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ABSTRACT BOOK

INTERNATIONAL CONFERENCE ON SMART TECHNOLOGIES AND APPLIED RESEARCH
ISTANBUL, TÜRKIYE

Edited by
Prof. Dr. Slimani Khadija

International Conference on Smart Technologies and Applied Research

STAR 2023

October 29-31, 2023
Hybrid Mode
Istanbul, Türkiye

Abstracts
Oral Presentations

"Within the pages of this book lie the collective brilliance of minds converging at the crossroads of innovation and applied research.

As we unfold the abstracts and details within, let these insights spark new ideas and collaborations, shaping the future of smart technologies. Welcome to the International Conference on Smart Technologies and Applied Research – where knowledge becomes the compass for progress."

STAR Organizing Committee

Abstract Book Editor

Assoc. Prof. Khadija SLIMANI
Higher school of automatic electronic computing, Paris, France

Dr. Khadija Slimani obtained her PhD. in Computer Science from Ibn Tofail University, Morocco. During her doctoral studies, she collaborated with University of Technology of Belfort Montbeliard (UTBM), in France to conduct research with a focus on machine learning, deep learning, pattern recognition, and computer vision, specifically applied to academic emotion recognition. Upon the successful completion of her PhD. thesis, Dr. Slimani embarked on a postdoctoral journey at the University of Poitiers, assuming the role of a postdoctoral associate. In this capacity, her research revolved around Objects DRI (Detection, Recognition, and Identification), while employing machine learning and deep learning methodologies to enhance video content filtering for optimal security. Her contributions extended to diverse engineering schools in Paris, where she undertook teaching responsibilities across modules spanning data science, deep learning, machine learning, databases, and computer vision.

Dr. Slimani holds the esteemed title of Associate Professor at the Graduate School of Automatic Electronic Computing in Paris, France. She's a dedicated scholar, with 18+ published articles in esteemed journals and conferences, backed by an impressive h-index of 9 in Scopus. Currently, she's playing a pivotal role as a guest editor for the special issue "Integrating Intelligence: Advancements in Applied Research with Smart Technologies" in the distinguished Journal of Autonomous Intelligence and for the **STAR'2023** proceeding published in E3S, Scopus indexed. In addition, she's proudly occupying the role of the General Chair for the International Conference on Smart Technologies and Applied Research **(STAR'2023)** in Istanbul, Türkiye. Her leadership promises an enriching and collaborative experience for all involved. Participants have the privilege of attending diverse workshops and actively participating in the conference by presenting their own research contributions. Through these roles, she continues to inspire and shape the next generation of researchers.

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About STAR 2023

The first edition of the International Conference on Smart Technologies and Applied Research (STAR'2023) took place successfully, providing a distinguished platform and outstanding venue for researchers, esteemed academic faculty, ambitious students, and professionals across diverse fields. The conference featured original, high-quality papers covering Intelligent Systems, Environment, Social Science, Information Management, Computer Vision, Image Understanding, and various technology applications.

STAR'2023, organized in collaboration by Ibn Tofail University in Kenitra, Morocco; the Higher School of Automatic Electronic Computing in Paris, France; and Istanbul Sabahattin Zaim University in Türkiye, was held in Istanbul, Türkiye, from October 29th to 31st, 2023. The conference was a hybrid event, allowing participants the flexibility to attend either in person or virtually. Accepted authors had the option to present their papers online, ensuring maximum accessibility for attendees worldwide.

We look forward to future editions of this influential conference.

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Plenary Speakers

We kicked off the STAR'2023 conference at Istanbul Sabahattin Zaim University with an exciting opening event. Starting there, we continued the conference with both in-person and online plenary sessions. This mix allowed people to join from different places worldwide. We wanted to make sure everyone, no matter where they were, could be part of the conference and share ideas. It was a great way to connect with people both locally and globally, making STAR'2023 a truly inclusive and accessible experience for everyone involved.

Intervention 1: University 4.0: Next-generation students with modern learning techniques

Pr. Samira KHOULJI
Abdelmalek Essaadi University, Tetouan, Morocco.

Dr. Samira KHOULJI is a professor in electronics, telecommunications, and computer science at the National School of Applied Sciences in Tetuan (ENSATE) of Morocco. Where she also serves as the coordinator for the Telecommunications and Networks Engineering program for engineering students. She holds the position of director of the "Innovative Systems Engineering" (ISI) research laboratory. Previously, she was the head of the Department of Statistics and Computer Science at the multidisciplinary faculty in Tétouan, where she was responsible for the professional programs in "Tourism and ICT" and "Management of Information Systems (MSI)," as well as the coordinator for the Specialized Master's program in "Management of Information Systems and Multimedia (MSIM). Dr. Samira KHOULJI has actively participated in various committees and councils and has coordinated teaching modules in physics, computer science, and telecommunications at the multidisciplinary faculty and ENSAT in Tétouan. As a researcher, she is the author or co-author of numerous research articles and has contributed as a member to multiple national and international conference and meeting committees. She has also been involved in several European research projects, particularly in the fields of professional integration, tourism, and renewable energy.

Intervention 2: Theoretical models of composite materials for the protection technologies
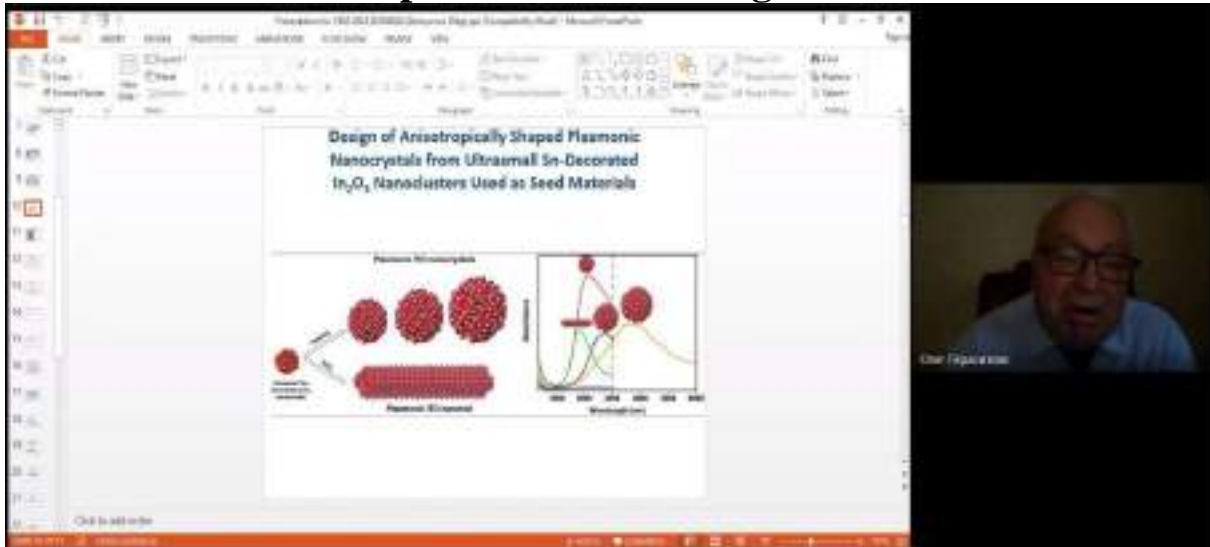
Pr. Oleg GERASYMOV

Odessa State Environmental University, Odessa, Ukraine.

Gerasymov Oleg Ivanovich, Professor, Doctor of Physical and Mathematical Sciences, Head of the Department of Physics and Environmental Safety Technologies of the Odessa Environmental University (Ukraine). Graduated from the Odessa State University named after I.I. Mechnikov in 1977 with a degree (with honors) in theoretical physics. He defended his Ph.D. thesis at the Kiev University named after Taras Shevchenko in 1982, and his doctoral dissertation at the Institute of Theoretical Physics named after N.N.Bogoliubov , From 1987 to the present, he has worked as a contract and visiting professor at the universities of Italy (University of Messina), the Netherlands (Technical University of Eindhoven), Belgium (ULB and VUB, Solvay, Brussels), Japan (CUT, Tokyo), Saudi Arabia (KAUST). From 1994 to the present, Head of the Department of Physics and Environmental Safety Technologies in Odessa Environmental University (Odessa, Ukraine). Main research interests in: physics of complex non-equilibrium systems and processes, statistical theory of classical and quantum many-particle systems, scattering theory, physics of micro-mechanical (granular) conglomerations, physical modeling in environmental protection technologies. Created a scientific school in this direction to which many widely-known scientists and specialists in various fields of science and production belong. Author of more than 200 scientific publications in refereed journals and 14 monographs. In various years he received grants from the European Union and NATO, as well as from the universities in Europe, Japan, Saudi Arabia. Commander of the Order of the Crown of Belgium for achievements in the field of scientific cooperation (2012).

Intervention 3: Using a Multimodal Transportation to carry people or goods on a single trip

Pr. Sandeep Kumar GUPTA
AMET University, Chennai, India.

Highly accomplished academic professional with a proven track record in the field of education, Pr. Sandeep Kumar Gupta holds a Ph.D. degree from Banaras Hindu University (B.H.U.), demonstrating strong research and academic credentials. He has acquired the Advanced Development Program (ADP) certification from the prestigious Wharton School in the United States, showcasing international academic exposure. Engaged in the Quality Improvement Program (QIP) at the Indian Institute of Technology, B.H.U., further enhancing expertise in the chosen field. Pr. Gupta authored and published 23 international publications, contributing significantly to the academic and research community. He has a wealth of experience in the education sector, accumulating 24 years of teaching and mentorship experience in Human Resources Management, Innovation & Entrepreneurship Development as well as Multinational Transportation fields.

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Intervention 4: Digital Innovation and Immersive Technologies in Higher Education

Pr. Nour El Houda CHAOUI
Ibn Tofail University, Kenitra, Morocco.

As a professor of higher education in computer science, Dr. Nour El Houda has had the privilege to serve at various esteemed institutions, namely at ENSA-Agadir, ENSA-Fès and EST-Kenitra where she imparted knowledge and guided aspiring students through the world of computer science. She also had the honor of contributing to the growth and development of the Department, taking on the role of Department Head. She extended her influence across various universities, including UIZ-Agadir, USMBA-Fès, and UIT-Kenitra. Her active participation in university governance and decision-making processes allowed her to contribute to the broader academic community. At USMBA-Fès, she had the distinct privilege of advising the university president, sharing her insights and expertise to shape the institution's future. As a coordinator and member of various national and international projects, she played a pivotal role in initiatives spanning emergency programs, information systems, partnerships, quality assurance, and participation in prestigious programs like Tempus, Erasmus+, and H2020. These initiatives aimed to drive innovation and excellence in higher education on a global scale. In addition to her academic roles, she also served as a Senior Editor at Emerald Publishing for the Journal of Applied Research in Higher Education (JARHE), ranked Q2 in 2023. Pr. Nour El Houda extended her influence internationally by assuming the role of Country Director for The International Higher Education Teaching and Learning Association (HETL), which is dedicated to thought leadership for a sustainable future in higher education, based in the United States.

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Workshops

STAR'2023 was a groundbreaking conference, enriched by a diverse array of six workshops that were carefully curated to amplify the depth and breadth of knowledge exchange. These workshops, each led by esteemed experts in their respective fields, were designed to offer participants an immersive and hands-on experience. STAR'2023 wasn't just a conference; it was a dynamic convergence of ideas, expertise, and practical insights, ensuring that participants left with a profound understanding and newfound inspiration in their fields.

Workshop 1: Theoretical and empirical research methodology: practices and lessons learned.

1. Theoretical research methodology, Research Problems, Reference Search, Writing Practices
2. Empirical research methodology, framework of the empirical study, Preparation and Action, Effects of experience.

Pr. Mohamed EL KENDILI
Chouaib Doukkali University, El jadida, Morocco

YouTube: https://urlz.fr/prWL

Workshop 2: The impact of AI in the progress of Medicine Diagnostic and Prognostics

1. Data packaging, Data pre-processing
2. Differential expression analysis to extract up and down regulated genes.
3. Find your ideal strategy
4. Gene set testing with camera and pathway check for genes selected to check the biological signification of genes.

Pr. Abdessamad YOUSSFI ALAOUI
University of Miami, Florida, United states

YouTube: https://urlz.fr/prXc

Workshop 3: Development of the financial electronic control system as a subsystem of the ''E-State'' project in the conditions of the digital economy

1. Problems of the existing system of state financial control.

2. Requirements for creating a digital-era financial e-control system.

3. The role and position of financial e-control in the state's financial control system

4. The main goals and objectives of creating the e-state project.

Pr. Olena ZUBAREVA
Union of Economists of Ukraine, Sumy, Ukraine

YouTube: https://urlz.fr/prXp

Workshop 4: Playful exploration of the lexicon in a foreign language

1. Fun immersion in a foreign language

2. The 12 keys to memorizing vocabulary

3. Find your ideal strategy

Pr. Christina STYLIANIDOU
Cyprus University. Aglantzia, Nicosia,Cyprus

YouTube: https://urlz.fr/prXD

Workshop 5: Artificial Intelligence: Fundamentals and applications

1. Artificial Intelligence techniques
2. Fundamentals of machine learning
3. Different existing types of ML
4. Basics of deep learning

Pr. Bouchra NASSIH

Ibn Tofail University, Kenitra, Morocco.

YouTube: https://urlz.fr/prXN

Workshop 6: The Artificial Intelligence Revolution in the Medical Field

1. Introduction
2. Evolution of AI in the medical field
3. Applications of AI in the medical field
4. Focus on a research project linking AI to the brain and perspectives.

Pr. Anass NOURI

Ibn Tofail University, Kenitra, Morocco.

YouTube: https://urlz.fr/prXO

Abstracts of Communications

The STAR conference featured six multidisciplinary sessions with both in-person presentations at Istanbul Sabahattin Zaim University and remote participation. Attendees engaged in enriching discussions, either face-to-face for direct interactions or virtually for global involvement. This hybrid approach enhanced the diversity of ideas and expertise, contributing to the overall success of the event. Thanks to all participants for their valuable contributions to this unique experience.

YouTube Chanel: https://www.youtube.com/@InterConfSTAR

Session 1: Advancements in Predictive Models, Technology Applications, and Innovative Analysis Methods

Instructional design for adaptive learning: A Review and future challenges

Abdelkarim Taam* [1], Amine Amar [2], Smail Kheraz[1], Abdelhak Adnane[1], Ayoub Ait Lahcen[1]

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In many recent years, there has been a lot of talk about the need to adapt the instructional design, according to pertinent factors such as, the identified shortcomings, the student's desire and the level of achievement. This new way of learning conceptualization is called the adaptive learning, which can be defined as the delivery of custom learning experiences that address the unique needs of an individual through just-in-time feedback, pathways and resources. However, since there are many ways to change how we teach to meet learner needs, the adaptive learning has become an umbrella term. To make it clearer, experts try to define what they see as the most common different types of adaptive learning and split the field into adaptive content, adaptive sequence and adaptive assessment. With the help of technology, the adaptive learning aims to support educators to engage learners, spark passions, encourage persistence, support content mastery and provide the best learning experience for every single student, with a great scaling opportunity. In this context, institutions can employ technology-enabled approaches to redesign diagnostic tools or to target remediation for students in need of additional preparation. As the figure below shows, the mechanisms of how technology adapts to students can have several variations.

This may include automated assessment systems to evaluate student's skills, recommendation systems to suggest additional learning activities and feedback systems to provide immediate feedback to students. Data-informed approaches, such as the use of learning analytics, can be also used to assess the efficacy of teaching methods and update or adapt content to help students achieve the best outcomes. It is worth to note that the design of specific instructional scenarios for adaptive learning is not an easy task and requires more effort that is agile and the commitment of all stakeholders, in order to understand both the students and teacher's needs, to identify the optimal implementation scenario and to make available appropriate resources. This work aims to present critical and comprehensive reviews that provide new insights and interpretation of instructional design for adaptive learning, through a systematic evaluation of available evidence.

Keywords: Adaptive learning, Algorithmic adaptivity, designed adaptivity, Intelligent Educational Systems, Instructional design, Learning effectiveness.

Bayesian Networks: A Strategic Tool for Enhancing SME Eligibility and Success in Public Procurement within the Social and Solidarity Economy

Amina Oussaleh Taoufik*, Abdellah Azmani

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In the realm of public procurement and the Social and Solidarity Economy (SSE), Small and Medium-Sized Enterprises (SMEs) embark on a multifaceted journey towards achieving eligibility and success in securing contracts. This paper delves into the intricate process of how Bayesian networks can assist SSE-affiliated SMEs in assessing their prospects of submitting competitive bids and ultimately winning public contracts. These SMEs, which play a vital role in fostering both economic growth and social solidarity, frequently encounter serious challenges within the public procurement sector. The application of Bayesian networks, an advanced statistical modeling technique, emerges as a transformative strategy in this context by systematically analyzing the various factors that influence the eligibility of SSE-affiliated SMEs. Through our paper, we provide a comprehensive review of the existing literature from four distinct perspectives. Initially, we explore constraints directly linked to SMEs, illuminating how these factors shape their prospects for successful participation in public procurement (PP). Subsequently, our analysis extends to the barriers stemming from the identity and reputation of the public adjudicators. We then delve into the constraints tied to tender documents, requirements, and procedural aspects as the third perspective. Lastly, we venture into the realm of external factors that exert influence on firms keen on engaging in public procurement. The cornerstone of our research lies in the meticulous construction of a Bayesian network tailored specifically for the assessment of SSE SME eligibility. We take a rigorous approach encompassing data collection, variable selection, and probability assignment. The paper underscores the critical aspects of model validation and calibration, providing empirical evidence through real-world case studies. The outcome is a powerful tool that furnishes SMEs with actionable insights, enabling them to adapt their strategies based on Bayesian network recommendations and significantly enhancing their likelihood of success.

Keywords: Public Procurement; SMEs; Bayesian Network; Eligibility; Risk Assessment; Social and Solidarity Economy.

A survey of federated learning approach for the Sustainable Development aspect: eLearning

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Many countries have shown concern about sustainable development over the years. In 2015, the United Nations has revealed the agenda of sustainable development goals, which has 17 goals. Attainting this objective is challenging because it requires balancing between various factors, the social, ecological, and economic ones. eLearning is one of the most significant illustrations of sustainable development. It is environmentally friendly and eliminates the need for students to attend physically their classes, hence preserves energy. Since the pandemic, eLearning has been used widely to guarantee the continuity of education. In the literature, there were many e-learning systems that were built using artificial intelligence solutions; nevertheless, these solutions still have some shortcomings that have been resolved by newer technology trends. Among them is the concept of federated learning. It provided more secure and resilient ways to use the eLearning approach in a successful manner.

Therefore, in this study, we will explain how eLearning illustrates sustainability and then discuss how technology support this approach. Our focus will be mainly solutions built using the concept of federated learning. Thus, our goal will be to present and synthesize the most relevant research works that served eLearning, using federated learning.

Keywords: Sustainability; artificial intelligence; federated learning; sustainable development; eLearning; online learning.

Theoretical Modeling of Composite Materials for the Protection Technologies

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The concept of shielding external radiation using composite materials that are a single condensed structure with incorporated specially configured impurities and (or) defects is attracting increasing attention from process engineers and technologists working on the creation of new technologies for protective screens from various types of external radiations. Physical models describing the interaction of electromagnetic radiation in various wavelength ranges have been developed in detail both at the microscopic and phenomenological levels in the theory of solids and in the quantum theory of scattering by condensed matter objects. Already for one-dimensional structures consisting of their force centers and including impurities (defects), the possibility of the existence of a specific band structure has been shown, which makes it possible to manipulate the transmission or reflective (that is, protective) characteristics of such structures. Despite the model one-dimensional nature of such theoretical approaches, in the case of real ones, naturally anisotropic systems (such as micro-mechanical discrete materials), the results obtained indicate the possibility of designing protective screens with manipulated properties in selected channels (set by the directions of anisotropy). Developing the idea proposed upper, further research is focused on studying the transmission of plane waves on super-lattices and on scattering on two-dimensional and three-dimensional structures (force centers) specially configured into symmetrized complexes containing a given number of particles. Developing the band theory for such structures, exploring the features, like detachable (Tamm) resonances (and their erosion), a theoretical basis can be developed to describe the manipulation of the properties of protective wave screening based on discrete materials.

Keywords: wave screening, discrete micro-mechanical materials, wave transport, band - structure

A New Helmet Design Approach Based on SLAM to Improve Situational Awareness and Reduce Hazards in Mountaineering

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Sensitivity to surrounding circumstances is essential for the safety of mountain scrambling. In this paper, we designed a smart helmet prototype equipped with visual SLAM (simultaneous localization and mapping) and multi-sensor fusion of barometer, IMU (Inertial measurement unit), omnidirectional camera, and global navigation satellite system (GNSS). Equirectangular projection techniques undistort 360° camera images before passing them to the SLAM algorithm. The barometer and GNSS provide additional altitude and positioning constraints to restrict the drift in the visual odometry. As a result, a 3D semi-dense point cloud of the mountainous terrain surrounding the wearer's trajectory is produced. The environment map is then discretized into grids and danger metrics calculated for each cell based on surface normal analysis. Factors including slope, roughness, cliff proximity and obstacles are quantified.

The A* algorithm then optimizes the traversal by minimizing a weighted score comprising the cumulative grid danger and estimated path length to the destination. The helmet detected moving objects via 360° camera projection and tracking. Multi-sensor fusion with GNSS and barometer improved odometry accuracy, reducing position error to 0.4% and orientation error to 1.2° over 100m traversals compared to 1.2% and 4.5° with visual SLAM only. The helmet system demonstrated robust performance in mapping mountain environment and planning safe, efficient traversal paths. The proposed helmet system has the potential to reduce accidents and improve outcomes for climbers exploring dangerous mountain landscapes.

Keywords: Simultaneous localization and mapping (SLAM), multi-sensor fusion, head, mountaineering, point clouds

The impact of Big Data on the Sustainable Development Goals water and energy

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All countries have been concerned about sustainability in recent years. In fact, sustainable development is mainly about planning for current demands while preserving the capacity to meet the needs of future generations. Nevertheless, achieving this objective is challenging since it integrates social, economic, and environmental elements to establish a stable society. This paper addresses the Sustainable Development Goals and how using big data technologies contribute to their evaluation and achievement. We will focus on SDG6 that tackles the clean water and sanitation issues, and SDG7 which handles affordable and clean energy. We will present a concise survey reviewing the big data solutions that were used in these fields, to achieve and assess the progress on these goals. This is thanks to the robust and efficient prediction models built based on large datasets collected in the water and energy domains.

Keywords: sustainability, SDG6, SDG7, big data, water, energy.

Sustainable processes: Electrodialysis as an innovative and environment friendly technology in material processing

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In the past few years, the demand for processes that are sustainable and environmentally friendly has been in the crosshairs of many researches. Electrodialysis, initially developed for desalination and water purification applications, has evolved as a promising and versatile technology with the potential to revolutionize material processing. This method provides accurate control over ion transport, making it suitable for a variety of material processing activities such as electrodialysis-based extraction, separation, purification, and concentration. Electrodialysis can be a powerful membrane-based technique for a sustainable and creative material processing option that aligns with the global shift toward eco-friendly and resource-efficient techniques. Its precision, low environmental effect, and resource recovery potential make it an important role in the pursuit of sustainable materials manufacturing. Electrodialysis has enormous promise for a greener and more sustainable future in material processing as enterprises attempt to lower their ecological imprint. Its relevance consists in the fact that electrodialysis operates with minimal use of hazardous chemicals comparing to other separation methods, it offers precise control over ion transport facilitating the separation of materials with high selectivity where product purity and consistency are critical such as pharmaceutical and agriculture industries and finally it is a great technique with a major interest in water desalination.

This abstract delves into specific applications of electrodialysis in the selective separation of various components and in material processing. Additionally, it discusses ongoing research efforts and innovations in electrodialysis technology, including the development of novel ion-selective membranes and scaling up processes for industrial applications.

As a conclusion, industries seek to reduces their ecological footprint and electrodialysis holds great promise for a greener and more sustainable future in material processing.

Keywords: Electrodialysis, Environment friendly, Material processing, Membrane process

Transforming Waste into Opportunity: Small-Scale Black Soldier Fly Farming for Sustainable Food Production and Waste Management

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In an era of burgeoning global population growth, the pressing challenge of ensuring food security is intimately entwined with the imperative of responsible waste management. Conventional agricultural practices are stretched to their limits, leaving a widening gap between food production and demand. This chasm calls for innovative solutions, and among them, is an insect called the Black Soldier Fly (Hermetia illucens) which stands as a beacon of hope, not only for its role in sustainable food production but also for its remarkable ability to transform organic waste into a valuable resource.

While large-scale industrial Black Soldier Fly farming operations have demonstrated the viability of this species as a protein-rich feed source, it is the nascent field of small-scale and laboratory setups that holds immense promise. This communication paper ventures into this emerging landscape, conducting a comprehensive review of small-scale Black Soldier Fly farming practices. Our primary objective is to present an enticing narrative of innovation, sustainability, and circular economy potential. We will explore the captivating world of Black Soldier Fly larvae as a high-protein feed source for animals while also emphasizing their extraordinary waste management capabilities. These voracious larvae efficiently convert organic waste materials, such as food scraps and agricultural residues, into valuable biomass, turning waste into an opportunity. In this era of climate change and resource scarcity, the synergy between sustainable food production and waste management cannot be overstated. This paper champions the notion that the Black Soldier Fly is not just a solution but a transformational force. By synthesizing existing research and revealing the practicality and feasibility of small-scale Black Soldier Fly farming models, we aim to inspire the scientific community to consider this dynamic approach. In this paper, we aim to delve into the ecological advantages and economic viability of Black Soldier Fly larvae. Our exploration focuses on their potential to convert waste into a valuable resource and make food security attainable within smaller, community-based settings. This journey leads us toward a sustainable and environmentally friendly future.

Multi-criteria decision making for supplier selection in the digital era: Combining AHP and TOPSIS approaches

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Regular supplier selection is imperative to ensure a high-quality offering of products and services, given that these suppliers play a central role in the success of a marketplace, thus having a decisive impact on its profitability. In the context of electronic commerce, numerous factors influence the purchasing process, extending beyond what is observed in traditional sales. The supplier's reputation, product quality, pricing, behaviour and financial situation are all key elements to consider. However, the digital age empowers customers; therefore, customer evaluation is fundamental, as are other aspects such as delivery quality, after-sales service, returns and complaints management, and inventory management.
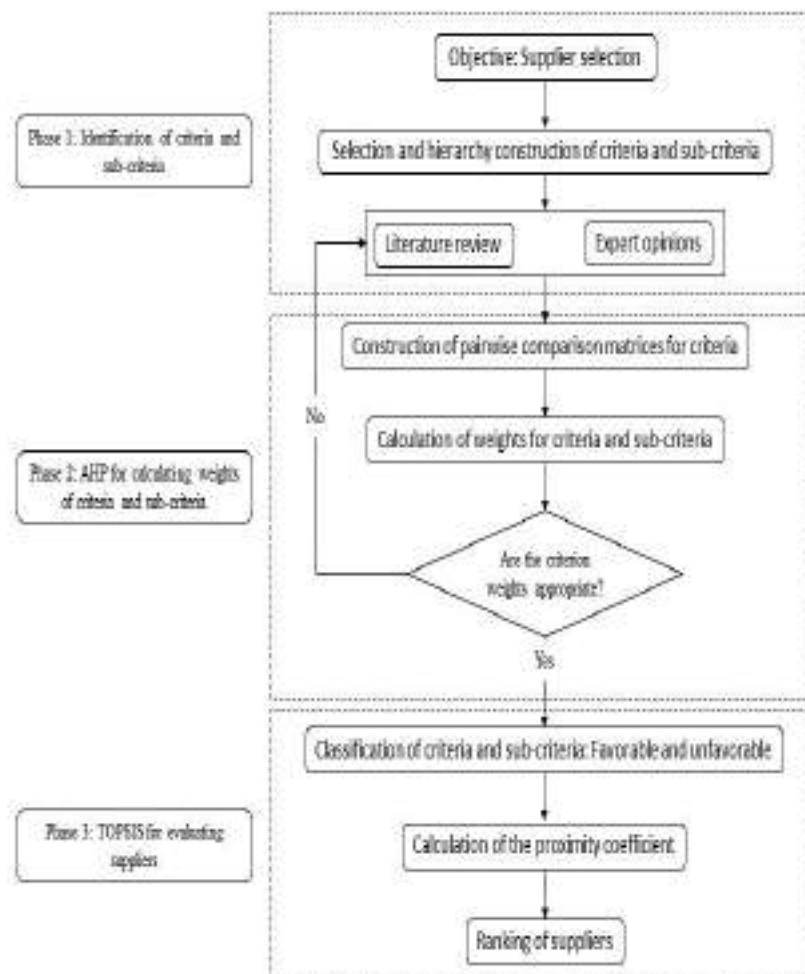
This study presents a hybrid approach that relies on MCDM (Multi-Criteria Decision-Making) techniques. It combines the AHP (Analytic Hierarchy Process) and TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) methods, as illustrated in Figure 1, allowing for the prioritization of identified criteria for supplier selection. The hierarchy established, resulting from a literature analysis and expert opinions, includes seven major criteria, each with three sub-criteria. The results emphasize the significance of supplier quality as the predominant factor in their performance, closely followed by price competitiveness and inventory management. Furthermore, the essential sub-criteria for these criteria are respectively: product quality, price-to-quality ratio, and inventory cost.

Keywords: Supplier selection, electronic commerce, multi-criteria decision-making, AHP-TOPSIS.

A Bayesian networks approach for burnout analysis

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Human resources are grappling with burnout due to the significant increase in tension within organizations. According to statistics, two-thirds of full-timeworkers have experienced career burnout. This tension is impacting both employee well-being and the success of companies. Workplace mental distress has now become a major societal issue, and the term "burnout" has become part of our common language. While productivity remains crucial for companies, it is no longer sufficient in today's landscape. Many factors must be taken seriously to retain employees and maintain their well-being. These factors can be associated with workload, work environment, planning, personnel issues, the nature of the work, psychology, and physiology, making it more challenging to identify or predict burnout.

This study proposes an approach based on Bayesian network and fuzzy logic; using OpenMarkov as a software platform for probabilistic graphical models and FisPro as a fuzzy inference system tool, to develop a model incorporating multiple factors, as suggested by several articles. This model aims to assist companies, particularly human resources managers, in taking the appropriate actions to support employees, particularly from a psychological standpoint, and guide the company towards achieving its goals. The findings indicate that burnout tends to be low in scenarios characterized by weak communication, high overload, and low obstacles. Conversely, burnout is more likely to be high when communication is weak, overload is occasional, and obstacles are medium. Moreover, burnout can also be high in situations featuring medium communication with high obstacles and medium to high overload, as well as in cases of high communication combined with frequent obstacles and non-rare overload.

Keywords: Human resources, Burnout, Prediction, Bayesian network.

Review of Digital Twins in Supply Chain 4.0 with the Integration of Artificial Intelligence

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Supply chain 4.0 is driven by a host of advanced technologies that transform traditional supply chains into more connected, intelligent, and efficient systems. Digital twins; as one of these technologies, play a pivotal role in bringing value to supply chain. A digital twin is a digital representation of a physical object or system, and in the context of supply chains, it models the entire supply chain network, including products, processes, assets, and logistics. Therefore, it allows organizations to monitor, simulate, and optimize supply chain activities in real-time. Meanwhile, artificial intelligence is shown as a promising and rapidly evolving field in transforming supply chains. When combined with artificial intelligence, digital twins can significantly improve the capabilities and efficiency of supply chain operations.

This study aims to assess the integration of artificial intelligence models within the digital twin frameworks in different areas of supply chain management. First, we aim to provide a comprehensive overview of digital twin and artificial intelligence technologies and their growing significance in supply chain 4.0. Then, we classify artificial intelligence models incorporated into digital twin solutions for the supply chain by studying the research results of the current published literature in SCOPUS. The review analysis revealed that the application of artificial intelligence in supply chain digital twins mainly targets the production, distribution, and logistics levels, with significant effects on supply chain capabilities, including resilience, sustainability, and collaboration. We also discuss the current challenges of integrating artificial intelligence into digital twins such as the lack of guidelines for model development and data integration issues. Furthermore, we highlight the related topics that need to be explored in the future.

The findings of this preliminary study can contribute to improving the overall performance of supply chains in various industries. However, we look forward to extending our study to other databases to build state-of-the-art of artificial intelligence integration in supply chain digital twin applications.

Keywords: Supply chain, Artificial intelligence, Digital twin, Machine learning, IoT

Persistent Slotted alohaCA in Planet Mars

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The launch and successful operation of the Mars Cube One (MarCO) CubeSat in May 2018 heralded a new era in solar system exploration and the setup of the first Interplanetary CubeSat Network (ICN). In order to maximize the transmitting data from rovers to the CubeSat during itspass, we will need to design an efficient MAC protocol. This research focuses on the simulationand evaluation of the performance of the Slotted AlohaCA MAC Protocol on the planet Mars.

compared to Earth taking into account the differentproperties between the two planets, such as radius,mass and speed of rotation. We have conducted many simulations using the NS2 simulator that takes into consideration the spatial dynamicbehavior of the Nanosatellite, which is dependent on motion of the Nanosatellite in its orbit. Three appropriate performance measures are evaluated: Throughput, stability and power consumption.
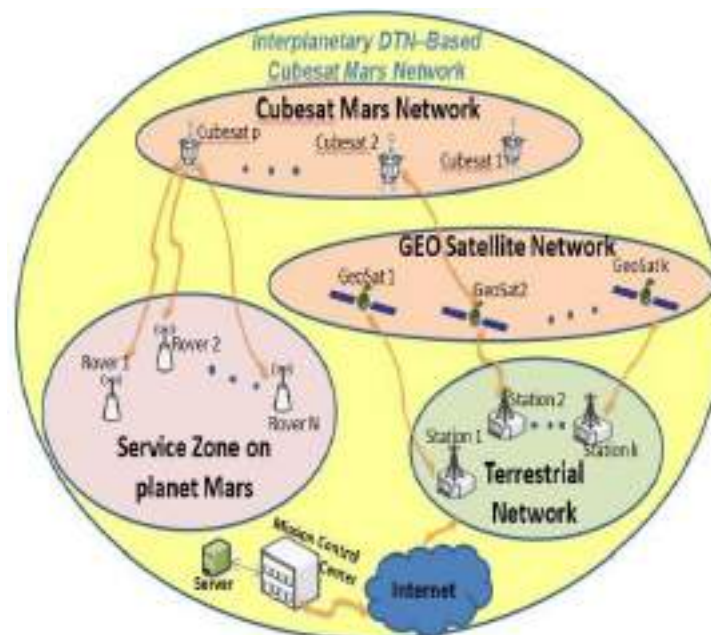
Figure 1: Interplanetary DTN–Based CubeSat network

We have focused on the simulation of rovers on the surface of Mars that are willing to send their collected data to a Nanosatellite using slotted AlohaCA protocol on the planet mars. The obtained results based on Earth planet and the energy consumption, related to these two planets of the Persistent Slotted AlohaCA MAC protocol for LEO Nanosatellite are also compared.
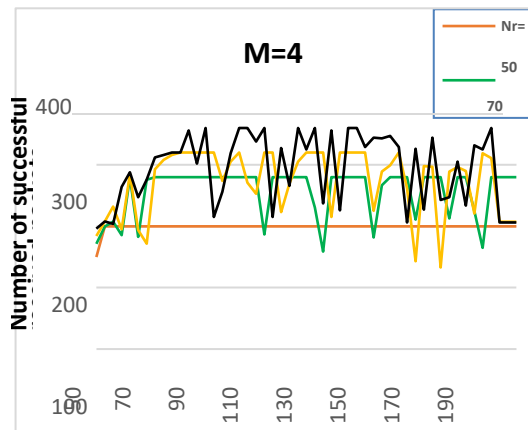
Figure 2: The Number of successful received packets in Mars planet
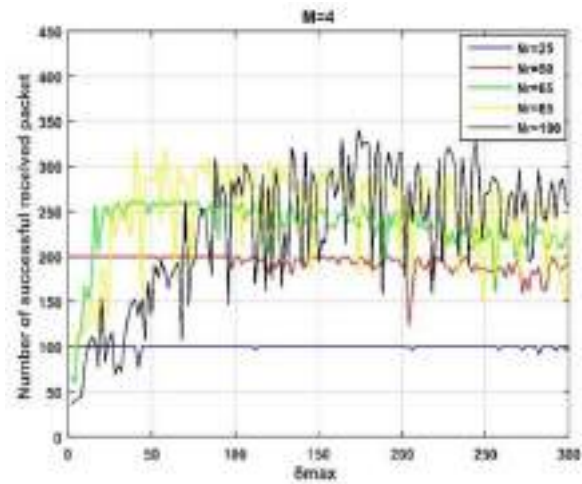
Figure 3: The Number of successful received packets in Earth planet

All the simulations, proposed in this paper, are carried out using proposed NS2 simulator. We have proved with simulations that the results on Mars planet are better than on Earth. In our upcomingwork, we'll concentrate on studying the performance of Mars CubeSat network constellation.

Keywords: Media Access Control (MAC); LEO Satellite communication; Nanosatellite; Mars; WSN; Slotted AlohaCA.

Deciphering the Indiscernible: Advanced Anomaly Detection for the CAN Bus in the Age of Autonomous Vehicles

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With the rapid digitization of vehicular systems, the Controller Area Network (CAN) bus, fundamental to in-vehicle communication, has emerged as an attractive target for cyber adversaries. Protecting this intricate ecosystem demands novel security strategies beyond traditional network intrusion detection systems (IDS). This research endeavors to design and validate an anomaly-based IDS specifically tailored for the CAN bus.

Given the CAN bus's unique real-time constraints and distinct message formats, we develop a model that can accurately discern genuine traffic variations from malicious anomalies. Through extensive experimentation with both synthetic and real-world vehicular traffic datasets, our proposed IDS demonstrates a high detection rate with minimal false positives, thus enhancing the security posture of modern and forthcoming autonomous vehicles. Our findings underscore the imperative need for bespoke IDS solutions for vehicular networks, ensuring passenger safety and fortifying the foundation of future transportation systems.

Keywords: Controller Area Network (CAN), Intrusion Detection Systems (IDS), vehicular security, anomaly detection, autonomous vehicles.

Indexing of Handwritten Archives Complexity and Morphology of Arabic Characters according to Traditional Moroccan Styles: Semantic Indexing and Optical Character Recognition

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Arabic manuscripts present a challenge of transcription and reading of the content. We are interested in this work the study of the complexity and diversity of traditional styles of characters in Moroccan Arabic manuscripts (Figure 1), and in particular concerning their morphology and their variations according to their position in a word. Our dataset contains 457 manuscripts classified as Moroccan historical archives written by different persons. The objective of this work is to identify the nature of Moroccan writing from a geometric point of view (Figure 2) for the application and development of optical character recognition models applied to historical archives and for the application of semantic indexing for the extraction of descriptors and concepts in documents. For this, we suggest implementing segmentation and character recognition algorithms to analyze and interpret characters in documents and introducing artificial intelligence tools and natural language processing techniques to extract meaning from handwritten texts arabs to promote Moroccan archival heritage.

Figure 1: Manuscript published in the periodical ElWataiq of the Moroccan archives department N°1384.
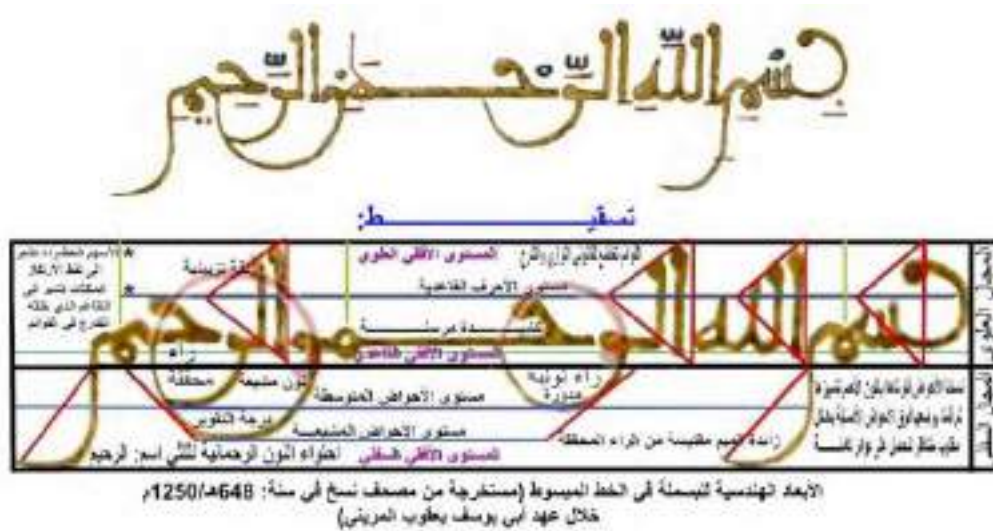
Figure 2: The geometric dimensions of the "BASMALA" in simplified script.

Keywords: Manuscript archives, Moroccan Arabic character, Semantic indexing, OCR, Artificial intelligence.

Internet of Things (IoT) for Intelligent Healthcare: Smart System to relieve pressure on hospitals during the Pandemic of Corona

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The need for medical supplies and healthcare experts has increased due to the spread of the corona virus, which has placed a huge pressure on healthcare systems. This is why several solutions have been developed, particularly since the Internet of Things (IoT) has been used widely in the technology of information and communication. This article suggests a solution for this issue, which is affecting the health sector. Its main objective is to alleviate pressure on hospitals, especially in the times of crisis. This solution is illustrated through a monitoring system, aiming at controlling the corona virus indicators in real time. It is a device on a wristband, which monitors levels of temperature and oxygen level of patients in real time.

These indicators are very crucial for the medical staff to monitor the patients' health status and thus decide whether a patient needs immediate intervention or not. The system contains a tracker for checking whether patients are adhering to the guidelines of social distancing. A notification is immediately sent to the health professionals once the indicators of a given patient is above the set threshold. In fact, this device consumes energy in an optimised manner. Hence, the proposed system is a very promising solution to deal with the spread of corona virus because it offers patients remote access to health services no matter where they are.

Keywords: Smart System, Healthcare, IoT, monitoring, health system, Corona

Predicting Blast-Induced Ground Vibration in Mining and Civil Engineering Projects Using Artificial Intelligence and Deep Learning

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The rapid advancement of Artificial Intelligence (AI), particularly Deep Learning (DL), has demonstrated its effectiveness across diverse industries, from medicine and economics to automotive and digital marketing. In this study, the potential application of AI within the realm of civil engineering and geotechnics in the context of Morocco is investigated. Specifically, the phenomenon of blast-induced ground vibration (BIGV) resulting from explosives commonly used in excavation, rock fragmentation, and various construction projects such as buildings, bridges, dams, and tunnels is the focus. While blasting operations are economically advantageous, ground vibrations akin to minor earthquakes are produced, posing risks to nearby structures. Conventionally, explosives practitioners using seismographs undertake the measurement of the Peak Particle Velocity (PPV) induced by test blasts at varying distances from the detonation point, ensuring compliance with prescribed vibration thresholds. However, this method is characterized by its time-intensive nature, reliance on skilled personnel, costliness, and limited spatial coverage. In response, the implementation of DL to predict PPV across different areas by utilizing three key input parameters is explored: maximum unit charge per delay of the explosive, distance between the blast site and the target point, and the geological density of the underlying rock or soil. The establishment of relationships between PPV and independent variables influencing ground vibration intensity requires a substantial dataset for DL models. To facilitate this, a dataset comprising 100 real measurements of PPV, blast distance, maximum unit load per delay, and ground density spanning from December 2022 to September 2023 has been compiled. This dataset was collected from two Moroccan mining sites, with data collection ongoing. A larger dataset will empower the DL software to accurately predict BIGV intensity irrespective of soil or rock characteristics. Ultimately, the objective of this research is to provide blasting companies with

an intelligent, cost-effective tool capable of ensuring the safety of local residents and infrastructure.

We programmed a first code with Artificial Neural Network to predict the PPV , as a first result we found that the coefficient of determination R2 of our program is very superior to the one of the Empirical Equation called Scaled distance widely used by blasting practitioners to forecast the PPV. Hence, we conclude that the accuracy of the ANN outstand the one of the Scaled Distance Equation.

Keywords: Blast-Induced Ground Vibration, Peak Particle Velocity, Deep Learning, Artificial Intelligence, Moroccan Mining

The role of Artificial Intelligence in Elevating Customer Experience in Luxury Hotels

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This abstract provides an overview of the integration of Artificial Intelligence (AI) technologies into the customer experience strategies of luxury hotels. In an era where personalized service and seamless guest interactions are paramount, luxury hotels are increasingly turning to AI to enhance their guests' stay. This paper explores the various ways AI is transforming the luxury hotel industry, focusing on its impact on guest satisfaction, operational efficiency, and revenue generation.

The first section of the paper highlights how AI-powered chatbots and virtual concierges have revolutionized guest interactions. These AI-driven interfaces provide round-the-clock assistance, recommend personalized experiences, and address guest inquiries, thereby improving guest satisfaction and freeing up hotel staff to focus on more complex tasks.

The second section delves into the power of AI-driven analytics and data-driven insights. Luxury hotels are harnessing AI to gather and analyze guest data, enabling them to anticipate guest needs, preferences, and behaviors. This, in turn, allows hotels to offer tailored experiences, from room preferences to dining recommendations, elevating the overall guest experience.

The third section explores how AI has optimized back-end hotel operations. AI-driven systems are streamlining housekeeping, inventory management, and maintenance, reducing operational costs and ensuring that guests enjoy a flawless and well-maintained environment.

Additionally, the paper discusses the role of AI in enhancing security and safety protocols, particularly in the context of guest privacy and fraud prevention. AI-powered surveillance systems and data protection measures are ensuring guests feel secure while maintaining their privacy. Furthermore, the study investigates the revenue-generating potential of AI through dynamic pricing, personalized promotions, and targeted marketing campaigns. By leveraging AI-driven strategies, luxury hotels can optimize room rates, increase upsell opportunities, and maximize overall revenue. Lastly, ethical considerations and challenges associated with AI

adoption in luxury hotels are addressed, highlighting the importance of transparency, data privacy, and responsible AI deployment.

In conclusion, this paper demonstrates how luxury hotels are embracing Artificial Intelligence as a transformative tool to provide exceptional guest experiences, improve operational efficiency, and drive revenue growth. While challenges exist, the benefits of AI integration in luxury hotels are undeniable, setting a new standard for luxury hospitality in the digital age.

Keywords: Artificial Intelligence, Customer Experience, Luxury Hotels, AI-driven.

Session 2: Human Resources Management and Artificial Intelligence

Artificial intelligence in the service of marine aquaculture optimization

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Recently, artificial intelligence has become an unavoidable player in the field of sustainable development and international competition. Artificial intelligence (AI) has permeated various industries, and marine aquaculture is no exception. The integration of artificial intelligence into the management and conservation of marine aquaculture is revolutionizing the intensification and expansion of sustainable aquaculture production systems. AI-powered systems assist aquaculturists in optimizing their operations, enhancing production, and effectively managing marine farms. They also facilitate the development of innovative applications for monitoring, control, and prediction of marine ecosystems. Furthermore, AI contributes to waste reduction and minimizes the environmental impact of aquaculture. The adoption of AI technology in aquaculture is crucial for ensuring the long-term sustainability of the industry and the health of our oceans.

Overall, AI is proving to be a crucial tool for optimizing aquaculture development plans and strategies for conserving marine ecosystems. By providing early warnings of environmental changes, identifying and safeguarding threatened species, and monitoring water quality, AI helps maintain the health and vibrancy of marine ecosystems.

Keywords: artificial intelligence, marine aquaculture, development, marin ecosystems.

Digital Technologies in Moroccan Universities: Reflections on A New Agile Pedagogical Model.

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The Covid 19 health crisis has clearly demonstrated the key role of digital technologies in the Moroccan universities, which guaranteed the pedagogical continuity at a distance and transformed gradually the university operating model, the teaching methods and the research management. Indeed, the digital technologies give the Moroccan universities the opportunity to reinvent their strategic plan, hence and thereby the need to a deep thinking about the nature of the managerial practices to be implemented in order to set up a new managerial model. This needs to find a new way of managing led us to carry out a doctoral research project, which attempts to propose an agile managerial model for the Moroccan university based on the integration of digital technologies. Given this context, we recall that since the publication of the law of 01-00 in 2003 relating to the functioning of the universities, several reforms have followed one another to put the digital technology at the heart of the strategic plans. Moreover, the latest reform known as "The National Plan to accelerate the transformation of the ecosystem of Higher Education, Scientific Research and Innovation (PACTE ESRI 2030)" has among its strategic axes the reinvention of the current educational model universities by integrating digital technologies as an accelerating lever for the transformation of Moroccan universities. Our research work converges totally with this reform.

Indeed, it allow us to define the right and key variables to study which will be the basis for proposing a new educational model. This latter is supposed to be agile and a gateway to attempt to change the existing university operating model toward a well-structured professional educational service offering by higher education institutions. This new design will make it possible to change the professor's posture who will becomes a guide and a coach and the student who becomes a learner. Both parties will integrate the digital into their fields of activity. This paper aims to shield the light on the digital technologies that should be adopted in order to reinvent educational practices as well as how to integrate them in the different strategic areas of the Moroccan university to ensure an integrated global educational reform and thereby an agile and proactive higher education.

Keywords: Digital Technology – Educational reform – Moroccan higher education - Agile management.

Human Capital and Education: Theoretical Perspectives and a Brief Empirical Synthesis.

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For a theoretical understanding of how education and training affect economic productivity and social development, the idea of human capital was developed. The underlying principle of human capital is that investing in people's education, training, and skill development can have a significant impact on their ability to contribute to society and the economy.

The human capital theory offers many benefits to people in order to increase their productivity and future income if those people make purchases. Thus, the analysis of the private sector's rate of educational earnings is not a novel situation. According to business projections, a firm's investment in real capital results in an increase in its profits and outside revenue. Our current paper's main goal is to provide an essential literature review that will help clarify the two notions with an empirical synthesis. This provides us with the chance to conduct empirical studies in the future.

In order to do this, we have developed a theoretical foundation within the context of a review of relevant literature with an indication of an empirical synthesis. Therefore, human capital and education are two pillars that are critical to the growth of the individual and the economy. Investment in education helps a society's human capital grow, which in turn stimulates economic growth, lessens inequality, and improves everyone's quality of life. Therefore, it is crucial that governments, businesses, and society as a whole recognize the value of education and work together to make it a top priority. The theory of human capital puts forth the notion that education and training are crucial investments for both individual and societal growth. A strong human capital may enhance living standards, boost the economy, lessen inequality, and encourage innovation. As a result, numerous public policies and development strategies work to improve the human capital of their population.

Keywords: Human Capital; Education; Theoretical Approaches; Productivity; Empirical Works.

Intelligent Organizational Social Responsibility in the Moroccan context: the case of Moroccan Public Establishments and Enterprises

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Our work treats the intelligent Corporate Social Responsibility (CSR), based on artificial intelligence (AI) and new technologies. This innovative approach to organizational social responsibility integrates AI and massive data for Organizations' Social Responsibility (OSR) activities, while improving their efficiency and impact. In the Moroccan context, particularly within Public Establishments and Enterprises (PEE), the adoption of intelligent CSR is of particular importance. PEEs play an essential role in Morocco's economy, and their transition to smart OSR practices can catalyze the country's economic and social progress. However, Morocco has yet to make significant strides in the adoption of emerging technologies and practices. The article therefore highlights the importance of this approach for Morocco and PEEs, highlighting the potential benefits. By adopting intelligent OSR, PEEs will benefit from a number of advantages. As such, it represents an essential first step towards promoting smart, sustainable OSR in Morocco and beyond, while providing fertile ground for researchers and practitioners to further explore this promising opportunity. Ultimately, this article paves the way for future research and collaborations aimed at refining and extending this smart practice of OSR, with a focus on creating added value for organizations, improving citizens' quality of life and positively influencing humanity as a whole.

Keywords: Corporate Social Responsibility (CSR), Artificial Intelligence (AI), New Technologies, Public Establishments and Enterprises (PEE), Morocco

Management control: a new era in the face of artificial intelligence

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Management control is a practice, a decision-making tool. It is a profession that is currently evolving and will continue to face transformations to which it must adjust, in order to guarantee the company's sustainability, maintain its performance and provide the necessary means to improve the decision-making process. The digitization of this profession is no longer a choice, but an obligation to continue this evolution.

Artificial intelligence is a computer science discipline that aims to create computer systems capable of performing tasks generally associated with human intelligence. It is also characterized by their ability to learn from data, reason, adapt and solve problems without human intervention. In other words, intelligent machines.

The implementation of artificial intelligence tools applies to its role transformations at the business level, through the analysis of massive data enabling profitability prediction, fraud detection or other tasks contributing to decision support. This presents an organizational challenge.

Through our contribution, and by means of a literature review, we aim to shed light on the digitization of management control in general, and the role of artificial intelligence at this level in particular.

Keywords: Management control, Digitization, Artificial intelligence TDABC method, Target Costing

Morocco's new tax reform: between the imperative of mobilizing tax revenues and the challenge of social justice

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The present research aims to clarify how social justice is achieved through the implementation of the new tax reform adopted in Morocco, this reform having recently had economic and social connotations, particularly in the light of the objectives and imperatives of the new development model, which calls for reflection on mechanisms and techniques that would make it possible to improve the structure of the Moroccan tax system and achieve excellence in guaranteeing the yield of tax revenues and equity in the distribution of tax burdens in a way that limits tax avoidance practices and thus achieves social justice. To answer our research question, we used qualitative approach based on exploring the reports officials of Morocco published by ministry of economics and finances, then working semi-structured interviews.

The process of the data analysis data is carried out through the NVIVO software The results concluded that the adoption of the new tax reform in Morocco is mandatory to provide the necessary revenues to cover the country's public expenditure, on the one hand, and achieve social justice, on the other, because it offers opportunities to strengthen Morocco's tax system and raise the tax revenues needed to achieve social justice provided that the new tax reform is properly implemented in the next finances laws.

Keywords: new tax reform; tax revenues mobilization; social justice; new development model; tax justice

Performance at the Center of Reflection of Human Resources Management (HRM)

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The concept of performance has always been representative of a significant subject in the field of management sciences; it is a theme that brings together consultants, researchers, and business leaders. It remains at the heart of economic and administrative literature and is the subject of much controversy. Today, there is no consensus or agreement on the definition of performance and the way to measure it, which makes measuring the performance of human resources complex and difficult and assimilates to a challenge.

Our study's objective is to investigate the various organizational performance techniques, HR-related approaches, and methodologies for measuring HR performance. Our work within the company subject to our study is based on the application of the Autissier and Simonin methods, which provide a strategic and operational tool for measuring the performance of the HR function. The method adopted makes it possible to identify the strengths and weaknesses of this function.t.

Keywords: HRM, Performance, Organizational Performance, HR performance measurement

Performance of the Moroccan higher education sector in the era of artificial intelligence: construction of a conceptual model

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Today, we find ourselves at the forefront of technological advancement, ushering in new innovations across various domains. Among these, artificial intelligence (AI) has emerged as a central player, undergoing significant development. AI offers a multitude of technologies that streamline internal processes, enhance task efficiency, automate routine operations, and boost overall productivity. By sifting through vast datasets and transforming them into valuable insights, AI mitigates uncertainties and risks posed by both internal and external environments. The realm of higher education now grapples with a fresh challenge - the management of copious amounts of data from diverse sources, spanning structured and unstructured formats. This data emanates from various origins, such as educational platforms, digital workspaces, MOOCs, databases, social networks, Open Data initiatives, and more. Consequently, we witness an exponential surge in digital data that traditional information systems struggle to handle and optimize efficiently. AI emerges as an ideal solution to this challenge, offering capabilities for prediction, resource optimization, and planning. However, as we embark on this AI integration journey, it is crucial to proactively address the ethical dimensions inherent in AI's deployment. Monitoring and assessing the ethical integration of AI is imperative to ensure its ethical operation. Likewise, promoting training programs for teaching and administrative staff becomes paramount to enhance their skills in this ever-evolving landscape. Striking a harmonious balance between human expertise and AI solutions is essential to enrich the higher education sector effectively.

While numerous research studies have explored the potential of AI in education worldwide, there is a noticeable dearth of explicit studies focusing on the application of AI in the Moroccan higher education context. In this communication, we aim to underscore the significance of AI in Moroccan higher education and its impact on performance. We intend to construct a conceptual model that amalgamates the requisite metrics for evaluating the higher education sector within the framework of AI. To achieve this, we will conduct a comprehensive literature review, delving into the concept of artificial intelligence and its interplay with Big Data. We

will contextualize the application of artificial intelligence in the Moroccan higher education landscape, ultimately culminating by the formulation of our conceptual model.

Keywords: Artificial intelligence; Big Data; higher education; performance; human skills.

Self-entrepreneurship as a lever for integrating the informal sector and promoting entrepreneurship: the case of the "auto-entrepreneur" status in Morocco.

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Like other countries, Morocco is characterized by a high proportion of jobs in the informal sector. To tackle this problem, several measures have been put in place to encourage the conversion of informal activities. On the other hand, the Moroccan economy has been marked in recent years by a certain stability in its macro-economic fundamentals, and the implementation of several strategies aimed at developing and liberating the entrepreneurial spirit of talented young people and offering a legal alternative to those engaged in informal activity. One of these flagship measures is the "auto-entrepreneur" status, set up under Law n°114-13 in 2015, with the main aim of enabling any Moroccan citizen who so wishes, easy and non-expensive access to a legal framework dedicated to micro-business with a minimum of commitments (tax and social).

After more than eight years since the introduction of this status, a legitimate question needs to be asked: how effective has this new legal framework been in encouraging the integration of informal activities and stimulating the entrepreneurial spirit among the target populations, notably Moroccan youth?

A diagnosis of this target population, as well as an analysis of the needs and expectations of "auto-entrepreneurs" already in business, will shed light on the impact of the new status.

Targeting a population estimated at more than 4.2 million people in various categories, this status is of proven interest to many project leaders and entrepreneurs. In fact, as of May 2023, over 565,000 applications had been received and more than 384,000 people had registered with the national register of "auto-entrepreneur", with significant indicators: 30% of these "auto-entrepreneurs" are women, 50% are under the age of 35, 50% work from home, and 81% of them work on a permanent basis.

Even if this status seems to be a good way for certain informal activities to integrate the classic economic circuit, by offering a transparent and recognized possibility of reconversion to people active in the informal sector, as well as the reinforcement of links with companies via the possibility of invoicing, access to public orders and social coverage.

This status has made it possible to do business differently and without complexes, by freeing the potential of citizens with projects, whether students, young talents, or people with special needs, notably by facilitating access to the entrepreneurial act (inexpensive creation, dematerialized registration, simplified and symbolic taxation, domiciliation at home, etc.). However, this initiative remains a limited offer, not meeting all ambitions and not covering all economic activities (agriculture, sea fishing and others), which needs to be filled and coupled with other initiatives and measures, the aim being to create a large-scale and irreversible coordinated movement for the development of entrepreneurship and the integration of the informal sector, based on broad support from the target population and effective mobilization of the players in this ecosystem on a local, regional and national scale.

Keywords: Self-entrepreneurship, entrepreneurship, informal sector, inclusion, auto-entrepreneur status.

Innovative Approaches to Labor relations conflict Resolution: Harnessing the Power of Collective Bargaining Agreements in HR Management

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Organizational proactivity in conflict prevention stands as a pivotal objective within the domain of Human Resources Management (HRM). This imperative is geared towards fostering a harmonious work environment and ensuring stability in social relations. This study delves into the strategic role played by collective bargaining agreements, serving as a decisive instrument for anticipating and resolving conflicts within the specific context of Morocco. Acknowledging HRM as a central actor in this dynamic, the research illuminates its proactive engagement in the identification and resolution of potential sources of tension. This proactive involvement is notably executed through the formulation of explicit and transparent internal policies defining the rights and responsibilities of employees. Particular emphasis is placed on the importance of equitable policies as a pre-emptive measure against conflicts.

Methodologically, this study relies on the analysis of a sample of Moroccan enterprises spanning diverse sectors. Through the examination of conflict evolution before and after the implementation of collective bargaining agreements, the research seeks to clarify the impact of these agreements on the dynamics of conflicts. Contextualization is meticulously conducted, taking into consideration the cultural, economic, and legal norms specific to the Moroccan context. Preliminary findings uncover a tangible enhancement in the social climate within enterprises that have embraced collective bargaining agreements. The noteworthy decrease in conflict occurrences post-agreement underscores the efficacy of these strategic instruments in cultivating a collaborative and resilient work environment. Consequently, this research significantly contributes to comprehending the instrumental role of collective bargaining agreements in conflict prevention within Moroccan enterprises, offering valuable insights for HRM practices and organizational strategies aimed at cultivating enduring and productive workplaces.

Keywords: Collective Bargaining, Labor relations conflict, HRM, anticipation and resolution of conflicts.

The impact of the HR information system on the decision-making process and information management

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The application of information technology to HRM has grown rapidly since the early 1990s. Since then, its use and impact on HRM have attracted researchers. Advances in information technology have changed the way HR functions within organizations. Today, many organizations use the services of an HRIS to help the HR department perform core functions, boost administrative efficiency, improve decision-making, and accelerate information sharing. A high-performance HRIS supports the planning and implementation of an organization's core management processes, such as management decision-making, technology selection and organizational hierarchies. As a result, HRIS has become an active tool that helps employees to relate more easily to their organization and to each other, and thus to increase their productivity and performance at work.

A computerized HRIS system enables a team to perform more effectively in terms of decision-making processes, planning, administration, and the development of functional data for storage, analysis, retrieval and updating.

They have provided organizations with comprehensive information, enabling them to ensure structural connectivity between units and their employees' activities., and maintain the highest level of communication and cooperation.

Keywords: Human resources information system, decision making, information management, impact, employee.

The integration of artificial intelligence at the heart of working capital management: a lever for financial performance and an asset for business prosperity

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Effective management of Working Capital Requirements (WCR) is crucial to a company's financial stability and profitability. In a complex, competitive and data-driven business world. Integrating technological advances such as Artificial Intelligence (AI) and Big Data into working capital management is a strategic lever for optimising working capital management and a compound for sustainable financial performance. AI, powered by advanced algorithms and equipped with an advanced capability for analysing massive data, enables more accurate predictive analysis of working capital components such as trade receivables, inventories and trade payables.

This ability to anticipate cash requirements and optimize cash flow has a significant impact on reducing financial costs and improving profitability. It also enables the automation of repetitive tasks linked to WCR management, the identification of trading partner behaviour models and the prediction of the target level of each WCR section. Similarly, Big Data represents a rich source of real-time data that enables businesses to better understand market trends, customer behaviours and external economic factors influencing WCR. It also allows organisations to proactively manage working capital, make informed decisions and perform in-depth cash flow analysis.

Through a fairly recent literature review, in addition to a qualitative study of 30 companies, this research explores the opportunities offered by these emerging technologies and suggests that treasurers introduce them into their regular management, since they help to reduce operating and financing costs, anticipate ecosystem risks and optimise investment in each element of WCR, which consequently encourages the company to refocus on its core business, structurally ensures financial equilibrium and thus leads to a significant improvement in financial performance and competitiveness. However, our study also raises potential challenges relating to the ethical implications of using these technologies, data confidentiality and information security.

Keywords: WCR, IA, Big Data, Financial performance, Cash management.

The role of technological incubators in the entrepreneurial ecosystem in Morocco.

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The purpose of this presentation is to examine the role of technological incubators within the entrepreneurial ecosystem in Morocco, an ecosystem that is experiencing significant growth and increasingly fostering innovation. In this context, technological incubators are emerging as strategic entities aimed at supporting the creation and growth of innovative, high-value-added companies.

Firstly, we will outline the various key players in the Moroccan entrepreneurial ecosystem, while striving to understand the specificities of the entrepreneurial landscape in which they operate and interact.

Next, we will embark on an exploration of the model and operation of technological incubators in Morocco, highlighting their contribution to the development of technology startups.

To illustrate our points, we will present concrete examples of Moroccan companies that have benefited from the support of technological incubators.

Finally, we will analyze the persistent challenges faced by these incubators, particularly their ability to adapt to the changing needs of incubated companies in a rapidly evolving technological landscape. Additionally, we will provide insights into their future role in shaping the innovation landscape in Morocco.

In conclusion, this presentation is aimed at the academic community, policymakers, and stakeholders in the entrepreneurial ecosystem, with the ambition of stimulating a deep reflection on the potential of technological incubators as a crucial lever to energize the entrepreneurial ecosystem and accelerate innovation in Morocco.

Keywords: Entrepreneurial Dynamics, Technological Incubators, Entrepreneurial Ecosystem, Innovation, New Technologies.

The Transformative Influence of Information and Communication Technologies on Knowledge Transfer and Organizational Dynamics in Moroccan Organizations

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In a short space of time, intangible capital has become the decisive driver of economic growth. Indeed, sustainable competitive advantage is now linked to the capacity to innovate, based on the production of knowledge, the enrichment of knowledge, and the enhancement of skills. This is measured by three main indicators: research and development (R&D) expenditure, training, and the intensity of use of new information and communication technologies (ICTs). Aware of the importance of preserving and valorising knowledge and concerned about their competitiveness in a constantly changing environment, companies are increasingly opting to manage their intangible capital and invest in ICTs. The way the companies use these technologies facilitates the acquisition, conservation, and sharing of both explicit and tacit knowledge. Indeed, the results of the study carried out for this article, using a dual qualitative/quantitative approach, lead us to the following conclusion: because of the quasi-immediacy of their effects, organizations have a definite interest in adopting ICTs to benefit from their use in a knowledge management dynamic.

Keywords: Information and Communication Technologies, influence, knowledge, knowledge transfer, organization.

Session 3 : Finance, Entrepreneurship, and Information Management

Development of a financial e-control system as a subsystem of the "e - State" project in the digital economy

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The purpose of our research is to identify problems and formulate proposals for improving the system of state financial control based on the financial e-control system that we have developed. It is this system that will prevent corruption in the formation, distribution and expenditure of state budget funds. The proposed financial e-control system is a subsystem of the project "E-state". It should be noted that the main problem of the "incapacity" of the Ukrainian state financial control system, both internal, carried out by the authorities of the State Audit Service, and external, carried out by the Accounts Chamber, is the incorrect organizational and functional structure. This structure leads to a conflict of interest and does not comply the basic European principles of independence of state financial control from the system of the audited object. Today in Ukraine there is a situation where in the executive power system the controlling authorities are obliged (according to the current legislation) to carry out orders and assignments of budget funds managers, that is, in fact, the financial control authorities, being in the executive power system, are subordinate to its leadership, whose financial actions are obligatory control. This is the conflict of interest that causes damage to the state and society!

That's why our team has crafted a novel approach: the Concept of a financial e-control system within the wider "E-State" project. This solution aims to organize stringent, transparent control over budget funds' utilization, ensuring efficacy and adherence to the designated purpose. It's an important step towards a future where the state can truly serve its people effectively and transparently. Our proposed Concept for modernizing the state financial control system based on the information and analytical system financial e-control has an author's certificate and a patent for a utility model for a system for collecting and monitoring financial data flows, registered in the state register of patents of Ukraine.

The proposed IAS SFC will allow the integration and automation of budget planning processes, management of income, costs, debts and financial assets, cash, procurement, human resources etc. It must interact with other state, regional and local information and analytical systems.

Platform "E-State" is a public initiative. Our team believes, that the power should be controlled by the people, and our aim is to assist not only state and municipal institutions but also public organizations, using expertise in managing complex organizational processes and developing information systems. We are convinced, that this initiative can help Ukraine foster mutual relationships with the EU.

The purpose of the "E-State" project (platforms of cooperation between civil organizations), is to serve as an instrumental tool in involving the public in the process of collecting, analyzing big data, and effectively addressing these issues.

Keywords: budget funds, e-control, digital economy.

Agricultural Cooperatives Supply chain integration: Bibliometric and Content Analyses

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Agricultural cooperatives are frequently perceived as ideal mechanisms to promote vertical coordination with, or horizontal integration between, small farmers who might otherwise struggle to access value-adding opportunities and selective markets. Although research on this topic shows considerable interest in further vertical integration as an approach in improving agricultural production and marketing, the growth of cooperatives is not readily determinable since it is intermingled with growth arising from horizontal integration and other factors.

The goal of this study is to show how horizontal integration led to vertical integration in the supply chain management of cooperatives and promotes the creation of efficient "second level cooperatives". The paper presents a comprehensive review of the Agricultural cooperatives' integration strategies within the scope of supply chain integration. Using systematic review methods, relevant studies published to early 2023 are explored to reveal the research landscape and the gaps and trends. The paper shows the building blocks and the main research directions. Three main categories — Agricultural cooperatives supply chain integration, horizontal and vertical integration strategies profitability, vertical coordination performance—help explain this association and were discovered through cluster analysis. Insights are provided into the various elements of vertical and horizontal integration strategies among agricultural cooperatives and the degree of joint horizontal and vertical integration that may be effected in one cooperative firm. Many cases of integrated firms involve combinations of vertical, horizontal, and complementary integration. Only a few researchers have systematically reviewed the literature or taken a bibliometric approach in their analyses to provide an overview of the current trends and links between cooperatives business model and supply chain integration.

Keywords: Supply chain integration; Agricultural cooperatives; vertical integration; horizontal integration.

Attempt to Model the Entrepreneurial Ecosystem of the Tanger-Tetouan-Al Hoceima Region (Northern Region of Morocco)

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The Tangier-Tetouan-Al Hoceima region has become an expanding economic hub in Morocco, attracting more and more entrepreneurs and investors. Our research aims to create a simplified and structured representation of the environment in which companies operate within this region. This modelling makes it possible to visualise the different elements, actors, resources and interactions that contribute to the entrepreneurial dynamics of the TANGER-TETOUAN-AL HOCIEMA (TTA) region. Modelling the entrepreneurial ecosystem usually involves identifying and connecting components.

The main question is who are the components of the entrepreneurial ecosystem of the TTA region and how do they interact with each other?

The methodological approach deployed to deepen the understanding of the entrepreneurial ecosystem of the TANGER-TETOUAN-AL HOCIEMA (TTA) region and identify the key components and the interactions between these elements. It will be based on a combination of qualitative and quantitative methods to obtain a holistic view of this dynamic ecosystem.

First, we will conduct a comprehensive review of the academic literature and relevant reports on entrepreneurial ecosystems. This allows for familiarity with existing models and typical actors present in such ecosystems, thus providing a solid foundation for research.

Once the baseline is established, initial data will be collected through a questionnaire distributed to the various key representatives of each component of the ecosystem. Analysis of this model can provide valuable insights into ecosystem strengths and weaknesses, growth opportunities, potential barriers to innovation, and areas where strategic interventions might be needed to foster sustainable and prosperous entrepreneurial development in the TANGER-TETOUAN-AL HOCIEMA region.

Keywords: Modelling, Entrepreneurial, Ecosystem, Region

Behavioral bias Versus Rationality in decision-making: Case of Morocco

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Large numbers of investors make irrational decisions in the financial market which leads to stagnation of investment. Investor sentiment is one of the main determinants of market movements. In this context, studying the role of emotions in shaping investment decisions seemed important. Work in behavioral finance has attempted, for several years, to explain some of the anomalies observed, by abandoning the idea of investor rationality, which is central to the hypothesis of efficient markets. Indeed, recent empirical and experimental work has confirmed that instead of compensating for errors in judgments made by individuals, they influence the behavior of securities prices on the financial market.

The aim of our work is to provide a better understanding of cognitive and emotional biases, which affect the mental processes of information processing and decision making. Part one is an opportunity to present the context of the research as well as the review of the literature by analyzing the theoretical frameworks necessary to deal with the problem. In the second part, we use a questionnaire to validate the existence of the influence of each of these variables on the rationality of decision-making. Our results show that investors should make constant attempts to increase their awareness of behavioral finance by educating themselves on the ground. Studying behavioral errors and reflecting on investor decisions can help better understand the extent and how they are influenced by emotions while making financial decisions in uncertain circumstances.

Keywords: Decision-making, behavioral finance, cognitive and emotional biases, rationality.

Enhancing the efficiency of financial audits through technological integration in accounting firms

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The competitiveness of companies has been influenced by recent occurrences, particularly the COVID-19 pandemic, which caused significant disruption to the global economy. Nevertheless, certain companies have adeptly adjusted to the new circumstances by embracing novel business models, investing in technology, and displaying adaptability to swiftly accommodate rapid changes.

The rapid digitalization across various industries has also left its mark on companies' competitive landscape, allowing them to offer products and services with greater speed and reduced expenses. Companies that have channeled resources into technology have also reaped the rewards of improved collaboration and heightened operational efficiency, attributes that have played a pivotal role in sustaining their competitiveness.

In fact, even audit firms have not remained unaffected by this trend. Digitalization is fundamentally reshaping the audit sector. These firms are under growing pressure to provide services that are not only swifter and more precise but also cost-efficient. Digitalization presents fresh avenues to enhance audit procedures through the integration of technologies such as big data, artificial intelligence, blockchain, and cloud computing.

Through this article, we aim to explore the impact of these technologies on the "Audit Risk Equation" that represents our research model.

Keywords: Financial auditing, audit risk equation, digitalization.

Ethics and information systems management, what are the practices in Morocco? Does gender play a role?

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This article focuses on the ethical debate in information systems management in Morocco, from This article focuses on the ethical debate in information systems management in Morocco, from a gender perspective. Given that IS play a crucial role in contemporary organizations, it is obvious to examine how ethical issues manifest themselves in this context, and how they may be influenced by gender roles. Our study suggests that women, as opposed to men, would establish a closer correspondence between ethics and information systems management.

Our research also looks at the ethical challenges and the ethical versus non-ethical considerations related to the respect of the professional life, confidentiality, private practices on the job and the use of data, which are all experienced differently by men and women. Our article highlights the importance of promoting an ethical culture within IS management teams and recommendations to promote an ethical, equitable and inclusive professional environment.

Keywords: ethics, information systems management, gender approach, IS ethics, engineering.

Hydrologic Ecosystem Services values in Morocco's Protected Areas: A Case Study of Ifrane National Park

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The establishment of Ifrane National Park (INP) stems from the need to preserve its unique bioecological characteristics and rich biodiversity, while playing a crucial role in national water supply. Situated in the province of Ifrane in Morocco, INP serves as a vital reservoir of hydrological ecosystem services (HES), largely due to its extensive mountain forests and numerous wetlands. However, climate change and land use dynamics have led to a decline in water resources, resulting in the drying up of some of these wetlands. This phenomenon is primarily attributed to agricultural development, thereby endangering the HES that INP provides, including its role as a critical water source. This study aims to underscore the often-underestimated importance of the HES provided by the park, with a particular focus on their evolution since its establishment.
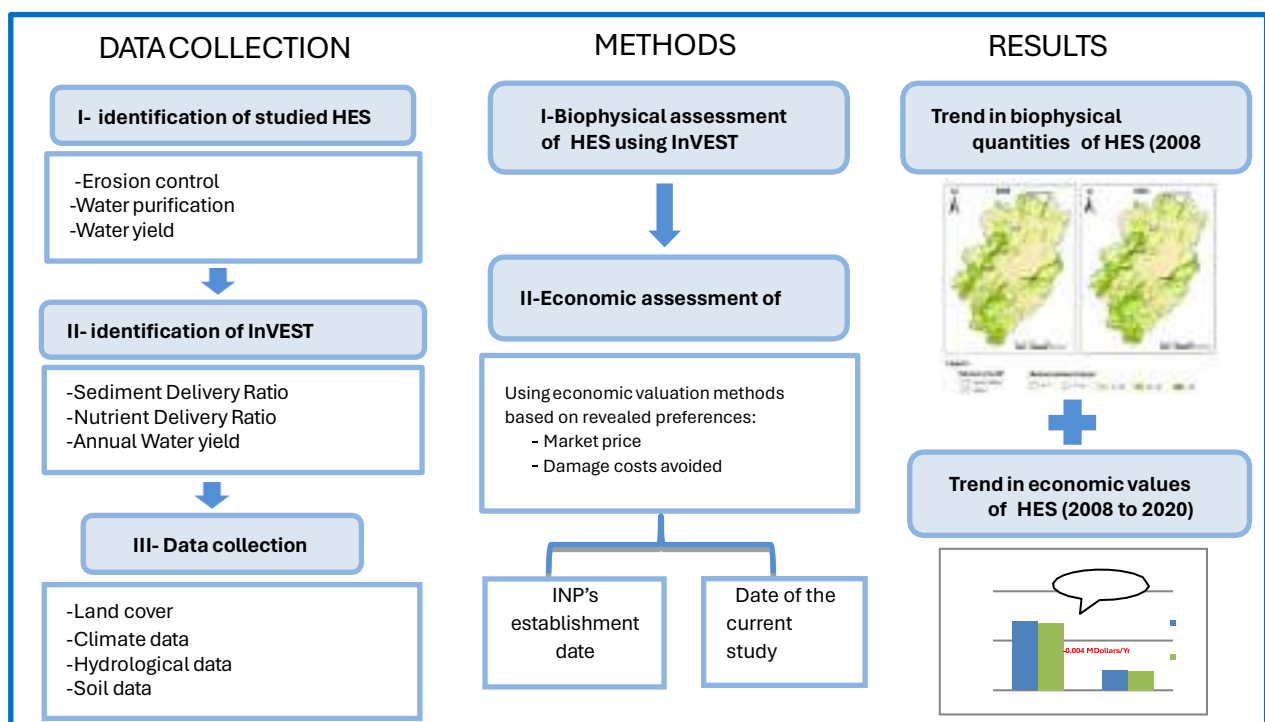
It highlights INP as a true "water tower" and emphasizes the significance of the services it

offers, while examining their evolution in the face of the aforementioned challenges. The methodology employed includes the use of InVEST software to quantify the HES, a cutting-edge approach essential for accurately assessing these vital services. Furthermore, a cost of avoided damage monetization approach has been employed to determine the economic value of the quantified HES. Our findings reveal an annual decrease in the economic value of HES by -0.004 million Dollars.

This economic evaluation serves as a powerful tool to inform and persuade decision-makers and park users of the crucial importance of preserving natural ecosystems and judiciously using water resources. It also underscores the need to invest in conservation and restoration within protected areas to maintain these HES.

Keywords: Hydrologic Ecosystem Services; Economic Assessment Methods; InVEST; Ifrane National Park.

Intellectual capital and SME's strategic knowledge management: theoretical analysis and conceptual framework

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Recent intellectual capital (IC) literature has increased attention to SMEs' strategic knowledge management (SKM). This current research aimed to analyze the role of SKM in developing SMEs' IC dimensions—such as human capital as input, relational capital (mechanisms), and structural capital (structure).

This study aims to make a particular contribution to the field of IC / SKM in the context of knowledge-intensive SMEs and to provide an answer to the following question: What is the relationship between SKM and the development of IC?

This study will bridge the gap in strategic management literature by demonstrating the missing connection between SKM practices and enhancing SMEs IC in the developing economy context (i.e., Morocco). To do this, we conducted a review of theoretical and empirical literature of the main works having dealt with this problem. The result of the study allowed us to develop a conceptual framework consolidating the main determinants that influence the adoption of SKM practices and which can be grouped into individual, organizational, and technological factors.

Keywords: Intellectual capital; Strategic Knowledge Management; Knowledge-intensive SMEs; Theoretical analysis; Conceptual framework

Opportunities and challenges of cryptocurrency in Morocco

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Cryptocurrencies have gained significant popularity in recent years, but they are not without challenges and risks. Cryptocurrency is a type of digital or virtual currency that uses cryptography for security and operates independently of a central bank, and the new economy of transaction between peers. After a ban that lasted 5 years, Morocco has finally embraced cryptocurrency, gaining ground and popularity. Regardless, the public knowledge of the new comer still vague. The aim of our study is to provide an insight of the level of knowledge and use of cryptocurrency between Moroccans using a survey. In this case study, we elaborate on the opinion of transaction through banks, and the limited amount to trade on the blockchain system.

The study is Descriptive and Analytical in nature as the data is collected from both primary and secondary sources. To perform the study, a questionnaire is used as a research instrument. The survey in the form of a questionnaire helped in analyzing the public awareness about cryptocurrencies and the challenges faced in terms of its complexity in trading and legislation in Morocco. The data was also collected from various research articles, websites and newspapers to analyze and understand the legality of cryptocurrency with respect to Morocco.

The result of the questionnaire is put in comparison with other countries in similar positions as Morocco. In particular, 15 % of the survey population are knowledgeable of cryptocurrency, own a cryptocurrency, and stated their trust in banks as a way of transaction in between peers, and stay natural on the limited amount to trade. Having said that, the country still on the phase of legislation, financial restrictions and freedom of transaction without having a third party interfering which breaks the first rule of cryptocurrency peer to peer (P2P) concept, making the full adoption of blockchain technology demanding and complex.

Keywords: Morocco, Cryptocurrency, blockchain technology, Legality, cryptocurrency transactions.

Phase III of the NHRI: From new blood to human development in Morocco

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When faced with globalization linked to the technological revolution, states are called to profoundly change their policies and orient them towards the human. As the population constitutes the true wealth of any nation.

In this context, several challenges present themselves for Morocco, which must both restore the confidence of citizens and meet the social and economic expectations of its population by raising wages and strengthening social protection.

This is why Morocco launched, through the royal speech of May 18, 2005, the National Initiative for Human Development (NHRI), to fight poverty and rise to the rank of advanced countries.

This communication proposes to analyze the participation of the 3rd phase of the national human development initiative - as a social policy - in the development of Morocco. It would be a question of explaining how the practices of this phase participate in the revitalization of the economic fabric and in the multiplication of the economic and social political opportunities of our nation.

Keywords: Development, human, NHRI, phase III

Proximity marketing: What about implementing Beacons for a better customer experience

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Proximity marketing is an interesting retail Marketing strategy. It aims to establish a direct link between retailers and consumers, while fostering customer engagement and improving their shopping experience. This marketing approach focuses on personalizing interactions while taking into consideration customers' location, providing relevant information, and encouraging purchases at the right time and place. The introduction of beacon technology in proximity marketing represents a significant technological advance in this field. Beacons are short-range wireless communication devices that enable retailers to easily detect the presence of consumers on their shop premises.

By using low-energy Bluetooth signals, beacons can send notifications and special offers directly to visitors' smartphones, based on their proximity to certain areas or products in a store. This technology provides a real-time personalization experience, offering retailers an extremely effective way of interacting with their customers in a highly targeted way. This article reveals a quantitative study aimed at assessing the impact of implementing beacon technology in large shopping malls in terms of proximity marketing. Indeed, a questionnaire is designed to gather consumers' opinions and reactions regarding the use of beacons in large surface shopping malls. This research will help to inform retailers' decisions by providing them with quantitative data on how this technology is perceived by customers, which could have a significant impact on the future adoption of beacons in shopping malls and, consequently, on proximity marketing strategies.

Keywords: Beacons, Customer experience, Personalization, Proximity marketing, Technology.

Social entrepreneurship and job creation dynamics in Morocco: cooperative entrepreneurship.

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In recent decades, social enterprise has been a growing organizational model that has generated profits through social missions by promoting job creation for vulnerable people and providing solutions to problems. Recent research has revealed that social economy organizations struggle to achieve economic and social performance. Although social entrepreneurship is often seen as a business with a social purpose, Dees (2003) stated that he favors another definition of social entrepreneurship, one that emphasizes innovation and impact, and not income, in solving social problems. Sometimes, according to Dees (2003), these two ways of thinking intersect when people using business-like methods come together to propose innovative solutions to social problems.

Therefore, compared to entrepreneurs, who are "for" the economy, social entrepreneurs are "for" social change and "are the driven and creative individuals who challenge the status quo, exploit new opportunities, refuse to give up and rebuild the world for the better".

Social and solidarity economy organizations in Morocco are a way to create wealth, and to integrate the underemployed into the world of work, by creating social value in different sectors and national regions, operating in sectors of general interest such as the fight against exclusion, environmental protection, education and health.

Through this research we seek to provide an answer to the following problem: **What is the contribution of social and solidarity economy organizations in general and cooperative entrepreneurship in particular, in terms of job creation, and social impact?**

The main objective of the conceptual model is the study of the relationship between the variables: the social, institutional environment, desirability and feasibility, human capital and social capital and entrepreneurial action. On the other hand, the effect of entrepreneurial action (social entrepreneurship) on the creation of social value (dynamics of job creation).

Keywords: Social entrepreneurship; cooperative entrepreneurship; job creation.

Target Costing in the service of management control: a crucial vector of performance

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The company is a unit that produces goods and services with the aim of making a profit, but it operates in a turbulent environment where competition and technological development are key to capturing market share and satisfying customer expectations. To achieve this, and maintain its market share, the company is obliged to implement and apply several management control methods.

The aim of this paper is to provide an overview of one of the instruments of management control: Target Costing and its influence on corporate performance. In this respect, for the company to satisfy its customers' needs and maintain its profit margin while respecting the price, it needs to reduce costs before industrializing the product. To achieve our goal, we have opted for a more in-depth literature review.

However, there is a lack of literature dealing with the innovation of this method and its impact on the performance and hence the sustainability of companies. To elucidate this relationship, we have conducted a literature review that addresses the importance of this instrument in improving performance through an analytical approach that will boost corporate effectiveness and efficiency.

Target costing enables companies to improve performance by reducing costs, avoiding waste, improving quality, increasing competitiveness, adopting an upfront approach to cost management and aligning the objectives of different company departments with the aim of resisting technological innovations.

Keywords: Management control tools, Target Costing, management control, Performance, vector.

The Impact of Market Orientation on the Performance of Moroccan SMEs: Exploring the Role of Organizational Learning

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In Morocco, SMEs play a crucial role in the economic and social development of the country (ALLAMMARI & Ahmed, 2023b). According to the latest data from the Moroccan Observatory for Small and Medium-sized Enterprises, these businesses constitute 96% of the Moroccan productive sector, contribute to 70% of employment, and account for 37% of value added (ALLAMMARI & Ahmed, 2023a). However, Moroccan SMEs face various obstacles and challenges that could jeopardize their competitiveness and overall performance. For instance, limited resources, foreign trade liberalization, deregulation, digitization, evolving customer requirements, and intense market competition, among others. Consequently, to ensure their survival, Moroccan SMEs must adjust their management model to meet the new market demands.

Market orientation and organizational learning orientation have been regarded in the literature as key strategic orientations contributing to the enhancement of overall performance and competitiveness for SMEs operating in a turbulent environment (Kohli & Jaworski, 1990; Narver & Slater, 1990; Suliyanto & Rahab, 2012; Wang, 2008).

A market orientation in businesses involves a profound understanding of current and future customer needs, strong competitive awareness, and interfunctional coordination to effectively adapt to market requirements (Slater & Narver, 1994, 1995). Additionally, organizational learning orientation is a strategy that emphasizes creating an environment conducive to knowledge acquisition, skill sharing, and innovation (Eshlaghy et al., 2011; Kreiser, 2011; Wang, 2008).

According to Barney's (1991) resource-based theory, market orientation and learning orientation can be viewed as unique resources that interact synergistically to create a competitive advantage and enhance the competitiveness and overall performance of SMEs. This paper aims to analyze the impact of market orientation on the performance of Moroccan SMEs while examining the mediating role of learning orientation. An electronic questionnaire

was distributed to a sample of 112 SME managers. Research hypotheses were tested using the Partial Least Squares Structural Equation Modeling (PLS-SEM) method. The study's findings

revealed that the adoption of market orientation by Moroccan SMEs positively and significantly impacts their overall performance, and this relationship is partially mediated by learning orientation.

The findings of this study make a significant contribution to enriching the theory regarding mechanisms for enhancing the performance of SMEs. They underscore the crucial importance of concurrently developing both a market orientation and a learning orientation to optimize the overall performance of small and medium-sized enterprises. These results also offer relevant managerial implications, suggesting to practitioners that the conscious and integrated adoption of these two strategic orientations can serve as a powerful lever to guide strategic decisions towards a substantial improvement in their company's performance. By encouraging a proactive approach that combines market understanding with a dynamic learning culture, SME managers can strengthen their competitive position and promote sustainable growth.

Keywords: Market Orientation; Learning Orientation; Performance; Moroccan SMEs; Structural Equations.

The role of crowdfunding as a responsible financial lever in the promotion of solidarity financing

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Crowdfunding, literally defined as crowd funding, is an alternative form of financing that appeals to the general public to raise funds for projects, through online platforms, without the intervention of traditional financial institutions. Each contributor invests a relatively small amount, allowing for the collection of a substantial sum to support an initiative for the realization of a project. In return, contributors receive rewards or benefits related to the project. This innovative financing method plays a crucial role in promoting responsible finance and financing solidarity projects, allowing a direct and transparent contact between project leaders seeking funding and contributors concerned about the responsible use of their savings, for this purpose crowdfunding provides financial contributions for funding companies or projects that integrate sustainable and responsible practices in their business model, especially those with environmental, social or ethical vocation with a strong positive impact, which allows to gather and mobilize a community of contributors, who share a common desire to bring a positive change in society, through innovative projects, in order to promote social innovation and the creation of innovative solutions to societal and environmental challenges, as well as sustainable development. In this context, and faced with an uncertain future due to the painful and challenging circumstances caused by the earthquake that struck our beloved country, particularly the provinces of Elhaouz, crowdfunding emerges as an essential means of financing solidarity and social projects through various platforms, especially donation-based ones that have mobilized to allow those heavily affected by this crisis to regain their normal lives (in-kind donations, financial donations, etc.). For this purpose many Moroccan and foreign associations have resorted to this method, known for its transparency and speed of execution, by launching calls for donations and campaigns to collect solidarity contributions addressed to citizens, private companies, public entities, and others, in order to assist the affected populations. In this paper we will first discuss the conceptual framework of crowdfunding, then we will present its role as a responsible funding lever in the financing of solidarity projects.

Keywords: Crowdfunding, responsible finance, crowd impacting, solidarity financing.

The evolution of the cash manager's role: which skills base should be developed in the era of digital transformation

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In the age of digital revolution and the resulting challenges, major transformations have shaped the corporate ecosystems. In this respect, the evolution of cash management has not gone unnoticed, since it is one of the financial functions that has undergone significant developments in recent decades. Indeed, in parallel with the unbridled changes in the economic environment towards globalisation, cash manager must also accelerate the digital transformation of his function. In view of these constant shifts, cash managers are assuming new responsibilities that require enhanced strategic skills. As such, they are called upon to spread innovation across all dimensions of their function, in order to support growth and boost the company's performance. In this context, treasurers are being asked to embrace new technologies aimed at reducing costs, mitigating risks and increasing profitability. Similarly, they are required to review their skills base, demonstrating therefore a high level of agility coupled with the development of a collaborative and communicative spirit as cash management is a cross-functional function around which all the company's strategies revolve. In the same vein, cash manager has become the undeniable pillar around which all the company's activities gravitate. Based on the above, the aim of this study is to gain a better insight into the cash manager's new strategic role in driving performance and conducting change. In this regard, the results of the present paper highlight the need to develop an innovative skills base in line with the new responsibilities undertaken by cash managers in the era of digital transformation.

Keywords: Innovative cash management, Performance, Cash manager's profile, Digital technologies, Risk management.

The CFO strategist: Anticipating risks, creating value through proactive and informed management

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The economic environment has become increasingly dynamic, complex and changing, creating a growing need for a more strategic, robust, modern and innovative financial function. From this perspective, the role of the CFO holds paramount significance in ensuring sustainable financial performance. The CFO as strategist goes far beyond the traditional and classic responsibilities of accounting and management, however, he is now positioned as an essential strategist with a clearer vision. At the heart of this metamorphosis lie two major imperatives, risk anticipation and value creation.

Risk anticipation is an imperative in an economic environment characterized by constant crises, geopolitical uncertainties, rapid technological change and so on. As a result, CFOs need to reinvent the principles of risk management, while integrating innovative, preventive and proactive strategies to identify and mitigate risks, and consequently limit their negative effects. Indeed, risk management is a window to value creation for every company. This is an essential phase in the CFO's role, since it goes beyond maximizing profitability to include sustainability, technological innovation and corporate social responsibility. From this perspective, the CFO must orchestrate a rational financial strategy that aligns financial imperatives with the company's objectives.

The CFO strategist plays a crucial role in the evolution of the corporate financial function. The objective of this research is to explain the articulation of the strategic CFO's role in identifying risks while creating value through an effective management.

Keywords: CFO, Risk management, Financial Function, Creating value, Corporate.

Contract Validity Analysis for Risk Mitigation: A Bayesian Network Approach

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A contractual relationship is based on an agreement between the parties that creates mutual obligations recognised by law. For such an agreement to be legal, a contract must contain several fundamental elements. Firstly, there must be mutual consent, expressed in clear and unambiguous terms. Secondly, there must be adequate consideration, meaning that each party brings value to the other in exchange for what is set out in the contract. In addition, the legal capacity of the parties and the conformity of the subject matter of the contract with the law are indispensable prerequisites for maintaining the legitimacy of the contract. The Effective management of contractual risks is essential for the successful completion of legal transactions. Inadequate understanding of contractual risks can lead to significant claims and litigation. Parties usually take great care in defining their roles and responsibilities when entering into a contract in order to mitigate potential conflicts in advance.

In this study, our main objective is to analyse the causal links between different risk factors associated with legal contracts. To this end, we begin with a detailed review of the existing legal literature, highlighting the main sources of risk and factors affecting the validity of a contract, such as ambiguities in language, contractual inconsistencies, changes in legislation and legal precedents. This analysis provides an in-depth understanding of the complexities surrounding contract validity.

Against this background, our paper introduces the Bayesian network approach as a powerful tool for modelling these risks and influencing factors. The Bayesian network is able to graphically represent probabilistic relationships between variables, helping to map the complex dependencies between the elements of a contract and the external factors that may affect its validity. This underlines the importance of reliable data collection and the appropriate specification of probabilities for each variable in the network.

The fundamental aim of this AI-driven approach is to provide significant support for lawyers in their day-to-day work. By implementing this model, legal and judicial professionals can optimize their ability to evaluate contracts by identifying critical issues and ensuring their

compliance with legal requirements. Through this approach, we aim to strengthen the overall efficiency of the contract review process and improve the quality of legal documents, thereby ensuring better protection of the interests of the parties involved.

Keywords: Legal Contract, Risk Assessment, Bayesian Network, Contract laws, Predictive Analysis.

Digitalization as a tool for increasing the organizational efficiency of an enterprise

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In international and domestic practice, a harmonized definition of the digital economy has not yet emerged. In most foreign sources, when describing the digital economy, the emphasis is on technologies and related to their use, changes in the ways of interaction of economic agents. In this case, either specific types of technologies or certain forms of changes in economic processes may be mentioned. The definition of the digital economy is often replaced by listing the directions of its influence on the economy and social sphere. Digitalization has affected almost all areas of human activity, and primarily the production sector.

Digital transformation of business today is an inevitable process of adaptation to the new conditions of the digital economy. Ignoring current processes will lead to a loss of business efficiency and its disappearance, under the pressure of new market conditions and more pragmatic flexible "digital" competitors.

Among the advantages of digitalization of enterprises, we can highlight increased production flexibility, since automation allows us to reduce the time for reconfiguring equipment, and quickly makes adjustments to the production process. All this allows you to gain an additional competitive advantage and, as a result, increase profits. In addition, digitalization ensures information integration of the stages of the product production cycle, which makes it possible to effectively and comprehensively solve problems not only of optimizing production itself, but also of quality, environmental safety, creating new business opportunities, etc.

However, the digitalization of production imposes its own disadvantages, including the dependence of the enterprise on digital technologies as a disadvantage. If digital systems fail, the company is no longer able to continue its activities, as a result of which the highest demands must be placed on the digital solutions used.

The indicator of organizational effectiveness is based on the fact that the activities of any enterprise are aimed at making a profit through satisfying consumer needs. Each business can choose different paths to satisfy its customers, and organizational effectiveness measures how well the chosen path compares to alternative options. To ensure stable high levels of organizational efficiency in an enterprise, it is necessary not only to satisfy current consumer

demands, but also to anticipate potential needs. All activities of the enterprise should be aimed at identifying and satisfying the real and potential needs of customers; effectiveness depends on the ability of the enterprise to adapt to changes in the market.

Improving the management system on the principles of digitalization not only leads to an increase in labor productivity of management personnel, but also contributes to better organization and increased productivity of all employees of the enterprise, increased production, reduced downtime of people and equipment, in addition, labor discipline increases, and the conditions under which a person can fully develop his abilities.

Thus, assessing digitalization at the global level allows us to form a general idea of the degree and scale of development of the phenomenon and is the first stage in the process of identifying quantitative relationships between digital transformation and the sustainable development of an enterprise.

The impact of successive reforms of the retirement system in Morocco: Literature Review

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This comprehensive article examines the intricate transformation of Morocco's retirement system, meticulously dissecting its historical progression since its inception. By shedding light on the manifold modifications made to its structural framework and policy landscape over the years, this literature review casts a spotlight on the enduring metamorphosis of the country's retirement landscape.

The study delves deeply into the pivotal reforms that have been strategically implemented to address a myriad of demographic, economic, and social challenges encountered by Morocco. Through a discerning lens, it scrutinizes the objectives that underpinned these reforms and meticulously dissects the far-reaching consequences they have had on various facets of the retirement system. From a nuanced analysis of their effects on the financial stability of retirement schemes to their influence on the overall quality of life experienced by retirees, this review aims to leave no stone unturned.

Furthermore, this analysis ventures into the realm of forecasting, providing a thoughtful assessment of the long-term implications that these reforms bear on the sustainability of Morocco's retirement system and the institutions supporting it. By extrapolating the consequences of past reforms, it offers invaluable insights into the trajectory that the retirement landscape is poised to follow, thereby aiding policymakers, researchers, and anyone invested in the financial security of Morocco's retirees.

In sum, this analysis serves as a cornerstone for comprehending the nuanced evolution of Morocco's retirement system, offering profound insights into the intricate interplay of reforms and their implications for both current and future generations of retirees. As such, it stands as an indispensable resource for policymakers, researchers, and stakeholders concerned with ensuring the enduring financial well-being of Morocco's retirees.

Keywords: retirement system, sustainibility, reform analysis, social security, Morocco.

The development of financial audit and the challenge of artificial Intelligence

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Technological developments are having an ever-increasing impact on many fields. Financial auditing is no exception. Due to the speed of data analysis offered by these technologies, the level of assurance provided by audit assignments can only improve. However, the use of artificial intelligence is becoming increasingly widespread among audit firms. Data visualization and machine learning tools are making their presence felt in the daily lives of these professionals. This study aims to assess the use of artificial intelligence tools by auditors in Morocco. It identifies the opportunities and risks that these technologies can bring. It also highlights the obstacles hindering the development of these solutions, as well as the requirements needed in the profile of the auditor of the future.

Keywords: audit, artificial intelligence, technology, development, Morocco.

Session 4 : Innovations in Education, Technology, and Cultural Exploration: A Multifaceted Perspective

Enhancing Language Self-Learning Through AI-Assisted Gamification

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Technological developments have revolutionised the way we learn and interact with educational content. In particular, language learning through mobile applications has emerged as a dominant educational trend, marking a transition from the traditional teaching model to a more flexible and personalized format. However, despite the potential of mobile platforms, keeping users engaged is proving to be a major obstacle. This research explores in depth the potential impact of gamification, assisted by Artificial Intelligence (AI), as an innovative strategy to increase user engagement and enrich the language learning experience.

The first phase of the research focuses on identifying the key elements of gamification that are intrinsically related to user engagement. By scrutinizing various mobile applications, such as Duolingo and Babbel, which have integrated gamification mechanisms into language learning, the study seeks to demystify the specific aspects that make these applications attractive and engaging for users. The objective is to identify common trends and characteristics that can be considered best practices in designing gamified applications for language learning.

The second part of the study aims to understand the user experience and perceptions of gamified language learning. Through surveys and interviews, the study delves into the depths of users' opinions and reactions, seeking to understand how gamification elements influence motivation, satisfaction, and perseverance in their language learning experience. This crucial phase enables the link to be made between the gamification elements identified and their actual impact on the user experience, offering valuable insights into which aspects are truly beneficial and stimulating for learners.

The study then explores how language learning can be personalized to meet the specific needs of each learner. AI offers the ability to create adaptive learning paths, adjusting challenges, difficulty levels, and rewards according to the user's progress and preferences, creating a personalized learning experience that is both fun and stimulating, meeting individual learning objectives.

Preliminary results suggest that gamification can play a crucial role in engaging users of mobile language learning applications, by creating a stimulating and motivating environment.

Moreover, users seem to appreciate this playful approach as a more enjoyable and engaging learning experience. So, this study aims not only to shed light on the effectiveness of gamification and AI in autonomous language learning, but also to provide an evidence-based guide for practitioners and application developers to design more engaging, effective, and user-centred language learning experiences.

Keywords: Gamification, M-learning, AI, Engagement, Motivation.

Scientific research methodology in economics and management sciences: What are the differences? What practices?

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In any scientific research framework, it is important to lay the foundations of your methodological approach in order to respond to your problem and therefore to provide results. Research methodology in economic sciences includes differences compared to research methodology. in management sciences. First, economics is the study of economic aggregates and phenomena of macroeconomic, microeconomic and mesoeconomic activity. In management science, it is the study of the managerial, relational or organizational situation within a company or organization. Epistemology in its general sense consists of reflecting on the "science of sciences". More precisely, this term designates according to M. Grawitz (2000) "a critical study carried out a posteriori, focused on the validity of sciences, considered as realities that we observe, describe, analyze". The epistemological and positioning framework of Research in both situations requires different approaches to better respond to the issues and the use of adequate measurement tools.

The objective of this article is to provide a point of clarification and apprehension on how to approach research between subjects in economic sciences and subjects in management sciences. Elements of the literature will be discussed to understand the difference between two independent but sometimes complementary research methodologies in certain study settings.

Keywords: Research methodology, Economics, Management Sciences, Epistemology, Approach and Practice.

Exploring the Interplay of Mathematics and Problem-Solving in Secondary Level Physics Education: A Study of Moroccan Teachers' Perspectives and Learners' Attitudes

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Problem-solving research is an ongoing and sustainable activity in science education and training, involving the teaching of advanced techniques for solving specific problems. The aim is to develop the mental capacities needed to solve everyday problems. Problem-playing is essential in physics, as it requires a rigorous approach. Physics offers learners the opportunity to demonstrate their cognitive and intellectual skills in solving problems related to physics and chemistry. Furthermore, physics is closely linked to mathematics, as it frequently involves mathematical models to explain phenomena.

Physics mathematization can significantly impact learners, modifying their cognitive structures, enriching their learning environment, and influencing their interests and attitudes. This can foster the development of positive problem-solving skills and knowledge in secondary school learners. However, standards-based teaching and physics textbooks often place less emphasis on mathematics, which can hinder learners' engagement in problem-solving. Teachers are also faced with the challenge of implementing interdisciplinary education that integrates mathematics into physics problem-solving.

This research aims to analyze the perceptions of Moroccan secondary school teachers on the impact of mathematics not only on physics problem-solving but also on learners' interest in and attitudes toward problem-solving. The research explores various aspects, including examining physics textbooks, the effect of mathematization on the difficulty of problem-solving, and the influence of mathematical manipulations on learners' interests.

The research methodology comprised a questionnaire with four main strands: teachers' observations of textbooks, teachers' opinions on the mathematization of problems, perceptions of the difficulty of mathematization, and teachers' observations of learners' interests. The questionnaire was validated to ensure its reliability and internal consistency. The participants were physics teachers in the Fès-Meknès region of Morocco. The study aims to fill a gap in interdisciplinary research on physics mathematization at the secondary level.

The conceptual framework of the research is based on different models, including Docktor (2016) who describes five stages of problem-solving, and Jensen (2017) who emphasizes the formalization and physics mathematization problems. However, these models do not take into account affective aspects such as learners' interest in and attitudes towards physics, which is a key aspect of this research.

In conclusion, this research examines the importance of physics mathematization in secondary problem-solving, focusing on teachers' perceptions and the impact on learners.

Keywords: Physics, Mathematics, Problem-Solving, Teachers' Perspectives, Learners' Attitudes.

Environmental Health and E-Learning: Effects on Students and Teachers

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The creation of an optimal environment is pivotal for ensuring the successful integration of digital technologies in education, offering diverse and interactive educational content while allowing personalized resources tailored to individual student needs. Despite the myriad benefits, uncontrolled immersion in these teaching methods may lead to psychological challenges for both students and educators. Therefore, it is crucial to adapt digital learning support systems to foster not only psychological well-being but also environmental sustainability.

The imperative lies in designing e-learning platforms that prioritize environmental respect, thereby minimizing their ecological impact. The study aims to assess the constraints and challenges related to environmental health that hinder teachers from embracing digital teaching methods, to enhance the overall quality of the teaching/learning experience. This assessment is conducted through an online questionnaire survey completed by teachers in the city of Sidi Slimane, and the obtained results are subjected to analysis using the Statistical Package for Social Sciences (SPSS).

Keywords: Environmental Health, Digital education, E-learning, ICT.

The irony in the work of Ahmadou Kourouma: a weapon of protest or a transfer of historical testimony?

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No one can dispute the truth that literature is a great medium for transmitting ideas, values or ideologies of all kinds: cultural, religious, social or political... Irony is one of the discourses that has always aroused the interest of researchers: rhetors, philosophers, linguists, psychologists. So many other disciplines have taken up the study of irony, attempting to circumvent it and appropriate its meaning and multiple facets.

It is this specificity that makes ironic speech one of the most studied subjects in contemporary criticism. Through the ironic discourse in literature, many writers convey and transmit their thoughts to the readership in their works. Their aim is to counter the opposite thought and fight against the false beliefs and the tares from which their societies suffer.

To show the relevance and strength of irony in activism, we chose the Ivorian writer Ahmadou Kourouma, one of the emblematic figures of Black African literature.

Starting from some of his works such as: "Waiting for the vote of the wild beasts" and "When one refuses one says no" as well as other works; we will put ourselves on the lookout for irony to discover what are the various facets painted by Kourouma and show how this author uses it to fight the vices and disclose the defects? By using as a weapon the pen and paper.

Keywords: Literature; Irony; Satire; Opposition; Weapon.

Developing oral interaction competence in the secondary French classroom: The environmental poster as a perspective

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The relationship between the three poles of the pedagogical triangle (knowledge, student, teacher) has been the subject of a great deal of research and has been conceived in different ways depending on the paradigm of reference. History reveals a paradigmatic shift in teaching-learning methods: The teaching paradigm based on the transmissive method, which is underpinned by the behaviorist model known as stimulus-response learning, has been succeeded, with the advent of competency-based approaches, by the learning paradigm, according to which the learner, considered as a social actor, develops his or her language skills by carrying out complex tasks in meaningful authentic situations, through the development of a pedagogical project around which the didactic sequence is structured. The question that prompted us was to what extent the development of a pedagogical project involving the production of an awareness-raising poster for environmental protection could constitute a learning situation that enables learners to develop their oral interaction skills. We carried out a case study through observation of an oral language course at the secondary college level, using an observation grid as a data collection tool.

The results revealed that the theme of the environment seems likely to enable learners to develop their oral interaction skills, given the advantages it offers it enables learners to work in an authentic context, is a source of motivation for their commitment to the learning tasks...

Keywords: competence, environment, development, learning situation, oral interaction

Intelligent solutions in education: The impact of the Digital Classrooms project on Science Subject teachers

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The global changes caused by the health crisis COVID-19 coronavirus pandemic have significantly impacted education all over the world. Schools today have had to adopt distance learning models using digital tools to ensure the continuity of educational systems in different circumstances. For this reason and to ensure the continuity of education even in the event of future disruptions in Morocco (war, pandemic, natural disaster...). The Minister of National Education for Preschool and Sport has unveiled an initiative to establish digital classrooms within the educational institutions of the Kingdom. This innovative pedagogical approach, grounded in the utilization of digital tools, is specifically designed to bolster the instruction of science subjects, (Mathematics, Physics, and Life and Earth Sciences). This digital educational transformation has emerged as a highly suitable mode of learning, catering to a diverse array of social groups, including individuals with disabilities and refugees. The primary objective of this research is to assess the influence of digital classrooms on the performance of science educators operating within the Rabat Sale Kenitra region. The intention is to gauge how this technological implementation has affected their teaching methods and overall effectiveness. Furthermore, this study seeks to gauge the progression of this educational transformation and advocate for the wider adoption of digital pedagogy, extending its incorporation into the instructional strategies of other subjects. The ultimate goal is to promote inclusivity and level the playing field for all learners, ensuring equal educational opportunities for every student.

Keywords: Digital classroom, Stress analysis, educational platform, pedagogical innovation, ICTE.

Digital resources for improvement of the teaching learning of Life and Earth Sciences in Morocco

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The Moroccan education system is at the heart of this movement, demonstrating its will and institutional commitment through the pedagogical integration of information and communication technologies (ICT) into the teaching-learning process. However, a few studies have shown that this integration into learning and assessment activities in life and earth sciences (LES) remains very weak, if not absent, in qualifying secondary and college education. To pedagogically innovate teaching practice in LES, our research helps teachers and innovative designers conceive digital resources to develop LES. To meet the objective of our research, a questionnaire was drawn up and sent to 200 teachers in the various regional education and training academies of the Kingdom of Morocco. Analysis of the results showed that teachers' awareness of these skills in general and those specific to LES was moderate and that in-service and pre-service teacher training, the design of multi-level and multi-type digital resources, and curriculum reform are very important elements in reinforcing the 21st century in the digital teaching-learning of LES.

Keywords: Pedagogical innovation, digital resources, teaching learning, ICT, Life and earth sciences.

Reinventing Literary Text Reading in the Digital Era: Convergence, Interactivity and New Experiences

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The advent of digital media has radically altered the conditions for literary creation, In other words, digital literature is not literature that has simply changed medium, from a paper page to a Word page on a computer screen, but it's a literature that has taken shape in a cybernetic space, a space where the possibilities for literary creation no longer have any limits, and the evolution of the work goes hand in hand with the evolution of programs and media.

In other words, digital literature, while following in the footsteps of the books that preceded it, is rich in developments and research. The Internet is asserting itself as a privileged field for writing that is adept at experimenting with new forms and questioning usage, writing with others and with the machine, using the transporting powers of hypertext in playful or metaphysical ways, by diverting software and applications from their intended uses. Text, moreover, is no longer simply legible, but becomes visible and manipulable: the reader's "digital hand" has long been inviting him to "read his own reading". In this digital environment, we have seen the emergence of the concept of "digital literature".

This paper will set out the elements of a definition of digital literature to highlight the different meanings of this literature. First of all, we need to explain the concepts involved: tension between textual linearity and hypertextuality, the link between visual writing and sensory effects which are always concerned with the readability and accessibility of the text. Next, we'll focus on the question that seems fundamental to us: the impact of technology on text reception, taking as an example the digital literary work *Chatt* by Jordanian writer Mohammed Sanajela. Finally, we propose to examine the role of the reader: his interactivity with texts that tend more to suggest a particular and singular reading.

Keywords: Digital literature- hypertext-interactivity- visual writing.

Smart Technology's Effects upon Moroccan Doctoral Students at Department of English Language and Literature: Dhar El Mehraz Faculty of Letters and Humanities as Case Study

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This research paper attempts to illuminate the positive and negative effects of smart technology upon Moroccan doctoral students at department of English Language and Literature at Faculty of Letters and Humanities Dhar El Mehraz at the university of Sidi Mohamed Ben Abdellah. Although smart technology can benefit researcher student in conducting research dissertation, it is also detrimental to the academic and autonomous research skills. The research sheds light upon the untold stories of doctoral students. In fact, smart technology is a double-edged sword in scientific research. It may speed up the process of research progress; otherwise, it delays and prolong years of conducting research. To this end, the research uses interview and focus group as data collection techniques. To approach the research results, the research resorts to thematic analysis.

As such, themes covered exhibit unprecedented impacts upon research settings in higher education. In the end, smart technology's negative effects have deepened the academic research difficulties for traditional researchers. Yet, young technology savvy researchers view smart technology as a facilitator and comforter in their scientific mission. Surprisingly, female researchers are highly adept at smart technology employed for academic research purposes than male researchers regardless of age and research area. In conclusion, university trainings and workshops like doctoral student week are organised yearly to bridge the technological gap between researchers and students in terms of smart use of smart technology.

Keywords: smart technology, Morocco, higher education, effects, students.

Diagnostic assessment in the teaching/learning process targeting nurses and health technicians in training at ISPITS in Fez, Morocco: an exploratory quantitative study

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Diagnostic evaluation (DE) is an integral didactic practice in the Teaching/Learning (T/L) process, promoting pedagogical quality. It is also an important pedagogical tool for improving the quality of assessment systems in the educational sciences, both globally and nationally. This makes it possible to regulate students' learning in training and think reflexively about the adjustment of teaching practice. As a result, much research has been carried out to situate the role of DE in the development of pedagogical projects, didactic decision-making, and the realization of E/A practices worldwide.

The Moroccan education system has made DE one of the levers of pedagogical transformation to improve the quality of training for Moroccan students.

ISPITS, as a higher education institution specializing in the training of nurses and health technicians, is committed to the development of the E/A process, of which DE is a crucial element, defining learning difficulties that can be remedied along the student's training and ensuring their progression to achieve a performance of the skills to be acquired by student nurses and health technicians in Morocco, enabling their integration as health professionals in a knowledge society. Our study (N=51) aims to explore teachers' perceptions at ISPITS in Fez regarding the value of DE in the E/A process.

Our present study revealed that all ISPITS teachers are unanimous on the importance of DE in the E/A process, 83% of them attest that standardized tools for DE practice are absent, 70% declare having difficulties in operationalizing DE concerning a large number of students, 45% consider that these difficulties are about the workload and 48% link these difficulties to the inadequacy of DE instruments at ISPITS. Our work has shown the interest and necessity of making DE a central part of the ISPITS E/A process.

However, optimizing the training of future healthcare professionals requires efforts from all players to make DE an opportunity to promote the quality of teaching activities, improve the quality of learning regulations, and encourage reflection on the programming and educational

differentiation to be implemented to accompany the training of nursing students at ISPITS in Morocco.

Internet of Things: The Legal Challenge of the Connected Era

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The rise of the Internet of Things (IoT) has brought about an unprecedented change in technology, creating a connected network of smart objects and devices. However, this technological shift isn't just about the technical side; it also presents a complex legal challenge.

IoT is an incredible technological advancement that changes how we interact with ordinary items. As we navigate this constantly changing world, we enter an era of incredible innovation, omnipresent connectivity, and endless possibilities. IoT has turned our homes into smart houses, our streets into smart cities, and even our cars into connected vehicles. But this technological revolution doesn't stop at our front door; it deeply affects the field of law, shaking up traditional legal foundations and presenting new challenges.

At the intersection of technology and law, IoT raises important questions about privacy, data security, responsibility, and rules. This constantly changing field needs innovative legal thinking to tackle the challenges of connectivity while protecting the rights and interests of everyone involved. Our analysis explores these complex issues, showing the implications and opportunities of this connected era.

Keywords: Innovation - Law - Internet of Things - Connected Technology – Regulation.

Public private partnership: an emerging concept

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During the last decades, new public management tools called public-private partnership contracts have evolved exponentially. These emerged for the first time in the United Kingdom in 1981 in the form of the private finance initiative during the government of Margaret Tchatcher. According to Philippe Cosalter, the private finance initiative is a British program whose main purpose was to encourage the completion of work and the management of services facilitating private financing or pre-financing.

Over time, private finance initiatives have developed to bear the name of public-private partnership contract, which is defined by the OECD as a mutual agreement between the public sector and the private sector for the purpose of providing services. public and good quality goods such as improved infrastructure. Taking into consideration the various projects which have been carried out in the form of public private partnership in various fields including (infrastructure, energy, agriculture and transport, etc.), we can clearly see that this practice has grew and was transposed to other countries such as European countries, America, Canada and African countries.

In this wake, it appears appropriate to demonstrate that public-private partnership contracts are not ex-nihilo but rather the fruit of a set of internal factors (financial reasons relating to public debt relief, the desire to benefit from the managerial capacities of the private sector, the modernization of the public service), or external factors (the pressure exerted by international organizations such as the World Bank, the International Monetary Fund, integration into globalization).

Through the analysis of the literature review, our paper will essentially deal with the evolution experienced by the public-private partnership contract, to zoom in on the reasons for the emergence of public-private partnership contracts. Thus, our paper revolves around the following problem: What are the reasons which influenced the emergence of public-private partnership contracts?

Keywords: Public private partnership, the emergence, public service, Private service.

Cinematic language in optical illusions in the era of smart technologies

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In an age dominated by smart technologies and visual media, the confluence of cinematic language and optical illusions presents an intriguing nexus of inquiry. This interdisciplinary study delves into the intricacies of how filmmakers leverage optical illusions to create immersive and perceptually challenging narratives within the contemporary digital landscape. As our visual experiences become increasingly intertwined with technology, this research endeavors to examine the evolving role of optical illusions in cinematic storytelling and their impact on the viewer's perception.

This study adopts a multifaceted approach, drawing from the realms of film studies, psychology, and technology. It explores the historical evolution of optical illusions in cinema and their adaptation to modern, digital platforms. The analysis incorporates various case studies and perceptual experiments to dissect the intricate techniques employed by filmmakers in manipulating audience perception. Additionally, the study investigates the potential implications of this intersection, including the cognitive effects on viewers and the broader implications for the future of narrative storytelling.

Our findings underscore the dynamic and transformative power of cinematic language within the contemporary media landscape, illustrating how optical illusions and smart technologies intertwine to challenge traditional narrative paradigms. Moreover, they point to the significance of this symbiotic relationship in engaging and redefining the viewer's perceptual experiences in an increasingly technologically driven world.

This presentation will contribute to the ongoing discourse on the fusion of film and technology, offering fresh perspectives on the immersive potential of cinematic language through the lens of optical illusions. It invites a dialog among scholars, artists, and technologists to explore the evolving landscape of storytelling in the era of smart technologies, emphasizing the perceptual dynamism that continues to shape our digital narratives. Therefore, this article seeks to address and outline the key points of this subject through the following research question:

How has the integration of optical illusions into cinematic language evolved in the era of smart technologies, and what impact do these techniques have on visual perception and audience engagement in contemporary cinema?

Keywords : Cinema, illusions, smart technologies, expression.

Moroccan perception of environmental volunteering

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Understanding people's actions and interactions is a challenging task for social science researchers. Environment is closely related to humans, with people potentially causing harm to the environment through waste disposal, overuse of cars, and smoking. However, others are committed to protecting it. From a sociological perspective, understanding the differences between these actions and individuals' understanding of environmental volunteering is crucial. This study aimed to explore Moroccans' perceptions of environmental volunteering in Morocco, considering these questions. However, less attention has been given to the relationship between environments and volunteering, their roles in local development, and their influence on economic growth, politics, and social life. There is a lack of research on environmental aspects and their influence on economic growth, politics, and social life, with studies on environmental volunteering being almost non-existent. By examining Moroccans' perceptions of environmental volunteering, this study can contribute to filling the gap in knowledge and inform strategies for enhancing environmental awareness and engagement in Morocco. Additionally, investigating the potential impact of environmental volunteering on economic growth, politics, and social life can provide valuable insights for policymakers and stakeholders seeking to harness the power of volunteerism for holistic development.

Keywords: The Values, Moroccan perception, Environmental Volunteering, and Local development.

The role of social media in engaging young people in environmental issues

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The prevalence of social media is increasing, establishing itself as a preferred information platform for political and public figures due to its user-friendly features facilitating participation and interaction.

It is noteworthy that social media plays a dual role in fostering both political engagement and societal mobilization among citizens, a crucial aspect when addressing environmental concerns and striving to achieve sustainable development goals. Given the escalating environmental challenges, it is evident that the younger generation will bear the brunt of the severe consequences of these environmental issues. Consequently, there is a pressing need to engage all stakeholders, particularly the youth, in environmental initiatives. Morocco's innovative development model aligns with this approach as it strives to promote a green transition. This has prompted us to examine the role of social media in involving young people in environmental issues.

To explore this, we conducted a quantitative survey focusing on the #b7arblaplastic campaign organized by the Mohamed VI Foundation for Environmental Protection, translating to 'plastic-free beach.' This campaign predominantly targets the younger demographic. Our findings indicate that the sampled group expresses concern about environmental issues and primarily relies on social media for environmental news. Hence, we can assert that these emerging media platforms are the most effective means of communication to engage the youth in environmental matters. However, our study revealed that not all participants were aware of environmental initiatives orchestrated by public entities, such as the #b7arblaplastic campaign. Despite the Foundation's use of social media to connect with young people, only a small percentage of participants encountered the hashtag circulating on these platforms. This leads us to the conclusion that merely utilizing social media is insufficient; it is crucial to understand how to leverage these platforms effectively to reach the intended audience. Thus, there is a vital need for a well-thought-out and pertinent communication strategy. Such a strategy would not only enable political and public figures to digitize their communications and reduce their

environmental footprint but would also empower them to engage and mobilize the youth through a familiar mode of communication.

Keywords: social media, youth, engagement, environmental issues.

Session 5 : Advancements in Research and Healthcare: Insights from Morocco and Beyond

Study and comparison of the ZnONi material on ITO, Nickel and Graphite substrates

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In order to compare the performance of ZnONi material electrodeposited on different substrates: indium-doped tin oxide, nickel and graphite, cyclic voltammetry and chronoamperometry were used to study the kinetics, nucleation and behavior of the materials. Voltammetry shows that the potentials to be imposed for the deposition of ZnONi material in two steps on ITO, Nickel and graphite are respectively -1.21, -1.21, -1.45V at which nucleation will take place. Chronoamperometry shows that all the current transients exhibit a typical form for a diffusion limited nucleation process with three-dimensional growth of nuclei. Characterization by electrochemical impedance spectroscopy of the electrodeposited thin films, shows that the material deposited on ITO, Nickel and graphite have respectively low, medium and high charge transfer resistance which reflects that the ZnONi material on ITO substrate has a good electrochemical activity than the others. The cyclic voltammograms confirm the result of electrochemical impedance spectroscopy that ZnONi material on ITO substrate has high specific capacitance and ZnONi material on Nickel substrate has lower specific capacitance than ITO and higher than Graphite.
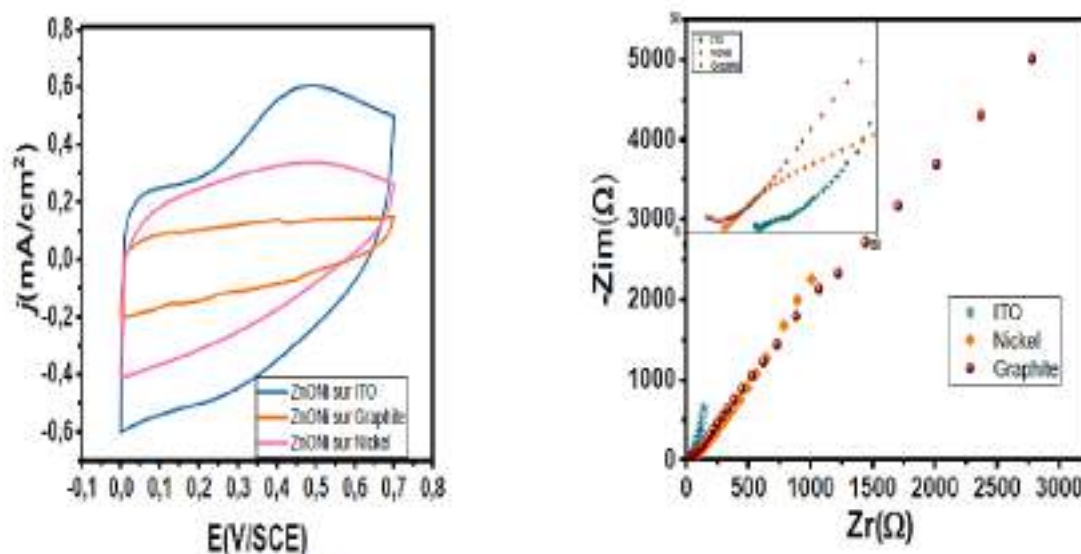
Cyclic voltammograms of ZnONi at 50mV/s and Impedance spectra in Nyquist form (EIS) of ZnONi /Na2SO4 (0,5M) solution at ITO, Nickel and Graphite substrate.

Keywords: Cyclic voltammetry; specific capacitance; Chronoamperometry; EIS.

Sleep disorders in hemodialysis patients in Morocco

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Sleep disorders in chronic hemodialysis patients are common. Apart from their negative effects on quality of life, it has been reported that these disorders can worsen cardiovascular risk and have a negative effect on immunity.

With this in mind, the aim of the present study was to investigate the quality of sleep-in haemodialysis patients and identify associated factors.

The study was cross-sectional, descriptive, and analytical and included 60 chronic hemodialysis patients at the Essaouira provincial hospital. We assessed sleep quality using the Pittsburgh Sleep Quality Index (PSQI). Sleep disorders were defined by a score above 5. Patients were assessed for daytime sleepiness (Epworth questionnaire) and RLS (RLS score). We also collected epidemiological and clinico-biological data, as well as adequate dialysis parameters. A total of 60 patients were enrolled in the study. The mean age was 45.36 ± 12.92 years, with a sex ratio of 0.6. The length of time on dialysis varied from 5 to 360 months, with a median of 16 years. Poor sleep quality was found in 72% of patients, with a male predominance (56%). Daytime sleepiness was found in 22% of patients. Restless leg syndrome was noted in 62% of patients. Anxiety-depressive disorders, arterial hypertension, and age over 50 were correlated with poor sleep quality. There was no correlation between the Epworth score and the RLS score. Daytime sleepiness was correlated with length of time on dialysis, morning sessions, low KT/V, and anemia.

In conclusion, the prevalence of sleep disorders in hemodialysis patients is higher than in the general population. Screening and appropriate management of these disorders will help improve the quality of life of these patients.

Keywords: Sleep disorders, sleep quality, hemodialysis patients, associated factors, Morocco.

An application of the Unified Theory of Acceptance and Use of Technology (UTAUT) for understanding mental healthcare professionals' and patients' acceptance of e-health services

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Many industries have been substantially transformed by information technology. A real disruption is taking place, with technology challenging organizational models, business models, customs, consumer behavior, and so on. For many sectors, innovation through technology has become a prerequisite for success. The healthcare sector is not an exception. Digital health technologies are changing the way we produce and deliver health services. According to numerous studies, equitable access to healthcare services and a high-quality healthcare system can be ensured by the deployment of technology. It holds great promise in terms of access to information and expertise, cooperation, monitoring, and healthcare management. It has led to the creation of a new healthcare model based on personalization, support, and prevention. However, achieving such benefits is contingent upon patients' and healthcare providers' effective acceptance and adoption of the health technology.

Research investigating the variables that affect technology acceptance and adoption has led to the creation of several models enabling the analysis of variations in technology adoption or rejection. They suggest that a variety of determinants, such as intention of use, sociodemographic variables, system usability, prior Internet usage, prior awareness of health technology, computer skills, etc., may affect people's decisions to embrace or reject consumer technology. Considering the specific requirements and challenges that come with delivering mental health services, using e-health services can be quite beneficial, particularly for people who may feel reluctant to seek in-person assistance due to concerns, about stigma, distance, or limited mobility. Unfortunately, relatively few researches explore health technology acceptance, especially in the mental healthcare setting. Thus, this paper aims to explore and analyze the determinants influencing patients' and mental healthcare providers' acceptance of e-health services by extending the Unified Theory of Acceptance and Use of Technology (UTAUT) model and adding the constructs "trust in technology" and "habit". The study synthesizes the literature review on theoretical models of technology acceptance and adoption

of health information technology and proposes a conceptual framework to better understand the determinants influencing the adoption and use of e-health services for mental healthcare. Empirical testing of this conceptual model is expected in the Psychiatry Department in Morocco.

Keywords: E-health service, mental healthcare, Technology acceptance, Technology adoption, UTAUT.

University proximity management: for a buoyant entrepreneurial ecosystem

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The entrepreneurial ecosystem (EE) is the set of cultural, political and economic elements that enable the various players within it to launch, stimulate and develop innovation, growth and productive entrepreneurship. The creation of an EA is a complex process that is not only built by a group of interconnected actors within a local geographic community.

Its construction and evolution can only be envisaged on a broader scale, that of proximity management based on varied, interdependent, non-hierarchical interactions between the various players, support programs, gas pedals and entrepreneurs, with laws, rules, common values and shared representations in a given territory. The university is part of this EE. It relies on management with all stakeholders to "fertilize each other" and create a dynamic of resources in this ecosystem. However, there is still a "lack of proximity", which is visibly hindering the collective construction of a promising EA.

- Is this due to the fact that various public policies do not take proximity into account?
- the university's lack of understanding of EE's operating mechanisms?
- the difficulty of reconciling traditional and new functions?
- Or simply the difficulty of adopting a multi-faceted proximity approach?

The aim of the present work is to answer these questions and make new proposals for a specific region, that of Fez-Meknes.

Keywords: entrepreneurial ecosystem, proximity management, university.

The Impact of Social Networks on the Eating Behaviors of University Students: An Analysis of Trends, Influencers and Nutritional Messages

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Social networks have come to dominate the daily lives of university students, influencing various aspects of their behavior. This article looks at the specific impact of social networks on the dietary behaviors of this population. Through an in-depth analysis of trends, influencers and nutritional messages disseminated on social platforms, this study aims to understand how social networks shape the nutrition perceptions and eating habits of university students in Morocco.

The article begins with a literature review, highlighting previous studies on the subject and underscoring the absence of specific research examining social networks as vectors of influence on student nutrition. It then establishes a robust methodology with a quantitative study for analyzing data collected from different social platforms, including Instagram and Facebook, focusing on hashtags and accounts related to nutrition and health.

The results of the study highlight several important trends, including the considerable influence of nutrition influencers, the growing popularity of specific diets (such as veganism) among students, and the frequent dissemination of nutritional advice, recipes and meal images on social networks. However, the article also highlights that nutritional messages are not always based on sound scientific evidence, raising concerns about the quality of nutritional information available online.

In conclusion, this article highlights the significant influence of social networks on the dietary behaviors of university students, while emphasizing the need for critical nutrition education to help this population navigate the complex social media landscape and make informed, balanced dietary decisions. It also calls for future research to understand better the long-term implications of this influence on the overall health of Moroccan students.

Keywords: Social networks, Eating habits, University students, Nutrition.

Application of essential oils on raw turkey meat: Organoleptic and physicochemical parameters, and preservative effects

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The increasing consumption of poultry meat among the Moroccan population stresses the necessity for enhanced hygiene practices in the poultry sector. This study aims to evaluate the preservative properties of essential oils in raw meat. Eight distinct essential oils are selected and applied to turkey meat obtained from a local poultry seller. These oils are applied using three different methods at varying concentrations. Organoleptic analyses, physicochemical properties, and microbiological analyses are conducted to explore the impact of concentration on the organoleptic properties of the product and to evaluate the preservative effect. Sensory analysis and the results of physicochemical properties reveal that concentration levels significantly influence organoleptic qualities and physicochemical parameters. Additionally, microbiological analysis results demonstrate significant differences among the three methods used in reducing bacterial load. These findings suggest a favorable outcome in the realm of consumer health and safety. The application of these properties in maintaining the safety of meat stored at refrigeration temperatures would be of considerable interest.

Keywords: Poultry hygiene, Essential oils, Microbiological analysis, Organoleptic properties, Food preservation

COVID-19: Epidemiological Characteristics and Clinical Manifestations in Morocco.

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Since the description of the new coronavirus disease associated with severe acute respiratory syndrome in December 2019 in Wuhan, China, it rapidly spread worldwide, causing a severe respiratory illness called COVID-19. This disease evolved into a pandemic, leading to a global health crisis, involving upper respiratory tract infections and varying degrees of flu-like symptoms. However, SARS-CoV-2 is capable of causing multi-organ disease, with involvement of the central and peripheral nervous systems in some patients. Indeed, a wide range of neurological manifestations of SARS-CoV-2 infection has been identified. The aim of this work is to detect clinical symptoms, circumstances, factors influencing this disease, and neurological manifestations present at the time of SARS-CoV-2 infection in order to highlight them in clinical diagnosis.

Our retrospective epidemiological study spanned a period of 5 months from April to August 2020, immediately after the onset of the pandemic as highlighted by the Moroccan Ministry of Public Health and involved 658 cases divided between suspected and confirmed cases hospitalized at Idrissi Kenitra Hospital. The data collection method used aimed to gather as much information as possible and to understand various aspects of the phenomenon under study.

In our research, Kenitra Provincial Hospital was able to admit 658 cases in the COVID-19 isolation unit, with 309 cases testing positive, representing 46.96%. The average age of hospitalized individuals during this period was 34.75, with a range from 1 to 86 years. Among those affected by COVID-19, females were more impacted, with 191 out of 309 confirmed cases being women, accounting for 61.8%, while 118 were men, accounting for 38.1%. After analyzing the clinical manifestations observed during COVID-19 infection, the results of our study revealed that among the patients, 167 of them reported a loss of taste, which represents a significant percentage of 54.04%. Additionally, 165 patients reported a loss of smell, equivalent to 53.39% of cases. Regarding the evolution over time of anosmia and ageusia symptoms in our series, in April, 10.52% of patients reported a loss of smell, and the same proportion

(10.52%) reported a loss of taste. In May, these numbers increased to 16% for both symptoms. However, in June, we observed a significant increase, with 51.69% of patients reporting a loss of smell and 55.08% reporting a loss of taste. This trend continued in July, with respective rates of 84.21% for anosmia and 84.26% for ageusia. In August, we recorded 64.06% of confirmed positive cases reporting a loss of smell and 62.5% reporting a loss of taste.

COVID-19 can lead to severe respiratory complications, and the responsible virus can cause multi-organ failure as well as neurological manifestations. According to our study and studies conducted in this regard, anosmia and ageusia appear to be specific symptoms of COVID-19. For reasons still unexplained, women seem to be more susceptible to the loss of smell and taste than men.

Keywords: Covid-19, Clinical Manifestations, Anosmia, Ageusia, Morocco.

The association between antioxidant genes and schizophrenia in Moroccan population

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Schizophrenia is a severe, multifactorial neuropsychiatric disorder that affects approximately 1% of the world population.

Schizophrenia has been associated with a number of genetic and environmental risk factors, including drug and alcohol abuse, prenatal infections, and inflammation. although there are a variety of risk factors involved, oxidative stress may be responsible for the underlying biological mechanism linking these processes.

Oxidative stress is induced by an excessive generation of reactive oxygen species (ROS) or a deficiency in their proper removal, leading to potential damage to neural cells.

It has been established that oxidative stress plays a crucial role in schizophrenia. Most studies examining oxidative stress in schizophrenia populations indicate an increase in cellular damage due to a combination of elevated pro-oxidants and reduced antioxidants, numerous reports have identified oxidative stress in various contexts, including cerebrospinal fluid (CSF) and the prefrontal cortex in vivo, the anterior cingulate cortex in post-mortem studies, as well as in peripheral tissues and plasma of schizophrenia patients.

Therefore, this study aims to investigate the association between genes related to the antioxidant system, such as glutathione genes, manganese superoxide genes, catalase genes, and genes associated with nitric oxide metabolism, and the pathophysiology of schizophrenia in Morocco.

Keywords: schizophrenia, oxidative stress, antioxidant, Moroccan patients, reactive oxygen species.

Knowledge, attitudes, and practices of health professionals regarding neonatal emergencies in delivery rooms at the level of the Marrakech-Safi region.

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Birth is a revolution that requires considerable adaptations on the part of the fetus, particularly in terms of cardiorespiratory fitness. However, any disruption of adaptation to extrauterine life exposes the newborn to real risks of morbidity and mortality. The aim of this study is to examine the perception, knowledge, and practices declared among health professionals faced with situations of neonatal emergencies in birthing rooms, at the level of the Marrakech-Safi region.

This was a prospective descriptive study, with data collected from a questionnaire targeting the knowledge, attitudes and practices of healthcare professionals working in the region's birthing rooms. Almost all participants were female (80%). 83% were trained in initial cardiopulmonary resuscitation, while only 30% were trained in full cardiopulmonary resuscitation. After each return to service, only 11% of participants systematically checked the Cheek list required for cardio-pulmonary resuscitation.

The diagnosis of a high-risk birth prompts almost all professionals to assess fetal well-being on an ongoing basis. However, at birth, a proportion of professionals still use stimulation techniques that should be avoided, such as folding the thighs over the newborn's abdomen, shaking the newborn, chest compressions and the application of hot and cold compresses.

The identification of these shortcomings' points to the need to: recruit competent health professionals in sufficient numbers, improve the quality of care provided to newborns, especially in the event of neonatal emergencies, and improve training programs, to improve neonatal outcomes and reduce morbidity and mortality.

Keywords: Knowledge, attitudes, practices, health professionals, delivery room.

Analysis of Conversion Coefficients for Cs-137 and Co-60 at Various Rotation Angles.

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Accurate determination of conversion coefficients is essential for reliable and precise dose measurements in radiation dosimetry. In this study, we analyze the conversion coefficients for Cs 137 and Co-60 at different rotation angles, comparing experimental values to those specified by the ISO standard 4037.

Experimental measurements of the conversion coefficients Hp $(10, α)$ were conducted at rotation angles of 0°, 15°, 30°, 45°, and 60°. The obtained values were compared to the ISO-specified coefficients for Cs-137 and Co-60.

For Cs-137, the experimental coefficients ranged from 1.18 to 1.23, while the ISO-specified coefficients varied from 1.19 to 1.22. The experimental values generally exhibited close agreement with the ISO values, with a maximum deviation of 1.65%.

For Co-60, the experimental coefficients ranged from 1.12 to 1.17, while the ISO-specified coefficients ranged from 1.14 to 1.16. The experimental values showed larger deviations from the ISO values, with maximum deviations of 2.61%.

These findings emphasize the importance of considering appropriate conversion coefficients based on rotation angles for accurate dose measurements in Cs-137 and Co-60 radiation fields. Adhering to ISO-specified conversion coefficients helps ensure precise and consistent dose assessments.

This study underscores the significance of understanding and utilizing appropriate conversion coefficients in radiation dosimetry, particularly when dealing with varying rotation angles. The results contribute to enhancing the accuracy and reliability of dose measurements, ultimately supporting effective radiation protection practices and safe applications in various fields.

Keywords: Radiation protection, Conversion coefficient, ISO 4037, radiation dosimetry.

Stability Structural, Electronic, Magnetic, and Elastic Properties of Inverse Heusler Alloy Ti2CoSn: GGA, mBj-GGA and GGA+U

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Heusler alloys have garnered significant attention from researchers due to their unique and remarkable physical properties. This study examines in detail the structural, electronic, and magnetic properties of the Heusler Ti_2CoSn alloy using the density functional theory based on the linearized augmented plane wave method, applying the GGA, mBJ-GGA, and GGA+U approximations. The formation energy and elastic parameters of Ti_2CoSn indicates the alloy's stable existence. It was also observed that is neither too brittle nor too ductile and exhibit anisotropic behavior. The results indicate that this alloy exhibits a semi-metallic ferromagnetic nature. The magnetic moment of this compound, obtained through the GGA+U approach, is $3.00267\mu B/f.u$ for a lattice parameter of 0.63777 nm. Ti_2CoSn behaves as a semiconductor, with a spin-down band gap according to the analysis of electronic properties. Moreover, the band gap values obtained using the GGA, GGA+U, and mBJ-GGA approximations are 0.741 eV, 0.458 eV, and 0.608 eV, respectively. The 100% spin polarization at the Fermi level confirms the potential utility of this material in the field of spintronics.

Keywords: semi-metallic, electronic properties, magnetic moment

Teachers' perceptions of the integration of simulation into nursing training

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Simulation has become a crucial pedagogical approach in nursing education worldwide. The aim of this study is to explore teachers' perceptions of the use of simulation in nursing and the obstacles they encounter when integrating it into their teaching. The study is descriptive and quantitative. Data were collected by means of an anonymous online questionnaire sent to teachers training students in Morocco's higher institutes of nursing and health technology. A total of 83 people took part in the study. The main results revealed that 93.9% of participants reported some knowledge of simulation. 49.4% with moderate knowledge.

The majority of participants felt that simulation contributed to the acquisition of skills and boosted students' self-confidence. Only 44.6% of participants reported having used this approach in the course. Of those who had, 78.4% had used low-fidelity procedural simulators followed by standardized patients. A number of obstacles were raised, including the need to train teachers in simulation, the lack of material resources and equipment, the large number of students and the shortage of staff. Despite the advantages of simulation, there are several obstacles to its integration into nursing education.

Keywords: simulation, nursing education, teachers' perceptions

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Exploring the Correlation Among Excessive Smartphone Usage, Sleep Disruptions, and Academic Performance Among Middle School Students in Kenitra, Morocco: Findings from a Cross-Sectional Analysis

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Background: Adolescents encounter diverse challenges related to addiction, notably excessive smartphone usage, significantly influencing their sleep patterns and academic achievements. This study explores the prevalence of heightened smartphone use among adolescents, emphasizing distinctions based on gender and educational institution type (public versus private). Additionally, it delves into the correlation between this excessive usage, sleep disturbances, and suboptimal academic outcomes.

Objective: This research primarily seeks to comprehend the impact of frequent smartphone usage on the sleep quality and academic performance of middle school students in Kenitra, Morocco. The investigation aims to scrutinize how insomnia and academic success vary concerning excessive smartphone use. Moreover, the study aims to unveil the underlying motives compelling adolescents to adopt these behaviors.

Methods: This study encompassed 342 middle school adolescents from Kenitra, Morocco, where a comprehensive questionnaire was administered. The questionnaire covered sociodemographic details, an assessment of smartphone addiction using the Smartphone Addiction Scale (SAS), evaluation of sleep quality utilizing the Insomnia Severity Index (ISI), and an assessment of academic performance based on second-semester grades from the 2021/2022 academic year. The results were presented in percentages to outline the prevalence of various studied aspects, coupled with an exploration of correlations with participants' individual data.

Results: Among the 342 middle school adolescents in Kenitra, Morocco, the study discovered a slightly higher prevalence of insomnia (measured by ISI) in girls compared to boys, significantly more prevalent in public schools than private ones. Academic performance indicated marginally lower scores among excessive smartphone users compared to non-excessive users. Additionally, there was a notable elevation in insomnia severity among

frequent smartphone users in comparison to less frequent users. These findings suggest a correlation between excessive smartphone use and heightened prevalence of insomnia, coupled with suboptimal academic performance among adolescents.

Conclusion: In conclusion, this study underscores the significant relationship between excessive smartphone use among Kenitra, Morocco's adolescents and issues related to insomnia alongside suboptimal academic performance. The outcomes highlight the vulnerability of girls and students in public schools to these effects. Understanding these dynamics is crucial in developing educational and awareness strategies aimed at fostering a more balanced smartphone usage culture among young individuals.

Keywords: Smartphone, Adolescents, Insomnia, Academic Performance, Prevalence, Morocco

Self-treatment: the case of sexually transmitted infections in Morocco

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Sexually transmitted infections (STIs) are indeed a major public health concern, and timely diagnosis and appropriate treatment are crucial in preventing complications and reducing the risk of transmission to partners. The potential complications of untreated STIs, such as infertility, maternal and infant mortality, and other long-term health effects, underscore the importance of addressing these infections promptly and effectively. Thus, the aim of this study is to evaluate the factors associated with self-treatment and its effects on the duration of symptoms of sexually transmitted infections before medical care.

In the context of Morocco, it's important to acknowledge the potential stigma associated with STIs, which can lead some patients to seek self-treatment remedies or keep their illness private. This underscores the need for comprehensive education, awareness campaigns, and destigmatization efforts to encourage individuals to seek professional medical care for STIs.

To address the issue of self-treatment of STIs in Morocco, it's important to conduct research to understand the prevalence, motivations, and consequences of self-treatment practices. Thus, a cross-sectional survey was conducted among 1,100 women of childbearing age in health facilities in the province of Essaouira to search for factors associated with signs of self-management of sexually transmitted infections. Additional data were obtained from women's health diaries. Thirty-five percent of respondents reported self-treatment when experiencing STI symptoms. Of the 385 patients who self-medicated, 21.3% reported using primarily topical medications (55.2%) and, in some cases, antibiotics. Those who self-medicated were more likely to live in rural areas, be older than 35 years, have primary education, live more than 6 km away from the nearest health facility, and have more than one symptom. Symptoms persisted three days longer among self-medicators than among women who presented to a health facility for STIs.

In conclusion, self-medication is common among patients with sexually transmitted infections, but these people are limited by a lack of information on the adverse effects, interactions, and contraindications of these drugs. Furthermore, we consider the lack of preventive health advice

to be a serious omission, leading to unnecessary exposure of patients to, and even reinfection by, the causative pathogens.

Examining the relationship between intestinal microbiota and high blood pressure: towards new perspectives in cardiovascular health

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High blood pressure (HBP) remains a major public health issue that has a significant impact on cardiovascular disease and premature death. The gut microbiota (GM) has become an important factor in blood pressure regulation in recent years, initiating an exciting exploration of its potential role in the development of HBP, but there have been no studies conducted on this in Morocco. Hence the objective of this research, which aims to analyze the composition and diversity of GM in Moroccan hypertensive individuals compared to healthy subjects, in order to establish the link between GM composition, the onset and development of hypertension and the risk factors associated with this disease. We plan to recruit a group of patients comprising 200 patients with hypertension and 100 breast subjects willing to take part in the study, collect stool samples from these subjects and analyse the intestinal microbiota by sequencing the V3-V4 hypervariable region of the bacterial 16S rRNA gene in order to identify the bacterial species present in their intestines. We expect that the bioinformatics and statistical analysis of the results obtained will demonstrate that there are significant differences in the composition of the GM between hypertensive individuals and controls. Furthermore, we aim to discover potential associations between specific micro-organisms and the severity of hypertension. Hence, the possibility of using certain GM germs as clinical indicators to predict the risk of hypertension and propose management based on regulation of intestinal flora.

Keywords: High blood pressure; Gut microbiota; Morocco.

Detection of isocitrate dehydrogenase and mismatch repair proteins expression in glioblastoma

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Gliomas are a category of brain tumors that account for a significant portion of all cerebral tumors, with glioblastoma being the most aggressive subtype. Glioblastoma represents half of all gliomas. Unfortunately, it is associated with a poor prognosis, with a life expectancy limited to an average of 14 months. The WHO 2016 classification of cerebral tumors has introduced specific criteria based on both histological aspects and molecular characteristics. These criteria involve the identification of certain features such as necrosis, endothelial-capillary proliferation, and multiple mitoses. Furthermore, the classification may also involve molecular confirmation by investigating novel signaling pathways in order to identify specific subtypes and guide treatment decisions. Overall, this stratification highlights the importance of accurately classifying gliomas which can have significant implications for prognosis.

This study aims to highlight some interesting biomarkers identified in glioblastomas and establish a correlation based on the overall survival of the patients. It is a retrospective study conducted over a 2-year period, involving 90 cases with GBM, collected from the University Medical Center Ibn Rochd in Casablanca. The patients included 35 females and 55 males with a median age of 54 and a range of 13 to 79 years.

An immunohistochemical study was performed using the antibodies anti-MSH6, anti-MSH2, anti-MLH1, anti-PMS2, and anti-IDH1 (R132H).

Immunostaining using mismatch repair protein antibodies was negative in 6% (7 cases). Furthermore, IDH immunostaining was positive in 10.81% of glioblastoma cases (8 cases), consistent with the results reported in the literature.

Glioblastomas are uncommon and exhibit a wide range of variations. Prognosis is determined by molecular profiling, underscoring the need for tailored and personalized treatment approaches.

Moroccan Argan Oil: Extraction, Quality, and Safety

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The focus of this study is the comparative analysis of different methods used in the extraction of Argan oil, examining their impact on both the oil and cake quality, as well as health safety considerations. A survey conducted among Argan oil producers in Morocco's Essaouira region revealed key factors influencing product quality, with the condition of the fruit being a primary determinant. Notably, 25% of respondents, primarily women selling Argan oil in souks, employ a water soaking method to facilitate the crushing stage of Argan fruit, though this practice may introduce challenges such as fermentation and mold. Furthermore, variations in water grade were identified among responses. While, all surveyed cooperatives reporting the use of high microbiological quality water. Poor water quality was found to affect the composition, shelf life, and, consequently, consumer safety of Argan products. The study also highlights significant disparities in roasting parameters, roaster types, and storage conditions, underscoring their substantial influence on Argan product quality. In conclusion, the investigation underscores the need for standardizing extraction processes and storage conditions to enhance the overall quality of Argan oil and cake.

Keywords: Extraction, storage, Argan oil, quality, roasting

Propagation modes in Thymus maroccanus subsp. rhombicus and Thymus leptobotrys species

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Morocco has an important heritage in aromatic and medicinal plants which are used in traditional medicine, cosmetics, and other purposes. In Morocco, the genus Thymus comprises 21 species, 12 of which are endemic, in this case, Thymus maroccanus subsp. Rhombicus (Tm) and Thymus leptobotrys (Tl). These species, whose geographical area shrinks from one year to another, are widely exploited in southern Morocco. The objective of the present study is to study their modes of propagation and the thousand seeds weight (PMG) in order to initiate a program of domestication and safeguard of these species. The germination of the seeds of 5 accessions for each species of thyme collected from the south, were carried out at the INRA laboratory in Rabat, in a Petri dish in three repetitions. The follow-up concerned the number of germinated, swollen, hard and rotten seeds. The aptitude for cuttings was carried out in a greenhouse for 5 accessions for Tm. PMG varied between 0.128 g and 0.254 g with an average of 0.194 g in Tm and between 0.126 g and 0.170 g with an average of 0.140 g in Tl. Germination started after the 4th day for both species. The number of germinated seeds was maximum after 10 days. Average germinating rate varied between 35 and 63% for Tm and between 15 and 37% for Tl. Tm species showed a cuttings aptitude rate oscillating between 41 and 66%. The results obtained showed that the two thyme present certain dormancy and that Tm has a better germination capacity compared to Tl.

Keywords: T. rhombicus, T. leptobotrys, germination, PMG.

Session 6 : Technological Innovations and Strategic Insights for Organizational Advancement

A socio-economic approach to the relationship between Humans and Machines

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This paper aims to address in this digital era the relationship between Humans and Machines through the lens of the Socio-Economic Approach to Management (SEAM). We will make a theoretical exploration of the subject.

We found it crucial to apply the SEAM because, to our knowledge, it has never been used for the Moroccan case (specifically in the logistics field). The second reason is that SEAM shows the reality we want to represent by adapting itself to this reality. First, we will discuss the context in which the research emerges, which is the context of internal logistics. When we talk about internal logistics, we emphasize two kinds of relationships: the one between human beings, and the one between Humans and Machines.

We found that SEAM can be applied in this digital era to better represent the facts in internal logistics. It can explain the social part (Human interactions), and the economical part which is the investment firms make to improve their performance, resilience, growth and profit. Our attention is focused on the investment in Machines (Robotization…). We mainly centre our reflection on this kind of investment because we see that firms tend to digitalize every part of the organization. As a result, the work that was done before by men such as picking is now done by machines. It is quite interesting to pay attention to this because according to the report made by the World Economic Forum on May 2023, there will be a destruction of approximately 89 million jobs by 2027. We encourage by our research managers and leaders of the firms to not forget the important place that Men have and should have in the organization.

Keywords: Internal logistics, digitalization, industry 4.0, Socio-Economic Approach to Management (SEAM), Information Communication Technology (ICT).

Agricultural Cooperatives Supply chain integration: Bibliometric and Content Analyses

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Agricultural cooperatives are frequently perceived as ideal mechanisms to promote vertical coordination with, or horizontal integration between, small farmers who might otherwise struggle to access value-adding opportunities and selective markets. Although research on this topic shows considerable interest in further vertical integration as an approach in improving agricultural production and marketing, the growth of cooperatives is not readily determinable since it is intermingled with growth arising from horizontal integration and other factors. The goal of this study is to show how horizontal integration led to vertical integration in the supply chain management of cooperatives and promotes the creation of efficient "second level cooperatives". The paper presents a comprehensive review of the Agricultural cooperatives' integration strategies within the scope of supply chain integration. Using systematic review methods, relevant studies published to early 2023 are explored to reveal the research landscape and the gaps and trends. The paper shows the building blocks and the main research directions.

Three main categories — Agricultural cooperatives supply chain integration, horizontal and vertical integration strategies profitability, vertical coordination performance— help explain this association and were discovered through cluster analysis. Insights are provided into the various elements of vertical and horizontal integration strategies among agricultural cooperatives and the degree of joint horizontal and vertical integration that may be effected in one cooperative firm. Many cases of integrated firms involve combinations of vertical, horizontal, and complementary integration. Only a few researchers have systematically reviewed the literature or taken a bibliometric approach in their analyses to provide an overview of the current trends and links between cooperatives business model and supply chain integration.

Keywords: Supply chain integration; Agricultural cooperatives; vertical integration; horizontal integration.

Comparaison des Banques Participatives et des Banques Conventionnelles : Evaluation des Modèles, Rendements et Avenirs Financiers

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The comparative study between participatory banks and conventional banks aims to thoroughly analyze the differences and similarities between these two distinct banking models. It delves into several essential aspects, including business models and operational procedures, financial performance, technological innovation, risk management, and regulatory compliance. By examining each of these areas in-depth, this study provides a comprehensive perspective on the advantages and challenges inherent in participatory banks compared to their conventional counterparts. It will help to better understand how these two types of financial institutions position themselves in the market, what their respective strengths and weaknesses are, as well as the opportunities and challenges that lie ahead. This comparative analysis will contribute to informing the future decisions of investors, regulators, and banking industry professionals."

Keywords: banking models, financial performance, risk management, regulatory compliance.

Business Intelligence and its Pivotal Role in Organizational Performance: An Exhaustive Literature Review

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The nexus between Business Intelligence (BI) and organizational performance remains a focal point of academic exploration and practical application alike. The purpose of this paper is twofold: firstly, to synthesize the existing body of literature that elucidates the multifaceted impacts of BI on organizational performance metrics, and secondly, to identify the prevalent gaps and challenges in BI implementation that have been reported to impede its full potential. Drawing from a rich tapestry of empirical studies, case analyses, and theoretical contributions, our review underscores the transformative potential of BI. When seamlessly integrated, BI tools and strategies have demonstrated a marked enhancement in decision-making, operational efficiency, and financial returns across varied organizational landscapes. Yet, the story is not singularly triumphant. A substantive segment of the literature reveals organizations grappling with BI's intricacies, from technological misalignments and data silos to cultural resistance and strategic misdirection.

In conclusion, while BI indisputably holds promise as a catalyst for organizational performance enhancement, its realization is deeply intertwined with both its commendations and challenges. This dual-purpose review serves not only as a comprehensive synthesis of BI's organizational impacts but also as a beacon, highlighting areas of concern and calling for targeted interventions to optimize BI's contributions.

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Keywords: Business Intelligence, Organizational performance, decision-making.

Embracing Digital Transformation: Revolutionizing Supply Chains for Efficiency and Competitiveness

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Recent years have seen a significant increase in the use of digital transformation in supply chains. Several organizations have begun the process of digitizing their supply chain processes in order to achieve predictability, efficiency, and a competitive advantage. With a focus on its components and implications for organizations as a whole, this paper aims to provide a comprehensive overview of digital transformation within supply chains. Identifying the predominant challenges in current supply chain operations is the first step in this exploration. By strategically adopting digital transformation principles, these challenges can be effectively addressed and mitigated. A structured approach is highlighted in the paper, which emphasizes the importance of a digital transformation framework.

Such a framework serves as a guiding tool for organizations to systematically develop and deploy digital capabilities, ushering in an era of digital supply chains.

Following the implementation of these digital capabilities, an essential phase involves evaluating whether they are delivering the intended value. Questions arise regarding the improvement of supply chain performance after the integration of digital capabilities. The paper examines the complexities of how and which metrics should be utilized to measure the value generated by digital advancements. It offers insights into the selection of metrics that best capture the holistic impact of digital transformation on supply chain operations. Collectively, these aspects offer a comprehensive understanding of digital transformation within supply chains. The primary objective of this paper is to address the increasing demand for digital transformation in supply chains, elucidate its role in surmounting contemporary supply chain challenges, outline a structured approach for organizations to initiate digital transformation initiatives, and provide valuable insights into the selection of metrics that illuminate the overall impact of digital transformation on supply chain operations.

Keywords: Digital transformation Supply chains Predictability Efficiency Competitive advantage

From traditional management to situated management: a socio-economic analysis of social organization: A theoretical investigation.

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Social enterprise plays a key role in the socio-economic restructuring of post-crisis economies. Through its particular vocation focusing on the creation of long-term value by combining both the achievement of a positive social impact with the creation of economic value. This unique combination calls for a traditional management approach that integrates its dual economic and social purpose in order to foster its role within society. Given that traditional management focuses more on maximizing short-term profitability (Peter Drucker (1954)) than on creating sustainable value and long-term profitability. As a result, management that enables such a structure to survive and develop is a vital solution. Also, smart technologies have influenced social organization, enabling the emergence of new forms of social organization. These technologies have transformed traditional management practices, fostering the emergence of situated management practices. Situated management of the social enterprise reduces the probability of dysfunction appearance. By highlighting the role of smart technologies in stimulating innovation and growth. Moreover, situated management strengthens the social enterprise's ability to ensure its survival and development in the market. This is achieved by integrating the social enterprise's contextual singularities into its management and steering its socio-economic performance. As well as using digital tools to improve communication, collaboration, and decision-making. To this end, we draw on the socio-economic approach, which we consider to have a considerable analogy with the particularities of the social enterprise. Similarly, we draw on Argris and Lewin's theory of action to understand the actions of individuals within the organization. Massahiko Aoki's game theory to understand the interactions between the various players directly or indirectly involved in the management of the social enterprise. The decision theory of v, Ansoff, Anthony to understand decision-making processes. Finally, Robert S. Kaplan and David P. Norton's performance measurement theory evaluates the performance of the social enterprise's situated management.

Keywords: social business model, socio-economic performance, social entrepreneurship, smart technologies

Government Communication Strategies during the COVID-19 Crisis: Morocco foreign affairs Ministry case.

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Effective crisis management has become a major challenge in a world marked by instability and globalization, allowing organizations the opportunity to overcome them and minimize their impact, while providing a learning opportunity to better prepare for the future. However, it is crucial to understand that without effective communication, organizations can worsen the situation by promoting the spread of panic and uncertainty and lack of trust with different stakeholders.

The COVID-19 pandemic has illustrated in a tangible way the crucial importance of communication in shaping public perception of government actions. The example of the Moroccan Ministry of Foreign Affairs during the pandemic highlights the complex challenges faced by governments in managing international crises. By balancing transparency, diplomacy and responsiveness in crisis communication, governments can maintain accurate information, respond effectively to stakeholder concerns and ensure trust, critical elements for successful crisis management.

This article explores the communication strategies used by the Moroccan Ministry of Foreign Affairs during the Covid-19 crisis, highlighting their efforts to navigate the complex context of international diplomacy in the face of unprecedented challenges. The case study of the Moroccan Ministry of Foreign Affairs, demonstrates that effective crisis communication in international relations requires a delicate balance between transparency, diplomacy and responsiveness and that the ability to transmit accurate information, addressing concerns and maintaining the trust of domestic and foreign stakeholders is crucial to the success of managing such a crisis.

Keywords: Crisis communication, Crisis management, Effective communication, COVI19, International crisis communication.

Intelligent technologies and higher education in Morocco: Around the "pedagogy/technology/space" triptych

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Intelligent technologies can be used to overhaul existing systems or maintain them, as well as to complement and improve existing processes. In the higher education (HE) sector, these technologies must be part of a three-dimensional logic: using active pedagogies, facilitated by accessible technologies, using adapted physical and virtual spaces to offer learning and teaching experiences.

Going beyond the classical models dominant in Moroccan universities, offering a continuum between the real world and the digital universe, mixing presence and distance, synchronous and asynchronous moments, individual learning and collective work.

This paper is a reflection on how Moroccan universities can rethink their training and learning processes around the triptych "pedagogy/technology/space" for both learners and trainers.

Keywords: Intelligent technologies, Higher education, Digital learning, Pedagogy, Learning process.

The possible impact of digital currency and new technologies on the revival of Moroccan tourism

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This comprehensive literature review delves into the potential influence of digital currency and emerging technologies on the revitalization of Moroccan tourism. Through an in-depth analysis of a variety of sources, it seeks to understand the ways in which these technological innovations have the capacity to transform payment systems, enrich the experiences of tourists, and bolster the tourism sector in Morocco.

The review emphasizes the dynamic interaction between digital currencies, Blockchain, and artificial intelligence, and how these components collectively possess the capability to attract contemporary travelers, streamline transaction processes, and foster sustainable growth within Morocco's tourism industry. Digital currency and emerging technologies have the inherent potential to create a profound impact on the Moroccan tourism landscape, breathing new life into an industry with vast untapped potential. The introduction of innovative payment systems can enhance the convenience and security of financial transactions for tourists, making Morocco a more attractive destination for modern travelers. Moreover, the integration of Blockchain technology can significantly bolster the transparency and trustworthiness of various aspects of the tourism sector, including accommodations, transport, and even cultural experiences. This not only appeals to tech-savvy tourists but also ensures the sustainability of Morocco's tourism industry, making it more resilient in the face of economic fluctuations and global challenges.

Artificial intelligence, another key component in this equation, plays a crucial role in personalizing tourist experiences. By employing AI-driven solutions, Morocco can offer tailored itineraries, recommendations, and support services to visitors, thus elevating their satisfaction levels and strengthening the country's appeal. Modern travelers, accustomed to the convenience of digital payment methods and personalized experiences, are more likely to choose Morocco as a destination. Simplifying transactions through digital currencies and providing intelligent, technology-driven services will make Morocco's tourism sector more competitive on the global stage.

In conclusion, the potential influence of digital currency and emerging technologies on Moroccan tourism is immense. These innovations, encompassing payment systems, tourist experiences, and the broader tourism sector, have the power to redefine the industry, attracting a new wave of modern travelers, simplifying their transactions, and promoting sustained and sustainable growth. Morocco stands to gain substantially by embracing these innovations, ensuring it remains a sought-after destination in the evolving landscape of global tourism.

Keywords: Digital Marketing, Moroccan Tourism Sector, New Technologies, Digital Currency, Digital Communication, Artificial Intelligence, Online Marketing Strategies, Responsible Tourism, social media, E-Tourism, Cultural Tourism, Metaverse.

Geospatial Mapping of Urban Mediterranean Wetlands in the Tangier-Tetouan Region (Northern Morocco): Conservation, Climate Change Resilience, and Sustainable Management

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Urban and peri-urban Mediterranean wetlands have a crucial role in promoting the sustainable development and well-being of urban areas, whether they are naturally occurring or man-made. They provide critical ecosystem services such as flood mitigation, water purification, and recreational opportunities. These environments also serve as refuges for biodiversity in the midst of urbanization and have a critical role in the resilience of the urban landscapes in the context of climate change in the Mediterranean region. Mediterranean wetlands contain a wide range of plant and animal species, ecosystems, and habitats. The Region of Tangier-Tetouan (Northern Morocco) is very interesting because of its geographical location and high socio-economic development.

This study delves into the critical realm of urbanized wetlands, in this region, emphasizing their conservation significance amidst growing anthropogenic pressures and climate change challenges. This region is the most urbanized in Morocco and has a high level of human development and infrastructure. Mapping environments is an interesting way to observe and analyse alterations or developments in these environments. It involves the collection of data and information to understand how the natural surroundings, ecosystems, and landscapes are evolving or undergoing change. Mapping wetlands help to obtain data about the distribution of plant and animal species, water bodies, water quality and distribution. Many tools are available and make mapping very useful.

Utilizing geospatial tools, such as Google Earth Engine (GEE) and QGIS, we explore a comprehensive mapping and assessment approach, incorporating the Normalized Difference Water Index (NDWI). Our findings reveal the decrease in wetland areas and the reduction of water surfaces linked to climate change, urban expansion, demographic growth, socioeconomic development and anthropic effects. Climate change is exacerbated by anthropogenic, industrial and tourist activities. Urban and per-urban wetlands in the Tangier-Tetouan Region are exposed to various hazards -including demographic and industrial growth- increasing their vulnerability. In the context of the Mediterranean region, particularly within the changing landscape of Morocco, this study paves the way for sustainable wetland

management and resilience. It responds to the urgent imperative of mitigating the ongoing loss of very important and critical ecosystems.

Keywords: Wetlands; Geospatial Mapping; Urbanization; Climate Change; Biodiversity; Sustainable Management.

The wavelet approach to quantifying credit portfolio losses.

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The quantification of credit portfolio losses using the wavelet approach offers an innovative methodology for assessing the financial risks associated with credit. This approach uses advanced mathematical techniques to analyze temporal fluctuations in credit data. In terms of quantifying losses, the wavelet approach allows the decomposition of loss time series into different time scales. This makes it possible to identify short- and long-term trends as well as irregular variations. By analyzing these scales, analysts can better understand the dynamics of credit losses and identify the underlying factors that contribute to fluctuations.

To quantify credit portfolio losses, the cumulative loss function is approximated by a finite combination of wavelet basis functions by computing the coefficients of the wavelet approximation (WA).

Wavelet approximation is an accurate, robust and fast method that enables VaR to be estimated much more quickly than with other loss quantification methods, such as the Monte Carlo MC method.

Keywords: Wavelet in finance; Portfolio management; Computational finance; The harmonic approach; Credit risk; Value at risk; Risk measures.

Unearthing the Business Ecosystem Metaphor: Tracing Roots and Contemporary Relevance

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In our quest to assimilate and fathom the ever-changing roles of business ecosystems in enhancing territorial competition, we cannot dismiss their relentless pursuit, as they journeyed a considerable distance before resonating in the realm of management. Throughout our exploration, we aim to uncover the origins and contemporary significance of the business ecosystem concept. We will trace its evolution from its ecological roots to its present status. Business ecosystems play a crucial role in management, motivating our interest in the concept. Our investigation seeks to understand how these ecosystems contribute to shaping and enhancing territorial attractiveness. It was in 1935 that the seeds of the concept of an ecosystem were sown in the soil of ecology. Sir Arthur Tansley explicitly and meticulously unearthed the concept within the field of ecology. In its nascent format, it evolved entirely around the exclusively ecological dance of biotopes and biocenosis. A complex interplay between living organisms and the environments they exist in.

Considered an expressive means to get messages through, metaphors seem to grow uninterruptedly in business and management research fields. In fact, the ecosystem's introduction to management goes back to 1993, when Moore explicitly founded his business ecosystem formula based on a biological analogy with natural ecosystems. Thenceforth, an array of ecosystems made their way through the hall of fame: innovation ecosystems, entrepreneurial ecosystems, national ecosystems, digital ecosystems, etc.

Today, the business ecosystem metaphor is subject to high expectations when it comes to enhancing territorial attractiveness. It has become a focal point for scientists and practitioners alike, thanks to its deep ecological roots and its adaptation to numerous management contexts. Ultimately, and throughout our exploration, the business ecosystem metaphor promises to guide territories on a rollercoaster of appeal and attractiveness.

Keywords: Business Ecosystem, ecological ecosystem, metaphor, territorial attractiveness.

Comparative analysis of predictive models in Learning Analytics: insights from previous research

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Over the last years, there has been a surge in the studies that use machine and deep learning models to predict critical academic outcomes in order to improve the learning process. This has resulted in the emergence of predictive modelling as a core practice in Learning Analytics. In this context, we conduct a comparative analysis based on a comprehensive review of previous research articles, focusing on machine learning algorithms applied to predictive modelling. Our objective is to extract insights from existing literature, and provide an overview of the strengths, weaknesses, and trends within this field.

We begin by systematically reviewing a substantial body of research articles published in the last decade, covering well-established and emerging machine learning algorithms employed in predictive Learning Analytics. The comparative analysis is structured around several key dimensions, including categorization of the model, prediction accuracy, computational efficiency, the predicted outcome and finally the predictor features used.

Our findings reveal that Neural Networks are the method of choice for predictive tasks in Learning Analytics, outperforming other algorithms in terms of accuracy. However, their computational demands may limit their applicability in resource-constrained environments. In conclusion, this comparative analysis synthesizes the existing body of knowledge on machine learning algorithms for predictive analytics, offering a comprehensive overview of their relative performance and suitability for different applications.

Keywords: Machine Learning, Predictive Modelling, Learning Analytics.

Enhancing IoT Data Integrity and Effectiveness through hybrid Compression Method: A Step Towards Energy Efficiency

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The proliferation of the Internet of Things (IoT) has presented a formidable challenge in handling the vast volumes of data generated by IoT devices, particularly within meteorological applications such as the monitoring of temperature and humidity. This study aims to address the pressing need for the efficient reduction of IoT data volumes while ensuring the preservation of data integrity, with a keen focus on its substantial implications for energy consumption within these systems. Our research methodology involved a dual-pronged strategy, utilizing the DHT11 sensor in conjunction with the ESP32 microcontroller for the collection of data. Subsequently, we delved into an exploration of various data compression algorithms, including delta encoding, run-length encoding (RLE), variable-length integer encoding (VLI), and bit-packing.

Notably, the strategic amalgamation of run-length encoding (RLE) and delta encoding exhibited remarkable outcomes, achieving an exceptional compression rate of 98%. This synergy not only facilitated data reduction but also proved instrumental in conserving energy by minimizing data transmission durations. The compression process operated at an impressive speed of 133 microseconds, contributing significantly to swift data transmission. Moreover, the seamless transmission of compressed IoT data to the Azure Cloud platform not only curtailed cloud storage expenses but also optimized storage space, thereby promoting enhanced energy efficiency within the system.

This research illuminates the paramount significance of employing data compression techniques as a viable solution for ameliorating the environmental impact of IoT technologies. The effective reduction of data volumes not only ensures streamlined operations but also fosters a sustainable and energy-conscious trajectory for the future. By significantly diminishing data sizes without compromising integrity, the implementation of these compression methodologies represents a pivotal step towards a greener technological landscape.

Keywords: Internet of Things (IoT), Data Compression, Data Integrity, Energy Savings, Azure Cloud

Distributed Multi-Intersection Traffic Flow Prediction using Deep Learning

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Traditional traffic prediction models face challenges in efficiently traversing complex urban traffic networks, especially at intersections with many crossings. Through the utilization of sophisticated data analytics and machine learning algorithms, these predictive methodologies can precisely forecast traffic patterns and improve routes in real-time. This not only decreases traffic and travel duration for commuters but also lessens the ecological impact of automobiles by minimizing idle time and wasteful fuel usage. Incorporating intelligent transportation technologies can ultimately result in a more environmentally friendly and sustainable urban mobility ecology. This research study presents a novel methodology that improves the accuracy of traffic flow forecast and indirectly supports energy saving efforts. This study utilizes deep learning techniques, notably the Gated Recurrent Unit (GRU), to simultaneously assess traffic patterns at many crossings in urban areas. The model views the traffic network as a distributed system, allowing for real-time forecasts and improved traffic management, leading to lower fuel usage.

In addition, the incorporation of data fusion techniques in this framework, which combines data from several sources including traffic sensors and historical traffic statistics, enhances the dependability and robustness of forecasts. This research makes a substantial contribution to optimizing traffic signal timing, improving congestion difficulties, and eventually promoting more efficient transportation systems by using exact traffic flow projections. As a result, this leads to the reduction of fuel wastage and the lessening of harmful emissions. This work is an important step in improving intelligent transportation systems and increasing energy efficiency in urban mobility. The use of these cutting-edge predictive methods has the capacity to completely transform traffic management strategies, hence improving the overall sustainability and ecological consequences of urban transportation infrastructure.

Keywords: Deep Learning, Traffic Flow, Energy Efficiency, Multi-Junction Traffic, Intelligent Transportation Systems.

Cloud computing, information systems, and governance: An overview and future perspective

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The IT industry's fastest-growing technology is cloud computing. In order to provide limitless resources and services over the internet, it is an architecture that combines the idea of virtualization technology with several computing paradigms, including distributed computing, utility computing, and grid computing. Users of cloud computing do not have to pay for infrastructure, installation, or maintenance because it operates on a pay-as-you-go model. Anyone can request access to the desired service from the cloud at any time and from anywhere in the world.

The advantages that Cloud Computing can provide are many which can make adopting it quite appealing. Although it has many benefits, this approach also faces difficulties and dangers that could restrict its acceptability and applicability, such as: ensuring the organization's data and services are available, confidential, and transparent.

To solve all these issues and increase an organization's return on investment in Cloud computing, governance is an essential discipline. A set of rules, procedures, job descriptions, and practices known as "Cloud Computing governance". A system information governance structure is strongly advised for these goals to enable enterprises to carry out various duties.

Research on this topic has focused on several aspects that we summarize in three axes. First, some works are interested in the intrinsic characteristics of cloud computing and information systems. Secondly, others are interested in the role of governance of information systems. For example, to the question of the concordance between cloud computing and information systems governance. Finally, there are works that focus on the governance of cloud computing, It is this last axis that interests us in this paper. We conduct a theoretical literature review to show that this issue is not sufficiently studied. Yet, however, this matter is crucial. To do so, we rely on a theoretical analysis through the Scopus database where we analyze three groups of works.

- First, the works that deals with cloud computing and information systems in a general way.

- Then, the works that deal with the governance of information systems.

- Finally, those that deal with the governance of cloud computing.

Keywords: Cloud computing, governance, information systems, IT industry

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As we conclude this compilation of knowledge and ideas, we extend our sincere gratitude to all participants, contributors, and organizers who made the International Conference on Smart Technologies and Applied Research a resounding success.
May the connections forged and insights gained continue to inspire progress in your respective fields. Until our paths cross again in the pursuit of knowledge and innovation.

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