policies that may be extrapolated to regions with similar characteristics. The relevance and particular contribution to the studied region are also emphasized, especially from an empirical perspective, given the scarcity of applied studies.

Keywords - Resilience, Sustainability, Organization, Information and Communication Technologies.

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PROCESS AND PRODUCT'S RESILIENCE

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EXTENDED ABSTRACT

Purpose

Resilient and sustainable regions are interconnected and based on roughly similar principles of highly competitive regional businesses, where the optimization of processes and products is a permanent target. Select and implement optimal solutions whose reproducibility in those processes or products is not the best one does not contribute to the desired business competitiveness or productivity improvement. By other words, it is not a recommended practice, under the assumption that vulnerability of socioeconomic systems and the undesired impacts on the environment are not minimized as it could be if less favourable solutions are implemented. Thus, the purpose of this paper is to help researchers and practitioners that need to solve multiobjective problems in selecting an optimal solution whose reproducibility is as high as possible. This way, they save time and resources whom can be allocated to other added value activities.

Theoretical framework

Sustainability paradigm is introducing new requirements to (non)manufacturing industries, namely in the design and improvement of process and product. These activities are frequently formulated as a multiobjective problem. However, to identify or select a method or approach for solving these problems is not an easy task, namely for those with limited background on statistics, mathematics, and computation. In addition, in many published works there is neither evidence that Pareto frontier was generated nor guaranty of the optimality and of any other technical evaluation of the selected solution reproducibility (resilience due to changes in the input variables setting).

Design/methodology/approach

A literature review on multiobjective methods is done and a case study from the literature is used to illustrate the Pareto solution selection, namely a metric to assess optimal solutions resilience.

Findings

There are Pareto or optimal solutions whose reproducibility in practice is not as high as desirable, so optimal solution selection cannot be done randomly or subjectively (without any technical justification). Optimal solutions selection must be done supported on solutions characteristics, namely on solutions' resilience, and the gradient method can be used for this purpose in addition to other metrics like distance to utopia point (bias).

**Research, practical & social implications**

Environmentally friendly processes and products with higher capability and better quality, respectively, are achieved from resilient Pareto solutions with lower bias.

Originality/value

Optimal solutions resilience concept is presented and illustrated.

Keywords – Multiobjective, Optimization, Pareto, Implementation Errors, Resilience.

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BUYING LOCAL PRODUCTS: MUNICIPAL MARKETS VS. MODERN TRADE. A PORTUGUESE CASE STUDY

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EXTENDED ABSTRACT

Purpose

The aim of this research was to analyze the purchasing behaviors of local food products, and specifically on the relevance of local products; identify opportunities for small local relays to develop and enhance their activity

Theoretical framework

This research seeks to analyze the concerns related to sustainability in the purchase of food products, in a context of a growing proportion of consumers who are willing to pay a higher price for the products they purchase to reduce their environmental impact (Haller et al., 2020), in several countries, including Portugal (The Consumer Intelligence lab, 2019).

Design/methodology/approach

Fieldwork was carried out with 500 inhabitants of the municipality of Setúbal in January 2021, and the data will be analyzed through statistical tests.

Findings

The data obtained showed that, for the inhabitants of the city of Setúbal, there ARE important environmental concerns, especially with the depletion of the planet's resources, the environment, and the intention to buy more and more local products, which bring important opportunities for traditional retailers.

Research, practical & social implications

The existence of important opportunities for small traders and local producers should lead to a greater effort to adapt their operations and marketing to a more sustainable reactivity, which should be framed by government support and applied research processes, improving their performance and value created.

**Originality/value**

This work has relevant contributions related to the understanding of the behaviors of the inhabitants of a city. There is a great scarcity of published works in this area, namely with works applied in Portugal.

Keywords - Marketing, Green products, Local products, Local retailers, Sustainability

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OPTIMISATION OF VIRAL RNA EXTRACTION WITH AN EXTRACTION KIT USING SAMPLE POOLINGS: CASE STUDY FOR SARS-COV-2 VIRUS

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EXTENDED ABSTRACT

Purpose

This work was conducted during the COVID-19 pandemic and aimed at responding to a social need to conduct massive screenings within the community, ensuring public health safety at the Polytechnic University. Its purpose was to develop and implement, within the IPS COVID Lab, a sample-pooling extraction strategy that allowed simultaneous COVID-19 analysis of more samples, without compromising conclusions, thus saving operational time, increasing testing capacity and reducing expenses on reagents.

Theoretical framework

Genetic screening by Real-Time reverse transcription PCR (RT-qPCR) analysis was the first and most reliable method for COVID-19 diagnosis. It would take some months for the first rapid antigen tests to become available on the market, and their sensitivity and reliability to screen early cases was initially poor.

The COVID-19 genetic testing procedure encompasses bottleneck steps, the extraction of the viral RNA genome from the collected nasopharyngeal swabs and the ~1.5 hour RT-qPCR analysis that was limited to ~30 samples per run. It was, nevertheless, the most sensitive method, able to detect viral infection before symptoms appeared, and when negative, giving a 72h safety window (DGS, 2021).

The sample-pooling extraction strategy was designed to allow more samples to be analyzed simultaneously, without compromising conclusions.

Design/methodology/approach

Pooled testing involves the screening of a pool-sample comprising multiple individual samples, followed by individual testing (pool deconvolution), but only for the positive pools. A pool that tests negative indicates a negative result for all individual samples in that pool.



The number of samples in each pool was chosen considering the ability to answer the need to deconvolute positive samples and predicted loss of sensitivity due to sample dilution. The efficiency of this method was validated by RT-qPCR, through comparison of the individually extracted positive samples Cp values and when they were pooled with negative samples.

Findings

The 3-time dilution resulted in a slight delay, during the real-time PCR reaction, to pick up the positive signal, which translated into a small increase in the Cp values for SARS-CoV-2 gene targets. This was seen for samples with a high as well as lower viral loads, without compromising the conclusions. Even with samples with a Cp close to the established limit of 35 cycles, it was possible to distinguish a diluted positive sample in the pooling. This study validates the use of pooling for COVID-19 screening tests using the RT-qPCR technique.

Research, practical & social implications

The emergence of the COVID-19 pandemics by the end of 2019, by the new coronavirus, SARS-CoV-2 (Long et al., 2020) that rapidly spread across the entire globe, reaching 34627 confirmed cases with 2% of associated deaths lead in March 2020 to the first full-scale lockdown. When returning to the presential activities at IPS, it was mandatory to screen the community to mitigate possible chains of infection. For that task it was crucial for the IPS COVID Lab to optimize the PCR-diagnosis. The sample pooling procedure was successfully developed as a time and resources (reagents) optimization strategy.

Originality/value

Despite this technique as concept not being recent (Dorfman, 1943) its application for different purposes always requires validation (Daniel et al., 2021). While being an apparently conservative approach (poolings of only 3 samples) it was feasible, and its implementation was an asset to the challenges posed by the pandemic during the community screening in the fall/winter of 2021. It enabled to screen more people with accuracy on time, to identify early cases and to efficiently circumscribe many potential outbreaks, while controlling expenses and reducing plastic waste of the lab.

Keywords - COVID-19 pandemic, SARS-CoV-2, Real-Time reverse transcription PCR, sample-pooling

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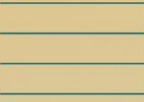
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Technological, Engineering and Environmental Solutions





ANTECEDENTS OF ENTREPRENEURIAL INTENTION IN STUDENTS OF POLYTECHNIC INSTITUTE OF SETUBAL (PORTUGAL)

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EXTENDED ABSTRACT

Purpose

This paper explores and evaluates entrepreneurial intentions (EI) and their antecedents among 132 students from College of Business Administration, Polytechnic Institute of Setubal. The paper also examines the role of age, gender, work experience and self-employment in affecting personal attitudes, subjective norms, perceived behavioral control and entrepreneurial intentions.

Theoretical framework

It is recognized that an entrepreneurial career offers significant opportunities for individuals to achieve financial independence and benefit the economy by contributing to job creation, innovation, competitiveness, and economic growth (Barba-Sánchez et al., 2022). Today's students are tomorrow's potential entrepreneurs, which may explain why a growing number of universities, spread across the world, offer entrepreneurship courses and programs. Numerous studies have identified entrepreneurial intention (EI) as a highly influential predictor of entrepreneurial activities and behaviors (Krueger et al., 2000; Autio et al., 2001; Arasti et al., 2012). Consequently, contemporary research has increasingly emphasized EI over the broader field of entrepreneurship (Yu et al., 2021). Indeed, the utilization of EI as a foundational framework for research has increased since the early 90s, underscoring the pivotal role of EI in various contexts (Liñán and Fayolle, 2015).

Design/methodology/approach

The empirical analysis has been carried out on a sample of last-year students from College of Business Administration, Polytechnic Institute of Setubal, who attended the subject of entrepreneurship in the 2022/2023 school year. A total of 132 questionnaires were thus collected.

Student samples are very common in entrepreneurship research (Liñán; Chen, 2009) especially given evidence that university graduates between 25 and 34 years of age show the highest propensity toward starting up a firm (Reynolds, Bygrave & Autio, 2004).

To collect data, the research used part of the Entrepreneurial Intentions Questionnaire (EIQ) designed by Liñán and Chen (2009) with additional demographic questions (age, gender, course, labor experience and self-employment experience). The EIQ is an instrument developed by Liñán and Chen (2009) to measure entrepreneurial intentions (EI)



and other variables such as personal attitude (PA), subjective norm (SN), and perceived behavioural control (PBC).

Findings

In this study, we present a model with the variables that influence entrepreneurial intention among students from Polytechnic Institute of Setubal (Portugal). The comparative analysis of these three countries—Spain, Taiwan, and Portugal—reveals more similarities than distinctions among them.

Research, practical & social implications

In future studies, it is suggested that the sample may have a greater number of higher education institutions, to cover students from different areas of education. On the other hand, it is also suggested to analyze other variables that may have an influence on students' entrepreneurial intentions, such as analyzing the influence of the family on the development of entrepreneurial intentions.

Originality/value

Our study builds upon the work previously conducted by Liñan and Chen (2009), which explored the same variables but in different cultural contexts, namely Spain and Taiwan. Our research extends this comparison to a third country, Portugal.

Keywords – Entrepreneurship Intentions, Antecedents, Theory of Planned Behavior

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DIGITAL TRANSFORMATION IN BERTH PLANNING OPERATIONS – A BIBLIOMETRIC ANALISYS

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EXTENDED ABSTRACT

Purpose

The quest to increase operational efficiency and costs, the advancements in digital technologies and the fast evolving needs of shippers are some of the drivers of the digital transformation of maritime logistics (Raza et al., 2023). In this study, we conducted a bibliometric analysis to systematically review and quantify patterns within the scientific literature. The aim is to have insight on how can emerging technologies, notably artificial intelligence, and machine learning, be harnessed in berth planning for maritime or seaport operation optimization.

Theoretical framework

A bibliometric analysis employs quantitative methods, such as citation analysis, to evaluate bibliometric data (e.g., publication units and their corresponding citations) (Donthu et al., 2021). Such an analysis becomes particularly essential when the scope of review is broad and when the dataset is too large for manual review. Several tools facilitate this type of analysis, with *VOSViewer* (van Eck & Waltman, 2010) and *Bibliometrix* (Aria & Cuccurullo, 2017) being among the most popular. In this study, several bibliometric visualizations were originated to generate an overview of the current state of the research on the topic under study.

Design/methodology/approach

Considering the aim of this study, a bibliometric analysis was performed. A methodology based on Jović et al. (2022) was adapted, following four main phases: research design setup (i.e., aims, research questions), search strings with relevant keywords creation, data collection of scientific databases (e.g., Web of Science, Scopus) and bibliometric using available software.

Findings

A total of 7,625 results were retrieved from Web of Science (WoS) Core Collection and subsequently analyzed, using both *VOSviewer* and *Bibliometrix* software



tools. This analysis allowed to highlight the trends around the topic under study. Results show that is an intersection between research areas, namely in Engineering and Computer Science and highlight the exponential surge in the number of publications over the last five years. In a subsequent stage, the search parameters were refined based on identified keywords and a total of 70 papers were retrieved from WoS database. These papers will be subjected to a more detailed systematic literature review.

Research, practical & social implications

This study shows that even though the interest in this research topic has been increasing over time, there are still several areas that need further developments, such as transshipment of cargo containers, ship stowage, and scheduling problems, among others. A notable gap is the limited application of many studies to real-world case scenarios. Such findings underscore the imperative to advance knowledge and studies to help achieve a green and digital transition in the maritime field.

Originality/value

While the digital transformation of the maritime sector has been acknowledged by various studies (Tijan et al., 2021), a comprehensive overview that focuses specifically in on the role of emerging technologies in berth planning for maritime operation optimization remains sparse. Our study fills this gap by presenting a holistic review of existing research in this niche intersection of maritime logistics and cutting- edge technologies. Furthermore, by employing a systematic bibliometric analysis, we offer a quantified insight into the current state and potential future trajectories of this topic.

Keywords – bibliometric analysis; digital transformation; maritime logistics; berth allocation problem; machine learning; artificial intelligence

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ADVANCING SUSTAIBAILITY IN BUILT HERITAGE CONSERVATION

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EXTENDED ABSTRACT

Purpose

The conservation of built heritage aims to preserve and protect unique objects with significant artistic, historical, social, cultural, or economic value and must respect the original materials. Conservation objectives aligns with the concept of the circular economy since, in addition to safeguarding a human legacy for the enjoyment of future generations, it also contributes to the reduction of resources extracted from the environment and minimizes waste generation. This is achieved by avoiding, whenever possible, the replacement of the authentic building components and objects. Nonetheless, sustainable interventions and products must be adopted to achieve a harmonious balance between environmental sustainability and heritage conservation (ICOMOS-ISC20C, 2011).

Theoretical framework

In Europe, stone is present in many monuments and is often subject to various degradation phenomena that require conservation interventions, including consolidation, protection and cleaning. These interventions involve a wide range of products (Gherardi, 2022) (e.g., consolidants, hydrophobic products (Gherardi, 2022), oleophobic agents for anti-graffiti purposes (Lettieri et al., 2019), biocides, etc.) and, consequently, multiple resources are consumed, and wastes generated (products, application accessories, packaging, etc.). On the other hand, some of the traditional products contain high concentrations of organic solvents that release volatile organic compounds (e.g., consolidants containing white spirit) and/or highly toxic substances (e.g., biocides).

Approach

Within this context, scientific research has been conducted by our team to make conservation interventions more sustainable. The path to achieve this goal was divided into



two stages: (I) making stone consolidants more sustainable by gradually reducing the use of VOCs and other components with a significant weight in the overall environmental footprint, and (II) tune these developed eco-friendlier solutions to obtain multiple functions, thus reducing the need for fabrication of various products, sequential conservation interventions and the global number of generated wastes.

Findings

The chemical development of these products has been based in alkoxysilanes due to their versatility in both chemical manipulation and assignment of multiple properties (Rucha et al., 2023). In a first step, it was possible to obtain stone consolidants with low-toxicity solvents (ethanol). In a second step, organic solvents were eliminated from the composition, and in a third phase, water-based products were formulated.

The eco-friendlier stone consolidants developed in the latter two steps were further chemically tuned to obtain secondary actions that include protection against water-related phenomena. Additional actions are envisaged to be obtained in the future.

Research, practical & social implications

The applicability into stone materials of the products developed in the three steps and their potential efficacy has been assessed in two Portuguese stone varieties with significance in Portuguese built heritage, such as Ançã stone (limestone) and Silves sandstone. Different products developed revealed adequate characteristics to be applied into porous stones and potential to improve relevant proprieties, such as stone cohesion, hardness, and resistance against water ingress.

Originality/value

Therefore, this research line achieved important steps towards more sustainable conservation interventions.

Keywords – Sustainable conservation, alkoxysilanes, water-based, multifunction products, deteriorated stone.

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CIRCULAR USE OF WATER IN AGRICULTURE: SOLUTION OR THREAT?

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EXTENDED ABSTRACT

Purpose

Setúbal Peninsula like other regions of E3UDRES2 alliance has vast agricultural areas that need to be irrigated.

In Portugal 75% of the consumed water is used in agriculture. Climate changes puts enormous pressure on the rational use of water, an increasingly scarce commodity. As Setúbal region is densely populated, large amounts of wastewater are daily produced and treated. From a circular economy perspective, treated wastewater, TWW, could be used in agriculture, further contributing to minimize the use of fertilizers since contains nitrogen and phosphorus. However, TWW may also contain pollutants, such as toxic metals and/or nanoplastics, Np (Gaylarde et al., 2021).

Theoretical framework

Np are plastic nanoparticles that can result from the degradation of macroplastics or from commercial products as cosmetics, paints, etc. Np have unique physicochemical properties due to their enormous surface area, leading to enhanced reactivity and ability to alter toxicological effects. Due to their small size, they can easily penetrate cell membranes and interact with biological systems, leading to adverse health effects. Their behaviour and



impact are unpredictable, being highly dependent on the environmental conditions, exposure duration and concentration (Wu et al., 2018; Najahi-Missaoui et al., 2021). This investigation aims to study the influence of irrigation water, IW, with Np (alone or combined with toxic metals) in germination tests of *Lactuca Sativa* (lettuce) seeds, including Np tracking after test (incorporation in the plant, leaching or accumulation in soils). Germination tests are a simple method for environmental biomonitoring (DL238/96).

Design/Methodology/Approach

Spheric nanoparticles of poly(methylmethacrilate) labelled with Fluorescein were produced and characterized by Light Diffraction (Mastersizer-Malvern) and ATR-FTIR (Thermo Nicolet5700). For the germination tests, seven pairs of twin solutions (tap water/TWW) were prepared: 5 pairs with Np in distinct concentrations, a pair of control solutions (tap water/TWW) and an extra pair containing Np plus toxic metals (Cd, Cr, Pb and Ni at maximum legal concentrations). Seeds were let to germinate inside petri dishes, in the dark, at 21 °C. Each 3 petri dishes were poured every two days with one of the above mentioned waters. After a week, parameters as the germination ratio, average root length, average seedling length and total mass were determined and analysed (ANOVA). Roots, seedlings, cotton and leaching waters were observed in a LEICA DM 2700M microscope with GFP for fluorescence detection ($\lambda_{exc}=470\pm 40$ nm; $\lambda_{em}=525\pm 50$ nm).

Findings

Germination rates were not statistically affected by IW but seedling lengths were, higher values being observed for TWW (independently of the other components). A statistically decrease in these values occurred when Np and toxic metals were simultaneously present. This might be related to the barrier effect of the seed coat that prevents pollutants from meeting the embryo, not affecting germination rates. Seedlings, however, are in direct contact with the IW being directly influenced by its composition: TWW, richer in nutrients, originates longer seedlings; Np (high surface area) may gather toxic metals, negatively affecting seedlings growth. Fluorescence results clearly indicate incorporation of Np in both roots and seedlings.

Research, practical & social implications

The question is relevant. Is the circular use of water in agriculture a solution or a threat?

Originality/value

Treated waste water contains Np. This study irrevocably proved that Np become incorporated into the vegetables, when TWW is circular used for irrigation.

Keywords – circular economy, treated wastewater, nanoplastics, toxic metals, germination tests

FUNDING

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CLOSING THE LOOP: MICROALGAE-BASED SOLUTIONS FOR AGROINDUSTRIAL WASTE IN SETÚBAL

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EXTENDED ABSTRACT

Purpose

Harnessing the untapped potential of byproducts from tomato and wine industries in Setúbal Peninsula to promote sustainable practices, particularly the cultivation of microalga *Chlorella* as a valuable resource for feed. This initiative aims to enhance agroindustry's sustainability and resilience against climate change impacts, reuse /reduce waste, and optimize resource usage by producing new products for food and pharmaceuticals.

Theoretical framework

The cultivation of tomatoes and grapes is of paramount importance to Portugal, a country that faces the Atlantic Ocean, but it is deeply Mediterranean in the fundamental features of its climate, landscapes, economies, culture, and ways of living. These thriving industries, however, do come with a significant challenge - the generation of a substantial amount of waste. Yet, this challenge presents a unique opportunity for innovation and sustainable practices. The advantages of cultivating microalgae in this project are that they grow faster than plants and do not require arable land, which is scarce. They are efficient in nutrient utilization, can thrive in brackish or recycled water, and do not compete with crop plants for land [1].

Design/methodology/approach

Tomato pomace samples and coarse pulp, along with red grape pomace, Moscatel grape pomace, and spent coffee grounds were gathered from two agro-industries situated in the Setúbal region and the cafeteria of the school [2]. Diverse culture media were formulated



using these industrial byproducts, and meticulous adjustments were made to optimize microalgae's biomass production. The growth experiments were conducted on a bench-scale, using 100 mL cultivation in Erlenmeyer flasks which were monitored by measuring optical density and microscopic observation to assess the viability of *Chlorella* sp. cells and the presence of potential microbial contamination. The optimization of culture media was carried out by Response Surface Methodology (RSM) using a Central Composite Design [3], which has been validated by a General Algebraic Modeling System.

Findings

The microalga successfully adapted to all new culture media prepared with syrups obtained by mixing tomato, grape pomaces and spent coffee grounds. In some mixtures, it led to the duplication of the biomass productivity compared to the conventional *Chlorella* medium. Furthermore, there was an increase of 10% in protein content in the microalgae biomass harvested at the end of the assay. This result was associated with the available sugar content of 15 g/L.

Research, practical & social implications

The cultivation of microalgae offers a promising solution to address the waste generated by the tomato and wine industries. When properly processed and utilized as nutrients for microalgae growth, these waste materials can serve as a sustainable solution to both waste reduction and the production of valuable resources for various industries, including animal feed and beyond [4]. This innovative approach aligns with the Portuguese goals of achieving agricultural sustainability and optimizing resource usage.

Originality/value

Recycling local biowastes, it is possible to produce microalgae biomass which is an unconventional alternative to the current source of animal feed protein, displacing soy, while also serving as a source of vitamins and minerals.

Keywords – microalgae, Sustainability, Tomato pomace, grape pomace, Coffee grounds.

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UNVEILING THE LANDSCAPE OF ARTIFICIAL INTELLIGENCE IN CORPORATE MANAGEMENT: INSIGHTS FROM PROFESSIONALS

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EXTENDED ABSTRACT

Purpose

Artificial Intelligence (AI) serves as the focal point of the Fourth Industrial Revolution, transitioning its emphasis from consumer-oriented applications to industrial and corporate sectors. This transformation engenders pivotal inquiries concerning the future of work and its economic repercussions. While AI has the potential to amplify productivity and reduce expenses, it concurrently triggers investigations into the socially acceptable boundaries of its implementation. Within the realm of potential and emerging technologies, formidable challenges persist in effectively integrating these tools, encompassing technological considerations as well as societal and legal acceptance. This study endeavors to foster a deeper comprehension of this issue, with the intent of either elucidating it further or formulating hypotheses.

Design/methodology/approach

The research commenced with a descriptive and literature-driven exploration as its foundational phase. Subsequently, it conducted an exploratory investigation via semi-structured interviews with professionals employed in the financial sector. The sample comprised managers and analysts utilizing AI for professional purposes, with a demographically skewed majority of male participants aged predominantly between 18 and 28 years. Interview transcriptions underwent rigorous analysis to discern prevalent patterns and correlations through data coding and categorization.

Findings

In terms of findings, this study revealed patterns of usage, perceptions, expectations, evaluations of AI's potential, as well as associated risks and concerns. Regarding risks, there was a consensus on concerns related to information security and result reliability. Additionally, there was consensus that the use of AI holds the potential for increased productivity, even with varying applications and tools among the interviewees. Differentiation in usage was observed based on each participant's specific needs, ranging from text improvement to decision-making and programming. It became evident that there is ample room for exploration of AI across various sectors.



Research, practical & social implications

The objective of this study is to equip researchers with insights underpinning hypothesis formulation for future investigations. For example, given the identification of numerous risks linked to AI adoption in management, forthcoming research endeavors could focus on devising and assessing risk management strategies tailored to the application of AI in managerial contexts.

Originality/value

The integration of AI into organizational frameworks constitutes a burgeoning and imperative subject. Nonetheless, owing to its recent emergence as a research topic, substantial knowledge gaps endure, offering considerable research prospects. This study endeavors to empower researchers with insights to stimulate the formulation of hypotheses for subsequent research endeavors.

Keywords - Artificial Intelligence, Management, Technology Adoption, Organizational Challenges

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DOES ENERGY DEMOCRACY REALLY AFFECT GROWTH AND ENVIRONMENTAL QUALITY? EARLY EVIDENCE FROM UPPER MIDDLE-INCOME COUNTRIES DURING 1997-2020

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EXTENDED ABSTRACT

Purpose

The concept of Energy democracy belongs to the decentralization of resources from centralized authorities to local people for the production and consumption on electricity. This study aims to investigate the contribution of energy democracy (and other socio-economic variables such as energy equality, exports, globalization, financial development, and natural resources) on economic growth and environmental quality in upper middle-income countries from 1997 to 2020.

Theoretical Framework

The international debate suggests that energy democracy favours economic growth by enabling citizens to adequately manage energy sources and consumption, and access renewable energy (Balsalobre-lorente et al., 2023). This reduces energy costs and boosts local economies, allowing communities to invest in infrastructure and create new jobs. Moreover, energy democracy promotes sustainable growth by reducing emissions, ensuring fair access to clean energy, and creating a local 'empowerment' of energy resources. By doing so, energy democracy can lead to a more equitable, resilient, and prosperous growth. However, in a globalised era, increasing financial development and trade across countries, may affect both economic growth and environment quality (Padhan et al., 2023).

Methodology

The baseline functional form of the sampled model is present in below equation.

$$\ln EQ = a_{it} + \ln \beta_1 ED_{it} + \ln \beta_2 EXP_{it} + \ln \beta_3 GLO_{it} + \ln \beta_4 FD_{it} + \ln \beta_5 TNR_{it} + \ln \beta_6 GDP_{it} + \varepsilon_{it} \quad Eq1$$

$$\ln GDP = a_{it} + \ln \beta_1 ED_{it} + \ln \beta_2 EXP_{it} + \ln \beta_3 GLO_{it} + \ln \beta_4 FD_{it} + \ln \beta_5 TNR_{it} + \varepsilon_{it} \quad Eq2$$

In above equations EQ reveals environmental quality (CO₂), GDP=economic growth, ED=energy democracy, EXP=exports, GLO=globalization, FD=financial development and TNR =total natural resources. Subscript *i*, and *t* represent number of cross sections (47) and time (1997 to 2020).

This study applies Cross sectional Auto Regressive Distributed Lag model (CS-ARDL) and estimate the dynamic link among Environmental Quality (CO₂), energy democracy, export, globalization, financial development, and Natural resources. After the verification of cross-sectional dependence (CSD), and slope of heterogeneity among series; CIPS and CADF



tests are applied and checked the integration order of the series. In addition, we use Westerlund Co-integration test and find the long run association among variables.

Findings

Expected results will provide useful insights on the endogeneity of energy democracy on economic growth and environmental quality.

Research, practical & social implications

Furthermore, important policy suggestions can be provided to the policy maker: first, the development and/or strengthening of public-private partnerships; second, the linkage between energy policies and democratization processes, which envisage an energy transition towards the conceptual binomial of 'fairness and sustainability'; third, the implementation of efficient energy communities for a more inclusive and supportive global economic policy; fourth, the realization of effective policy strategies in the short and medium-long term, as highlighted in both the 2030 agenda for sustainable development and the latest cop 27; and finally, the contribution towards climate neutrality in the perspective of a circular economy and energy independence.

Keywords - Energy democracy, Environmental quality, Economic growth, Upper middle-income economies.

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RECOVERY OF PRECIOUS METALS FROM ELECTRONIC WASTES – A REVIEW

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EXTENDED ABSTRACT

Purpose

This review focuses on precious metals recovery from Electrical and Electronic Equipment (EEE or e-waste) in a cost-effective and sustainable manner following the circular economy principle.

Theoretical framework

The traditional flow process for e-waste treatment and precious metals recovery consists generally of the EEE manual dismantling and their separation. Subsequently, mechanical processing takes place, where the metallic and non-metallic materials are crushed for later separation according to their physical characteristics, such as density, magnetic susceptibility, and electrical conductivity. This is followed by final processing, where several techniques could be applied: hydrometallurgical, pyrometallurgical, electrometallurgical, biometallurgical and combinations of these techniques, including metals leaching and their purification through adsorption or phase transfer processes. The advantages of hydrometallurgical or biometallurgical technologies over pyrometallurgy are lower energy consumption and less environmental pollution. Some of the disadvantages are equipment corrosion due to the aggressive chemical action of solvents used; loss of precious metals that have not been dissolved during the process and the need to treat the generated wastewater.

Design/methodology/approach

Research on alternative and safer chemical solutions for the leaching process has been intense in recent years focusing on compounds with thiol groups (thiourea, thiosulfate and thiocyanate), halides (chloride, iodide and bromide), and other promising reagents (Gameiro et al., 2017).

After obtaining the metal ions in solution, several techniques have been developed to specifically retrieve them, such as metal biosorption methods using biological entities or metal solvent extraction methods (Gameiro et al., 2017) (Cascarrinho et al., 2023).



Findings

Regarding chloride-hypochlorite leaching, a gold recovery of $\sim 100\%$ was obtained (Gameiro et al., 2017). Moreover, there are several extractants and stripping agents that could be used to further optimize the recovery of precious metals from the several leachates.

Regarding biosorption, several microorganisms like microalgae *Chlorella vulgaris* and bacteria such as *Escherichia coli* and *Bacillus cereus* showed high adsorption of gold and silver compared with other biosorbents (Cascarrinho et al., 2023).

Research, practical & social implications

The present work provides an overview of the research in the field of precious metals recovery from printed circuit boards (PCB), which constitute the most growing e-waste generated, with focus on the leaching and metal ion recovery processes for their valorisation in a circular economy scheme.

Technological advances and population growth, combined with rapid economic development, have contributed to a significant increase in the use and acquisition of EEE. At the same time, their lifetime has been reduced, due to the influence of marketing campaigns, consumerism, and social networks, that force the idea of happiness by acquiring recent models. As a result, this advance led to the production of ever-increasing quantities of EEE waste (Ferreira & Pinto, 2016). About 49 million metric tons of e-waste were generated worldwide in 2019 and it is still expected to increase to 74.7 million metric tons of e-waste until 2030 (Forti et al., 2020). From the total amount only around 17.4% have been recycled while the remaining 82.6% were sent to open air landfill sites contaminating soils and streams (Ruiz, 2023).

It is therefore mandatory to solve this growing problem in an environmentally conscious manner by exploring methods to recover precious metals from e-waste for reuse, recycling and valorisation.

Originality/value

This work intends to incorporate original results from the authors within the review context of precious metals recovery.

Keywords - Electrical and Electronic Equipment waste, Printed circuit boards, Precious metals, recycling, recovery.

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SMART SOLAR VEGETABLE DEHIDRATATION, A WAY TO SUPPORT A SUSTAINABLE ACTIVITY

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EXTENDED ABSTRACT

Purpose

This paper describes the development of a modular solar vegetable dehydrator, a portable, low-energy consumption, and low-cost equipment working with renewable energy (solar thermal and photovoltaic) that can operate even under unfavourable weather conditions. The purpose of this equipment, currently in the prototype phase, is to process small amounts of farm products like fruit and vegetables to minimize waste, particularly by utilizing fruit that would not be viable for sale but can be utilized by cutting and dehydrating and subsequently sold as dried fruit (Baraday et al., 2015). This process contributes to the sustainability of small-scale agricultural producer's activity (Boyer & Huff, 2008).

Theoretical framework

The development of this dehydrator was based on the assumption that to optimize the dehydration process is essential to improve the factors: Time, Product Quality, Energy Efficiency, Cost, Flavor, and Aroma (Gregoire, 2009). This is achieved by actively controlling dehydration air temperature and air circulation velocity at any given time (Kendall, Dipersio, & Sogos, 2012).

Design/methodology/approach

The developed equipment optimizes the dehydration process by measuring the ambient temperature and relative humidity at the inlet and outlet air of the dehydrator, allowing at any time through the mixture control system to adjust the operating conditions of the equipment (Patel, Shah, & Bhargav, 2013). The equipment consists of a mobile device, easily moved and placed in the position that best suits the dehydration process at every moment, increasing the efficiency of operation, considering the local conditions of the production site.

Findings

With the development and implementation of this equipment, it was found that it was possible to utilize damaged and unfit fruit for commercial purposes. After the construction of the pre-prototype, some tests were carried out on this equipment, and horticultural products were dehydrated on it. The dehydrated horticultural products have generally presented excellent taste and consistency.

**Research, practical & social implications**

After being sliced thinly and dehydrated, it was sold, enabling economic valorisation of the activity and consequently promoting its sustainability.

Originality/value

Results show that the dehydration time is considerably lower compared to equivalent dehydration, made in conventional electric equipment.

Keywords – Sustainable Dehydration, Solar energy, Vegetables, Fruit and vegetable farmers

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TECHNOLOGICAL SOLUTIONS FOR A MORE RESILIENT WORLD: A CONTRIBUTION TO RESPONSIBLE CONSUMERISM

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EXTENDED ABSTRACT

Purpose

This article aims to demonstrate a technological solution within the scope of Information Systems and Information and Communication Technologies in the context of Portuguese consumer information.

In compliance with the current Portuguese legislation, the right to information is enshrined in the Constitution of the Portuguese Republic and in Law no. 24/96 of 31 July. However, the relevant information is scattered, runs the risk of being out of date and covers every area of the citizen's life.

The aim of the technological solution found is to give citizens access to critical information for decision-making, increasing proactivity and consumer literacy and facilitating the adoption of responsible behavior.

Theoretical framework

In the Western world, the diversity and ease of access to consumer goods goes hand in hand with the difficulty of making choices and the availability of information. Access to data needed to make informed decisions depends on several factors: accessibility, timeliness, relevance, credibility, and usefulness.

There is an urgent need to promote sustainable consumption patterns in Portuguese society that are more in line with concepts such as circular economy, degrowth, societies in transition, among others.

To find a technological solution to reduce the complexity of consumer action, it's appropriate to use an iterative process applied to discovering, analyzing, documenting, and verifying the functional/non-functional requirements of the solution: building an application suitable for Portuguese stakeholders.

Design/methodology/approach

The methodology adopted corresponds to Design Science Research. It's an approach suited to human-centered design cycles: problem-solving. This is achieved through the construction of artefacts in a triple aspect of usefulness/quality/effectiveness applicable to research projects in Information Systems.

Findings

The methodological approach adopted is suitable for formulating a solution to facilitate the consumer's decision-making process. The solution is a Web Application in an iterative process built with the aim of meeting the needs of the stakeholders: Consumer



Associations, the State, Consumers, Technicians from Municipal Consumer Information Centers (and equivalents, Non-Profit Organizations, Companies, Teachers/Researchers. As an integrating application with adaptability potential, it makes possible to increase the volume/level of interaction of the available data and the speed of data access/sharing.

Research, practical & social implications

The development of the technological solution still needs improvement, but the difficulty of providing reliable and up-to-date information to a diverse public with different levels of literacy/needs is already apparent. Providing a solution that empowers citizens in their role as consumers through a tool that facilitates the transition to responsible consumerism can be challenging and requires ongoing research work in an integrated/multidisciplinary manner.

The application has the potential to be adaptable and make it possible to bring efficiency to accessing/consuming information and assuming individual responsibility, particularly helping agents who work in defending consumer rights and duties.

Originality/value

Make possible to understand the challenges associated with creating a technological solution in the context of consumer rights and duties, namely aspects related to the diversity of stakeholders, themes, and sources of information. It also makes it possible to identify that the resulting web application is a valid contribution towards simplifying and speeding up access to reliable and up-to-date information.

Keywords - Consumer literacy, Information systems, Technological solution

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Society, Education, People and Behaviour





“NOTHING ABOUT US WITHOUT US”: RESULTS OF A LITERATURE REVIEW AND DELPHI STUDY ON ENGAGEMENT MODELS FOR RESEARCH

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EXTENDED ABSTRACT

Purpose

Many research findings are never implemented in the real world. One reason for this 'leaky research pipeline' is a lack of stakeholders engagement at the start of and throughout research projects. In addition, strategic documents, such as the European Green Deal, are increasingly stressing the importance of multistakeholder engagement in the green transition. Citizen science is one example of a research field trying to maximize stakeholder engagement in science. Citizen science can have both positive and negative effects on stakeholder engagement and environmental justice. The current study gives an overview of engagement strategies for undertaking citizen science.

Theoretical framework

Several participatory research techniques (e.g. participatory action research, implementation science, citizen science, ...) were considered throughout this study. Moreover, the research departed from a co-creative approach in which the expertise of citizen scientists was taken into account when creating a framework of engagement strategies.

Design/methodology/approach

The results presented are a combination of a literature overview and a Delphi study. Firstly, literature on multistakeholder engagement in different participatory research fields (e.g. citizen science, participatory action research, implementation science, ...) was reviewed. Secondly a three-round Delphi study was carried out. The first two rounds of the Delphi study consisted of surveys presenting engagement strategies in citizen science. Citizen science experts were asked to comment on the definition of each engagement strategy, and to provide any potential additional engagement strategies. In the third round, a consensus webinar was held to reach agreement on which strategies to include and how to define each strategy.

Findings

The study is currently still ongoing and will result in a guide with engagement strategies. Results will be presented during the conference.

Research, practical & social implications

The result of this study will be a guide with engagement strategies for citizen science. As such, the current study provides practical guidelines for researchers looking to engage stakeholders in their research. Increased engagement of multiple stakeholders in research



relating to the green transition is likely to have an impact on the engagement of the community in issues on environmental justice, circular economy and other fields related to the green transition.

Originality/value

Several different but related research fields are considering the importance of multistakeholder engagement for the practical uptake of research findings in society. The value of this study lies in 1) combining lessons learned concerning engagement from these different research fields and 2) including feedback from citizen science experts.

Keywords - engagement – citizen science – green transition – participatory research – implementation science

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FROM PANIC TO PANORAMA: GLOBAL INSIGHTS INTO CRISIS TRAINING

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Purpose

Considering the increasing occurrence of global challenges such as pandemics, technological advancements, geopolitical tensions, and environmental changes, this study seeks to evaluate the preparedness of individuals, organizations, and societies for such crises. Our research question is: what are the main areas and training tendencies in the field of training for crisis situations from the perspective of theory and practice? This is an exploratory study aiming to systematize the literature and benchmark the practice in training for crisis situations.

Theoretical Framework

Grounded in the academic tenets of crisis management and preparedness, this research aims to juxtapose theoretical insights with practical training methodologies state of the art.

Design/Methodology/Approach

A dual methodology was chosen to ensure comprehensive coverage. First, to encapsulate the academic discourse on the topic, a systematic literature review using the SPIDER approach was undertaken. In parallel, to understand the prevailing practical approaches, a benchmark analysis of pertinent training websites was carried out via Google. Information was systematized by two different coders in both the systematic review of the literature as well as the benchmarking element.

Findings

The extensive analyses yielded actionable insights and recommendations tailored for both researchers and practitioners within the crisis training domain. These recommendations aim to bolster crisis management and skill training across the globe, equipping societies to adeptly handle unforeseen challenges.

Research, Practical & Social Implications

The study underscores the pivotal role of advanced crisis management training in today's volatile landscape, advocating for an enriched amalgamation of theoretical knowledge and hands-on training practices. A well-prepared society, enriched with the right skills, stands better poised to navigate through and recover from crises.



Originality/Value

By seamlessly bridging academic research with real-world training paradigms, this study offers an in-depth look into the current state of crisis preparedness and training. It underscores gaps, highlights best practices, and lays down a roadmap for the evolution of global crisis management training.

Keywords - Crisis Management, Training Design, Crisis Preparedness, Skills Development, Crisis Training Approaches, Interpersonal Skills, Theoretical Frameworks, Practical Benchmarking.

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LEADING THE CHARGE: HOW WORKERS' VIEWS ON LEADERSHIP CAN SHAPE CULTURE SHIFTS, A CASE STUDY

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EXTENDED ABSTRACT

Purpose

The fast pace of the current world as well as paradigm shifting realities are making change an ever more quotidian element of life for societies, organizations and individuals alike. The literature generally proposes that in changing organizations, the role leadership can assume is paramount in guiding and supporting workers, thus ensuring their commitment and retention, but very few studies have addressed the impact of worker's perspective and opinion on leaders on their own attitudes towards the organization. Thus, understanding the influence of workers' perception on leadership support on their commitment to cultural organizational change within a multinational context is a relevant gap in the knowledge that this paper aims to address.

Theoretical Framework

Perceived Organizational Support (POS) and the Leader-Member Exchange (LMX) are the two theoretical frameworks that center this work: Successful changes necessitate workers being fully engaged and trusting the process (Jacob et al, 2013) and leaders play an influential role in guiding organizational culture and managing these changes (Schein, 1992).

Design/Methodology/Approach

Utilizing a case study methodology (Yin, 2003), this paper delves into quantitative analysis. Questionnaire surveys were applied to a multinational sample (N=201). Studied variables included worker's perceptions of leadership support, organizational culture and their own individual commitment with the organizational change. A correlational analysis was undertaken, using SPSS v.27.

Findings

Results showcase a positive evaluation of leaders in involving workers during change processes, especially within the multinational sample. Majority of workers recognize the importance of their role, indicating a profound engagement with the presented vision and purpose of the organizational change.

Research, Practical & Social Implications

The research underscores the significance of leadership support in influencing workers' commitment to change, particularly in a multicultural setting. From a practical standpoint, organizations can harness this understanding to enhance worker engagement during



transitions. Socially, recognizing and addressing the perceptions of diverse workers can lead to a more inclusive and successful change process.

Originality/Value

This study provides a unique lens into the intertwining dynamics of leadership perception and worker commitment across different nationalities and demographics, especially in the context of profound organizational changes. This work is part of a larger study which will include a second data collection moment and semi-structured interviews to key players at the company.

Keywords - Leadership Perception, Worker Commitment, Multinational Organizational Change, Perceived Organizational Support (POS), Leader-Member Exchange (LMX)

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SIMMERING SUCCESS: A BIBLIOMETRIC APPROACH TO THE LITERATURE AND RESEARCH AGENDA ON ENTREPRENEURIAL CHEFS

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Purpose

Entrepreneurial chefs have significantly impacted society, local and global economies, and culinary innovation, yet an exhaustive study on them is still sparse (Balazs, 2002; Presenza et al, 2018). This paper aims to discern and scrutinize the unique attributes of these culinary innovators, delve into the principal subjects presently under investigation in the literature concerning them, and identify the chief controversies in the field.

Theoretical Framework

The notion of entrepreneurial chefs resides at the crossroads of entrepreneurship, gastronomy, and hospitality management. This intersection might be contributing to a lack of knowledge about this particular group. Trends are detected and deliberated in line with the existing literature.

Design/Methodology/Approach

A bibliometric analysis was performed to recognize the traits of entrepreneurial chefs as well as the research agenda in this research area. This study included an examination of scholarly research from the Web of Science and Scopus databases. Using the Boolean expression "Chef*" AND "Entrepreneur*", 99 papers were gathered and narrowed down to 28 papers after duplicate removal and abstract content scrutiny through the SPIDER protocol. These results were then assessed to pinpoint trends and tendencies, major themes, and recognized future research directions.

Findings

The findings systematize the general state-of-the-art in this field, identifying 5 prominent phenomena of interest that appear to dominate, namely: 1) Gastronomy as a cultural ally, leveraging values and attitudes, 2) Innovation, 3) Gender Issues, 4) Individual variables of Chef Entrepreneurs and 5) Emerging issues for Chef entrepreneurs. These categories offer an all-encompassing perspective of the varied themes probed in research papers related to the culinary industry, furnishing invaluable insights into culinary entrepreneurship's multifaceted nature, gender dynamics, innovation, and gastronomy's cultural and societal influence.



Research, Practical & Social Implications

Entrepreneurial chefs' role has more extensive ramifications for the culinary industry and society at large. Their enterprises foster job creation and stimulate economic expansion, their educational initiatives enhance food understanding, and their support for sustainability may catalyze positive societal transformation. Studying these entrepreneurs is thus a pertinent task that warrants further exploration (Hendley, 2017; Garrigós et al, 2020; Elbasha & Baruch, 2022). This work pinpoints and debates prevailing trends in this domain.

Originality/Value

This research bridges a void in the existing literature by meticulously investigating the characteristics and trending topics of research regarding entrepreneurial chefs, a role that has been somewhat overlooked in academia. The conclusions furnish valuable insights for industry practitioners, educators, and policymakers in the hospitality and culinary sectors.

Keywords - Entrepreneurial Chefs, Hospitality Industry, Innovation, Sustainability, Economic Impact, Restaurants, Bibliometric Analysis.

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THE MORAL DIMENSION IN THE CONSUMPTION OF ORGANIC FOODS

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EXTENDED ABSTRACT

Purpose

Drawing from Zygmunt Bauman studies, this article aims to analyze the moral dimension present in the consumption of a group of organic food enthusiasts in the city of Vitória, ES, Brazil.

Theoretical framework

Bauman (2001, 2005), when analyzing the current post-modern period, uses the metaphor of liquidity, arguing that in liquid modernity, relationships are no longer fixed and solid but rather shapeless and fluid. Bonds become fragile and change rapidly, with consumption followed by detachment from material possessions and even relationships becoming a defining feature of contemporaneity. Consumption gains significant importance and legitimizes an individual's existence; the objects purchased become part of one's identity, an extension of their personality. According to Bauman (2008), human subjectivity becomes objectified through consumption. In this sense, this article seeks how the moral dimension operates the food choices individuals make.

Design/methodology/approach

Methodologically, this is qualitative research with the use of the group interview technique for data collection. The interviews were conducted in a more informal setting, in a context the field researcher referred to as an "organic coffee gathering." The idea was to make the subjects feel comfortable in expressing their opinions and narratives. This methodological approach is considered suitable because, in social interaction contexts, the processes of identification and, consequently, differentiation become clearer (Gaskell, 2010), which were essential for understanding the consensus and dissent within the practice of consuming organic foods and its moral dimension. Four sessions were conducted, with a total of 17 participants. The interviews were transcribed and analyzed through content analysis.

Findings

There is a collective moral sentiment that motivates these individuals to acquire organic foods, driven by concerns for the environment and rural producers. The choice of organics goes beyond personal taste or preference. For these individuals, acquiring organic food, especially from farmers' markets directly, supporting producers, is viewed as a contribution to building a better society.

Research, practical & social implications

The study advances by demonstrating the interconnectedness of other habits with the consumption of organic foods and revealing the social and collective motivations behind this choice. As a limitation, the study is limited to the city in which it was conducted.



Because it is a small capital city that allows direct access to rural producers, the purchase of organic foods is facilitated. However, there is also a social dimension here, as these markets generally take place in middle and upper-class neighborhoods.

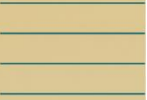
Originality/value

This article brings a different theoretical lens to analyze consumer behavior and advances in exploring the moral dimension in the choice of organic foods.

Keywords - Organic Food, Moral Consumption, Lifestyle, Consumption Practices

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Circular Economy





MEASUREMENT SYSTEM ANALYSIS OF MICROALGAE CELL CULTURE CONCENTRATION – A CONTRIBUTION FOR INNOVATIVE TECHNOLOGIES

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EXTENDED ABSTRACT

Purpose

The collection of experimental data in research settings is often carried out in laboratories, and it must be done with accuracy and scientific rigor when it comes to both the equipment and technical operators. Thus, in this paper, it was assessed the Repeatability, Reproducibility, and Discrimination/Resolution of the measurement system using data collected by two laboratory technicians, using the optical density as a common parameter to obtain cell culture concentration during microbial growth. The aim was the identification of weak points and improvement opportunities to achieve high quality data in a research laboratory.

Theoretical framework

The improvement or development of products and processes, as well as the research developed in laboratories, must be supported by high-quality data (valid, reliable, accurate). Data is a valuable asset for managing any business nowadays, where Resilience and Sustainability are two major objectives. Valid, accurate and reliable measurements are required for a wide range of parameters, and in any production and research environments. The indirect measurement of cell culture concentration during microbial growth using the optical density is an example of it (Beal et al., 2020).

The research laboratory of IPS in ESTBarreiro is developing new applications of agro-industrial wastes and effluents in the cultivation of microalgae, supporting local industries with innovative technology to boost their sustainability and resilience. Thus, the aim of this study was to assess the quality of the measurement system of the optical density in microalga cultures so as to get the necessary confidence (accuracy and reliability) on the data collected in future measurements using the same equipment and variable.

Methodology

The data collection was made by two technicians using a spectrophotometer (Multisky) at 590 nm with an optical 96 plate reader. The cell culture used was the microalgae *Chlorella* sp. at different growth stages. All data was collected in the same morning at constant environmental conditions. The measurements in the cultures were made randomly. The statistical analysis of measurement system was done according to AIAG (2010).

Findings

The measurement system can be considered suitable to perform the measurements on the optical density (Contribution of R&R<1%) and has the necessary discrimination (NCD>5). Nevertheless, data analysis shows that measurement system repeatability must be improved. In fact, there is evidence that the two operators perform differently in terms of repeatability. Operator 2 presents smaller measurement ranges than Operator 1, except in



two out of eight cell cultures. This difference in the ranges should be further analysed, including the conditions under which the measurements were made. Regarding the measurement averages, there are no differences to highlight.

Research, practical & social implications

This study will enable more confidence and higher reliability on conclusions from the studies developed in the laboratory and, consequently, supporting local industries with innovative technology to boost their sustainability and resilience.

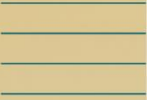
Originality/value

To the best knowledge of the authors, no similar study was found in the literature. Thus, it is a reference to disseminate the measurement systems analysis to other settings (variables and/or science fields).

Keywords - Repeatability, Reproducibility, Discrimination, Optical density, Cell culture.

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Finance, Investments and Funding





ANALYZING THE NEXUS: STOCK INDEXES AND CRYPTOCURRENCIES DURING THE RUSSIA-UKRAINE CONFLICT

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EXTENDED ABSTRACT

Purpose

The purpose of this research is to examine the co-movements between stock indexes and cryptocurrencies amid the present conflict between Russia and Ukraine. From February 24, 2022, to April 12, 2023, the survey will focus on 7 stock indexes (S&P500, DAX30, CAC40, Nikkei 225, TSX, MOEX, and PFTS) and 7 cryptocurrencies (Bitcoin, Ethereum, Litecoin, Dash, Ripple, DigiByte, and XEM). In this essay, we try to understand how investors react to swings in financial assets and hunt for safe havens in cryptocurrencies.

Theoretical framework

Many empirical investigations have been conducted to assess the significant impact of the current war and the COVID-19 pandemic on traditional and digital financial assets. The authors Yousaf et al. (2022), Ahmed et al. (2022), and Kamal et al. (2023) examined the influence of the Russian-Ukrainian conflict on the volatility and returns of G20 stock indexes in Europe and Australia and found negative effects. Furthermore, Khalfaoui et al. (2023) explored digital markets and discovered considerable short-term negative impacts.

Design/methodology/approach

To address the research subject, statistical models, econometric stationarity, correlation matrices, and vector autoregression (VAR) will be employed.

Findings

The findings of this study demonstrate that the cryptocurrencies Bitcoin, Ethereum, Ripple, as well as two less popular digital assets (XEM, Digibyte), are influenced by the capital markets of Germany (DAX30), Russia (MOEX), and Ukraine (PFTS). In the long term, our analysis has revealed a notable and statistically significant correlation between the performance of major US stock indexes (S&P500), Canada's stock index (TSX), France's stock index (CAC 40), Ukraine's stock index (PFTS), and the price movement of Bitcoin.

Research, practical & social implications

In terms of practical implications, it is noteworthy to underscore the presence of fears among investors stemming from the prevailing uncertainty in the global economy.



Originality/value

There is a dearth of research in the existing literature that has specifically examined the dynamics between financial markets and digital markets during times of crisis, such as the Russian invasion of Ukraine in 2022. The primary aim of this paper is to examine the relationship between the volatility of conventional financial assets and the cryptocurrency markets. The originality and authenticity of our study reside in its gathering of empirical data regarding the influence of stock indexes on the short-term and long term performance of cryptocurrencies.

Keywords - Stock indexes, Cryptocurrency, War, Russia, Ukraine

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COMPARATIVE ANALYSIS OF THE FINANCIAL PERFORMANCE OF COMPANIES IN PSI20 AND IBEX35, BEFORE AND DURING THE COVID-19 CRISIS

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EXTENDED ABSTRACT

Purpose

This study seeks to analyze the influence of the Covid-19 pandemic on the financial performance of companies listed on PSI20 and IBEX35. The central research query investigates whether substantial disparities in financial performance existed between PSI20 and IBEX35 companies before and during the pandemic.

Theoretical framework

The paper initially presents empirical evidence regarding the pandemic's impact on companies' financial performance. Subsequently, it delves into the theoretical development of the indicators under scrutiny, encompassing the current liquidity ratio, solvency ratio, and return on assets. Finally, it outlines the hypotheses as follows: (i) H1 seeks to assess whether statistically significant disparities exist in the current liquidity ratio of companies within the PSI20 and IBEX35 index before and during the Covid-19 pandemic; (ii) H2 endeavors to investigate whether noteworthy distinctions arose in the solvency ratio among companies belonging to the PSI20 and IBEX35 indices before and during the Covid-19 pandemic. Lastly, (iii) H3 strives to scrutinize whether meaningful variations occurred in Return on Assets concerning companies within the PSI20 and IBEX35 indices before and during the Covid-19 pandemic.

Design/methodology/approach

This study employs a systematic, quantitative research approach based on Atieno OP (2009) framework. It utilizes secondary financial data from PSI20 and IBEX35 listed companies between 2018 and 2021, sourced from the SABI and Amadeus Databases. Analysis is carried out using IBM SPSS Statistics 29.0 and Microsoft Excel 365. It includes descriptive statistics, normality tests Shapiro-Wilk, and the Wilcoxon Signed Ranks Test to conduct causal comparative research, aligning with the positivist paradigm emphasized by Park et al. (2020), which underscores hypothesis testing and variable analysis, contributing positively to scientific inquiry.

Findings

The results suggest that there are no significant differences in the financial performance of companies in PSI20 and IBEX35, before and during the Covid-19 pandemic, concerning liquidity and profitability. However, significant differences are observed in the solvency ratio of IBEX35 companies.



Research, practical & social implications

This study has two limitations. Firstly, it would benefit from a more comprehensive assessment of companies' financial positions, including a wider range of performance indicators. Secondly, the variation in sample composition between the PSI20 and IBEX35 indices presents a challenge.

Originality/value

This study aims to contribute knowledge by filling a gap in the literature regarding scientific studies on the impact of the Covid-19 pandemic on the financial indicators of companies listed on the main stock indices of Portugal and Spain, presenting the differences in the pandemic's impact on the performance of Iberian companies listed in the PSI20 and IBEX35 indices. And, to add knowledge about the pandemic's impact on companies' economic performance and to inform potential investors about their readiness to face similar events.

Keywords - COVID-19, financial performance, PSI20, IBEX35, profitability, liquidity, solvency.

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INTERCONNECTED MARKETS: EXAMINING SPILLOVERS BETWEEN STOCK INDEXES IN THE TRAVEL, HOTELS, RESTAURANTS, AND LEISURE SECTOR

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EXTENDED ABSTRACT

Purpose

Given the events that occurred in 2020 and 2022, the objective of this manuscript is to ascertain whether there has been an increase through spillover effects between specific stock indexes, namely FTSE Travel & Leisure, S&P 500 Hotels, Restaurants & Leisure's, STOXX Europe 600 Travel & Leisure, Restaurants & Bars, and S&P 500.

Theoretical framework

Most studies have focused on the COVID-19 pandemic's impact on tourism and hospitality markets at the business or regional level, overlooking global perspectives. There's limited research on spillover effects between these markets across different countries. Authors Mitra et al. (2019) highlight the increasing interdependence in these markets, exemplified by hotel chains and joint promotions, both domestically and internationally, while Balli and Tsui (2016) emphasize competition and collaboration. The author Sigala (2020) underscores the pandemic's significant and unexpected impacts on the industry. According to Cao et al. (2017), global interconnectedness in tourism demand, coupled with government policies limiting movement during the pandemic, contributed to a global spillover effect known as co-movement, where disruptions in one country's tourism stock market could spread to others.

Design/methodology/approach

The development of research will occur through different stages. To assess the stationarity of the time series, we will employ the panel unit root test proposed by Phillips and Perron (1988), which uses the Fisher Chi-square and Choi Z-statistic. The present study employs the PP version, commonly referred to as Pesaran and Pesaran test, to assess the cross-independence of panel data, based on the Fisher Chi-square statistics. To answer the research question, the Granger VAR (Vector Autoregressive) causality econometric model will be employed. This statistical model is widely used for examining the causal association between variables within a multivariate time series context.

Findings

The findings indicate that the co-movements have risen from 11 to 14 shocks. These results partially validate the research question, suggesting that the potential for portfolio



diversification may have been questionable even in the Tranquil period. The events of 2020 and 2022 further reinforce this trend, highlighting the importance for investors to consider alternative assets in their portfolio.

Research, practical & social implications

It is advisable for investors to consider alternative investment options beyond the scope of this study to enhance portfolio performance and mitigate risk. This conclusion implies that to achieve optimal returns and minimize the effects of unforeseen future events, it may be necessary to adopt a more comprehensive approach involving diversification and the use of different asset classes.

Originality/value

This study makes 3 key contributions to existing literature. Firstly, it conducts a global analysis of the impact of the 2020 pandemic and the 2022 events on diverse tourism and hospitality stock markets, breaking away from the usual regional or national focus in prior research. Secondly, it employs network analysis to explore the spillover effects and co-movements between these stock indexes, revealing significant differences in return behavior between pre-pandemic and pandemic periods, providing insights into the network dynamics. Lastly, the study provides a more comprehensive analysis of variables influencing tourism and hospitality stock returns by integrating market-specific interconnection measures into the econometric model.

Keywords - 2020 and 2022 Events, Spillover effects, Tourism and hospitality

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SIDE EFFECTS AND INTERACTIONS: EXPLORING THE RELATIONSHIP BETWEEN DIRTY AND GREEN CRYPTOCURRENCIES AND CLEAN ENERGY STOCK INDEXES

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EXTENDED ABSTRACT

Purpose

The purpose of this study is to determine whether clean energy cryptocurrencies (Cardano, Ripple, IOTA, and Stellar) can be regarded as safe haven assets for dirty cryptocurrencies (Bitcoin Cash, Bitcoin, Litecoin, Ethereum, and Ethereum Classic) and clean energy stock indexes (WilderHill Clean Energy, Clean Energy Fuels). The data used in this study spans July 6, 2018, to July 6, 2023, and considers significant events such as the US-China trade war from 2018 to 2020, the COVID-19 pandemic, and Russia's invasion of Ukraine in 2022.

Theoretical framework

Recent research has highlighted the importance of classifying cryptocurrencies based on their long-term sustainability rather than treating them as a homogeneous group. Gallersdörfer et al. (2020) recommend labeling cryptocurrencies as either energy-intensive or energy-efficient, whereas Ren and Lucey (2022) categorize them as "green/clean" or "black/dirty" based on their energy levels. Despite extensive research into the relationship between cryptocurrencies and major financial assets (Naeem et al., 2023), the clean energy cryptocurrency market has received less attention. Only a few articles have identified behavioral differences between "green/clean" and "black/dirty" cryptocurrencies.

Design/methodology/approach

The research is divided into stages that aim to analyze a set of data using different statistical and econometric methods. The first step is to present return charts to understand their distribution in relation to the means. To characterize the time series and determine whether it follows Gaussian distributions, descriptive statistics and the Jarque and Bera (1980) adherence test will be used. The research question will be answered using the econometric models VAR Granger Causality/Block Exogeneity Wald, VAR Lag Order Selection Criteria, and VAR Residual Serial Correlation LM Tests.



Findings

The results allow to identify strong clusters of bonds within the class, as well as the identification of extreme risk repercussions during times of crisis through variable time trends. The study also discovered that some markets could act as both risk emitters and risk receivers. However, the risk transfer between clean energy and dirty energy cryptocurrencies was generally weak, confirming the benefits of clean energy crypto currencies for diversification.

Research, practical & social implications

The findings imply that policymakers, investors, and other financial market participants should be encouraged to promote sustainability, transparency, and responsible investment practices while also considering the environmental impact of clean and dirty digital currencies.

Originality/value

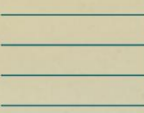
In different ways, our research adds to the existing literature. First, we examine whether clean energy cryptocurrencies can provide diversification benefits by employing different clean energy cryptocurrencies that support energy transactions in the field of clean energy. We also assess the safe haven characteristics of green cryptocurrencies using three groups: black/dirty, green/clean cryptocurrency markets, and clean energy stock indexes.

Keywords - Green cryptocurrencies, Tail risk spillovers

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Resilient Economy, Entrepreneurship and Innovation





BIOECONOMY IN THE BRAZILIAN AMAZON: ADVANCES AND CHALLENGES IN INNOVATION FOR SUSTAINABILITY

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EXTENDED ABSTRACT

Purpose

Bioeconomy has been part of the scientific, political, and economic agendas as a field to influence socioeconomic strategies of this century. However, the specificity in the context of tropical forests, such as the Amazon Forest, has not yet been deepened, and there are doubts and even controversies about its implementation (Costa et al., 2022). In that scenario, this paper aims to identify important factors for implementing a sustainable bioeconomy for tropical forests by analyzing the Programa Prioritário de Bioeconomia (PPBio) in the Brazilian Amazon, a public policy adopted by Suframa in 2018.

Theoretical framework

To organize concepts that build the bioeconomy, Bugge, Hansen, and Klitkou (2016) classified the studies into three visions: biotechnology, bioresources, and bioecological. In 2019, Vivien et al. also divided bioeconomy studies into three perspectives, classified as "based on Science," "based at biomass," and "considering biosphere limits." Against these classifications, Costa et al. (2022) related these concepts to international and Brazilian practice governments. They demonstrated that the conceptualization proposals need to cover the analysis of the protagonist of traditional communities and origins people in implementing a sustainable bioeconomy.

Design/methodology/approach

Through a study exploratory with quantitative and qualitative data, classified PPBio projects in the dimensions of objectives and aims, value creation, vectors and mediators of innovation, approach space (Bugge et al., 2016), and participation of traditional communities and origins people (Costa et al., 2022), to systematize key factors that contribute to the implementation of a sustainable bioeconomy for tropical forests. There were 30 projects analyzed from 2019 to 2022, 19 from Science and Technology Institutions (ICTs) and 11 from startups.

Findings

The research identified that the startup's projects focus more on new products and services than technologies and chain optimization, using raw materials like vegetable oils and super fruits for new products. Most projects proposed by ICTs have focused on innovation in the productive process, optimizing the chain and production, mainly in psychculture. Among those who propose new products and services, all are used as raw material waste, whether organic, solids, or agroindustrial. All projects cover the aspect of



sustainability and fair trade and treat the relationship with the community with special attention. However, it is possible to highlight that the projects executed by ICTs give more significant autonomy to the community participants because instead of classifying them as suppliers, they are the primary project beneficiaries.

Research, practical & social implications

In a preliminary overview, this paper identifies that the type of executor organization is a crucial characteristic, being a starting point for planning and implementing public policies in the future. In addition, based on results, an approach of actors involved in the program (public agents, coordinator and executor institutions, and communities engaged) is recommended for a more enhanced and powerful perspective about the priority aspects and those not detected in documents.

Originality/value

The research also contributes to the development of the bioeconomy through a practical case of implementation in a tropical forest region, highlighting aspects of innovation in that context.

Keywords - Bioeconomy, Amazon, tropical forests, innovation

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SUSTAINABILITY OF CULTIVATED MEAT PRODUCTION

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EXTENDED ABSTRACT

Purpose

This work aims to identify the environmental impact of large-scale production of cultivated meat (CM) through a systematic review to create opportunities to develop solutions.

The CM has been developed since last decade as an alternative source of protein and has received lots of investments. Almost 100 start-ups worldwide, in countries such as Singapura, EUA, Israel, Brasil, etc., are working on the progress of that technology. Compared to conventional meats, CM demands less land, less greenhouse gas emissions, and less water. However, commercial-scale, in the future, would create new environmental problems, such as a strong need for energy and the generation of new wastes.

Theoretical framework

For this research, 283 literature was used to support the arguments and expand the understanding of the process of implementation, acceptance, and incorporation of innovation in the CM and meat market.

Design/methodology/approach

To answer this research problem, as it is an extremely new subject, we based ourselves on qualitative research of an exploratory and descriptive nature, using a systematic literature review as a tool. This study used bases such as Web of Science, ProQuest, and Scopus to source articles between 2020 and 2023. In total, 283 were found. After, 3 were chosen.

Findings

Based on the review, we found that there are opportunities for CM producers to ally their production to renewable energy and develop supply chain collaboration to create simultaneously a sustainable manufacturing network (e.g. improve culture medium cells and diversify materials of the supply of disposable plastics for cell culture) to drive down the carbon footprint. Also, it identified a crucial research gap in the business literature about the theme.

Research, practical & social implications

The industrialization process happens in start-ups and companies daily, and for that reason, it is possible that there is unpublished information in scientific articles. The knowledge about the environmental impact of this new technology would be a business opportunity for future start-ups, resulting in a more sustainable activity in the long term.

By proposing a systematized review on the subject and identifying only 3 works on the subject, we believe that the main contribution to the literature is identifying a research



gap in the administration area that focuses on the subject. As a practical contribution, we identified that there is space for start-ups to grow.

Originality/value

The main contribution of this study is to show opportunities to develop businesses to collaborate with CM production.

Keywords – Sustainability, Cultured Meat

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RELATIONSHIP BETWEEN ENTREPRENEURSHIP AND GEOGRAPHICAL INDICATIONS (IGs): A LITERATURE REVIEW

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EXTENDED ABSTRACT

Purpose

The objective of this study is to identify the relationships between Geographical Indications and Entrepreneurship reported in the literature.

Theoretical framework

GIs can be understood as certifications that link products and services with their place of origin (Meirelles et al., 2023), attesting to peculiar characteristics arising from the origin (Marie-vivien et al., 2019) that can be valued in certain market niches (Curzi & Huysmans, 2022). Therefore, given that identifying opportunities and creating economic value are actions related to entrepreneurship (Metalloa et al., 2020), GIs can contribute to promoting entrepreneurship (Colamartino et al., 2023).

Methodology

The study will be carried out through a systematic review of the literature. The articles were searched in two databases: Web of Science, Scopus and Science Direct, with the combination of terms that relate to Geographical Indications and Entrepreneurship, the works were filtered by the area of research related to business, published in English, and only articles, which resulted in 16 articles in Web of Science and 26 in Scopus. After identifying duplicates and reading the abstracts and keywords, a total of 24 articles were reached.

Findings

The preliminary results of the article analyzes indicate that GIs can encourage local and institutional entrepreneurship, in addition to providing new business opportunities and encouraging change in the business model of local enterprises.

Research, practical & social implications

Identifying the state of the art of both themes and demonstrating how the contribution of GIs to entrepreneurship can contribute to the decision-making process of government bodies that seek to foster entrepreneurship and local development.

Originality/value

The study indicates the main implications of using GIs for entrepreneurship.

Keywords- Geographical Indication. Entrepreneurship.

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ENTREPRENEURIAL BEHAVIOR REFLEXES IN EFFECTUATION ON DYNAMIC CAPABILITIES: A BIBLIOGRAPHIC REVIEW

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EXTENDED ABSTRACT

Purpose

This study aims to investigate the entrepreneurial behavior reflexes of the company founder, in relation to the Effectuation methodology, in the development of Dynamic Capabilities able of conferring a competitive advantage to the organization.

Theoretical framework

Effectuation represents a decision-making approach distinguished by a pragmatic action logic employed by entrepreneurs confronting uncertain and unpredictable environments. This approach adopts a bottom-up methodology wherein entrepreneurs initiate their endeavors leveraging the available means, subsequently deducing potential ends that can be achieved with these resources. Central to Effectuation is the emphasis on experimentation, iterative processes, and collaborative creation within the decision-making paradigm. On the other hand, Dynamic Capabilities pertain to an organization's capacity to foresee, influence, and adapt to shifts within the competitive landscape. These capabilities empower firms to discern alterations in the environment, seize emerging opportunities, and adeptly reconfigure existing resources and processes to yield effective responses.

Design/methodology/approach

The methodology adopted for this article involved a systematic literature review aimed at comprehensively exploring the intersection between Effectuation and Dynamic Capabilities. The process commenced with the identification of relevant databases. A meticulously crafted search strategy encompassing keywords related to Effectuation and Dynamic Capabilities was formulated to ensure a thorough examination of the existing literature. Both qualitative and quantitative studies, theoretical frameworks, empirical research, case studies, and conceptual articles were considered to capture diverse perspectives and insights on the subject matter. The identified literature was reviewed, synthesized, and analyzed to extract empirical findings and emerging trends.

Findings

The empirical investigation conducted within this study has elucidated a discernible correlation between the entrepreneurial behavior exhibited by an organization's founder, as framed within the Effectuation paradigm, and the attainment of a competitive advantage facilitated by the cultivation of Dynamic Capabilities. This correlation is particularly pronounced during the nascent phases of the company's evolution, where the entrepreneur's influence and significance are markedly heightened. The findings underscore how the strategic adoption of Effectuation principles by the founder manifests in the deliberate cultivation of Dynamic Capabilities, thereby contributing significantly to the establishment and reinforcement of the organization's competitive advantage, especially in its formative stages.



Research, practical & social implications

The findings of this study have significant implications regarding how the execution of founder's entrepreneurial behaviors based on Effectuation can result not only in increased average business survival but also in the development of Dynamic Capabilities, which are capable of conferring long-term competitive advantage.

Originality/value

This study integrates Effectuation and Dynamic Capabilities theories to clarify the relevance of the entrepreneur, the company's founder, in the organization's success, thereby contributing to advancing the literature in both areas.

Keywords – Effectuation. Dynamic Capabilities. Entrepreneurship.

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TRANSFORMATIONAL LEADERSHIP AS A CRITICAL SUCCESS FACTOR IN ORGANIZATIONS

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EXTENDED ABSTRACT

Purpose

Through a systematic literature review, our article addresses the challenges that companies faced during the pandemic, highlighting the need to adapt to digital transformation, more specifically, it seeks to analyze the role of transformational leadership initiated in this scenario. We believe that this adaptation is the development of a dynamic capacity for efficient resource allocation and creating psychological safety for teams, even remotely. The challenge is to mobilize teams, equalize communication, and train new employees.

Theoretical framework

We use innovation literature as a backdrop to theoretically analyze the relationship between transformational leadership and innovative approaches and map the results indicated by the authors regarding this topic.

Design/methodology/approach

Qualitative and descriptive research based on a systematic literature review from papers published in indexed journals on platforms such as Web of Science and Scopus from 2019 through 2023.

Findings

As a result, it is expected that this research results in a theoretical mapping of how the authors of the research area have worked with the leaders and leadership, highlighting their ability to individually stimulate the teams, continuously improving their performance through the promotion of innovation.

Research, practical & social implications

The paper highlights a significant gap in research related to the in-depth understanding of the relationship between a transformational leadership approach, innovative practices and project success.

Originality/value

Examine how the theme of transformational leadership has been addressed by academic authors in the last 4 years.

Keywords - Transformational Leadership, Innovation, Success.



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HOW TO FACILITATE THE TRANSFER OF TECHNOLOGY FROM THE UNIVERSITY TO INDUSTRY? A SYSTEMATIC REVIEW

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EXTENDED ABSTRACT

Purpose

This research aims to understand How factors facilitate specific channels of technology transfer (TT) between University and Industry (U - I), and which factors influence which channels. Fabiano et al. (2020) define channels of TT as the "media through which encoded knowledge is transferred (unidirectional) in the absence of ad-hoc agreements and with low relational and organizational involvement whose access can be market-mediated not involving long-term transactions.", and affirms that different factors can facilitate different channels, but it doesn't specify which factors and which channels, which is this research's goal.

Theoretical framework

De Fuentes and Dutrénit, (2012) and De Wit-de Vries et al., 2019, argue that Technology Transfer between University and Industry is an important contributor to the market and nation's innovation and economic growth, but an appropriate channel must be chosen for each situation.

Design/methodology/approach

The chosen method was a Systematic Review, in which researchers gathered articles using two search engines, that discussed TT channels between U - I in the past 10 years. After a selection of the gathered data, the chosen 25 relevant articles were reviewed in order to answer the research question.

Findings

Reviewing the articles, it was noted three different themes among thirteen articles, which were: The importance of Geographic proximity between the university and the firm for the effectiveness of channels like cooperative research, network, patents, and shared governance channels in general; Also that the firm's absorptive capabilities impact the channel's choice, facilitating informal channels in particular; and that there is a specific highlight that the literature gives to network as an important channel for innovation and for the facilitation of the U - I interaction's start.

Research, practical & social implications

The study is limited to literature available in English but is nonetheless important to consolidate the knowledge on the topic.

Originality/value

This research contributes to the academy by identifying geographic proximity and the firm's absorption capabilities as facilitators for desirable TT channels (Network, Informal and shared governance channels in general), which in turn can help increase the effectiveness of these channels' application.



Keywords - Technology; Transfer; Channels; Modes; U - I.

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BIOPLASTIC REUSE ON BEACHES

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EXTENDED ABSTRACT

Purpose

The study aims to discuss how artificial intelligence (AI) can contribute to the development, production, and management of bioplastics, which are plastic materials produced from renewable sources and can be biodegradable.

Theoretical framework

Plastic materials are a major concern for the planet and must be managed appropriately in our society (Weinstein et al., 2020). Although plastics and the utility of these materials have become highly valued for their use, environmental risks and related energy crises are growing consensus concerns. Plastics are popular because they provide humans with less financial burden for the things they want (Saygin, H., Baysal, A.). For some authors, bioplastics are becoming an important alternative to traditional plastics. and their uses are defined as polymers that fulfill one or both of the following criteria: they are bio-based and biodegradable (Tokiwa et al., 2009).

Design/methodology/approach

The data for this study was collected systematically from credible sources in WOS and Scopus databases. It used a collection of relevant keywords to search and obtain data from these databases and present the literature analysis.

Findings

The study analyzes the benefits and challenges of this partnership for sustainability, considering the environmental, economic, and social aspects involved. The study concludes that AI can be an ally of bioplastics to overcome obstacles and enhance the advantages of these materials, which appear as an alternative to conventional petroleum-derived plastics, which cause several negative environmental impacts.

Originality/value

The text highlights that no single solution exists to deal with the problems arising from society's use of plastics and that a complete analysis of the product's life cycle and shared responsibility between industry, government, and consumers must be considered.

Keywords - sociotechnical, artificial intelligence, bioplastic

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THE RELATIONSHIP BETWEEN INTELLECTUAL CAPITAL AND FINANCIAL PERFORMANCE: A COMPARATIVE ANALYSIS BETWEEN CHINA AND JAPAN

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EXTENDED ABSTRACT

Purpose

In the context of globalization, companies aiming for a competitive advantage must allocate resources to innovation, particularly in intangible resources and intellectual capital, to secure strategic resources that are valuable, scarce, and non-imitable (ASTUTI *et al.*, 2023). In this scenario, significant differences arise based on the country in which the company is listed. Companies in emerging economies exhibit lower innovation capacity and require additional competencies for competitiveness (PAULA; ROCHA, 2021). While numerous studies have aimed to comprehend the impact of intellectual capital on financial performance, those comparing the relationship between the variables, while considering the level of development and institutional factors of each country, were not found. To address this gap, this work aims to answer the following research question: Does the financial performance of companies listed in developed countries experience a greater influence from intellectual capital compared to those listed in emerging countries?

Theoretical framework

With the growing importance of intellectual capital, the Value-Added Intellectual Coefficient (VAIC), introduced by Pulic (1998), is one of the most commonly used in the literature. It assesses intellectual capital efficiency by summing human, structural, and physical and financial capital efficiencies. However, Marzo (2022) contends that the model may produce inconsistent results by not considering a company's relational and innovation capital, recommending their inclusion in a modified model utilized in this study.

Design/methodology/approach

This empirical study employs panel data multiple regression to analyze the relationship between variables, utilizing a statistical model constructed with data from the S&P Capital IQ PRO database. The sample comprises Information Technology companies from the stock exchanges of China and Japan, chosen for a geographical and cultural comparison as the largest emerging and developed economies in Asia.

Findings

This ongoing study aims to compare the relationship between intellectual capital and financial performance in developed and emerging countries. The main hypothesis suggests that companies listed in developed countries have a positive advantage in this relationship compared to their counterparts in emerging countries, attributed to the favorable institutional factors for innovation present in these developed economies.



Research, practical & social implications

The research findings can guide managers in decision-making for innovation projects and resource allocation, help investors compare companies in developed and emerging countries in terms of intellectual capital investment, and highlight the need for public policies that encourage the innovation process and can positively impact companies in emerging economies.

Originality/value

No previous literature explores the link between intellectual capital and financial performance in emerging and developed countries. This study fills this gap by examining how institutional factors tied to economic development levels influence the impact of intellectual capital on financial performance.

Keywords – Intellectual Capital; Financial Performance; Developed Countries; Emerging Countries.

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INNOVATIONS ON THE ALTITUDE SIMULATORS TECHNOLOGIES: A PATENT REVIEW

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EXTENDED ABSTRACT

Purpose

This study aims to systematize the main technological innovations in altitude simulation systems by reviewing patent databases. Second, the aim looks to evidence the main applications of these innovations as a form of non-pharmacological treatment of chronic diseases.

Theoretical framework

Treatment at altitude or exposure to air with lower oxygen concentrations (hypoxia) is a non-pharmacological strategy used to increase sports performance and assist in treating chronic respiratory, cardiovascular, and cardiovascular and metabolic diseases, such as obesity (Park et al., 2018). Different technologies are used to try to simulate altitude, nitrogen dilution, changes in pressure, and oxygen reduction, however, it is not yet clear whether all these technologies are efficient in simulating altitude and generating similar and efficient results (Girard et al., 2020).

Design/methodology/approach

A systematic review was conducted in the main patent databases, using the following syntax (Hypoxicators OR "Altitude chamber" OR "Altitude Training Systems" OR "Altitude generators" AND treatment), in the Google databases Patents and Scopus Patent databases, covering the platforms of the National Intellectual Property Institute (INPI); United States Patent and Trademark Office (USPTO); J-PLAT PAT - JAPAN PATENT OFFICE; European Patent Office (EPO). The searches were carried out from 2023 to 2000. The inclusion criteria adopted for the work were: a) Patents developed for human treatment; b) Patents developed with applications in treating diseases or increasing human performance; c) Patents in English or Portuguese. The exclusion criteria were: a) Patents developed for applications in animal models, plants, or at the cellular level; b) Patents that may be duplicated or with exact technologies in other countries; c) Patents with the body text in another language. The works found in the search will be filtered according to the inclusion and exclusion criteria, in addition to being selected by researchers according to the title and basic information of the patent then they will be filtered by the abstract, and the remaining works will be read in full and systematized into structured files, for later writing of the results.



Findings

The search with the keywords resulted in a total of 192 results, with 78 patents in WIPO, 60 in USPTO, 47 in EPO, and 7 in J-Plat. Nine duplicate patents were found, and then the titles/summaries of all patents were read, resulting in 55 patents that were analyzed in full text, however, only 16 patents were read in full and used for this review. Patents with a title and abstract in English, but the body of the text in Russian, Chinese, or Japanese were excluded, patents that dealt with hypoxia equipment used for aviation or military purposes were also excluded. 40% of the technologies were hypoxicators; 20% were hypoxic chambers, 13% were rebreathers, 7% portable generators, and the other 20% were other technologies.

Research, practical & social implications

Concerning practical applications, 73% of the technologies were focused on sportive performance improvements. Meanwhile, just 27% were focused on disease treatment.

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