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Abstract proceedings

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Complied by Oskars Java

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FOREWORD

Vidzeme University of Applied Sciences (ViA) is honoured to welcome you to the third international conference "SOCIETY. TECHNOLOGIES. SOLUTIONS" held on 8 April 2022 in Valmiera, Latvia. In the 26th year from its establishment, ViA thrives on the synergy between science and academic work. Our goal is to develop a knowledge society that is smart, ambitious, curious, and motivated to unlock new knowledge constantly, as well as willing to promote a democratic, free and safe world for all of us. The task of academics in this time is not only to make society aware of the value of science, and to appreciate the contribution of various fields of science in solving current challenges for society, but also to use the achievements of science. Hence, we are happy to open the abstract template of the conference introducing the diverse and exciting themes that will be presented and discussed at the event.

During the conference, we will analyse in depth the processes important for society in the age of technology, talk about the future knowledge society, knowledge exchange and innovation, sustainable development and security issues related to digital transformation. Seven conference panel discussions will offer the opportunity to explore the current issues related to various societal and technological challenges in detail. The keynote speaker and the first panel of today's conference will discuss the idea of creating a joint education area – a topic that is high on the European agenda. The panellists will ask whether this is just a matter of education, or something more, and why should universities from different countries come together and create a conceptually new offer in higher education, the 'European University'? Among the other specific themes, you will find technological innovations, cybersecurity, advanced analytics, as well as student social responsibility, work productivity in specific production sectors, and business incubation in the context of the pandemic. A separate panel will be devoted to the current trends in the tourism sector: beach tourism, destination management, agricultural tourism, technology enhanced visitor experience in museums, as well as improvement of the tourism education. Socio-ecological challenges will be discussed through presentations on biodiversity issues, management of landscapes, nature conservation stakeholder analysis, and use of GIS technologies in identifying landscapes of national importance. Another conference panel will be devoted to the current trends in the circular economy field, and the related challenges: culinary education and development of the mindset needed for practising green business. Finally, one conference panel will focus on the timely topic of science literacy, science communication, discussing its state in the society and the role of schools in promoting scientific literacy.

I thank the organisers of the conference and especially my colleague, Oskars Java, from the Institute of Social, Economic and Humanities research at ViA, who brought us all together in these troubled and uneasy times.

Let the conference be a great inspiration for us all in our future work!

PhD Agnese Dāvidsone, Vidzeme University of Applied Sciences, Acting Rector, Dean of Faculty of Society and Science, Head of Communication, Media and Governance Studies, Associate Professor, Researcher at the Institute of Social, Economic and Humanities Research (HESPI)

How Much ICT Security has Improved During the Last Decade

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INTRODUCTION

Since 2000, information security has begun to develop at a significant pace. Many companies are adopting modern information and communication technologies, without fully considering the fact that it is necessary to manage new types of ICT threats, different from those of the past.

It is for these reasons that the security of access to ICT systems needs to be fundamentally rethought. Furthermore, modern IT environments are not ideal because they are constantly growing and evolving, becoming more and more complex. Their stepwise development also dictates at least the temporary coexistence of old and new technologies, thus leaving behind many cracks and gaps through which attackers can attack.

The purpose of this paper is to address this gap and outline how far we have come in terms of information security and protection, as well as the challenges faced by modern companies. It also investigates the other factors contributing to ICT security. This paper provides certain guidelines on where companies should begin, and which aspects of security are especially vulnerable nowadays. By studying the evolution of ICT security, the paper aims to determine the most effective way to protect information systems from modern threats.

MATERIALS AND METHODS

Scientific and professional literature in the field of computer and information technologies with special interest in the field of information security was used in the preparation of the final paper. In processing the topic, secondary data were used, from the official website where texts or papers related to the thematic area of this final paper were published. The paper uses methods of descriptive analysis (in analysing and describing the elements of the units that are discussed in this paper in order to determine the elements, content and components of the observed unit and the relationship as a whole) and synthesis (combining simple mental creations into more complex connecting elements, processes, phenomena and relations as a whole), inductive and deductive method (for the purpose of presenting general laws and reducing abstractions) and the method of compilation (when quoting and graphical representations taken from the used literature). Statistical data was also used, taken from official agencies, databases and research centres.

RESULTS

The security of information systems has always been important for an organisation to operate successfully. With the modernisation and informatisation of business, the risk of information systems security increases. It is the networking of computers and the dislocation of an organisation's business that leads to the need for greater protection of confidential information. When information is not properly protected, it is very likely that it can jeopardise an organisation's competitiveness and present the same organisation as a failure. Since security is not something that is the final product or condition, but a process, it is logical that the security of information systems is a constant action and the whole process of protection. It is not enough just to determine which information systems are suitable for business, it is necessary to constantly check the operation of the system in order to maintain an acceptable level of risk that threatens each information system and thus the business system as a whole. There are a number of parts of a system or organisation that need to be protected, and information security takes care of three basic aspects

of maintaining confidentiality, integrity, and availability of information. Through these three aspects and their proper protection, it is possible to lead to the progress of an organisation's business.

These conclusions and the completed work proved the hypothesis that there are a large number of ways, methods and practices governing information security. However, businesses and individuals are still not sufficiently educated or concerned so they remain extremely vulnerable. This is why ICT security is still a problematic issue – and it looks like it will be even more in the future.

DISCUSSION

The reason for the complexity of information security protection is precisely due to the security of information systems being a very broad concept, and it is necessary to look at it as a whole, and not pay attention to certain parts only. When the information system is understood as one large entity branched into different areas, and when the laws, rules, procedures, and instructions in this area are respected, only then can it be said that an information system is secure. However, due to the ramifications and complexity of this topic, it is very difficult to fully monitor the security of information systems, because they are vulnerable in many ways, so it is necessary to continuously check and guard against threats that systems are becoming more open to.

CONCLUSIONS

Since information is the main resource of business and it is the core of everything that an organisation possesses, the correct application of protection methods increases the competitiveness and business success of a particular organisation. An important aspect of business is correctly deciding on the protection measures to be used, depending on the organisation and the activity with which a particular organisation is engaged; it is important to implement proper protection. The security of information systems doesn't only include the storage of confidential data in a special place; it is necessary to protect the facilities themselves, equipment and premises, all the way to programs and documents that contain information. This paper can be used as a starting point for choosing and deciding on protective measures, as well as an wake-up call for everyone to think more about ICT security. ICT gives numerous benefits – but they come at a cost – so, we need to stay alert to tech trends and constantly strive for better protection.

KEYWORDS: ICT security, Cybersecurity, ICT security evolution, Threat, Vulnerability

Involvement of Technological Innovation in Sports

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INTRODUCTION

The complexity of the tools used in sports requires constant technological change and improvement. In this paper we will highlight how technological innovations have influenced the development of sports.

Is it true that technology has intervened in improving results in all sports?

Many authors (Tidd et al., 1997; Tidd and Bessant, 2009; Hakansson and Snehota, 1995) have attempted to highlight the complex relationships between the innovation process and the incentives that lead to various sport-related inventions.

MATERIALS AND METHODS

In this paper we will use the method of analysis and description to show how technological innovation has influenced the development of sport. The complexity of the tools used in sports constantly requires technological changes and improvements. For example, gymnastics equipment, athletic vaulting poles, tennis rackets, bikes, roller skates and ice skates, etc. are constantly undergoing technological evolution.

We will analyse how innovations such as: the use of rubber suits in swimming (2008), the increase in cycling speed by the invention of the mechanism that regulates the ratio of wheel speed (1935) or the use of light rubber and very resilient marathon running shoes (2013) have improved results, helping to achieve times at the maximum limits of human ability.

RESULTS

Comparing the results drawn from the analysis of scientific works of different authors gives us the opportunity to reach conclusions, which open new avenues of perspective in the sports sector in terms of the design and implementation of technology. The inclusion of technology in sports gives human society greater opportunities to reap its benefits for a more active life.

DISCUSSION

Data provided by various authors show that: the use of rubber suits in swimming (2008), increasing the speed in cycling by inventing the mechanism that regulates the ratio of wheel speed (1935) or the use of rubber lightweight and very resilient marathon running shoes (2013) have improved results, helping to achieve times at the maximum limits of human ability.

In order for innovation to have the greatest impact on sports, cooperation and exchange of experiences is required between sports companies and large manufacturers of sports equipment in improving the technical aspects of the equipment they produce.

CONCLUSIONS

The involvement of innovation and technology at different levels have has unquestionably influenced the discovery of high-tech materials as well as the modification and improvement of various techniques. Consequently, these inclusions have made sports performance achieve unimaginable results, pushing the limits of human ability.

KEYWORDS: Innovation, Technology, Sports, Sports equipment

Enterprise Modelling Methodology for Socio-Cyber-Physical Systems Design: Case from Cybersecurity Education and Climate-Smart Agriculture

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INTRODUCTION

The incorporation of various aspects and requirements in socio-cyber-physical (STP) system simulation modelling drives challenges for the application of appropriate methodology and visualisation. The research problem lies in the multi-dimensionality and complexity of these systems. According to information science, the definition of STP implies an understanding of how digital information interacts with and transforms the physical world (which compromises both natural and manmade materials) (Rijswijk et al., 2021). The multi-dimensionality of these system authors is expressed in: 1) time (historical and actual data, future predictions, and continuous updating based on simulation modelling results) (Frazzon et al., 2020); 2) the physical world and its digital representation (Rijswijk et al., 2021); 3) the change in social practices by the influence of the cyber world (Skarga-Bandurova et al., n.d.). All the above-mentioned factors have to be reflected within the comprehensive simulation model.

The author's proposed hypothesis is: the application of multi-scalability and multi-dimensionality within the enterprise modelling approach provides the opportunity to develop a comprehensive model for socio-cyber-physical systems.

The enterprise modelling method provides an excellent background for case studies and the application of the modern Living Lab approach for socio-cyber-physical systems design. But a research gap exists in contextual modelling for the particular solution. It means that for various cases there is specific contextual information that has to be described and taken into account in order to reach the main goal. The author proposes an extension of 4EM methodology for application in two various cases: 1) development of methodology for cybersecurity education; and 2) requirements for the definition of a climate-smart agriculture solution for farmers.

MATERIALS AND METHODS

Method: application of enterprise modelling methodology for 2 various cases: 1. climate-smart agriculture; 2. methodology development for advancing cyber security competencies.

EM consists of 6 inter-related models (Stirna & Persson, 2018):

Goal model, which in general defines the objectives of a company and its problems

in reaching such goals and implementing business processes;

Business law model, which describes the laws that have to be complied with in reaching the goals set and/or implementing business processes or rules in a particular context;

Concept model, which explains concepts used in other models;

Business process model, which generally describes processes to be implemented for reaching the goals and functionality tool;

Actor and resource model, which in general includes the required human resources and material-technical resources for implementing business processes or a particular user;

The model of technical components and requirements, which in general describes the provision of software and hardware for business process implementation, as well as how to reach the goals set and functions of a new remote communication tool.

The model development process was conducted according to methodology requirements in the following steps: 1) expert interview before the modelling session; 2) modelling session; 3) model justification within the expert group.

RESULTS

Results shows that 4EM methodology is an effective methodology for case analysis in uncertain situations and where the solution is not obvious. It brings new insight for the proposed situation and explicitly describes the innovative solution.

The outcome of the modelling sessions conducted was the development of models with incorporated stakeholder needs and requirements. The advantage of the application of 4EM methodology is simplicity and comprehensiveness at the same time. Methodology provides flexibility in a situational analysis and definition of sub-models, which supports the proposed case need and stakeholders' view and ideas. The iterative model design process provides an effective Living Lab approach for stakeholder community building and a snowball effect in engagement.

DISCUSSION

A discussion point regarding 4EM methodology is its completeness and how detailed the description of models and developed sub-models have to be. The application of 4EM in two various cases proves the hypothesis that methodology can be applied as an effective tool for community building within Living Lab.

Future work is related to the incorporation of technological solution and pattern design for the more effective elicitation of requirements.

CONCLUSIONS

The 4EM model has been developed, summarising the requirements and different aspects in using emerging technologies in various situations. It also includes aspects such as social, technological and security factors. Actors and goals have been defended, and important components recognised. Security capabilities and context elements have been determined according to the goal model. Several threats and problems have been identified. The advantage of this model is that the authors formulate technical requirements according to the set context. This approach is a new addition to the existing 4EM process.

ACKNOWLEDGEMENT

KEYWORDS: Enterprise modelling, Socio-cyber-physical systems, 4EM methodology, Climate smart agriculture, Cyber-security education

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The Blue Flag Programme and Destination Image: A Study on Eden Beach, Puducherry, India

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INTRODUCTION

Beach tourism offers enormous economic benefits to local communities and also causes many environmental and social impacts on the coastal environment. Many people choose to take a holiday at a beach destination because they want to relax, escape and participate in beachfront recreation (Lucrezi and Vander Walt, 2016). India, with a coast-line of 7516.6 km (Centre for coastal zone management and coastal shelter belt, 2017), has a wide variety of beaches on its shoreline that offer recreational activities to tourists. Foundation for Environment Education in Denmark (FEE) has awarded Blue Flag Certification to two new beaches in the year of 2021, namely Kovalam in Tamil Nadu and Eden beach in Puducherry, India. A Blue Flag beach is an eco-tourism model that aims to offer tourists clean and sanitary bathing water, facilities/amenities, and a safe and healthy environment while providing sustainable development to the local community. Around the globe, only 47 countries have achieved this blue flag certification for its beaches.

MATERIALS AND METHODS

The researchers have studied the destination image of Puducherry as a beach tourism destination, with special reference to Eden beach, Puducherry. With the support of literature studies, the assumption that a positive destination image also promotes the intention of tourists to revisit, thus bringing sustainable development to the destination, is justified.

RESULTS

The results are theoretical. The study is based on Eden beach, Puducherry. The results show that the destination image encourages the intention of tourists to revisit and loyalty to the destination. This research is significant for the future as it helps to propagate India's image as a clean and green beach tourism destination, thus creating a positive destination image among domestic and international travellers.

DISCUSSION

On achieving this Blue flag certification, the destination image of Pondicherry as a beach destination, a union territory in India, creates loyalty to destination that encourages the intention to revisit the destination among tourists that ultimately benefits the stake holders of the destination and helps in achieving sustainable development.

CONCLUSIONS

The connection between the destination image, destination loyalty and intention to revisit is clear and proven in many other research findings. Therefore, future researchers can also focus on other beaches in India with Blue flag certification and their role in promoting tourism in that region, as well as the image of a tourist destination and the tourist's perception of a tourist destination on other blue flag beaches of India.

KEYWORDS: Beach tourism, Blue flag, Destination image

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Latvian Semi-natural Grasslands in the Socio-ecological Extinction Vortex: the Evidence and Research Gaps

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INTRODUCTION

Semi-natural grasslands depend on active management by certain societal actors, and can therefore be defined as socio-ecological systems (Herzon et al., 2021). Semi-natural grasslands of the European Boreal biogeographical region are considered to be caught in a socio-ecological extinction vortex (Herzon et al., 2022). Our aim was to look at the evidence for the extinction vortex of Latvian semi-natural grasslands at the national level, and to describe the main directions in which research is insufficient.

MATERIAL AND METHODS

We conducted a scientific literature review and collected official agricultural and habitat conservation statistics.

RESULTS

Published studies are dominated by ecological aspects of semi-natural grasslands in Latvia. At the national level, there is little evidence available about all four interlinked and mutually reinforcing socio-economic processes operating in the extinction vortex (Herzon et al., 2022): 1) agricultural production; 2) policy, research and development; 3) vocational education in the fields of agricultural sciences and 4) the public's experience with semi-natural habitats.

DISCUSSION

The success of semi-natural grassland conservation depends on how well social-ecological system (SES) thinking has been applied through conservation planning and implementation (Krievins et al. 2018; Fischer et al. 2021). Therefore, conservation should approach semi-natural grasslands as socio-ecological systems rather than merely ecosystems. In Latvia, this approach has not yet been fully appreciated.

CONCLUSIONS

There is a lack of understanding of semi-natural grasslands as socio-ecological systems in Latvia both in the governmental and non-governmental sector, as well as in the research community. The main research gap is in inter- and transdisciplinary approaches to semi-natural grassland conservation.

KEYWORDS: Socio-ecological system, Semi-natural habitat, Conservation, Cooperation

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Sustainability of the Cross-country Approach and the Role of Destination Management Organisations in Creating New Tourism Products: the Case of Siauliai, Joniskis (Lithuania) and Jelgava (Latvia)

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INTRODUCTION

Destination is used as a synonym for attraction; destination can also be defined as a specific brand or product, or a product package or selection of products and services compiled according to climate, infrastructure, natural and cultural features. Destination is defined as a place where tourists can rest, walk, spend their time in nature, see historical monuments, attend festivals, events, taste local cuisine and be part of unique events. Combining the last approach with traditional geographic or administrative aspects, we may define a destination as an administrative or geographically defined area where tourists can rest, walk, spend their time in nature, see historical monuments, attend festivals, events, taste local cuisine and be part of unique events. With a new trend of local travel, the promotion of regions that were not among top visited destinations becomes essential in trying to attract local travellers in the short term. The objective of this study was to identify the effects of promotional and organisational factors on travellers' intentions to visit two destinations in Lithuania and one in Latvia.

HYPOTHESES

Key hypothesis of this study – can sustainable cross region or cross border cooperation initiate higher tourist interest in formerly less visited destinations and what steps do we need to take to create valuable proposals.

METHODS AND MATERIALS

Analysis of scientific literature and secondary data, descriptive statistical analysis.

Destination management has historically placed emphasis on the management of demand and supply, visitor experience and maintenance of competitive advantage. This has been enhanced through the application of modern marketing techniques (Buhalis & Sinarta, 2019; Gretzel & Scarpino-Johns, 2018; Kabadayi, Ali, Choi, Joosten, & Lu, 2019; Polese, Botti, Grimaldi, Monda, & Vesci, 2018). Our study shows that many destinations lack a clearly stated value separately, as they are mostly too small to attract the attention of experienced travellers.

RESULTS

We have collected all the possible sights, historical background and created 20 different routes that combine the object of project stakeholders – Siauliai, Joniskis and Jelgava districts, bearing in mind that enhancing greater cooperation might help to create better stories, use a historical element, and attract the attention of experienced travellers.

We clarified that DMO's are still heavily focused on the classical promotion of their attractions. This is why this first stage of research implemented a new methodology based on which regional DMO's can create cooperation and develop easy-to-use products. The authors put a content orientated approach and not infrastructure created experience at the forefront.

Justifying our hypothesis, we found that any less visited destination can acquire additional interest by combining objects from more than one district or well-known country.

But the most important question that we were solving is how to satisfy all the stake holders and not to benefit one partner.

We have tested our offered model by creating an actual product.

CONCLUSIONS

Destination resilience is becoming an important area of research, with DMO's becoming the key players in the development of more adaptive strategies, managing the risks, and furthermore, attracting visitors to most of the local objects. DMO's lack appropriate models that can help them to market their destination more. A ready-to-use and tested model can become a good example for any DMO that is eager to attract more visitors by creating products that reflect a modern traveller's needs.

KEYWORDS: Travel industry, Destination management organisations, Innovations, Travel products

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Adaptation of Advanced Analytics in Latvian Educational institutions

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INTRODUCTION

This study reflects advanced analytics as one of the most important resources for achieving the goals of sustainable education. The OECD points to the trend of increasingly complex education systems in OECD countries. Strategic, long-term thinking and approaches to the management of a complex education system in the context of the future are essential, with regular and targeted evaluation of the functioning of the system using so-called big data. Higher education institutions should be able to adapt to change and be prepared to proactively respond to crises and contingencies. Effective governance of educational institutions requires data collection and analysis, as well as the use of results for further decision-making. For the planning and successful implementation of education policy, it is necessary to increase the competence of the heads of educational institutions in the processing of large data and the ability to perform analytical work at a higher strategic level. Large data processing and analysis, as well as situational forecasting and context mapping require the use of sophisticated and up-to-date tools.

MATERIALS AND METHODS

The quantitative survey contains a questionnaire with 40 questions – single choice, multiple choice, text entry, matrix table, constant sum type questions, allowing one to collect wide ranging and structured information. The main blocks are Demographics, Data management, Analytics, Process around data and analytics, People, Technologies, Culture, Leadership, Success drivers, Barriers.

The data of this study were obtained using the online survey platform Qualtrics. The majority of respondents were attracted using the online panel provider https://intraresearch.com. An additional channel was created to attract respondents on the homepage http://www.raaconsulting.eu/ with the help of Google Ads. For quantitative data processing, the descriptive and statistical analytics R and MS Excel software were used. Mostly descriptive and statistical analyses were used to explore the survey outcome and describe the findings.

DISCUSSION

Some of the key questions to consider in the context of educational sustainability: What is the overall level of advanced analytics in Latvian educational institutions?

Analysis of literature suitable for the subject of the study reveals that advanced analytics is a process of turning huge volumes of structured or unstructured data, statistical and predictive analytics into decision-making with a value to business. To ensure sustainable decision-making, organisations should use advanced analysis to analyse past, understand current behaviours, and predict and influence future events, actions, decisions, and behaviours. Several studies have shown that to create data-driven decision-making, organisations need to put maximally automated processes in place to manage and utilise all different and fast-moving data from internal and external sources. New approaches, algorithms, tools and platforms help derive meaning from large amounts of unstructured and structured data and techniques that provide so-called advanced analysis. Data, analytics, related tools and the overall analytics ecosystem become more and more crucial topics in any organisation taking high digitisation demand into account.

CONCLUSIONS

The authors found that most Latvian educational institutions are not ready for the challenges of turning huge volumes of structured or unstructured data, statistical and predictive analytics into decision-making with a value to the organisation. Advanced analytics is a realistically underestimated tool for the sustainable effective governance of educational institutions.

Framework to Build an Advanced Analytics Maturity Assessment Model: Questionnaire Design

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INTRODUCTION

Every minute of every day, a huge amount of data is created – social media, email communication, any device connected to the internet, google search. The future of digitalisation and internet of things promises a further generation of new data volumes. New advanced analytical approaches are required to deal with and make sense of large volumes of unstructured and structured data.

Data-driven business environment is a competitive advantage for any organisation. To ensure faster and smarter decision-making, organisations are forced to use advanced analytics to analyse the past, understand the present behaviour and predict and influence future events, actions, decisions and behaviour. Assessment of the advanced analytics ecosystem is crucial for further development, competitions in the market and to reach the strategic goals of the organisation. The assessment and understanding of the investments needed and next steps is critical to make the digitalisation process productive.

Advanced analytics can be described as a process of turning huge volumes of structured or unstructured data, statistical and predictive analytics into decision-making with a value to business. In addition, time after time it is accepted as predictive analytics, big data analytics, data mining and similar. This is a forward-looking technique that can provide insights from huge unstructured or structured data volumes. The techniques used include data mining, machine learning, forecasting, visualisation, semantic analysis, sentiment analysis, network and cluster analysis, multivariate statistics, graph analysis, simulation, neural networks and others.

MATERIALS AND METHODS

The questionnaire developed by the author is based on an academic literature review, reports and publications shared by the analytics sector, industry experts and the author's professional experience in the advanced analytics industry. The questionnaire design is developed based on 4 models with disclosed or semi-disclosed information to obtain data for modelling: 1) Analytics Maturity Quotient Framework (AMQ), Authors: Aryng, Data Science consulting, training and advising company; 2) DELTA Plus Model, Authors: International Institute for Analytics (IIA, Davenport); 3) Defining analytics maturity indicators (DAMI), Authors: Jasmien Lismont, Jan Vanthienen, Bart Baesens, Wilfried Lemahieu; 4) TDWI Analytics Maturity Model, Authors: TDWI (Transforming data with intelligence) training company.

RESULTS

The outcome is a questionnaire with 40 questions – single choice, multiple choice, text entry, matrix table, constant sum type questions allowing one to collect wide ranging and structured information. The main blocks are Demographics, Data management, Analytics, Process around data and analytics, People, Technologies, Culture, Leadership, Success drivers, Barriers. The questionnaire was launched on 20 December 2021 and now the field work is at the final stage. The author developed the new questionnaire, adjusted it for 2022, and localised it for Latvia.

DISCUSSION

Considering the increasing demand for advanced analytics including automated decision-making based on data, the significance of understanding the advanced analytics ecosystem maturity level in the organisations of Latvia is topical. The outcome is a core phase of the research paper "Challenges of Advanced Analytics Adoption in the

Organisations of Latvia" with the research goal to develop the Advanced Analytics Ecosystem Assessment and Recommendation Tool based on 'self-assessment' to improve the results of the organisation in accordance with the strategic goals of the organisation. The questionnaire design of the quantitative survey is the most significant step in building an assessment model that allows one to collect core data material to obtain the initial model. The domains and factors which determine the maturity of advanced analytics will be identified based on quantitative survey data using proper analysis such as clustering, factor analysis, correlation analysis and other relevant analytical methods.

CONCLUSIONS

The challenge was to create a questionnaire in Latvian because of missing relevant terminology in Latvian, thus, leading to the identification of potential new terminology to be developed and implemented in Latvian.

KEYWORDS: Advanced analytics, Analytics maturity, Maturity models, Maturity assessment

Contribution of Private Lands to Biodiversity Conservation of Latvia. Challenges and Opportunities

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INTRODUCTION

A significant amount of biodiversity occurs on private lands of Latvia. About 88% of grassland habitats and 19% of forest habitats of EU importance are located on private properties. Most of the biodiversity values are located outside the Natura 2000 network and other types of protected areas. In order to reach biodiversity conservation goals of the European Union and Latvia, it is important to integrate private lands into nature conservation strategies as well. There are different mechanisms in Latvia available for biodiversity conservation on private land: protected nature territories; micro-reserves; general legal requirements of nature protection; support payments under the Rural Development Programme; tax exemptions for landowners in protected areas, and others. Economic restrictions related to biodiversity conservation measures also tend to create tension in society and cause socio-economic conflicts that might influence the success of reaching biodiversity goals.

MATERIALS AND METHODS

In order to explore private landowners' attitudes towards biodiversity conservation measures on their land, a literature review was carried out including the analysis of research articles, reports of projects, reports of landowner surveys, and others. Only studies from Baltic Sea region countries were reviewed, selecting 18 articles and reports analysing factors influencing landowners' attitudes towards biodiversity conservation on private lands. Identified factors and conservation approaches in other countries were analysed in the context of nature conservation system of Latvia, discussing the possible improvements of existing conservation strategies.

RESULTS

Private landowners are a very heterogeneous community, with various attitudes towards biodiversity conservation measures. There are many factors influencing landowners' attitudes regarding biodiversity conservation on private lands, e.g., property size, field of education and education level, general conservation values of the landowner, income proportion from land management, and others. In general, landowners of Latvia support biodiversity conservation measures on private land; however, they are concerned about possible related restrictions on economic activity and the respecting of their rights to own property. Landowners highlight the importance of effective compensation mechanisms, respectful communication with environmental institutions, and landowners' participation in conservation related decision-making.

DISCUSSION

In the process of searching for improvements of biodiversity conservation strategies, it is important to take into account the needs and concerns of private landowners. According to analysis, there is a potential and demand for voluntary biodiversity conservation mechanisms in Latvia, which could complement the existing (regulatory) biodiversity conservation strategies. Significant proportion of landowners would be ready to take an active part in the biodiversity conservation process if an effective support system (consultative and financial) were provided.

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State of Knowledge Discovery Process Models and Frameworks

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INTRODUCTION

The first knowledge discovery process models were developed in the late 1990s, almost three decades ago. Based on several surveys, researchers F. Martínez-Plumed et al. (Martinez-Plumed, F. et al., 2021) and Rotondo A., Fergus Q. (Rotondo, A., Quilligan, F., 2020) argue that CRISP-DM (Chapman, et al., 2000) remains the default standard for developing data acquisition and retrieval projects. In almost thirty years, the industry and technology has evolved, and data science is now the leading term. The knowledge discovery process has changed significantly since the inception of the CRISP-DM model. An area in which the CRISP-DM model does not work well enough is data-driven products, and most products nowadays are in fact data driven. The amount and complexity of data in applications suggests that data processing requires significant technical work on management and infrastructure. In the CRISP-DM model, data is included as a static unit in the middle of the process (Martinez-Plumed, F. et al., 2021), which means that the knowledge retrieval process needs to be viewed in the context of the knowledge retrieval framework in which the process is applied.

MATERIALS AND METHODS

To identify the state of knowledge discovery process models and frameworks, the authors adopted a systematic literature review approach on knowledge discovery process models and knowledge discovery frameworks to answer two research questions. Q1: what kinds of process models are available and what is the state of knowledge discovery process models? And Q2: what are the design principles that characterise knowledge discovery frameworks? To achieve this objective, research articles addressing process models and frameworks were analysed.

RESULTS

The knowledge discovery process models developed in the mid 90s are still being used in organisational data mining projects. Most data retrieval algorithms and tools stop at creating and delivering models that meet technical requirements. Models are being developed, but entrepreneurs are either not interested in them or do not know what to do next to add value to their business decisions. Knowledge discovery in organisations is mostly a closed process for solving optimisation problems starting with problem definition, framework or model development to the discovery of workable models designed to provide functioning business insights that can be linked to or integrated with business processes and systems. Obtaining information and hidden correlations from data has a growing trend in information systems; in order to provide better services to end users and support decision-making processes, as well as to acquire valuable knowledge, it is necessary to integrate and analyse the generated data sets from different domains. Multiple innovative knowledge discovery frameworks are being analysed in the research paper.

DISCUSSION

The heterogeneity of the definition of knowledge and the perception of its concept creates wide possibilities for interpretation. One of the knowledge definitions according to Ikujiro Nonaka and Hirotaka Takeuchi's (Nonaka, I., Takeuchi, H., 1995) theory of knowledge creation is the acquisition of new knowledge applied to its usefulness to a particular organisation by relating it to the social context in which the knowledge is created and used. Knowledge discovery process models are still widely used within organisations and there are multiple knowledge discovery framework proposals for various fields. The necessity and corresponding technological requirements for knowledge discovery frameworks remain open for discussion.

Recommended future research directions involve the following points:

- Technical requirements of knowledge discovery frameworks that define the requirements of components.
- Security requirements for knowledge discovery frameworks.
- Personal data protection requirements for knowledge discovery.

KEYWORDS: Knowledge discovery, Process models, Knowledge frameworks

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The Transition to the Circular Economy is a New Way of Thinking Both for Small and Medium Enterprises of Latvia and End-users

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INTRODUCTION

The subject of the research is the different models of the circular economy. The object of the research will be SMEs in different economic sectors. The research hypothesis can be defined as the transition to the circular economy and is an essential element in achieving high production efficiency in companies from a long-term perspective. The research aims to create an adapted model for the transition to the circular economy for Latvia's SMEs.

Although several circular economy good practices have already been implemented through eco-innovative projects in Latvia (treatment of different types of construction waste, plastics recycling etc.), there is still free capacity for many other projects. The research will use existing circular economy methodologies (for example, different checklists and questions) to strengthen both qualitative and quantitative methods.

MATERIALS AND METHODS

The research will use both qualitative and quantitative methods – 5 methods have been used so far in total.

Overall structured interview – the basic questionnaire has 13 questions and the additional questionnaire has 41 questions.

RESULTS

Expected results of the research will be the following – new criteria issued for SMEs for the transition to the circular economy in the long-term perspective, adapted model for SMEs issued for transition to the circular economy and recommendations and suggestions issued for developing the eco-innovation market.

Until now 2 overall questionnaires (hereinafter - Q) have been prepared – main Q with basic 13 questions in google format and additional Q with 41 questions in google format. Until now (accessed basic Q: 20 February 2022) 74 answers have been received out of 499 respondents from different stakeholder groups (basic Q), and 16 answers have been received out of 38 respondents (additional Q). Nevertheless, the study concentrates on the involvement of different companies from different industrial branches; until now, company activity has been least observed.

DISCUSSION

One of the explanations for such a low level of activity can be explained by the COVID-19 restrictions influencing the overall low interest from the side of companies to be involved in any scientific studies.

Future work needs to focus on changes to the approach of how to involve more companies in increasing the total number and activity.

In the following research, there is no longer a necessity to decrease the number of sectors chosen because the circular economy's elements can be implemented in all 5 sectors; not only in waste management and food production.

In the following research it is necessary to indicate and analyse the responses given in the additional questionnaire and provide feedback from expert interviews.

A new element in the following study is also the so-called "end-user" role and possibility of being involved and participating in achieving green goals for Latvia until 2027, 2030 or from an even longer perspective. As it is defined, circular economy is not only a new industrial production model, but also a new model for end users (energy efficiency measures, waste sorting, usage of deposit system).

CONCLUSIONS

Until now the author can conclude that there is critically low interest and responses received, which is the total opposite of trends such as "sustainable development", "green deal", "social responsibility" nowadays.

It can also be concluded that more than 80% of all respondents want to live in a clean environment (breathe fresh air, drink clean water, use appropriate sewage and waste management services) and mainly understand the main principles of the circular economy from one side. From another side, the responses given said – there is no necessity, or it is only necessary to invest as little as possible to implement eco-innovations (green technologies).

It can also be concluded that there is mostly a positive attitude to new approaches, different initiatives and projects, but only with condition that the source of financing is the state budget.

Practical application of the adapted model could be described as a possible IT green market tool where a wide range of eco-innovations (technologies, standards, costs etc.) will be collected and sorted. Waste management, food production, electricity, water, port sector SMEs can use such a tool for appropriate analysis and decision-making before investing.

KEYWORDS: Circular economy, Eco-innovations, Industrial production, Quality standards

Private Landowners as Safeguards for the Conservation of Biological Diversity and the Management of Natural Heritage in Natura 2000

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INTRODUCTION

Of all *Natura 2000* sites that form the basis of the national nature conservation system in Latvia, 43% are owned privately. Therefore, the owners and managers of private lands are strategically important stakeholders, and the achievement of nature conservation goals depends to a large extent on their motivation, environmental awareness, and involvement. The forest is an important and indispensable custodian of natural values, but natural and semi-natural grasslands are recognised globally for their high biodiversity, social and cultural values and provided ecosystem services. The aim of the research is to obtain data on how private land owners and managers treat natural values and their conservation not only in Natura 2000 areas, but also outside them. This decision was made because a large part of grasslands and forest micro-reserves are also located outside Natura 2000.

METHODS

To collect data on private landowners' opinions about their motivation for being involved in nature conservation, the value of nature among other values and existing compensating mechanisms for unearned economic value, both online (ArcGIS123) and paper (in seminars organised by Latvian Rural Advisory and Training Centre) questionnaires were used to reach a representative sample of respondents. Data were collected between July and December 2021. Altogether, 604 forest landowners and 442 grassland landowners' responses were used for further analysis.

RESULTS

Research shows that 42% of all respondents have lands in specially protected areas – Natura 2000, national parks, biosphere reserves and micro-reserves. 39% of forest landowners know what actions should be taken to preserve these natural values in their forests, but only 29% consider that before carrying out economic activities in the forest, its owner should ascertain the specially protected natural values found in the forest. Only 19% of forest owners, with restrictions on economic activities in order to meet nature conservation objectives, have received compensation, of which less than half (48%) were satisfied with the amount of financial support. 3% applied, but did not receive financial support, because their forest was too small.

The continuity of nature-friendly perennial grassland management will be ensured, with 93% of landowners showing rather high motivation for this. Of all respondents, 78% consider that grasslands provide wild plant diversity; improve the quality of the landscape while preserving the traditional rural landscape - 87%; provide a place for the continuation of cultural traditions, annual rituals - 57%; and provide business opportunities - 47%. Although 41% think that other land uses are more profitable, 29% admit that they have a lack of knowledge about grassland management.

DISCUSSION

Forest owners are less motivated than natural grassland owners regarding nature conservation activities, as the price of the economic value of the forest is likely to far exceed the number of compensatory mechanisms. Integrated solutions for ensuring nature protection on private land must continue to be sought. The opinions of the respondents will provide an opportunity to create a clear and reasonable motivation system for private landowners, which balances the interests of conservation of natural values and economic development, is understandable to everyone and will serve not only this, but also future generations.

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Innovation Technology on Connecting Agricultural Products with Tourism Enterprises in Rural Areas of Northern Albania

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INTRODUCTION

In a developing country such as Albania, the tourism industry is considered very important in creating economic benefits. The possible contribution of tourism is also considered in the agricultural sector. The integration of regional agriculture and tourism enterprises is very important and brings economic development to the rural area. The relationship of agriculture with the tourism sector in rural areas stimulates local production, and sustains tourism profits. The problem of integrating the two sectors is related to the seasonal nature of tourism, the low quality of local products, the dependence of the tourism industry on imported supplies and the lack of a direct link between agricultural enterprises and the tourism industry.

Digitalisation of agriculture is considered very important for the progress of farming. Different interested parties assume that adopting new farming technology influences performance and will also provide an increase in accuracy of output produced to meet the needs of tourism business in the region.

The purpose of this paper is to explore farmers' and tourism enterprises' perception and attitude in relation to farming technology. This paper also shows the importance of digitalisation of the supply chain of agricultural products in order for it to sustain the tourism market. Finding optimal ways to improve relations between agricultural and tourism enterprises is necessary to create market synergy and improve the image of the tourist destination. The main source of this is agricultural development and potential in tourism development, in the form of tourism programmes and facilities. Two hypotheses were raised: digitalisation improves the production process of agricultural products, and digitalisation of the supply chain sustains relations between agricultural and tourism enterprises to create market synergy.

MATERIALS AND METHODS

The methodology of this paper is based on the analysis of secondary data and processing of primary data. The secondary data are the result of a review of extensive and contemporary literature, domestic and foreign, related to the research topic. In formal statistical management systems, data are used to research the characteristics and importance of agricultural and tourism companies using farming technology. The primary data is obtained using quantitative research through questionnaires. The questionnaires contain open and structured questions and are self-administered by the respondent. Two questionnaires were distributed; one to guest houses that operate specifically in the area of Theth, Razma, Bogë, Tamara, Lepushë, Vermosh, and the other to farmers that operate in the same area. The results of the questionnaire were elaborated using the SPSS program.

Since a scientific method has been used for data collection, the paper can be reproduced by other researchers.

RESULTS

The data show that there is generally a positive attitude of farmers and tourism businesses in northern Albania towards adopting new technology, especially regarding distribution channels. There are several barriers to the adoption of technology by business in these two sectors.

DISCUSSION

The positive contribution of this paper is at the governmental level because it helps them understand where and what to invest or support regarding the tourism and agricultural sector. This paper is also valuable for private investors and NGOs.

KEYWORDS: Innovative, Technology, Supply chain, Agriculture, Tourism

Using Technology as a Way of Enhancing Visitors' Experience in Museums. A Case Study in Albania

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INTRODUCTION

The digital area has affected various sectors of the economy; both commercial and non-commercial. Successful organisations are those that are able to adapt their processes and activities relating to these digital innovations.

This article focuses on museum sector development in Albania and the way that the use of digital technology contributes to the visitor experience, as well as to analyse the extent to which new technologies are being used in museums in Albania.

Albania reveals sufficient potential in cultural tourism products (Caca et al., 2016). The usefulness of our research results from the fact that cultural tourism development is closely related to museum product development, and museums are considered as main cultural tourist attractions.

This article begins with the assumption that museums can use digital technology and enhance visitors' experience.

The research carried out so far has proven that the use of virtual reality (VR) provides an immersive environment that can enhance the storytelling process (Suroto, Dewantara, and Wiradarmo 2020), and technology can create a communication bridge that contributes to the process of transmitting knowledge to visitors in current ways that depend on modern technologies.

Augmented Reality (AR) is increasingly being used in museums as a way of providing added value to the museum experience by attaching virtual content on physical evidence (Ming 2018).

MATERIALS AND METHODS

The purpose of this paper is to analyse the way digital technology has affected the visitor experience and how the use of digital technology can capture visitors' attention and interests. This paper also analyses the current situation of museums in Albania. In this regard, this paper discusses the possibilities of incorporating digital technology for visitors as a way of increasing public appreciation and accessibility. The new technologies adopted in the museum sector form a new relationship between cultural heritage objects and the public.

This research was carried out in Albania, as Albania is considered a country distinguished for the development of cultural tourism and museum experience and is considered a main attraction in this regard. The usefulness of our research results from the fact that cultural tourism development is closely related to museum product development, and museums are considered main cultural tourist attractions.

20 museums were visited and given a set of questions designed to analyse the current situation of their management, the implementation of digital technologies, the way their visitors interact with these new technologies and the evaluation of their experiences.

We believe that this study will not only be useful for the museums analysed, but for all museums in Albania. The collected data were correlated with the conclusions presented in the literature and with our experience as visitors in the selected museums.

RESULTS

The results of this paper show that the use of virtual technologies positively contributes to enhancing the visitor experience and interactivity, but we found out that there are still museums which do not use digital technologies. This is because these technologies are not cheap and also require special knowledge and accurate planning. The application of new technologies in museums is a MUST.

DISCUSSION

New technologies adopted in museums help form a new relationship between the public and cultural objects, make them more visible and offer new approaches in reinforcing the role and importance of museums. Therefore, it is easy to notice from the results of the survey that technological innovations positively impact exhibitions of cultural products and thus the visitors' experience. New technologies also influence the decision to visit museums. This study points out the fact that with technological changes, there is a possibility to increase the number of visitors and become a key economic and social actor.

CONCLUSIONS

Museums today are required to explore the great potential offered by digital technology and demonstrate the ability to understand visitors' needs and expectations. In order to become more visible to the public there is a need to implement changes in the development strategy and mission of museums.

There is a need to understand how to use and fully benefit from the digital technologies as a way to communicate their products and contents to the public.

KEYWORDS: Museums, Digital technology, Visitors' perceptions, Strategy

Improvement in Professional Education and its Impact on Sustainable Tourism

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INTRODUCTION

Tourism is one of the most important sectors in Albania. The direct, and indirect contribution of this industry to Albania's economy during recent decades has been high. The development of sustainable tourism is also a key to success that requires a great deal of responsibility, careful planning and competence to achieve. For this reason, the Albanian government is investing in creating improved environmental conditions through legal policy, investment in infrastructure and the preparation of qualified human capacities for tourism, etc.

Given that many elements impact a well-functioning tourism sector, one of the most delicate issues remains human resources. The special importance of qualified human resources in tourism, the lack of culture inherited from the past in the hospitality sector in Albania, as well as globalisation, brought the necessity to develop a better education system, which is designed and orientated toward one purpose; that of sustainable tourism. Professional education and training of human capacities are a strong link in the chain that keeps all tourism sustainable. Given that among other things every tourism enterprise (but not only) aims to maximise revenue, human capacity normally plays a crucial role in ensuring success.

There has been a return from professional education in Albania in the last decade, but much remains to be done. The main research questions are: Is it essential to adapt curricula regarding professional education for tourism to the conditions offered by the labour market in the tourism sector in Albania? Do students leaving professional schools meet their expectations? Do they meet the actual requirements of work?

MATERIALS AND METHODS

To conduct this study, secondary and primary data were used. Secondary data result from a review of wide-ranging and generally current literature, related to the research topic. Primary data are acquired using qualitative and quantitative research. Qualitative data are obtained through the instrument of a focus group held with students who attend professional education in hotel tourism. Quantitative data are obtained using two questionnaires, compiled by teachers and tourism businesses in Albania. The questionnaires contain open and structured questions and are self-administered by the respondent. The scientific method has been used for data collection, and the paper can be reproduced by other researchers.

RESULTS

The results of this study provide interesting evidence of the problems and challenges of professional education for tourism, and its connection with tourism businesses. Theoretical and practical implications are discussed, highlighting what still needs to be done to further improve professional education for sustainable tourism in Albania.

DISCUSSION

This paper has a contribution on the government level. As the Albanian government is investing in developing professional education, they need to consider the efficiency of their strategies and where they need to invest in the future. This paper can help a business to understand the positive impact of collaboration with a professional school.

KEYWORDS: Professional education, Sustainable tourism, Curricula, Professional practice, Human resources

The Role and Importance of Universities in the Development of Students' Social Responsibility

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INTRODUCTION

Sustainable development is now a necessity of the time, and as such it is required to be at the centre of each country's development policies. Social responsibility is a broader and more comprehensive concept, which contributes to the solution of economic, social, and environmental problems for sustainable development. Social responsibility is a task of every person to maintain a balance between the economy and ecosystems. The university is considered an essential pillar of society in achieving sustainable development. Given that university students will be the most qualified professionals of tomorrow and their actions throughout their careers will be critical for the future of environmental, social, and economic systems, the university must foster training of them with social responsibility for sustainable development. Universities, with their primary role as "producers of knowledge", can serve as a powerful tool to create an open mindset towards sustainable development. In this perspective, the university can contribute to raising awareness and commitment to social responsibility among students. In public universities, social responsibility should be part of the strategic policy philosophy in their development.

Sustainable development in Albania is accepted as a strategic priority of any development policy of the country. But, as a developing country, social responsibility is a new concept in Albania and the integration of socially responsible practices can be a complex and difficult process. The purpose of this study is to investigate the role and opportunities of universities in Albania to the development of the social responsibility of students for the sustainable development of their country. There is no literature or study in Albania on this subject. The main research questions are: What are the most important factors that push students to commit to social responsibility? Do universities play a key role in developing students' social responsibility for sustainable development? In which topics of education for sustainable development are students most interested? What are the best methods that universities can use to teach and encourage students about social responsibility?

MATERIALS AND METHODS

A vast amount of literature was used to support research in this field of study. As a research tool for securing primary data, a structured questionnaire was developed with closed-ended questions. The target group for this study was students in the last year of study programmes offered by the Economic Faculty of the University of Shkodra in Albania. To collect data, a link to the use of the Qualtrics survey and a brief description of the survey were e-mailed to students by each of the study programme coordinators. Likert scales with five levels and bi-polar questions were used. Data analysis was carried out using descriptive statistical methods.

RESULTS

The results of the study reveal that students generally share a genuine interest in social responsibility. Students consider universities as their main places of learning, with knowledge of social responsibilities and their ability to practice the concepts of social responsibility within their chosen profession and in their everyday life. Students consider social responsibility an "important tool" to build a successful career. There is a need for change, both in the minds of students as well as in university practices to develop student social responsibility in Albania.

DISCUSSION

In the study, theoretical and practical implications are discussed, highlighting what still needs to be done to further improve the practice of universities to cultivate and encourage students' social responsibility to contribute to sustainable development in Albania and beyond.

KEYWORDS: Social responsibility, University, Students, Sustainable development

"CHANGE is Just Around the CORNER": Engaging Stakeholders for a Circular Future

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INTRODUCTION

The 'Engaged and Entrepreneurial European University as a Driver for European Smart and Sustainable Region' (E[3]UDRES[2]) project involves universities and university colleges from six European countries. Within E[3]UDRES[2] the transnational university campus of the future is developed. One of the main challenges for the future is the transition to a circular economy.

Circular economy (CE) has been proposed as a crucial strategy to reduce climate change. A circular economy reduces emissions and material losses by increasing the use of renewable and recyclable resources. Approaches to achieve a circular economy are multitude, such as sharing material and resources, prolonging the life cycle of resources, reusing, redistributing, refurbishing or remanufacturing materials and recycling resources. Several barriers exist in preventing the transition to a circular economy.

Multistakeholder engagement is needed for this transition to be successful. One of the most difficult aspects in the transition process to a circular economy is changing the attitude and decision-making process of stakeholders. There is a need to develop more engaging approaches for sharing information about a circular economy.

The Change Corner, originating from the E[3]UDRES[2] consortium, is a transnational space supporting multistakeholder engagement.

MATERIALS AND METHODS

Desk research is performed to find out the most appropriate form of the Change Corner Hub (CCH). The CCH concept envisages a virtual, physical or hybrid format across the different regions.

By integrating research methods from implementation science, citizen science, participatory action research and Human Centred Design (HCD), stakeholder barriers and needs concerning the transition to circular economy are explored. Starting from these needs and barriers, the desired impact of stakeholders concerning circular economy in their regions is envisioned in co-creation sessions.

Change Corner consists of transnational and region specific aspects. Photovoice challenges are organised across the regions of E[3]UDRES[2]. In these photovoice challenges, participants are asked to share pictures of their good practices and barriers concerning the transition to a circular economy.

At the University College Leuven-Limburg in Belgium, a series of lunch lectures are the basis for Change Corner. Good practices from the region are presented to stakeholders in order to inspire action and overcome powerlessness in the face of climate change. During the lunch lectures, barriers and good practices are discussed with participants, resulting in co-created challenges in the transition to a circular economy. Lunch lecture sessions are recorded so that information gathered in the sessions can feed back into the other regions. After the sessions, participants receive a qualitative questionnaire in which individual good practices and barriers are gathered.

RESULTS

A concept is developed of the Change Corner Hub (CCH) by all E[3]UDRES[2] project partners in physical or virtual format with different approaches. The CCH is used for information sharing, raising awareness and activities to prepare for future changes, which will take place during the implementation of a circular economy.

Upcoming results will form the basis for future research projects. Within the scope of Change Corner, a method-mix of contextual analysis, co-creation sessions, workshops and photovoice is applied to reach multistakeholder engagement.

Evaluation of the Latvian Labour Market Using the Cobb–Douglas Production Function and the Beveridge Curve Model

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INTRODUCTION

One of the biggest problems in the Latvian labour market is related to insufficient work productivity, but this is an important aspect of sustainable economic growth, and special attention needs to be paid to it from a macroeconomic point of view. Productivity is measured as gross domestic product per hour worked. One of the most important macroeconomic questions is the one that tries to understand how the gross domestic product depends on capital and labour. Cobb–Douglas production function is related to both – gross domestic product and labour market – and, despite being developed more than 90 years ago, it is still an object of interest. There are unresolved issues related to the function, one of which is whether parameters α and β are equal to 1 or not. Considering the long GDP, labour, and capital time series for one country, it has been recognised that the sum does not have to be equal to 1. The aim of this research is to find what parameters of Cobb–Douglas function for Latvia are equal to and evaluate the Latvian labour market using the Cobb–Douglas production function and the Beveridge curve model.

METHODS

When evaluating the Latvian labour market using the Cobb–Douglas production function, the statistical data of Latvian gross domestic product, labour market and capital were taken, and multilinear logarithmic regression was performed to evaluate parameters α and β of the Cobb–Douglas production function. When evaluating the Latvian labour market using the Beveridge curve, the statistical data of the unemployment rate and the vacancy rate in Latvia were chosen.

RESULTS

When evaluating the Latvian labour market using the Cobb–Douglas production function, the regression analysis gave $\alpha + \beta > 1$ ($\alpha = 0.74$ and $\beta = 1.55$). Here, a certain contradiction with the standard scaling condition $\alpha + \beta = 1$ arises.

When evaluating the Latvia labour market using the Beveridge curve model, the analysis showed that the ratio between the unemployment rate and vacancy rate grows during the economic decline periods and drops during the economic growth periods.

DISCUSSION

The condition $\alpha + \beta = 1$ has been discussed in the literature since the original Cobb and Douglas paper, and the main problem of the discussion is that the clear scaling reasons based on a theoretical explanation of this condition does not meet the experimental data. There is a condition called the scaling condition. If we merge two identical countries in one country that is two times larger, then GDP, capital and labour will be doubled. Cobb–Douglas function can be tested to see how it works in one country. However, when tested empirically on the data taken from one country, the requirement about the sum of parameters being equal to 1 is not met.

The interest in the values of the parameters of the Cobb–Douglas production function is based on the fact that they affect the labour market equilibrium. Parameter β of the Cobb–Douglas production function is used in the utility function of firms, and the condition of utility function maximisation determines the average wage in the country.

KEYWORDS: Latvian labour market, Cobb–Douglas production function, Beveridge curve

Reorienting Teaching Dynamics of Culinary Education with Sustainability

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INTRODUCTION

There is growing concern among environmental scientists that our food consumption pattern is harming the planet and acting as a catalyst for climate change. With the world already in the Anthropocene epoch, considerable harm is caused to the environmental systems by human activity. Achieving environmentally sustainable food systems is an immediate challenge. Food consumption is massively influenced by food trends and culinary innovations conceptualised by traditional and modern chefs. The greatest chefs in the past have linked food artistry with expensive ingredients and most importantly meat. Traditional culinary education was based on learning the art and science of cooking, but in the last decade, there has been a growing inclination to incorporate sustainable culinary practices, such as optimal usage of ingredients and controlling food wastage. Due to this, there has been an introduction of innovative cooking programmes initiated by culinary schools. Food, climate change and sustainable menus should be driving the next generation of chefs to rethink the way fine-dining is approached. This calls for understanding the various changes that can be brought in to change the face of culinary education, thus making it environmentally friendly.

MATERIALS AND METHODS

The current study aims at understanding the need of changing the dynamics of culinary education and thus training a clan of futuristic chefs who advocate and practice environmentally sustainable menus. The study also aims to conceptualise the various interventions required in culinary education in achieving sustainable development goals (SDGs) by 2030. In this study, the PRISMA technique has been adopted to bring out the themes in the collected literature. The work has been drafted as a viewpoint paper, as the author's own experience has gone into making the research fit the context.

RESULTS

The study aims to indicate the role of transforming culinary education in achieving sustainable development goals by 2030. The results would identify the gaps by reviewing the extant literature and would suggest a way forward to achieve sustainable commercial kitchens, introducing changes at the grass-root level by transforming culinary education.

CONCLUSIONS

The study would help understand the way commercial kitchens are changing and the role of transforming culinary education as well as the face of commercial kitchens. The study has a futuristic approach and considers the need to train chefs in promoting and cooking sustainable meals.

KEYWORDS: Culinary education, Sustainable kitchens, Sustainable development goals (SDGs)

Identification of Landscapes of National Importance using GIS

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INTRODUCTION

One of the aims of recognising landscapes of national importance is to encourage public authorities to adopt policies and measures at the local, regional and national level for protecting, managing and planning landscapes throughout national states. It covers unique and outstanding landscapes among the ordinary ones, that not only determine the quality of people's living environment but also contribute to national identity. Different approaches have been used so far internationally in identifying landscapes of national importance, assessing their characteristics, structure and landscape elements, recognising that both – quantitative assessment and expert judgement should be involved for this task. Within this study, the focus is on the quantitative part of the study, using GIS and revealing the traceable sequence of steps and criteria used.

MATERIALS AND METHODS

GIS approach was used to determine landscape areas of national importance, using a hexagon grid – (each in an area of 100 ha, 68,407 hexagons), which covers the territory of Latvia. The aggregation of spatial data in regular grids provides an opportunity to normalise different types of spatial data, as well as to address the use of irregularly shaped polygons (e.g., in the case of politically defined boundaries). The hexagon network, due to the shape, forms continuous coverage of the area, while at the same time the hexagon has a similar shape to a circle, which accordingly provides advantages in terms of defining and representing different spatial relationships. Territories of the most valuable landscapes of national significance are spatially separated, assigning values to hexagons in accordance with the landscape values in their territory. Each hexagon is assigned a value according to whether it overlaps with an area that meets one or more of the criteria for the most valuable landscapes of national importance. In the case of larger, continuous area units, the coincidence of areas is determined by the hexagon centroid, but in the case of smaller, individual area units (also point units), the intersect function is used. The criteria for the research part to be quantified include five thematic sections: natural heritage, cultural heritage and historical evidence, identity and community involvement, uniqueness and landscape quality, which can be quantified from the infrastructure created to highlight the visual aspects and aesthetics of landscape.

RESULTS

The part of the quantitative analysis data used to determine the value of the landscape by GIS has been realised in several sequent stages. First, after analysing the main criteria for the identification of landscapes of national importance from existing literature and research thematic areas, they were split into concrete criteria: 8 for natural heritage, 5 for cultural heritage and historical evidence, 6 for identity and community involvement, 4 for uniqueness and 1 for landscape quality. Each of the criteria was given an appropriate weight of 0.5 to 1.5 points (using 0.25 points as a step). Several of the criteria are exclusive and do not overlap; the total amount for most outstanding landscapes would be 12 points. This was followed by a phase of structuring and categorising large amounts of data to allow GIS analysis to be performed. Minor adjustments were made to the weights assigned to the criteria in the methodology during the analysis. Each area of 100 ha, 68,407 hexagons got weighted value, and those territories where the concentration of the highest values were identified, were reconsidered during the next stage as a landscape with national importance. As there were more than 100 such places of concentration, discussion on joint territories having less valuable hexagons in-between has been carried out.

DISCUSSION

A landscape character assessment technique that is scientifically sound, region-specific and stakeholder orientated, designed to describe landscape character, has been used often recently. It can be applied at a range of scales and it may also integrate landscape character analysis with biodiversity assessments, the analysis of historical character, and socio-economic functions such as recreation etc. Even so it is primarily concerned with documenting landscape character rather than assigning quality or values, implying a distinction between characterisation and judgement; identifying landscapes with national importance still involves the assessment and evaluation process. This is debated widely as the main concern is to carry out ordinary landscape quality in places where people live, recognising that only a limited number of societies will benefit from daily encounters of unique landscapes. However, the GIS method used and criteria applied provide transparent objectivity in the characterisation of landscape uniqueness, and even if it's relatively easy to recognise them by perception, having a society consensus, spatial aspects and the identification of borders for such landscapes would be much more difficult without GIS.

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Management of landscapes Within the Framework of Nature Protection

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INTRODUCTION

In Latvia, the most important landscape areas and sites have historically been included in various categories of specially protected nature territories (SPNT). This approach is also established in the regulatory framework. According to the law "On Specially Protected Nature Territories", the common goal of protected territories is to include the protection and conservation of unique, beautiful and Latvian-characteristic landscapes. However, only half of the eight identified categories of protected territories – national parks, biosphere reserve, nature parks and protected landscape areas – take landscape-related aspects into consideration. Practically all of these specially protected nature areas were also included in the network of Natura 2000 sites, the main purpose of which is to ensure the protection of protected biotopes and specially protected species habitats. To assess issues of whether nature conservation creates synergies with landscape management and to what extent, we performed quantitative and qualitative data analysis.

MATERIALS AND METHODS

The calculation uses data from the European Environment Agency's NATURA 2000 database for these areas – (SPNT area) and biotopes (the area of protected habitats). For the map display of the proportion of specially protected nature areas and the included protected biotopes, ArcGIS mapping software was used. The spatial data layers on SPNT's are derived from the nature data management system OZOLS. Likewise, an analysis of the long-term protection targets of SPNT's has been carried out by summarising the keywords therein. The descriptive words are displayed with text visualisation tools that illustrate the words according to their frequency of mention.

RESULTS

The proportion of protected biotopes is determined for all 55 landscape-related SPNT's in line with the law "On Specially Protected Nature Territories" (4 national parks, 42 nature parks, and 9 protected landscape areas). The average proportion of protected biotopes in the landscape-related SPNT's is 21%; however, its range is very wide – from 5% to 98%. When assessing the proportion of protected biotopes by SPNT category, there are no significant differences between nature parks, national parks and protected landscape areas – the proportion of protected biotopes varies from 20% in nature parks to 23% in protected landscape areas. The most frequently mentioned descriptive word in the long-term protection targets of SPNT's is biotope protection, while in one fifth of the considered SPNT's, the long-term protection targets don't even include landscape-related aspects.

DISCUSSION

The study results revealed the different approach to defining SPNT's in Latvia, the individual non-conformities in relation to the regulatory framework, as well as a number of challenges to landscape management. The analysis of nature conservation targets shows that the main emphasis is on the protection of habitats and species; however, landscape-related aspects are also defined generally. Characteristics such as socio-economic development, recreation, cultural and historical heritage, landscape values, tourism, nature education are mentioned. In the context of landscapes, the long-term goals most often mention cultural and historical heritage, landscape conservation, landscape structure and aesthetic value; however, these goals are general, mostly only detecting that the site has a landscape value and expressing the need to preserve it. The performed analysis of the targets and the relatively small proportion of biotopes in the Natura 2000 areas indicate that the ecological network in Latvia should

be improved, not only by specifying the protected areas, but also by a more targeted separation of conditions for nature protection and for landscape management in the regulatory framework. In particular, in view of the fact that landscape management in Latvia is primarily implemented through spatial planning.

ACKNOWLEDGEMENTS

KEYWORDS: Landscape management, Natura 2000 network, Nature protection

Business Incubation Scene in the Pandemic Through an Open Innovation Approach – Latvia Case Study

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INTRODUCTION

The concept of Open Innovation (OI) is recognised by researchers and practitioners internationally, but research on business incubation and incubators as OI partners promoting co-creation, collaboration, co-petition is missing the explanation of how OI in a pandemic transforms business incubation. Business incubators (BIs) are defined as a tool "to help small start-ups overcome liabilities of newness and smallness" (Vanderstraeten et al.,2020). The research aims to investigate the actual business incubation situation in Latvia in the pandemic with the focus on the OI approach. What is the business incubation scene in a pandemic? This remains the research question, addressing the hypothesis – the pandemic facilitated changes in national incubation promoting online co-creation, co-petition and collaboration.

MATERIALS AND METHODS

The Latvian business incubation scene was the main research field of the postdoctoral research project "Open Innovation". Descriptive analyses of various incubator types in Latvia were performed, identifying the types of incubators including the University, industry and state-run incubators, incubation services and requirements. The content analyses of the co-occurrence of key services were conducted by mapping the incubation service area. The research period was during the pandemic time of 2021, when several socialisation restrictions came into force in Latvia, thus, shifting incubation online.

RESULTS

The pandemic facilitated changes in the national incubation system, promoting online co-creation, co-petition and collaboration in the business incubation field offering online nature services to tenants. External online expertise, as well as online mentoring support, were the OI outside-in strategy activities offered to tenants.

DISCUSSION

The incubation requirements regarding tenants' recruitment still differ in Latvia, offering the incubation from the idea stage to real time performance, and work in business incubators was on-going even in the pandemic. The nature of services switched to on-line and distance incubation, addressing the basic needs of tenants. The future research could focus on the further elaboration of measurement between the impact of on-site and on-line services on tenants' performance.

CONCLUSION

The description of the national incubation scene during the pandemic is both a theoretical and practical novelty of this research, as this was the first time in the Latvia business incubation field when on-site services were restricted due to the pandemic. This research proved the importance of the business incubation function in entrepreneurship support and the ability of incubators to provide this function on-line.

ACKNOWLEDGMENT

KEYWORDS: Open innovation, Business incubation

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Collaboration Competencies and Green Business Mindset

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INTRODUCTION

There is increased international pressure to develop sustainable and circular businesses. This raises the question of entrepreneurs' green awareness and the ability to adopt green values in their business and management practices. While this has become a hot topic on the agenda of policymakers and researchers, there is a critically low level of green awareness among entrepreneurs. This highlights the need to explore how to better foster the development of a green business mindset among entrepreneurs.

Collaboration with multiple stakeholders is currently promoted as an essential resource for companies to create a positive environmental impact and circular value. However, entrepreneurs do not recognise the advantages of collaboration, but instead face growing stakeholder green pressure.

Collaboration competence has been recognised as one of the essential elements of the green business mindset. The awareness of green values and the importance of collaboration in this context needs to be developed at school to provide theoretical knowledge and promote green skills.

This study aimed to investigate the understanding of teachers and academic staff about the green business mindset and to assess their perception of the importance of collaboration competencies within the green business mindset.

Research questions: 1) What are the main competencies comprising the green business mindset model and the status quo of the collaboration within this model; 2) How do teachers and academic staff perceive the importance of collaboration in developing the green business mindset?

MATERIALS AND METHODS

The systematic literature analysis, content analysis and clustering of the co-occurrence of keywords and concepts were used for the research. The empirical study reflects the situation in Latvia, and accordingly, the academic staff as well as teachers from Latvia were surveyed. Interviews of experts were conducted. The descriptive analyses synthesised the research results and described the main implications and further research gaps.

RESULTS

The green business model encounters the development of critical thinking, creativity, initiative and leadership, reflection, sharing and collaboration, environmental concerns and the attitude towards green values. The research results reveal the increased necessity to promote green awareness among youth, entrepreneurs, families and teachers. The academic staff rather have an overall understanding of green business, but they lack detailed green knowledge. Changing the behaviour and attitudes towards environmentally friendly business is considered most important, but collaboration is less critical.

DISCUSSION

Latvian entrepreneurs do not recognise the benefits and positive impact of green business practices. Changing customer values and global trends of sustainable transition will foster green business practices. Therefore, it is essential to develop knowledge of the circular and green business and stimulate behavioural changes of entrepreneurs to accept and follow environmentally friendly values. Previous studies prove the vital and integral role of collaboration with and for multiple stakeholders in creating positive environmental impacts. Such stakeholder col-

laboration includes various managerial tasks – the establishment of the relationship, value mapping and standard value orientation, regular communication, involvement and engagement, sharing and co-creation, and requiring appropriate competencies.

Collaboration with multiple stakeholders is a cross-cutting issue that should be reflected horizontally in different study courses, not just in a specific environmental or ecological curriculum. However, the entrepreneurship and management study programmes should include stakeholder collaboration topics as one of the managerial practices.

CONCLUSION

This study describes the green business mindset model and its multi-dimensional nature, including knowledge and skills related to entrepreneurship, sustainability, ecology, and green education on the one hand, and emotional intelligence, green values and attitudes on the other. This research reveals the shorthand situation of Latvia. The green business mindset model envisages several levels of development and assessment – raising awareness, acquiring knowledge, changing attitudes and values, changing behaviour, and initiating green actions. The academic staff and teachers consider that, in Latvia, besides green business knowledge, the emotional, intuitive and spiritual intelligence, self-awareness and self-confidence encompassing green values are essential, and should be developed.

KEYWORDS: Green business mindset, Multi-stakeholder collaboration, Sustainability, Green business

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