IAFeS Edition

Innovation and Digitalization in Emerging Economies

17th NETTIES Conference
(Networking Entities)

University Pristina, Kosovo

Pristina May 2nd - 4th, 2019

IAFeS - International Association for eScience
in collaboration with University Pristina, Kosovo

Volume 7

UNIVERSITETI I
PRISHTINËS
HASAN PRISHTINA

IAFeS
International Association for eScience

Imprint

Evaluated by:

Erwin BRATENGEYER, Danube University Krems, AT
David EVANS, JME Associates Ltd, UK
Graham ORANGE, Leeds, UK

Editors: Johann GÜNTHER and Erwin BRATENGEYER

Contents

Preface
Johann GÜNTHER
Erwin BRATENGEYER

Our organization IAFeS (International Association for eScience) organises an international conference once a year. In 2019 the board decided to hold the 17th NETTIES Conference (Networking Entities) in the Balkans. The conference took place in Kosovo in cooperation with the University Pristina in May 2019.

It was an excellently organized conference. Many thanks on behalf of IAFeS to Vice-Rector Dashamir BËRXULLI and his team of University Pristina.

The topic related to the situation in Kosovo following a request of University Pristina:

"Innovation and Digitalization in Emerging Economies"

This topic was dealt with from the perspective of various domains such as society, education, ICT and philosophy. Around 40 speakers from different disciplines followed our call to this year's conference. This publication is intended to give those who were unable to attend the conference the opportunity to learn about the findings.

Johann Günther   Erwin Bratengeyer
Secretary General of IAFeS   IAFeS Vice-President

Preface
Radu VASIU

The International Association for eScience (IAFeS) was founded in December 2013 in Vienna by members from Great Britain, Greece, Romania, Finland and Austria. Since that moment, new institutional and individual members joined each year. They are all working together in order to achieve the aims of the association: to promote development, education and research in all areas of eScience and, especially, to encourage young researchers in these areas by offering an exchange platform for international co-operation.

Each year, the association organizes a conference called NETTIES (Networking Entities). The first edition was organized in 1994 in Vienna, Austria, under the umbrella of EATA (European Association for Telematics Applications). As a continuator of that association, IAFES continued to organise the NETTIES conference. The 17th edition NETTIES 2019 conference took place May 2nd – 4th, 2019 in Pristina, Kosovo, being hosted by the University of Pristina. The subject of the conference was "„Innovation and Digitalization in Emerging Economies". The NETTIES conference this year attracted researchers and presenters from Kosovo, Greece, Austria, Ireland, Romania, United Kingdom, Oman and China, as well as participants from some other countries.

This book contains the proceedings of the conference in the hope that readers will be inspired to follow up on the research and ideas of this broad and generous subject.

A special mention should be addressed to the local organizers. As a very young country, Kosovo tries to find its own identity based on its cultural roots and specificity. At the same time, the University of Pristina experienced some difficulties in the last period, being able to build its own way toward academic success based on its solid historical background and strength. Their hospitality and openness to discussions was remarkable, helping international guests to better understanding the Kosovo reality and their view towards a common European future! This made a huge contributin to the success of the conference.

Thank you, University of Pristina!

Thank you, Kosovo!

Radu Vasiu, PhD
Professor Politehnica University of Timisoara, Romania
President of IAFeS – International Association for eScience

Preface
Marjan DEMA

The University of Prishtina "Hasan Prishtina", as we know is the oldest and the most important University in our country. This University, since its founding until now, after decades of existence, continues to be the mainstay of higher education in our country. Therefore, I am delighted that on behalf of our university, to welcome the opening and working of the 17th edition of NETTIES Conference, within the theme "Promotion of Innovation and ICT in the Progression of Economic Growth and Country Development".

I want to use this opportunity to thank International Association for eScience that chose our University as the main partner for organizing this edition of NETTIES in our university. I want to thank also my team, vice rectors, ORSP and other staff members, that made this seminar happen, by bringing in our university researchers from different countries of the world, to contribute in this conference.

I appreciate the fact that this edition of NETTIES conference supports the concept of interdisciplinarity. It gives the opportunity to discuss about law, ethics, philosophy, psychology, economy, engineering, or other fields that might be an interest field.

Let me congratulate all of you for being chosen as participants in this conference, especially those who came here from other countries, like Austria, Greece, China, Sweden, Irland, Romania, UK and Russia, wishing you a warm welcome in Kosovo.

This conference gave the opportunity to spend three days at Prishtina, where an exchange of different academic views and cultural values were possible. Now all this is published in a special edition with an ISBN number. The conference created the opportunity of making new friends and explore Kosovo during an excursion.

I want to shortly introduce our university. As I mentioned above, UP is the leading institution of higher education in our country, as well in Albanian speaking countries. UP has around 45.000 students, 930 academic staff members, more than 350 administrative staff. In our university we cover all the disciplines in our 13 faculties and we have established many offices & centers.

We believe that the way to the success is where the work is based in values. Therefore, UP efforts are based on the values of higher education, as
- Integrity,
- Transparency,
- Equality,
- Accountability,
- Responsibility,
- Honesty and
- Public Responsibility (Duty).

I am congratulating the organizers for their impressive work for giving participants a useful conference to share different views and experiences in favor of elaborating the themes of this conference.

Marjan DEMA
Rector of University Pristina, Kosovo

1 The Need for Improved Learning Efficacy in a World of Digitalization

Erwin BRATENGEYER
Danube University Krems, Austria

1.1   Abstract

Digitalization is rapidly spreading across countries and industries affecting all social classes. Digitalization is changing the way of how people work and how they live. The digital transformation leads to new roles, which demand today's workforce to acquire new skills. Workers and employees of all kinds of occupations and professions are potentially affected by digitalization. Organizations are struggling to find skilled workforce. To overcome these challenges, organizations need to equip themselves with the capability of effective learning and so do individuals. Learning capabilities become a cornerstone, both from an organizational perspective as well as from an individual perspective.

While the speed of technological change is explosively accelerating the question arises how long learning curves can be transformed into shorter learning curves. Two aspects are being addressed which potentially improve the efficacy of learning: educational neurotechnology and educational quality management systems. Current developments of brain-machine interfaces and their potentials are described as well as the potential benefits of educational quality management systems. Both approaches, while inherently different, can have a positive impact on learning efficacy.

Keywords: learning, educational neurotechnology, educational quality management systems

1.2   Introduction

The digital evolution has occurred quickly and is affecting about every aspect of modern life. It is strongly impacting knowledge-based societies and economies requiring new skills and an increased focus on our ability to learn. According to directions from OECD (Organization for Economic Cooperation and Development) analyses "…learning is central in knowledge-based societies and economies, consequently reforms of the education systems should focus more strongly on learning itself rather than simply changing structures" (EDU/CERI/CD, 2008). Since digitalization is already deeply embedded in learning processes continuous upgrading of learning and teaching related activities is fundamental. This refers to both, organizations or institutions as well as individuals.

Organizations and institutions of all kinds may benefit from national or European policy initiatives, from combining all EU's current schemes of education and training (Erasmus Plus), from the Bologna process by promoting intergovernmental cooperation in the field of higher education and implementing a system of quality assurance to strengthen the quality and relevance of learning and teaching, from stakeholder collaboration, from technology and infrastructure, and from educational quality management systems.

Individuals may benefit from new approaches to learning processes, from valorization of non-formal and informal learning, from life-long learning, everywhere and anytime learning, e-learning, and from learning-analytics based individual learning paths. Today, personalizing learning is of growing prominence. Two decades ago, according to (OECD-CERI, 1999) too little was known about brain function to reliably infer a rule that would enable us to understand intelligence and, thus, human cognition and behavior. A project on "Learning Sciences and Brain Research" was launched 1999 by OECD's CERI (Centre for Educational Research and Innovation) Governing Board. Since then, the explosion of knowledge about the brain and the nature of learning helped identifying effective solutions. Today massive neuroscientific

research into the brain itself is conducted, supported by the European Human Brain Project[1] and by the US-led BRAIN[2] (Brain Research through Advancing Innovative Neurotechnologies). Both, neurosciences as well as quality assurance measures aim to improve learning efficiency. Figure 1 illustrates the impacts on individual learning and the impacts on institutional learning.

Individual learning path,
learning analytics

Policy initiatives,
Erasmus, Bologna

Everywhere
anytime learning
e-learning

Stakeholder
collaboration, PPP, NGO,
globalization

Formal, non-formal,
informal learning

Technology,
infrastructure

**Neuroscience,
brain-machine interface**

**Educational quality
management systems**
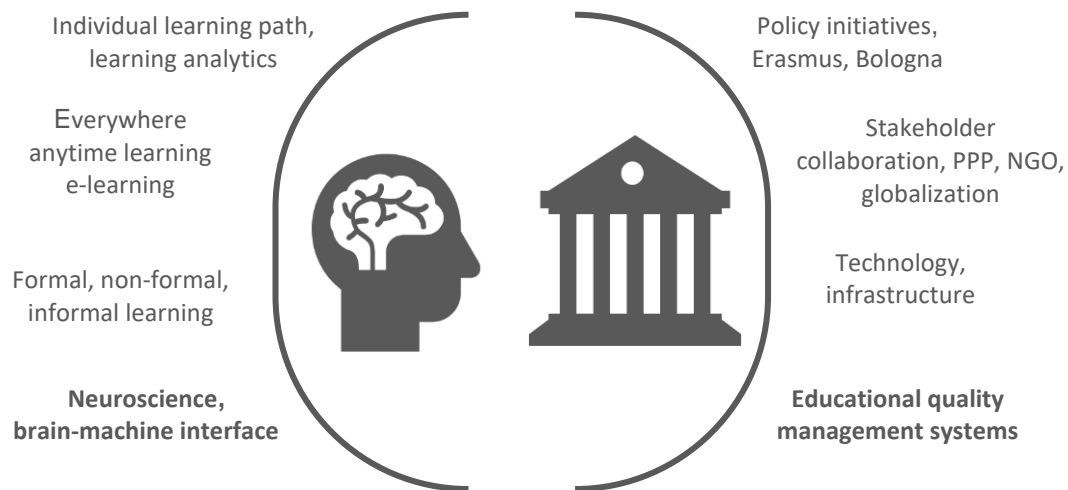
Figure 1: Impacts on individual learning and impacts on institutional learning.

The following chapters describe the individual's and the institution's learning approaches by means of neuroscience and brain-machine interfaces on the one hand, and educational quality management systems on the other hand.

1.3   Neuroscience, Brain-Machine Interface

Already at an early stage the study of the brain revealed many insights, like the effects of emotional states on learning and memory, like the necessity of learning to learn skills, like the plasticity of the brain showing that individual characteristics are far from fixed, like "one-size-fits-all" approaches being ill-adapted to individuals' needs and to the knowledge society at large, and like many more psychoeducational insights. Neurotechnologies can allow researchers and educators to have new ways to represent and see the processes involved in the brain during different situations of interest. In some way this is equivalent to start opening the black box of the brain to reveal individual differences, tendencies and in developing long-term processes, and start to know about the way brain uses information to solve problems in learning tasks (Diaz et al., 2012).

But learning is one of the most complex processes underlying human capabilities. Neurosciences try to understand and manipulate these processes. Neuroelectrical activity was detected first in 1924, in the 1970s DARPA (Defense Advanced Research Projects Agency) started to explore brain communication and evidence was provided that brain signals could be used to interact with external devices. Since then, brain-machine interfaces (BMI), systems that allow communication between the brain and various machines by measuring brain signals (electrical potential, magnetic field, blood flow density) non-invasively, semi-invasively or invasively, are applied to a variety of tasks. Those tasks include but are not limited to neurofeedback and learning. In 1999 it was shown that BMI could be used for limited hand movement, in 2003 the first BMI game was demonstrated, in 2008 voiceless phone calls were demonstrated, in 2014 direct brain-to-brain communication over the internet was achieved. In 2017 Facebook CEO Mark Zuckerberg announced: "*We are working on a system that will let you type straight from your brain. … Technology is going to have to get lot more advanced*

---

[1] https://www.humanbrainproject.eu/en/
[2] https://www.braininitiative.org/

before we can share a pure thought or feeling, but this is a first step." (NeuroTechX 2019). Once such advanced applications enable solid direct data transfer between the brain and any electronic device the human cognitive performance will change fundamentally.

Renowned research facilities, tech giants and start-ups are heavily involved in research and development of tools and applications which allow for advanced forms of human computer interaction:

- The Neural Engineering System Design program by DARPA[3] seeks to develop high-resolution neurotechnology. According to DARPA the focus of the program is development of advanced neural interfaces that provide high signal resolution, speed, and volume data transfer between the brain and electronics, serving as a translator for the electrochemical language used by neurons in the brain and the ones and zeros that constitute the language of information technology.

- The Targeted Neuroplasticity Training program [4] by DARPA supports improved, accelerated training of military personnel in multifaceted and complex tasks. According to DARPA it focuses on cognitive skills training by precise activation of peripheral nerves through stimulation by release of brain chemicals. In that way the synaptic plasticity is regulated in order to improve brain function during learning.

- BMI interfaces by the start-up company Paradromics[5] intend to increase the data transmission rate between brains and computers. An implantable chip records and stimulates electrical activity in the brain.

- Ultra-high bandwidth brain-machine interfaces to connect humans to computers are announced by Neuralink[6]. An integrated brain-machine interface platform has been developed (Musk, 2019).

- BrainCo[7] is a product of the Harvard Innovation Lab offering wearable headbands for education, fitness, and mind-controlled games. It aims to aid in the improvement of attention level and to help those affected with focus issues and learning difficulties.

- EMOTIV's mobile EEG headset [8] monitors brain responses (excitement, interest, stress, engagement, attention, meditation) in real time, thus allowing for achieving peak mental performance

These examples are intended to illustrate the current state of R&D. In the medium to long term, neurotechnologies will fundamentally change our understanding and our ability to communicate and to learn.

1.4   Educational Quality Management Systems

Educational Quality Management Systems aim at achieving quality goals in education through planning and monitoring. Quality management systems (QMS) started to surface about one hundred years ago. In short, the purpose of quality management is about customer satisfaction. Management theories are derived from industries, they have been applied to education not until decades later. Ever since there is an ongoing debate on the applicability of quality management principles, methodologies and tools to the education sector. Nevertheless, QMSs are widely used in Europe in higher education and in further education. There is a considerable variety of QMSs in German-speaking countries. The German Federal Institute for Vocational Education and Training and the German Institute for Adult Education, Leibnitz-Zentrum für Lebenslanges Lernen e.V., surveyed German training providers (n=1755) to

---

[3] https://www.darpa.mil/program/neural-engineering-system-design
[4] https://www.darpa.mil/program/targeted-neuroplasticity-training
[5] https://paradromics.com/
[6] https://neuralink.com/
[7] https://www.cbinsights.com/company/brainrobotics
[8] https://www.emotiv.com/

determine the distribution of QMSs in use in continuing education and analyzed their effectiveness attributions (Ambos 2017). According to this survey, the majority of continuing education providers had at least one QMS in use by 2017. The QMS most frequently used by CVET providers in 2017 were the longstanding DIN EN ISO 9000ff, LQW (Learner-Oriented Quality Testing in CVET) and EFQM (European Foundation for Quality Management). Later, the International Standard Organization ISO published another standard, ISO 29990, to specifically provide a common reference for learning service providers. The newest educational QMS standard ISO 21001 is intended to be useful to all kinds of educational providers, from kindergarten to higher education, vocational training centres and e-learning services and focuses on the specific interaction between an educational organization, the learner, customers and other relevant interested parties.

According to the study mentioned above, those providers who worked without a QMS (20% of the respondents) argued that no QMS was required for achieving good quality. But in general, the institutions surveyed attested that the QMS had rather positive effects. It is further stated that, with regard to organization, an improvement in organizational processes (90%) and an increase in transparency (85%) are being attested to; with regard to offer quality, an improvement in teaching/learning processes (64%), a professionalization of pedagogical work (59%) and an increase in participant satisfaction (56%); with regard to the market, an increase in costs (61%), a strengthening of the market position (56%) and higher customer loyalty (38%) (See Fig.2).
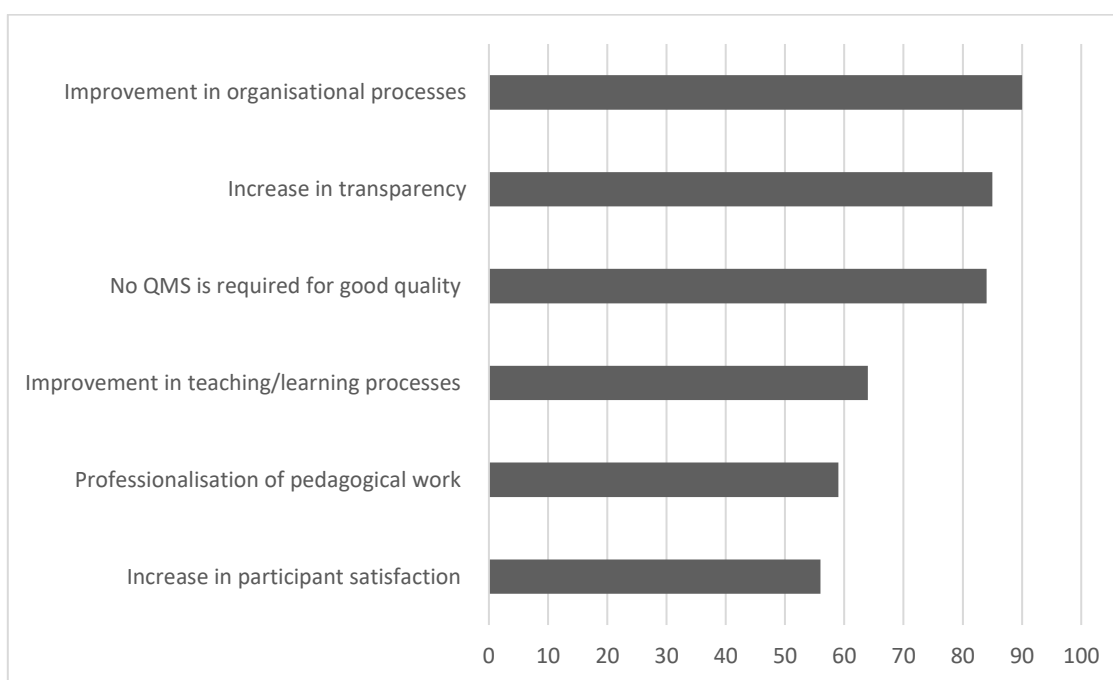
Figure. 2: Responds of German providers of vocational training (n=1755).

Although numerous QM models and quality development procedures have been established along with a flourishing market of quality certifications and agencies in the field of continuing education over the past 20 years, evaluations of effects on learning outcomes as such have come to rather sobering conclusions. According to the study by the Friedrich-Ebert-Stiftung: "*It seems that the effect of quality procedures often refers successfully to the surface and organisational level, but hardly or not reaches the core of continuing education at the level of teaching and learning processes*" (Käpplinger 2017).

The concept of education quality is certainly multidimensional, addressing features of the educational system, organizational frameworks, social and economic requirements, and qualification characteristics of learners. Educational QMS have contributed considerably to

improve sharing and transferring knowledge. According to (Michalska-Cwiek, 2009) the process of implementing QMS has a significant influence on improving the quality of education.

1.5   Conclusions

The digital transformation of the economy and society can only succeed with improved learning efficacy. Both, organizations and individuals need to equip themselves with enhanced capability of effective learning. Educational quality management systems, which have been around for about two decades, play an important role when it comes to support the acquisition and development of competence through teaching, learning or research. Quality in education is required in order for communities and societies to prosper.

The process of learning from an individual's point of view has also undergone a new development about two decades ago since the advent of e-learning. However, real progress in learning can only be expected with the application of neurotechnology. Interfaces between brain and machine promise an unprecedented expansion of cognitive abilities. Let us assume that improved learning effectiveness is accompanied by a higher degree of maturity and wisdom.

1.6   References

[1] Ambos, I., Koscheck, S., Martin, A. & Reuter M. (2018): Qualitätsmanagementsysteme in der Weiterbildung. Ergebnisse der wbmonitor Umfrage 2017. Bonn: Bundesinstitut für Berufsbildung (BIBB).

[2] Díaz, H. et al. (2012), Neurotechnologies for Education Improvement: Self-Knowledge after Opening the Black Box. Journal Plus Education, ISSN: 1842-077X, E-ISSN (online) 2068 – 1151 Vol VIII (2012), No. 2, pp 44 – 52

[3] EDU/CERI/CD (2008), 21st Century Learning: Research, Innovation and Policy

[4] Käpplinger, B. & Reuter, M. (2017): Qualitätsmanagement in der Weiterbildung. Friedrich-Ebert-Stiftung, 15/2017.

[5] Michalska-Cwiek, J. (2009), The quality management system in education - implementation and certification. Journal of Achievements in Materials and Manufacturing Engineering. Vol 37.

[6] Musk, E. (2019), An integrated brain-machine interface platform with thousands of channels. bioRxiv The preprint server for Biology. July 17, 2019.

[7] NeuroTechX (2019), Intro to Brain Computer Interface. http://learn.neurotechedu.com/ introtobci/#what-is-the-definition

[8] OECD-CERI (1999), Learning Sciences and Brain Research: Potential Implications for Education Policies and Practices

2 The Migration Flows from and to Europe During 1990-2010 and its Effect on Intellectual Capital in EU Universities

Konstantinos KALEMIS
Ministry of Education, Research & Religious Affairs, Greece
Refugee Education Coordinator, Member of the Department for the Coordination and Monitoring of the Refugee Education of the Ministry of Education and Religious Affairs, Instructor at The National Centre for the Local Government and Public Administration
Vasiliki PAPATHANASIOU, Ioanna APOSTOLAKI, Anna FRANTZI, Kalliopi DRAGOIDOU, Ypsilanti STELLA, Kindergarten Educators, Members of the Ministry of Education and Religious Affairs

2.1   Abstract

Education is an inalienable right of every child and must – obviously – include all children! Inequalities in education should not be perceived as a natural condition. Children are recognized as rights carriers. Within this framework, education is one of the rights reserved, for which the EU member States are obliged to ensure and safeguard it for all children, wherever they come from and regardless of any discrimination.

The school of inclusion can show the way of intercultural respect, tolerance to all kinds of diversity and humanism throughout society and contribute to the redefinition of its values. With the integrated planning of refugee education, the protection and broadening of the employee rights of teachers, as well as the coverage of the educational needs of all students, it can be a huge step towards accepting and solidarity in order to positively influence the whole society. Since October 2015 at all levels of education we have witnessed a titanic attempt to integrate refugee children into the school reality, from which they abstained, against their will, because of the difficult conditions prevailing in the countries of where they came from. Refugee education has many peculiarities, the most important of which are: the need for psychological support, the management of the specific problems created by their work (children who have never attend in a school or who they interrupted their studies), the absence of the parent-guardian, the ignorance of the language of the host country, the liquidity of the plans of place of establishment, the heterogeneity of the refugee pupil population, racism and social exclusion. The planning, therefore, of the education of refugee children must take account of these specificities, with the ultimate aim of integrating children into school, completing their studies and social inclusion in terms of respect for diversity and harmonious coexistence.

Keywords: migration flows, intellectual capital, refugee education, universities.

2.2   Refugees: a Cognitive and Political Challenge

The mass advent of refugees and migrants in the Aegean islands, culminating in the summer of 2015 and continuing at a lower intensity until today, is a fact of global importance. The systematic recording and study of the "refugee crisis", a highly complex and dynamic phenomenon with great influence, is both difficult and imperative. The objectives of the refugee training, irrespective of the tier, are two. On the one hand, it aims to gather, categorize and document a variety of materials for the refugee and migration crisis in Europe in general and in the Mediterranean in particular, starting in January 2015. For this purpose a digital repository has been created in collaboration with the Ministry of Education and Religious affairs. The digital documentation of primary and secondary materials and their free disposal on the Internet to researchers, journalists and other interested persons is of particular importance for the promotion of the relevant research, but for the historical recording of the phenomenon. On

the other hand, it aims at cross-sectional monitoring of the phenomenon in the Aegean. Recognizing the complexity of the refugee and migration phenomenon, the classification of available materials, primary and secondary sources is attempted, on the basis of a logic that includes the main aspects of the management of refugee and migratory phenomenon in the Aegean: the displaced populations, residing in the Aegean islands, the centers and structures that operate for their reception, identification, accommodation and detention, state and European authorities, organizations and individuals, which shape the landscape of humanitarian governance and, of course, the local communities affected variously by the fluctuations of the refugee and migration border of the European Union.

At the Gothenburg Social Summit (17/11/2017) the EU commission set out its vision for the European Education Area for 2025, to promote European identity and through education and culture so that Europe is a continent where it ensures the free and unimpeded movement of its citizens for education, apprenticeship or work and where its citizens gain a strong awareness of their identity as Europeans as well as of European cultural heritage and diversity. In this context and in the field of higher education, the European Commission has announced its initiative for the creation of networks of European universities, which, as mentioned in the 14/11/2017 press release, is proposed, "in order World-Class European universities can collaborate harmoniously across borders".

As early as the Gothenburg meeting, the Commission proposed three (3) steps towards the creation of a European university, with the horizon of 2025:
- 1st step is the establishment of a network of universities with the common provision of curricula using distance learning methods,
- 2nd step is the creation Joint ventures and
- 3rd step the establishment of foundations.

Finally, it announced its intention to provide a European statute for established networks of universities to ensure their financing by the EU and their long-term viability. On the basis of the Commission's proposals, the European Council in its conclusions of the December 2017 Summit invited the Member States, the Council and the Commission to promote work on a number of initiatives, including "encouraging the emergence of In 2024, about twenty "European universities", i.e. "From bottom to top" university networks across the EU, which will give students the opportunity to acquire degrees by combining studies in more EU countries and will contribute to the international competitiveness of European universities. "

Because the ambitious vision of establishing European universities, as the Commission emphasizes, goes further than the existing models of partnerships between EU universities. This call responds to the European Universities Initiative as we had already discussed which was developed jointly by higher education institutions, student organizations, Member States and the Commission. It is currently one of the EU's most flagship initiatives and is aimed at the ambitious vision of building a European education area.

2.3 Education and Social Reproduction

The social inequality that governs educational pathways, despite its relatively limited visibility, is a central issue of social justice that needs to be tackled together with the many other problems that have accumulated in all Levels and have been exacerbated by the crisis. It is true that there have been very important steps in the direction of educational inequalities. In Western countries, the elimination of illiteracy, the generalization of compulsory education and a spectacular rise in the educational level of the population, features that show that access to education is broadened for all social layers. However, despite these positive developments, social inequality not only continues to govern modern educational systems, but it does look and deepen.

2.3.1 The notion of Inequality in Education

Historically examining education, it is noted that the opening up of the institution of public education as to the access of refugee pupils to it, contributed decisively to social mobility. Individuals, that is, through education have the opportunity to change social layer. Success in educational mechanisms is crucial for social mobility and stratification. However, family-social origins play a very important role.

The level of education held by the individual plays a role in two factors: (a) The objective factors and (b) the subjective factors. Children of lower social strata when entering the educational institution have more "gaps" in relation to those children who come from middle or upper social strata. Therefore, these children, through the school, need to catch up so that they can have "equal opportunities" with the rest.

Figure 1: Immigrants outside Italian coast summer 2018 (Source: CNN)

So the question arises as to whether school and the education system in general can cover these differences. But the way the education system works, not only does it not cover these differences; it acts as a breeding mechanism for social inequalities. The argument that children of lower social strata, despite their disadvantaged position, exhibit very good performance and manage through education to occupy higher social positions does not save the ideology of "equal opportunities". This is because children of low social strata must make great sacrifices and efforts to cover the gap between their own cultural capital and the requirements of educational mechanisms). Inequalities in education are manifested in various other ways, resulting in a decisive influence on the educational course of refugee students. Some of the forms of educational inequalities are as follows:
- Non-enrolment in the school
- Early school leaving (student leakage) and organic and functional illiteracy
- Learning incentives
- Service
- Attendance at different types of school
- Tertiary studies
- The public character of education
- The use of information and communication technologies

The operation of the school is based on the cultural capital, which each carries with its arrival at school. Everyone's cultural capital depends on the social and economic level of the environment from which it originates. According to the above, in society the cultural capital is unevenly distributed and the school contributes in order to continue its unequal distribution.

However, the two sociologists do not overlook the importance of financial capital, but consider that cultural capital is what differentiates students from each other. The school is a mechanism of social choice, which appears as a process of natural selection. The owners of the cultural capital are promoted to the school, which reproduces the cultural capital of the social strata of those who participate and are included in the field of power. Inequality is reproduced through student evaluation. Thus, there is a separation of pupils into "good" and "bad".

2.3.2   Social Origins and Education

Already after World War II many governments are beginning to show interest in education, as according to the Schultz theory, education is a means of economic development. Let us not forget the huge migratory wave within the European countries immediately after the end of World War II and the structural changes it has brought to the whole of the social structures of each country. During that period, there are many research and studies related to education. The most important for the field of sociology of education is the "Coleman Report".

This study examined a total of 4,000 schools, over 600,000 pupils and 60,000 lecturers. The sample replied to questions related to the school itself (building, facilities), to the teachers, to the pupils themselves and to their origin. The most important thing in this study is that for the first time the student's school performance was associated with his social background. Thus, challenged and the argument that education provides equal opportunities for pupils and other factors, such as the economic and cultural influence of the family, were sought.

Our team of associates conducted a survey on the relationship between social origin and school success.
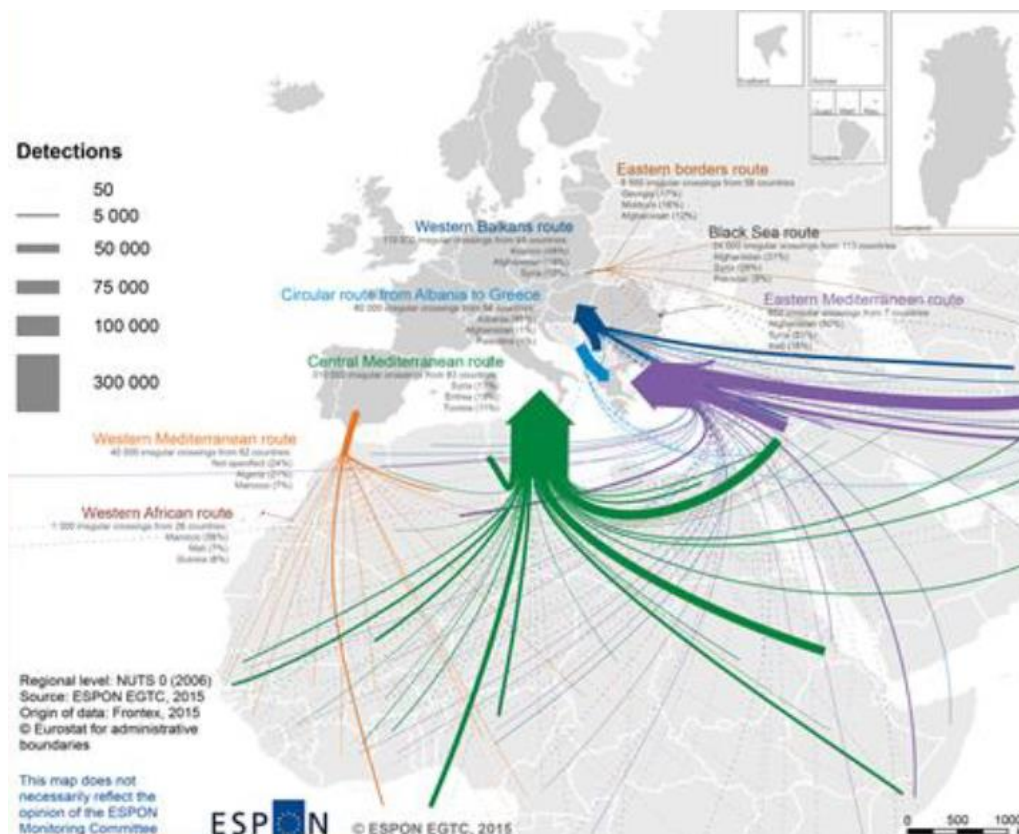
Figure 2: Main irregular border crossing routes depending on nationality (Source: Espon, 2015)

The research was conducted in 676 students of the sixth grade of the prefecture of Attica and proves that there is a close relationship between the social-professional position of the father and the school success of the student. More specifically, 62% of pupils are "excellent" and "good", but have uneven performance in their social origins. Students who are children of

scientists, executives and office employees are "excellent" and "good" at a rate of 94%. Similarly, students who are children of workers are less, with a percentage of 47%. In relation to the level of education of the father appear similar percentages. The students whose father is a graduate of a higher or higher school are "excellent" and "good" at a rate of 90%, while the students that their father owns a school diploma are equally less, with a percentage of 50% and those students who their father does not have a school diploma at just 41%.

Pupils whose parents are holders of a university or other senior diploma have a higher rating than those whose parents are primary graduates. The above percentages confirmed with the absolute identification of pupils of schools in the way students are attending refugees. In the number of participating pupils, 38% a total of 257 students were refugees from Afghanistan, Iran, Syria and Iraq.

2.3.3 Higher Education and Social Inequalities

As early as the mid-70, there has been an increase in demand for education and efforts are constantly being made to democratise and involve more and more members of society. The expansion of participation and the expansion of education are an economic and social investment, as the skills and qualifications of the employees are upgraded. The arguments for broadening the participation are based on three cases:

- The need for skilled workforce based on technological development leads to the high specialization required by the qualifications. Knowledge plays an important role and having a qualification is a prerequisite for access to the middle-city incomes.
- The expansion of higher education promotes social justice and provides opportunities for the lower social strata to deal with privileged professions in the future.
- The state is given the opportunity to exploit workers of all social classes with a view to the economic progress of the State itself.
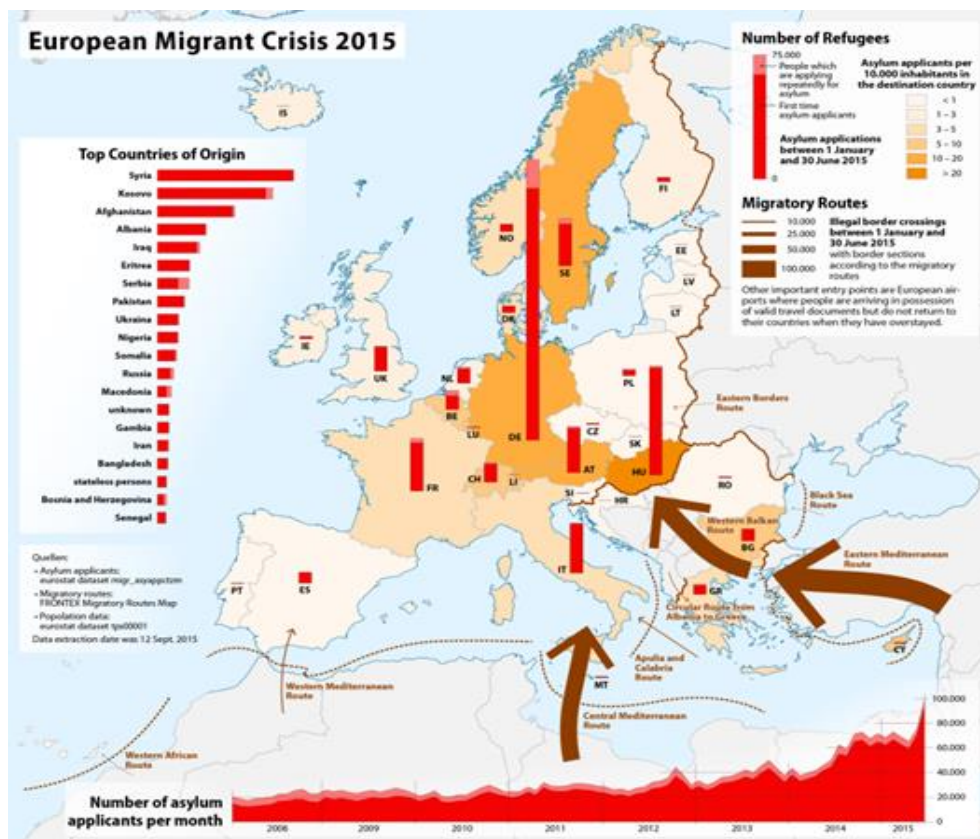
Figure 3: In recent years, instability in Syria, the Middle East in general and Africa has driven more refugees to Europe

The widening of participation in higher education and the increase in the level of education was initially promoted on the grounds that it would contribute to economic development and would give more opportunities to access the lower social strata and vulnerable social groups such as refugees, in higher education.

Despite the increase in access opportunities for all social strata in higher education, the inequalities between them remained. The effort of the lower strata to increase the opportunities for access to higher education was accompanied by a corresponding increase in the access opportunities of the upper layers, with the result that the distances between them were maintained. Thus, even after the expansion of participation in higher education, social inequalities remain intact and continue to be maintained. It seems, then, that the educational system over time appears inadequate in terms of tackling social inequalities.

2.4   What is the European Universities Initiative

The education landscape across Europe is changing. At the 2017 Gothenburg Summit, EU leaders outlined a vision for education and culture. In its December 2017 Conclusions, the European Council called on Member States, the Council and the Commission to take forward a number of initiatives, including:
'…strengthening strategic partnerships across the EU between higher education institutions and encouraging the emergence by 2024 of some twenty 'European Universities', consisting in bottom-up networks of universities across the EU which will enable students to obtain a degree by combining studies in several EU countries and contribute to the international competitiveness of European universities'.

Co-developed by higher education institutions, student organizations, Member States and the Commission, the European Universities Initiative responds to this call. Today, it is one of the flagship initiatives of the EU's ambitions to build a European Education Area.

2.4.1   What is a European University?

European Universities are transnational alliances that will become the universities of the future, promoting European values and identity, and revolutionizing the quality and competitiveness of European higher education. In order to achieve this major step forward, the Commission is testing different cooperation models for European Universities with two calls for proposals under the Erasmus+ programme. The alliances will:
   • include partners from all types of higher education institution and cover a broad geographic scope across Europe
   • be based upon a co-envisioned long-term strategy focused on sustainability, excellence and European values
   • offer student-centered curricula jointly delivered across inter-university campuses, where a diverse student bodies can build their own programs and experience mobility at all levels of study
   • adopt a challenge-based approach according to which students, academics and external partners can cooperate in inter-disciplinary teams to tackle the biggest issues facing Europe today

2.4.2   Migration crisis 1990 – Refugee crisis 2010: Closing Eyes (and borders) don't Solve Problems

The refugee crisis will not last for many years, but it has been predicted that 2016 will be a "hot" year for arrivals, since the situation in Syria is difficult and the bombing have escalated. The EU, particularly Central and Eastern Europe member states, is facing a difficult

demographic situation and will be unsustainable in terms of welfare issues if its population continues to decline. Austria is a country with low unemployment rates and Poland continues to have a positive sign of economic growth during the Eurozone crisis.

The refugee crisis has come to a new stage in the last few days following Austria's unilateral decision to convene a coordinating meeting with the Balkan countries and in fact to close its borders, causing the gradual closure of the intermediate Borders in the Balkans to the Greek border with FYROM. As Austria has significantly reduced the entry of people seeking international protection to a few tens per day, it violates not only the terms of the Geneva Convention, but also undermines all efforts by Germany, Italy, Greece and the European Commission to find a common European solution to the crisis.

Europe's Asylum Seekers Are Young

Asylum applicants by age in 2015 (through Aug.)

Age group	Number	Share of asylum seekers
Ages 0-13	124,785	18.1%
14-17	56,880	8.3
18-34	378,655	55.0
35-64	123,785	18.0
65 or older	3,960	0.6

Note: Not shown are 515 asylum seekers of unknown age.
Source: Eurostat. Accessed Oct. 2, 2015

PEW RESEARCH CENTER
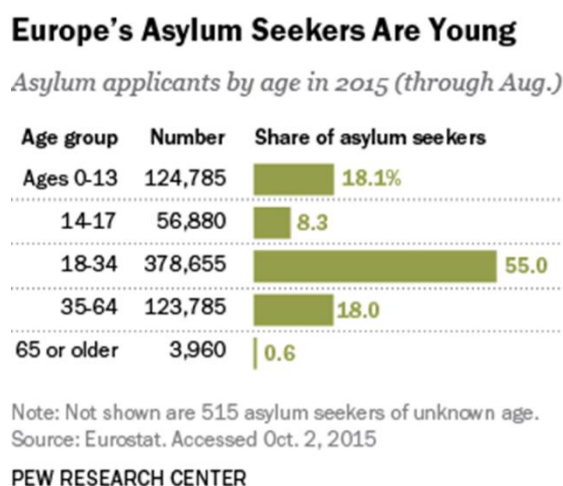
Figure 4: Europe's Asylum Seekers (Source: Eurostat 2015)

However, the most problematic thing about Austria's initiative is not the fact that it does not follow the EU line. What is worrying is the general policy of the countries of Central and Eastern Europe, who seem to think that if they keep their eyes tightly closed, the ' problem '-that is, the refugees, will disappear. This denial of reality is so strongly reminiscent of the attitude and policy of the Governments of southern Europe in the early 1990 when the citizens of these same countries that are currently closing their borders (the countries of Central Europe) they emigrated massively, both in Western and southern Europe-mostly without legal documents. Italy, Greece and Spain then believed that if they refused reality (i.e. the influx of irregular economic migrants was part of a much broader geopolitical change that could not be stopped and that migrants were there for To stay as their problems back in their homelands would not be solved overnight), and they applied stricter border controls by facilitating expulsions, the "problem" would disappear. What was the result? A 7% to 10% of the population of southern Europe is immigrants today but their accession process has been turbulent and difficult.

Period of Migration in Europe	
From the 1950s to 1974: Guest Worker Schemes and Decolonization	➢ In the period after the Second World War, North-Western Europe was economically booming. ➢ Industrial production, for example, increased by 30 % between 1953 and 1958 (Dietz and Kaczmarczyk 2008). ➢ Native workers in this region became increasingly educated and growing possibilities for social mobility enabled many of them to move up to white-collar work.
From 1974 to the End of the 1980s: The Oil Crisis and Migration Control	➢ The oil crisis of 1973–1974 had considerable impact on the economic landscape of Europe. ➢ The crisis gave impetus to economic restructuring, sharply reducing the need for labor. (Boyle, Halfacree & Robinson 1998)

	> Policies aiming to control and reduce migration, however, transformed rather than stopped migration.
From the 1990s to 2012: Recent Trends in Migration towards and within Europe	> Patterns of migration from, towards, and within Europe underwent significant changes and further diversification starting in 1990. > The collapse of the Iron Curtain & the opening of the borders of Eastern Europe induced new migration flows across Europe > The end of the Cold War, as well as the wars in the former Yugoslavia led to new flows of asylum seekers to Western Europe.

Table 1: Period of migration in Europe

And this is a loss for all involved: Migrants have been confronted with state bureaucracy and have worked without documents for many years, social welfare and tax systems have lost revenues, immigrant's 1st and 2nd generation are still struggling to acquire citizenship – perhaps it was only the traffickers and the unscrupulous employers who ultimately benefited! Is that what we want to happen today? Why repeat such an error of short-sighted approach to things?

Tackling the current refugee crisis requires an integrated strategy and a careful analysis of the data: from people arriving in Greece over the last two months, only 45% are Syrian, almost 30% are Afghans and 18% Iraqis. In addition, 35% are children, 45% men and the remaining percentage are women. In order to remedy this situation, it is necessary to:
• a system of relocation quotas across Europe.
• the transfer of know-how from the northern and Western countries that have worked with immigrants and refugees for decades.

A European Peace Corps consisting of NGO workers, who will transfer this know-how to the EU countries with less experience, could be an idea. Furthermore, relocation and integration will provide work for many young people in the host countries and will ensure that the human capital of refugees and their children is not lost. Furthermore, a foreign policy is needed which includes Turkey's agreement with the EU, but also a more extensive strategy. There is a need to include other countries in the region, especially Lebanon and Syria. There is a need for research and analysis of data in order to understand whether flows are secondary movements of asylum seekers from neighbouring countries or are arrivals directly from Syria, Afghanistan and Iraq.
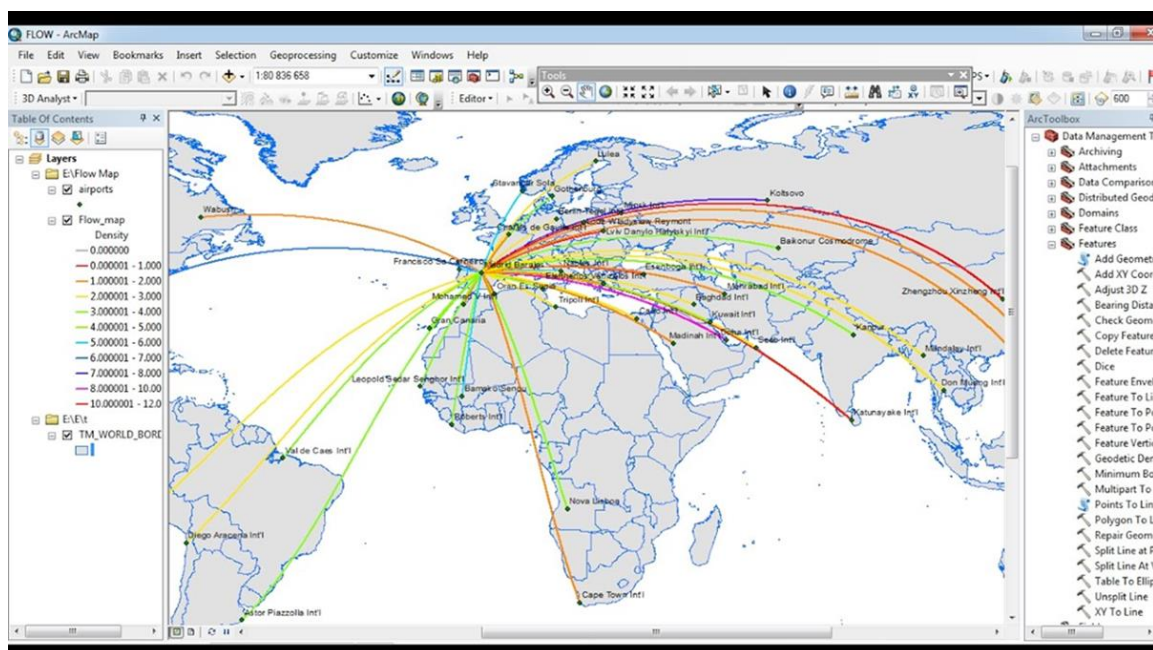
Figure 5: Global Migration Sheet (Source: UNHCR).

These are the solutions to the crisis; without closing our borders and not closing our eyes.

2.4.3   Diversity and Development

Immigrants are carriers of a variety of ideas and abilities, and are an important factor input into the process of technological progress. More than their actual number, however, their composition seems to be crucial issue in stimulating the rate of technological progress in the destination country. In fact, a large number of studies, particularly at the micro level, support the claim that diversity has productivity-enhancing effects. Diversity within a team may improve its performance, as workers from different backgrounds bring along their various skills, experiences, and abilities in the day-to-day interactions. By challenging social solidarity and by eroding the level of social capital ethnic diversity is shown to have a number of undesirable effects on society:

- diversity, in particular cultural polarization, can be destabilizing as culturally fragmented societies are associated with high probability of conflict (see e.g., Esteban & Ray, 2011; Horowitz, 1985;Montalvo & Reynal-Querol, 2005a);
- diversity may lead to distortionary taxation, large government sector, or voracious redistribution (Azzimonti, 2011; Lane & Tornell, 1999);
- ethnic diversity is negatively correlated to participation in community activities and to voting in elections at various levels (Mavridis, 2015);
- heterogeneity under various forms or dimensions may hinder collective actions when e.g., individuals of comparatively high ability are induced to exit a pooling arrangement and may make regulation less efficient (Baland & Platteau, 2003);
- as ethnically diverse communities are less able to overcome the collective action problems, cultural diversity can reduce the willingness to redistribute income and provide (socially) optimal levels of public goods (e.g., Bahry, Kosolapov, Kozyreva, & Wilson, 2005; Miguel & Gugerty, 2005).

2.4.4   Challenges Arising from the Refugee Crisis

People move over time to achieve better living conditions, more opportunities for themselves and their family members, or to avoid persecution and wars. The main groups of displaced persons are three: refugees, internally displaced people and immigrants.

There is a growing confusion between these three groups:
- Refugees are fleeing mainly because of wars or persecution and do not receive any protection from their country.
- Internally displaced persons in relation to refugees have not left their country and remain legally under the protection of their own state.
- Migrants decide to move freely from their country with a view to improving their lives.
- Migrants and refugees are increasingly using the same routes to move. But they do have basic differences, which is why they are treated differently from international law.

In recent decades, a worldwide increase in the number of migrants, internally displaced persons and refugees has been observed. All three groups are treated more and more in the same way: with suspicion and rejection. Border controls are becoming stricter, while at the same time, the problems of xenophobia and racism are making their appearance very strong. The mass advent of refugees and migrants in the Aegean islands, culminating in the summer of 2015 and continuing at a lower intensity until today, is a fact of global importance. The systematic recording and study of the "refugee crisis", a highly complex and dynamic phenomenon with great influence, is both difficult and imperative. We live at the dawn of a new era that heralds cosmogenic upheavals in all areas of human activity. The century that has just begun, brings mankind to face with changes that have no precedent in human history. Technological progress is progressing at a staggering pace. Knowledge is multiplied, literally, by the speed of light.

The global economy, as the most basic expression of human activity, is at the heart of these upheavals. Traditional sectors of economic activity are collapsing or are in the plaintiffs waiting while new ones emerge and magnified with amazing speed. These reclassifications create increasingly demanding demands for multifaceted and multi-layered education. Emerging sectors of economic activity require a workforce with multi-tasking education and continuous and intensive training. This reality also implies an overall redefinition of the cultural values of mankind and dictates new practices in all areas and, in particular, above all, in education and the production of knowledge. The above developments bring to the fore and highlight, in the most indisputable way, the decisive importance of investing in spiritual capital. Spiritual capital is the most important form of accumulated wealth and is a function of education, knowledge, dexterity, practical training and of course, health. In tourism the role of spiritual capital is catalytic.

Tourism, by its very nature, is anthropocentric. It is produced and offered by man for man. It is therefore immediate and imperative to focus on the spiritual – the human – capital. It is a matter of survival to create skilled and skilled executives at all levels, which will get their hands on the big case of Greek tourism.

Europe has an opportunity: the influx of refugees crossing the continent's borders has elicited a mixed wave of emotions among politicians and citizens - but where some see chaos and a burden for Europe, academics see potential for a great contribution. When all else is left behind, a refugee's knowledge remains within them. For refugees who have already received an education, it is vital to recognize this part of their identity and to nurture their knowledge and intellectual capital. A refugee's academic training and intellectual interests travel with them wherever they go and follow their flight. When all else is left behind, this knowledge remains within them and continues to form a key part of who they are. If refugees are given the necessary resources, networks, and opportunities, they can reconnect with their true identities in Germany or elsewhere in the world. We need to formulate a system that allows academics to make use of their positions of influence. The ideal system can garner all the various acts of support, no matter the magnitude – for instance, giving a free lecture or making it accessible online, becoming a mentor, providing research resources or granting library access to refugees. These small acts can, together, amount to meaningful change. On an individual level, academics can reach out based on shared interests to identify possibilities for interesting collaborations and exchanges of ideas within their field of expertise.

A structure that mobilizes local academics to fulfil their passion for sharing knowledge will create experiences that produce fruitful benefits across Europe. In this way, we will form a structure that not only facilitates personal engagement between professors and academic refugees but perhaps even extends to other marginalized groups suffering from a similar absence of intellectual exchange. Universities could easily acknowledge such involvement, perhaps via a points system whereby honours would be awarded based on a level of social engagement. Additional funding could be provided to conduct research with a refugee academic as a collaborator. Academics should not be forced to solely focus on grants and ranking of their publications: they should rather receive proper recognition from their institutions when they collaborate with other academics from around the world that have been marginalized. We value students who volunteer - why don't we place as much significance on such work for senior academics? Such a step would capture the true essence of a professor - one who seeks to share knowledge and to be intellectually engaged wherever and whenever possible. One academic has the power to inspire others. This ripple effect would be tangible and the radius of impact could be boundless.

When looking at the daunting refugee crisis and wondering where to help, one doesn't have to look far. As a professor, not a lifeguard or a politician, I knew my place wasn't rescuing refugees from the water on the island's coast. I do recognize that academics need to apply their knowledge, to keep their intellect active, or risk losing it. It was this area where I could be most effective. Knowledge is valuable wherever it is located - a Syrian engineer can both apply his skills and contribute to technological advances in his host country and, one day, bring them back to Syria to help in the rebuilding process. Institutional strategies alone are not enough to

make the academic world more accessible for refugees. Rather, a sustainable solution can only be achieved through a bottom-up approach, which makes use of the existing motivation found among local academics. Institutions must facilitate, not neglect, this inclination to make society recognize refugees' human capital.

2.5   Present situation of European Universities

EU higher education institutions are currently immersed in a process of profound change, the intention of which is to improve the effectiveness, efficiency and transparency of these institutions with the aim of contributing to the development   and improvement of the competitiveness of the EU economy. IC reporting becomes critical at universities, mainly due to the fact that knowledge is the main output as well as input in these institutions Kalemis, 2014). On the research front, since 1998 the EU has developed several Framework Programs in order to boost research cooperation among European countries. In this context, the European Research Area (ERA) is being developed. This project aims at creating the necessary conditions to increase the impact of European research efforts "by strengthening the coherence of research activities and policies conducted in Europe" and "offers a new horizon for scientific and technological activity and for research policy in Europe" (European Commission, 2000: page 3). Intellectual capital management become critical at universities mainly due to the fact that universities´ main goals are the production and the diffusion of knowledge and their more important investments are in research and human resources (Elena, 2004); so, both inputs and outputs are mainly intangibles. The term "Intellectual capital" is used to cover all of the non-tangible, or non-physical, assets and resources of an organisation, including its processes, innovation capacity, patents and the tacit knowledge of its members and their network of collaborators and contacts. So, Intellectual capital (IC) has been defined as the combination of intangible resources and activities that "allows an organisation to transform a bundle of material, financial and human resources in a system capable of creating stakeholder value" (European Commission, 2006: page 4).

2.6   Conclusions

Immigration policy, in no serious state and with any elementary logic, is not primarily a security issue. It is neither the people nor the numbers (which are now manageable) the problem. The administrative chaos prevailing in the refugee is what creates insecurity, xenophobia, opportunities for exploitation and lawlessness, great tensions, with losers on both sides. Refugees and migrants are treated either as a social threat or as mindlessly, vulnerable victims. In the trap of fragility unwittingly international protection organizations and non-governmental organizations and many millions have been spent, mainly from the EU, to maintain programs that are still responsive to a period Refugee crisis, four years later. In fact, these people are neither one nor the other. The strength and resilience one needs to uprooted from his country, to make an incredibly dangerous journey and try to live a new life in a completely foreign country, is inexhaustible. These people are potentially a driving force for every society and economy.

The integration and empowerment of these people, to become the earliest productive members of society and the economy, is a tremendous opportunity for the present government. The three pillars of integration (language learning and intercultural education, participation in the workforce, and inclusion in the national education and Health System) are rights and large obligations. It is no coincidence that our partners in Europe emphasize integration and empowerment programs: countries such as Sweden, Germany and Denmark link asylum with intensive and mandatory integration programs, understanding that as soon as someone can to be strengthened, it will become an autonomous and productive member of the economy without absorbing state welfare funds. EU officials estimates that the recent refugee wave of 2015 can bring the European annual GDP up to 80 billion € until 2025.

I believe in the potential of the people who choose our country, but the will of society to do so, as long as a safe, organized framework is created, with respect for the human rights of all those who come and the society that accepts them. The great opportunity of accession to the refugee must not be lost.

2.7　References

[1] Azzimonti, M. (2011). Barriers to investment in polarized societies. The American Economic Review, 101(5), 2182–2204.

[2] Bahry, D., Kosolapov, M., Kozyreva, P., & Wilson, R. K. (2005).Ethnicity and trust: Evidence from Russia. American Political Science Review, 99(04), 521–532.

[3] Baland, J. M., & Platteau, J. P. (2003). Institutions and the efficient management of environmental resources. In D. Malher, & J. Vincent (Eds.), Handbook of Environmental Economics (pp. 127–190). Amsterdam: North-Holland.

[4] Communiqué of The Conference Of European Ministers Responsible For Higher Education (2003). Realizing the European Higher Education Area. Berlin.

[5] Communiqué of The Conference Of European Ministers Responsible For Higher Education (2005). The European Higher Education Area. Achieving the Goals. Bergen.

[6] Council of the EU. (2002). Seville European Council 21 and 22 June 2002: Presidency conclusions. Brussels: European Commission.

[ ] EC. (2011). The global approach to migration and mobility. COM (2011) 743 final. Brussels: European Commission.

[7] Elena, S. (2004). Knowledge Management and Intellectual capital in European Universities. Proceedings of the Workshop organised by the Graduate Programme "Entering the Knowledge Society" and the Institute for Science and Technology Studies, Bielefeld University. Germany.

[8] Elena, S. (2007). Governing the University of the 21st century: Intellectual Capital as a Tool for Strategic Management. Lessons from the European Experience. Ph.D. dissertation. Universidad Autónoma de Madrid.

[9] Esteban, J., & Ray, D. (2011). Linking conflict to inequality and polarization. The American Economic Review, 101(4), 1345–1374.

[10] EUROPEAN COMMISSION (2000). Making a reality of The European Research Area: Guidelines for EU research activities (2002-2006). Brussels, COM (2000) 612 Final.

[11] EUROPEAN COMMISSION (2003). The role of the Universities in the Europe of Knowledge. Brussels, COM (2003) 58 Final.

[12] EUROPEAN COMMISSION (2005). Mobilising the brainpower of Europe: Enabling universities to make their full contribution to the Lisbon Strategy. Brussels, COM (2005) 152 Final.

[13] EUROPEAN COMMISSION (2006). Ricardis: Reporting intellectual capital to augment research,development and innovation in SMEs. Report to the Commission of the High Level Expert Group on Ricardis. Available at: http://ec.europa.eu/invest-inresearch/pdf/download_en/2006-2977_web1.pdf

[14] Eurostat. (2011). Migrants in Europe: A statistical portrait of the fi rst and second generation. Luxembourg: Publications Office of the European Union.

[15] Eurostat. (2014a). Immigration in the EU. Brussels: European Commission.

[16] Eurostat. (2014b). Unemployment Statistics . Brussels: European Commission. http://epp.eurostat.ec.europa.eu/statistics_explained

[17] Fazlagic, A. (2005). Measuring the intellectual capital of a University. Proceedings of the Conference on Trends in the Management of Human Resources in Higher Education. Paris.

[18] Horowitz, D. L. (1985). Ethnic groups in conflict. Berkeley: University of California Press.

[19] Horwitz, S. K., & Horwitz, I. B. (2007). The effects of team diversity on team outcomes: A meta-analytic review of team demography. Journal of Management, 33(6), 987–1015.

[20] Kalemis, K. and others (2014). A Strategic Approach for Intellectual Capital Management in European Universities. Guidelines for Implementation, Edition: Nr. 1 Publisher: UEFISCDI Blueprint Series Editor: Karl-Heinz Leitner; Adrian Curaj ISBN: 978-973-711-499-0. Available at: https://www.researchgate.net/publication/272748508_A_Strategic_Approach_for_Intellectual_Capital_Management_in_European_Universities_Guidelines_for_Implementation

[21] Lane, P., & Tornell, A. (1999). The voracity effect. American Economic Review, 89(1), 22–46.

[22] Leitner, K.H. (2004). Intellectual Capital reporting for universities: conceptual background and application for Austrian Universities. Research Evaluation, 13(2): 129-140. http://dx.doi.org/10.3152/147154404781776464

[23] Leitner, K.H.; Schaffhauser-Linzatti, M.; Stowasser, R.; Wagner, K. (2005). Data Envelopment Analysis Method for Evaluating Intellectual Capital. Journal of Intellectual Capital, 6(4): 528-543. http://dx.doi.org/10.1108/14691930510628807

[24] Mavridis, D. (2015). Ethnic diversity and social capital in Indonesia. World Development, 67, 376–395.

[25] Miguel, E., & Gugerty, M. K. (2005).

[26] Montalvo, J. G., & Reynal-Querol, M. (2005b). Ethnic polarization,potential conflict, and civil wars. The American Economic Review, 95(3), 796–816.

[27] OECD. (2011). International migration outlook 2011 . Paris: Organisation for Economic Cooperation and Development.

[28] OECD. (2013). International migration outlook 2013 . Paris: Organisation for Economic Cooperation and Development.

3 Research on Wuhan's Advanced Manufacturing Development Policy

Dong LIANG and Zhongwei Zhang
Jianghan University Business School, China

3.1 Abstract

In recent years, the manufacturing industry has been continuously developing towards automation and intelligence. The advanced manufacturing industry as a typical representative of the manufacturing industry is a highly integrated product of mechatronics. At present, advanced manufacturing has become the most important and most dynamic component of manufacturing, representing the development direction of the world's manufacturing industry. The development of advanced manufacturing industry is an important part of a country's economic competitiveness, a key area for participating in international competition and highlighting national competitive advantages, and also an important carrier for innovative applications and breakthroughs in innovation. Based on the analysis of China's advanced manufacturing government support policy, this paper analyzes Wuhan's advanced manufacturing support policy based on the current status of Wuhan's advanced manufacturing industry, and proposes suggestions for improving Wuhan's advanced manufacturing development policy.

Keywords: advanced manufacturing; development; Wuhan; policy support;

3.2 Perface

Since entering the 21st century, the manufacturing industry has faced the opportunities and challenges brought about by the adjustment of global industrial structure. In particular, after experiencing the financial crisis in 2008, countries began to face the pressure of transformation and upgrading of the manufacturing industry. In order to find new ways to promote economic growth, all countries have begun to pay attention to the development of advanced manufacturing. In 2011, the United States proposed the "Advanced Manufacturing Partner Program" to increase investment in technological innovation. Germany followed up with the implementation of the Industry 4.0 strategy in 2013, and China has established clear advantages in the international market after the reform and opening up with the rapid development of manufacturing. However, the traditional mode of extensive manufacturing has gradually lost its advantages. Using advanced technology as a means of production is an inevitable trend in the future development of the manufacturing industry. Faced with this situation, China's manufacturing industry must rise to catch up, and it must not give up its advantages in the traditional manufacturing industry, but it must actively compete for the commanding heights of advanced manufacturing.

3.3 Analysis of Government Support Policies for Advanced Manufacturing Industry in China

All countries have paid great attention to the role of government support. Through the formulation of a series of policy measures, we will actively promote the development, demonstration, and application of key technologies in advanced manufacturing industries and strategic emerging industries, and create a favorable market environment for promoting the development of advanced manufacturing industries, smart manufacturing technologies, and strategic emerging industries.

3.3.1 The Development Status of China's Advanced Manufacturing Industry

As China's economy has entered the "new normal," a variety of social problems have begun to escalate, such as high prices, rapid price increases, and severe link pollution. The Chinese government has taken active measures to promote the transformation and upgrading of the manufacturing industry in the face of the problems in the manufacturing industry. "Made in China 2025" is a strategic plan made by the Chinese government in a comprehensive analysis of the current situation of the development of advanced manufacturing at home and abroad. As China's existing resources are difficult to support the development of traditional manufacturing, traditional manufacturing is in urgent need of transformation. The rising production costs of the labor force, raw materials, etc., have reduced the competitive advantage of manufacturing products, causing some developed countries to relocate their advanced manufacturing industries to cheaper Southeast Asian countries for production.

With the support of national policies in recent years, China's advanced manufacturing industry has improved. However, compared with the world advanced level, China's manufacturing industry is still large and not strong. There is a clear gap between independent innovation capability, resource utilization efficiency, industrial structure level, informationization level, and quality and efficiency. The task of transformation, upgrading, and striding over development is urgent and arduous. In recent years, developed countries such as the United States and Germany have increasingly focused on the development of advanced manufacturing industries and have successively introduced the bill to revitalize the development of advanced manufacturing industries. Against this background, the Chinese government is also actively transforming itself from a "manufacturer" to a "manufacturer" and achieve leapfrog development in advanced manufacturing.

3.3.2 Analysis of China's Advanced Manufacturing Support Policies

In response to the arrival of the third industrial revolution. The government of our country combines China's national conditions and focuses on key areas such as innovation-driven, intelligent transformation, strengthening of the foundation, green development, and talent-based, as well as advanced manufacturing, high-end equipment and other key areas. It has proposed major strategic tasks and major policy initiatives to accelerate the transformation and upgrading of the manufacturing industry, increase efficiency, and strive to enter the ranks of manufacturing powerhouses by 2025. "Made in China 2025" is an effort and attempt to promote the transformation of China from a manufacturing powerhouse to a manufacturing powerhouse. In the document, the Chinese government put forward the basic policy of "innovation-driven, quality-first, green development, structural optimization, and talent-based",and proposed to improve the national manufacturing innovation capability, promote the deep integration of information technology and industrialization, and strengthen the industrial foundation. Capacity, strengthening of quality brand building, full implementation of nine key tasks such as green manufacturing, and breakthrough development in key areas.

To make the "Made in China 2025" plan achieve the expected results, some key issues need to be solved, including the implementation of innovation-driven development strategy, the construction of new economic infrastructure, the allocation of resources to the real economy, the dynamic adjustment of key technologies and domain catalogues, and the promotion of "craftsmen spirit" strengthens the cultivation of skilled talents and draws on international experience to bring China into the "first square" of manufacturing and truly become a manufacturing powerhouse. "Made in China 2025" is based on the trend of international industrial change and has made a major strategic plan to comprehensively upgrade the quality and level of China's manufacturing industry. It is of great significance to promote the adjustment and reform of China's industrial structure, accelerate the development of China's advanced manufacturing industry, increase the international competitiveness of China's manufacturing industry, and make China a manufacturing powerhouse.

3.3.3 Development Trend of China's Advanced Manufacturing Industry

With the impact of economic globalization, the development of advanced manufacturing is developing toward the trend and direction of intelligence, high-end, lean, and green. With the continuous adjustment and upgrading of the advanced manufacturing industry structure, the market size of China's smart manufacturing equipment continues to expand in recent years. Smart manufacturing is one of the innovative trends in advanced manufacturing. Developed countries such as Europe and the United States have emphasized the importance of smart manufacturing in their advanced manufacturing development plans and have formulated detailed technological innovation plans and incentives. Therefore, intelligentization and high-endization are inevitable directions for the development of advanced manufacturing industries in the future. For example, cloud manufacturing, smart manufacturing, and the Internet of Things are products of advanced manufacturing intelligence. The advanced manufacturing industry continuously optimizes and upgrades the products that are manufactured to be both precise and highly productive, and able to respond to changing user needs. And can make the redundant part of the production process be streamlined, and ultimately achieve the best results in all aspects of production including market supply and marketing. Traditional manufacturing is produced at the expense of the environment. The advanced manufacturing industry emphasizes the recycling of clean production and resources. Taking into account the natural environment and social efficiency, the products provided are characterized by no pollution, low energy consumption, and recyclability. Through the green revolution of the entire industrial production process from the design, manufacture, marketing, and circulation processing of manufacturing industries, the sustainable development of the manufacturing industry is realized.

3.4 Analysis of Support Policies for Wuhan's Advanced Manufacturing Industry Development

In recent years, Wuhan's advanced manufacturing industry has developed rapidly and has now become the main support for the city's economic growth and the most dynamic new growth point. Among them, the optoelectronic information product manufacturing industry and the software industry have developed particularly rapidly and have become increasingly important in the city's advanced manufacturing industry. However, its development still faces unfavorable factors such as unreasonable industrial structure, relatively weak corporate brand economic strength, and weak corporate independent innovation capability. How to analyze and identify problems in a timely manner, so that Wuhan's advanced manufacturing industry to a higher level is the most important development.

3.4.1 The Status Quo of Wuhan's Advanced Manufacturing Industry Development

With the rapid development of Wuhan's economy, Wuhan has now initially achieved a transformation from an old industrial base to an advanced manufacturing base with industrial clustering characteristics. More than 80 of the world's top 500 companies have invested in Wuhan. The East Lake New Technology Development Zone in Wuhan has been approved by the National Independent Innovation Demonstration Zone to form a high-tech industrial cluster represented by optoelectronic information. The industrial concentration of the advanced manufacturing industry has significantly increased in the past two years. In the high-end equipment manufacturing industry, Wuhan Jinyun Laser Co., Ltd. was established as one of the first batch of 21 demonstration companies for cultural and technological integration in Wuhan. The company is dedicated to the digital application of laser and 3D printing. The "Gold Laser 3D Digital Technology Application Service Innovation Platform" was constructed, extending the application industry chain and providing a comprehensive, innovative and

leading digital solution for the downstream applications of laser and 3D printing. Wuhan currently has a number of emerging industries such as lasers, robots, new energy, rail transit, and new materials. However, as a whole, at present, no significant core competitiveness has yet been formed. Existing industries are still in the process of cultivation and growth, and their R&D capabilities and ability to grasp the market are relatively weak. Whether they can grow into leading companies in the industry and build well-known brands in the industry will require further market inspections. Compared with other cities, the existence of problems such as irrational industrial structure, lack of brand features, and poor ability to independently innovate seriously restricts the industrialization and large-scale development of Wuhan's advanced manufacturing industry.In addition, with the continuous development of China's advanced manufacturing industry, there has been a fundamental change in the situation where scientific research results are not valued, and society's thirst for transforming scientific research achievements into productivity has become increasingly strong. However, in the process of industrialization, the contradiction between demand for and supply of scientific and technological achievements is very prominent. The projects with high technological level, good market prospects, and independent intellectual property rights are very difficult to find, and a large number of venture capitals are idle due to lack of good projects. The lack of continuous innovation in technology and the lack of technological stamina have become major issues affecting the sustainable development of Wuhan's advanced manufacturing industry.

3.4.2 Analysis of Supportive Policies for the Development of Advanced Manufacturing Industry in Wuhan

In August 2005, General Secretary Hu Jintao emphasized the need to speed up Hubei's development and become an important strategic fulcrum for the rise of the central region. During the National "Two Conferences" in 2009, Premier Wen pointed out that Wuhan is the central city and the most important central city. In the implementation of the strategy for the rise of central China, the state requested Wuhan to inherit the east and west of Kaixi to play a fulcrum, and to take the lead in the rise of industrial development and economic development and build an important national energy raw material base, modern equipment manufacturing and high-tech industrial base.With the support of the strategy for the rise of Central China, Wuhan's manufacturing industry will enter a period of rapid development. At present, the world has entered an unprecedented era of innovation and industry revitalization, strategic emerging industries will become the dominant force in economic and social development. Donghu New Technology Development Zone has been approved to build a national demonstration zone for independent innovation, which will bring opportunities for innovative development ideas and institutional mechanisms for Wuhan. Giving full play to the advantages of intensive science and technology resources and active technological innovation in East Lake High-tech Development Zone and enhancing the competitiveness of independent innovation in the city will lead to a rapid transformation of the development mode of Wuhan's manufacturing industry.

3.4.2.1 Robotics Industry has Become the Main Direction

With the rapid development of advanced manufacturing technology in the pace of industrialization, advanced manufacturing has become an important part of Wuhan's high-tech industry. As an important part of advanced manufacturing technology, Wuhan robots have received increasing attention in recent years. Hubei Province formulated the "Opinions on Accelerating the Development of Six Key Industries such as Equipment Manufacturing" and "Accelerating Action Plan for the Development of Equipment Manufacturing Industry in the Province". It is clear that the competitiveness of high-end equipment manufacturing industries such as industrial robots and additive manufacturing (3D printing) must be improved. This year, the Economic and Information Technology Commission issued the "Accelerating Action Plan for Accelerating the Province's Smart Manufacturing Equipment Industry Development", which clearly put forward the action path, action priorities, action goals, and safeguard measures for the development of the industrial robot industry. In accordance with the requirements of the provincial government, Wuhan actively promoted the development of the robot industry and

did a lot of useful work. The Wuhan municipal government has always insisted on the development of the robot industry as an important starting point for Wuhan's innovative development strategy. As a pioneer in speeding up the industrial transformation and upgrading of Wuhan and the scale development of "Wuhan Zhizhao", it is an accelerator for the construction of a comprehensive innovation and reform pilot zone, a national innovation city, and a state-level manufacturing innovation center. Since the beginning of this year, the "Opinions of the Wuhan Municipal People's Government of Wuhan Municipality on Accelerating the Promotion of All-round Innovation in Building a National Innovative City," and "Wuhan Manufacturing 2025" have been intensively introduced, as well as the intensified integration plan of Wuhan's informatization and industrialization. The thirteenth five-year plan for the development of the equipment manufacturing industry has included industrial robots and smart manufacturing as development priorities and main targets.

3.4.2.2 Advanced Manufacturing Enterprises Become the Focus of Government Support

China has officially promulgated the "CPC Central Committee's Proposal for Formulating the 13th Five-Year Plan for National Economic and Social Development" and the "Made in China 2025" overall plan. In the industries that the country mainly supports the development of robotics, advanced rail transit, aerospace equipment, and bio-pharmaceuticals, Wuhan has laid a relatively solid industrial foundation and has certain advantages in advance. As a national-level center city, Wuhan City attaches great importance to the development and construction of advanced manufacturing industries. The "March 2025 Wuhan Outline for Action on Manufacturing Industry" promulgated in February 2016 clearly stated that it will strive to build the city into a national advanced manufacturing center by 2025. It will provide strong support for the coordinated development of the city's economy and society, and will play a demonstration role for China's entry into the world's manufacturing powerhouse. Wuhan will comprehensively deepen reforms and make every effort to create an industrial innovation system. Actively promote various tasks such as smart parks, enterprise clouds, big data, and public production platforms, and strive to meet the new equipment needs of various industrial sectors, the new consumer demands of the people, and new capacity requirements for social governance services. It will certainly provide a vast space for development and impetus for Wuhan's advanced manufacturing industry.

3.4.2.3 Limited Support for High-Tech Industry Policy

In recent years, Wuhan has achieved rapid development in high-tech industries, especially the development of optoelectronic information product manufacturing and software industries. However, compared with Shanghai and Beijing, which have developed rapidly, Wuhan has a relatively weak foundation to engage in advanced manufacturing. Wuhan's key innovation resources such as scientific research institutions and colleges and universities are relatively weak. Wuhan's policy support for advanced manufacturing industries is also relatively inadequate. The number of business parks attracting high-level overseas students, key universities, and scientific research institutions is relatively small, and the grade is low. Due to Wuhan's special geographical location, the direction of policy tilt is concentrated in modern finance, high-end real estate and other industries. In the future, the gap between Wuhan City and the advanced urban areas in the field of high-tech industries may further widen. The most important fund for the development of high-tech industries comes from venture capital. However, as Wuhan's position in the regional financial market is far less than that of Shanghai and Shenzhen, the risk funds that can be provided are not only of small scale but also of unreasonable structure. The financial shortage has severely restricted the industrialization and large-scale development of high-tech industries in Wuhan. In addition, the legal service system is not perfect and the response is not timely, which also seriously restricts the growth of high-tech industries in Wuhan. As the pace of urbanization and the pace of transformation have accelerated, the resources of industrial land available for use have become increasingly scarce, and the cluster advantage of large-scale advanced manufacturing in Wuhan has ceased to exist. With the continuous advancement of the strategy of building a national-level

center city in Wuhan, the functions of Wuhan's core business districts and government districts have become increasingly prominent, promoting the rapid development of the tertiary industry, and the proportion of advanced manufacturing industries in total economic output of the region will continue to decline. We must strengthen overall planning and forward-looking deployment, and resolutely target the relevant industries supported by the state, and unswervingly advance the development of advanced manufacturing industries. Take full advantage of the new generation of information technology, accelerate the transformation of enterprises' digitization, networking and intelligence, and promote the transformation of traditional industries from manufacturing to manufacturing and service. To shape the regional characteristics of Wuhan's advanced manufacturing industry, forge a batch of companies with international competitiveness, and seize the commanding heights of advanced manufacturing.

3.5 Wuhan's Advanced Manufacturing Government Support Policy Recommendations

The huge potential of China's advanced manufacturing market provides a broad market space for the development of advanced manufacturing. However, compared with advanced manufacturing areas, Wuhan's advanced manufacturing technology research and development and market expansion are still not balanced. In addition, the low numerical control rate of technical equipment in industries related to advanced manufacturing cannot meet the market demand for medium and high-end advanced products. Looking at the competition and development of the international manufacturing industry, we are faced with the gradual integration of the two advanced manufacturing markets at home and abroad. How to integrate the decentralized corporate resources according to the market demand of Wuhan's advanced manufacturing industry and form its own technological superiority in the advanced manufacturing industry as soon as possible is an urgent issue facing Wuhan's advanced manufacturing industry.

3.5.1 To enhance the Independent Innovation Capability of Advanced Manufacturing Enterprises in Wuhan

Advanced manufacturing is an important carrier of scientific and technological innovation, an area where innovation is most concentrated and most active, and a fertile ground for innovation to be applied and applied. The Wuhan Municipal Government should focus on promoting the leap-forward development of advanced manufacturing enterprises in policies and guide the forward-looking vision of advanced manufacturing enterprises in targeting the development of advanced manufacturing industries at home and abroad. Selectively introduce and digest, absorb, and innovate advanced manufacturing technologies with high R&D costs, long research and development cycles, and significant benefits of import. Promote high-level grafting of advanced manufacturing technologies, give full play to their advantages in post-production, and realize leap-forward progress in low-cost, short-term, and high-efficiency.

Adhere to a high starting point to advance the innovative leap-forward development of Wuhan's advanced manufacturing enterprises, relying on China's existing advanced manufacturing technology foundation, and accelerate the research and development of advanced manufacturing technology. We will give all-round and key support to advanced manufacturing companies with independent innovation awareness and independent intellectual property rights to improve the core competitiveness of Wuhan's advanced manufacturing enterprises. We will earnestly construct an enterprise-led industrial technology research and development system, and strive to promote the collaborative innovation of various innovative entities such as industry, universities, and research institutes and improve the original innovation capabilities of enterprises. Finally, we must promote the application and industrialization of results with core independent intellectual property rights, nurture and develop strategic emerging industries, and upgrade the overall level of innovation of Wuhan's advanced manufacturing enterprises.

3.5.2 To vigorously Nurture the Talents Needed for the Development of Advanced Manufacturing in Wuhan

The development of Wuhan's advanced manufacturing industry is inseparable from talents. In addition to supporting policies in terms of personnel training, exchange, and introduction, the government should actively establish various talent platforms. Such as talent exchange platform and introduction platform, talent training platform, especially the cultivation platform for innovative talents, use these platforms to carry out talent introduction and training. Specifically, a special fund for talents can be set up and a green channel for talents can be set up. It can be used exclusively for talent introduction, training, commendation, motivation and key talent projects. In the high-end talent section, key talents are supported and special talents are specially trained. In the professional talents section, we will implement a plan for updating the expertise of talented professionals and focus on key areas. We will carry out large-scale continuous education of knowledge renewal, and cultivate urgently needed and backbone professional and technical personnel. In the grass-roots talent section, the "blue-collar" high-skilled personnel forging plan will be implemented to cultivate the skills needed for the transformation and upgrading of the industry.

Actively introduce domestic advanced technology innovation teams and form deep cooperation with university research institutes. Strengthen the advanced manufacturing talents to go back to college for further education or retraining, actively promote the implementation of the "Innovative Talents Promotion Plan" in the advanced manufacturing field, and strengthen the introduction and training of talented people in areas such as strategic emerging industries. We will strengthen cooperation among universities, enterprises, and scientific research institutes in China to foster a group of young and talented young and middle-aged scientific and technological talents, management talents, and senior technicians. In particular, we must cultivate leading personnel for major equipment development and system design. Actively build a talent flow platform and green channels both inside and outside the country and at home and abroad, establish an information system for overseas students and senior talents in developed regions, establish an overseas talent pool based on the development of Wuhan's robotics industry, and attract talents back to Wuhan to start businesses.

3.5.3 Strengthen Support for Key Areas and Accelerate the Conversion of Results

"Made in China 2025" in the context of the specific conditions of our country, has identified the ten major areas of advanced manufacturing. To achieve sustainable technological innovation and transformation of achievements in the key areas of advanced manufacturing is the focus that our government should focus on. To promote technological breakthroughs in key areas, we must formulate policies and measures to guide the development of the industry in light of China's specific national conditions and concentrate on solving key problems. Guide the development of advanced manufacturing to the high end and original direction of the value chain, avoiding disordered competition and low-end redundant construction. In addition, for key areas, it is necessary to strengthen government financial support and promote continuous innovation in the advanced manufacturing industry.

At this stage, the cycle of transformation of scientific research results is getting shorter and shorter. If a scientific research result does not translate into productivity within the conversion cycle, its economic potential will quickly decline. The U.S. Advanced Manufacturing Research Center has integrated scientific research institutions, companies, and government resources, and has achieved seamless integration of research, development and application, and has promoted the industrialization of innovative results. At present, the conversion rate of scientific research in China is obviously low, only about 10%, lower than the average level of 40% in developed countries, and even lower than the level of 80% in the United States.In promoting the integration of production, education and research, "Made in China 2025" also made a useful attempt. A group of manufacturing innovation centers will be formed around the major common needs of the transformation and upgrading of key industries and the development of

new-generation information technology and other fields, focusing on industrial fundamentals and common key technologies for R&D and achievement industrialization. If you want to further research and solve the problems of science and technology in economic and industrial development, the government needs to build a modern industrial system, cultivate a series of strategic emerging industries, and develop modern service industries. This will promote the transfer and transformation of scientific and technological achievements and promote the leap in the high-end and value-added industries and products.

3.5.4 Promote the development of Advanced Manufacturing Clusters

Industrial clusters refer to the grouping of a group of interconnected companies, suppliers, associated industries, and specialized systems and associations within a specific area. Through this kind of regional agglomeration to form an effective market competition, we have constructed a set of specialized production factors to optimize agglomeration. Enable enterprises to share regional public facilities, market environment and external economy, reduce information exchange and logistics costs, and form regional agglomeration, scale, external and regional competitiveness. In close connection with the market orientation, government departments should give full play to their guiding role and guide the rational distribution of various industries with the industrial cluster development plan. Give full play to the guiding role of the government, attract advanced manufacturing companies at home and abroad to settle in, increase financial support for basic supporting facilities and advanced demonstration areas in industrial clusters, and take advantage of new financial financing platforms to promote the development of China's advanced manufacturing enterprises and gradually expand.

Promote the spatial concentration of advanced manufacturing enterprises in China. Combining with the promotion of urbanization, and in accordance with the functional requirements and comparative advantages of various regions, we will break administrative divisions, make overall planning and layout, optimize resource allocation, guide industrial agglomeration, and advance the rationalization of China's advanced manufacturing layout. Focusing on cultivating and supporting a group of leading enterprises to enable them to quickly scale up and create brands, and become the core of the development of advanced manufacturing clusters, thus enhancing the overall competitiveness of China's advanced manufacturing industry. It is necessary to strengthen planning and guidance, taking leading enterprises as the main body, relying on industrial agglomeration areas, and in accordance with the requirements of rational industrial division of labor, targetedly introduce large enterprises and develop core industrial clusters. Increase the degree of industrial agglomeration and promptly create a large group of companies to drive the further development of related companies.

3.6 Conclusion

With the continuous development of the manufacturing industry, advanced manufacturing industry has also been increasingly mentioned. While Wuhan's advanced manufacturing industry has a wide range of application prospects and huge market potential, it also ushered in unprecedented competitive pressures and challenges. . In recent years, although China has made great progress in its research on advanced manufacturing, it has made breakthroughs in key technologies, but it still lacks breakthroughs in the overall core technology. Although applications have spread across all walks of life, they are still large but not strong. Policy support centered on technological innovation, personnel training and enhanced competitiveness can fundamentally solve the impetus and vitality of advanced manufacturing. Therefore, our government should strengthen the support for Wuhan's advanced manufacturing industry, and promote the development of Wuhan's advanced manufacturing industry through policy support. Wuhan should combine its own characteristics to form its own distinctive development.

3.7   References

[1] Hong Jiang Yujie Du, Yihe Liu. Research on the Development Policy of Advanced Manufacturing at China and Abroad [J]. New Materials Industry, 2016(05):44-46.

[2] Feng Li. Research on innovation policy in the United States based on policy elements [D]. University of Electronic Science and Technology, 2016.

[3] Yang Pan, Ruyi Luo.The Enlightenment of Advanced Manufacturing Development Policies in Developed Countries to Hangzhou [J]. Hangzhou Science and Technology,2014 (05):56-60.

[4] Peng Lei.Research on Wuhan advanced manufacturing technology capacity improvement path [D]. Wuhan Textile University, 2013.

[5] Tao Zhang.Research on Manufacturing Industry Development Strategy in Wuhan [D]. Wuhan University of Technology, 2009.

[6] Jianfeng Chen.Analysis on the Restrictive Factors of Wuhan's Construction of Advanced Manufacturing Center in Central China [J]. Journal of Pingdingshan University, 2008(02):29-36.

4 Security Aspects of Cloud Computing

Buen BAJRAMI
University "Kadri Zeka" Gjilan, Kosovo

4.1   Abstract

Cloud Computing is a new growing technology. Its concept is different from the technologies that already exist. It is very flexible and offers online services depending on customer's requirements. Facilitates management and reduces the need for IT department across the company, as all services will be maintained by the cloud service provider. You will pay as much as you will use a service, unlike web hosts. There is a great and very fast development. Therefore, this has created disadvantages for companies that attach great importance to the aspect of data security. There are many companies who want to try this technology, but lack of information prevents them. Security is one of the main issues that hinder the rise of clouds. The idea of handing over important data to another company is worrying. Consumers should be vigilant about the risks of misuse of data. Through this document we will offer a detailed analysis of the security features the cloud offers. What can we improve for security? And the dangers we can afford and how we can avoid them.

Keywords: Cloud computing, services, security aspects, threats

4.2   Cloud Computing Security Threats

Cloud computing does not change much from personal computers of clients in terms of threats from viruses or other forms that aim at their damage. Namely, almost any kind of threat that could affect a computer or other device of a client may also affect cloud computing. In addition, cloud computing is even more threatened, as thousands of virtual machines work concurrently in configuration. And any damage directly affects. We are going to research for most of them.

Shared technology
Infrastructure sharing is an existence for IaaS suppliers. Disappointingly, the segments on which this infrastructure is based were not intended for that. To guarantee that clients don't intrude on each other's "zone", strong compartmentalization and monitoring is needed.

Data breaches
The risk of a data breach is not unique to cloud computing, but it consistently ranks as a top concern for cloud customers.

Human error
According to Jay Heiser, research vice president at Gartner, "Through 2020, 95% of cloud security failures will be the customer's fault."

Figure 1. *Human errors*

Data loss with no backup
An accident or catastrophe can lead to the permanent loss of customer data unless there are measures in place to back up that data.

Advanced persistent threats
Many advanced persistent threat groups not only target cloud environments but use public cloud services to conduct their attacks.

Insider threats
Insider threats to cloud security are also underestimated. Most employees are trustworthy, but a rogue cloud service employee has a lot of access that an outside cyber attacker would have to work much harder to acquire.

4.3   Conclusion

Cloud computing is a new technology that is growing steadily. The main problem with the rapid growth of cloud computing is data security and privacy issues. Reducing the cost of storing and processing data is a compulsory requirement of any organization, while data and information analysis is always the most important task in all decision-making organizations. So no organization will transfer its data or cloud information until trust is established between cloud service providers and users. There are many data protection techniques to achieve the highest level of data security in the cloud. However, there are still many gaps to be filled by making these techniques more effective. More work is needed in cloud computing to make it acceptable by cloud service users. This primary goal was to provide basic knowledge on cloud technology and also to study data security and privacy, focusing on the storage and use of cloud data for data protection in cloud computing environments to build trust among providers cloud services and users. We hope to heighten awareness about using cloud technology.

4.4   References

[F1] International Journal of Computer Applications (0975 –8887)

[F2] H Kim, H Lee, W Kim, YKim,2010. A Trust Evaluation Model for QoS Guarantee in Cloud Systems. In Proceedings of the International Journal of Grid and Distributed Computing.

[F3] T Mather, S Kumaraswamy, SLatif,2009. Cloud Security and Privacy: An Enterprise perspective of Risksand Compliance. O'Reilly Media, Inc.

[F4] F Lombardi, RPietro, 2011. Secure Virtualization for Cloud Computing.In ProceedingsoftheJournal of Network and Computer Applications. Academic Press Ltd. London, UK.

[F5] MLouw, V.N. Venkatakrishnan,2009. BluePrint: Robust Prevention of Cross-Site scriptingattacks for existing browsers. In Proceedings of the 30th IEEE Symposium on Security and Privacy.

[F6] Bowers, K. D., Juels, A., Oprea, A. Proofs of retrievability: theory and implementation Proceedings of the ACM Workshop on Cloud Computing Security (CCSW '09) November

[F7] Rakesh, D. H., Bhavsar, R. R., Thorve, A. S. Data security over cloud International Journal of Computer Applications

[F8] Delettre, C., Boudaoud, K., Riveill, M. Cloud computing, security and data concealment Proceedings of the 16th IEEE Symposium on Computers and Communications (ISCC '11) July 2011 Kerkyra, Greece

[F9] Rakesh, D. H., Bhavsar, R. R., Thorve, A. S. Data security over cloud International Journal of Computer Applications

[P1] https://journals.sagepub.com/doi/full/10.1155/2014/190903#_i18

[P2] https://azure.microsoft.com/en-us/overview/what-is-iaas/

[P3] https://www.techopedia.com/definition/10254/confidentiality

[P4] http://www.diva-portal.org/smash/get/diva2:950573/FULLTEXT01.pdf

[P5] https://www.synopsys.com/blogs/software-security/10-cloud-security-threats-2018/

[P6] https://www.tripwire.com/state-of-security/security-data-protection/cloud/top-cloud-security-threats/

[P7] https://www.getkisi.com/blog/7-tips-prevent-cloud-security-threats

5 Transcending Limitations: how Ireland's Economy Emerged

Amanda DELAMER
Solid-IT, Austria

5.1 Abstract

Emerging from the struggle that marked its birth as a small independent state a century ago, Ireland prospered to become one of Europe's economic success stories as the new millennium dawned. Benefitting from membership of the European Union over almost five decades until now and having attracted billions of euro in foreign direct investment, the country has been transformed from a largely agricultural society into a modern, high-technology economy thriving on a diversified world-wide export market. This paper highlights the determining factors that played a role in Ireland's overcoming various drawbacks, to thus become the flourishing and more resilient small open economy it is today. Having embraced digitalization and innovation as a foundation for its evolution, the country faces further inherent challenges to sustain its economic model, both with regard to domestic issues and in a more global setting. A closer look is taken at what the significant needs and priorities are that the Irish economy must now continue to address.

Keywords: Ireland, economy, EU, innovation, Celtic Tiger

5.2 Introduction

Ireland's geography and history have played important roles in defining the nation that was reborn a century ago. It is Europe's third largest island and is separated from Great Britain to the east by the narrow Irish Sea and from America to the west by the Atlantic Ocean. Often referred to as the Emerald Isle because of its lush green landscapes, it owes these to abundant moist air and a relatively temperate climate resulting from the warming currents of the Gulf Stream. The origins of Ireland's own culture and language are predominantly Celtic with later strong influences including the coming of Christianity, Viking invasions, Norman colonisation and English suppression.

Following centuries of British rule and struggles for independence, a political division and partitioning of the island of Ireland was formally implemented in 1922. The larger part of it is now officially referred to as the country *Ireland* (also called Éire or the Republic of Ireland), as shown in Fig.1. The remainder is *Northern Ireland*, which is a part of the UK (United Kingdom of Great Britain and Northern Ireland).

Expanding its largely agricultural economy to modernise and embrace new industries was a slow process for newly independent Ireland, due to various circumstances. Still one of the poorest countries in Western Europe at the start of the 1990s, with high levels of unemployment, inflation and emigration, the country then prospered to enjoy a period of rapid economic growth fuelled by foreign direct investment. The boom was curbed in 2007 with the bursting of an untenable property bubble, which led to severe economic recession and major fallout as the global financial crisis took hold. After benefitting from a substantial bailout deal, the Irish economy recovered by 2014 to resume growth at a robust pace that has been sustained. This paper outlines the development phases of the Irish economy, focussing on the major causes and effects that determined how in recent years it soared, to crash and then recover to thrive again.

Figure 1: *Aerial view of the island of Ireland*
(Source: satellite image from https://visibleearth.nasa.gov/)

5.3 A Timeline of the Modern Irish Economy

5.3.1 Early Years

When Ireland gained independence in the 1920s the economy was predominantly based on traditional agriculture with small farms that were often cost-ineffective. The financial situation was further weakened in the early turbulent years of the state, until greater political stability was achieved. In the 1930s, the new government embarked on a protectionist policy in economic dealings, introducing tariffs on a wide range of imported goods, primarily from the UK, the country's main trading partner. However, instead of nurturing native industries, this tactic led to economic isolation, stifling trade and prolonging widespread emigration. The constricting policy was reversed from 1960 and Ireland slowly embraced the industrial world, to progressively become an open economy [1].

To help stimulate the economy, the Industrial Development Authority (IDA) Ireland was established as a national agency responsible for the attraction and retention of vital inward foreign direct investment (FDI). It sought out innovative modern industries and promoted Ireland as a location to investors from abroad. These stood to benefit from the attractions of both the availability of plentiful English-speaking labour at a relatively low-cost as well as full exemption, at that time, from corporation tax on all profits from exports. The IDA concentrated on companies that represented the future, displaying high technology, high output and high skills. Main targets included the computer industry, pharmaceuticals and medical technology followed by international services. In the decades that followed, the proposals on offer proved to be of greatest interest to multinationals from the US. Pfizer, which established its first plant in 1969, was one of over 350 overseas companies that had set up in Ireland by 1970. Today, it still is the country's leading investor and employer in the pharmaceutical sector [2].

5.3.2 EU Membership

Adjusting to becoming a more open market took time but better prepared Ireland for a major milestone in 1973, namely joining the European Economic Community, now known as the European Union (EU). Becoming part of the EU's Single Market made it easier for Irish businesses to trade on both European and international markets, reducing an excessive commercial reliance on the UK and a dependence on it as a gateway to the continent of Europe. At that time Ireland's economy was still highly dependent on agriculture with almost a

quarter (24%) of the working population employed in the sector [3]. Support received from the Common Agricultural Policy (CAP), the Structural Funds and the Cohesion Fund benefitted Ireland, both in social and in economic terms. These shared EU funds aim to help reduce regional disparities in income, wealth and opportunities among Member States. While emerging as an economy and before the state transitioned to becoming a net contributor, Ireland's total net gain from EU budgets from 1976 on was €44.6 bn [4, 5]. Investments helped to strengthen the sustainability of agriculture, to modernise agri-food industries, support major road and railway infrastructure projects, improve education standards and tackle chronic youth unemployment [6].

5.3.3 The Celtic Tiger and its Origins

Despite considerable boosts, underlying economic problems in Ireland of the 1970s persisted into the next decade. This coincided with a severe global economic recession in the early 1980s as well as a prolongation of the shadow cast over Ireland by ongoing violence in neighbouring Northern Ireland. Ensuing economic decline brought the return of high unemployment, a renewed rise in emigration and steady worsening of the public finances until the government ultimately succeeded in restructuring state bodies and tax regimes to resolve the budgetary crises. While cutting back on spending, the government took steps to promote business investment. A notable example was the adoption of a proposal to create the International Financial Services Centre (IFSC) in the old Docklands area of Dublin. The successful development of the IFSC and its on-going expansion are evidence of the strength of the well-established co-operation between business interests and all parts of the Irish state system [7]. The EU granted a temporary waiver of State-aid rules, which ensure fair trading and competition among the EU-28, to allow Ireland a reduced rate of 10% taxation in this special economic zone until the agreement was phased out between 1996 and 1998. Ireland subsequently reduced its standard corporate-tax rate from 40% to 12.5%, making it one of the lowest in the EU [8]. With the added advantages of being the only English-speaking nation in the euro area and offering the availability of a young, highly-educated workforce, Ireland's transformation to become a knowledge-based economy was accelerated.
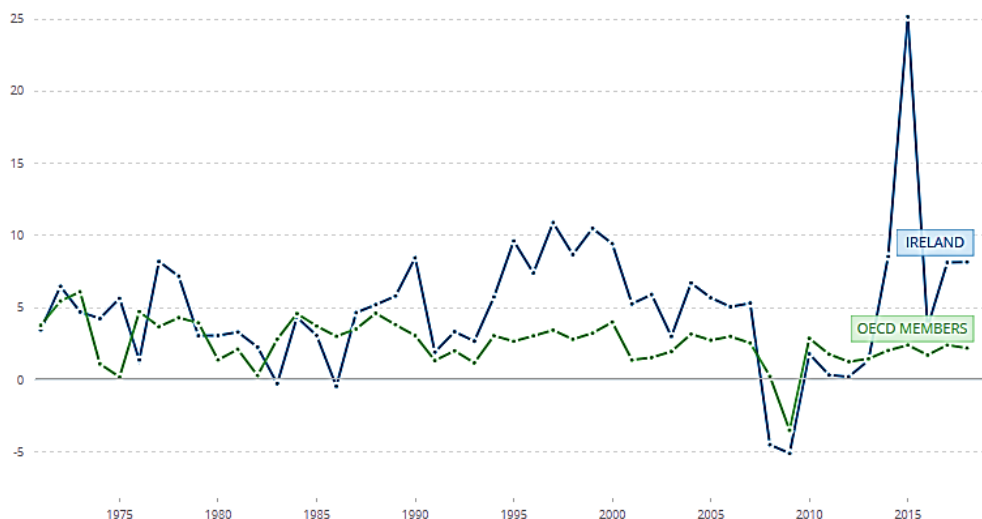
Figure 2: GDP growth (annual %) Ireland and OECD-average
(Source: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=IE-OE)

Real national income per capita rose from less than 65% of the EU average to achieve rough parity by the end of the 1990s. Unemployment tumbled at a rate without precedent in Irish history from a high of 17% in 1987 to less than 4% in the early years of the new millennium. Numbers at work expanded by more than 50%. The peace dividend of the Good Friday

Agreement signed in 1998 in Northern Ireland began to pay off, encouraging new synergy in various sectors between both parts of the island. [9]

Fig. 2 indicates the period of rapid economic expansion in the mid-1990s to the mid-2000s, which earned Ireland's economy of the time the name of the Celtic Tiger[9], and compares it to the OECD[10] average. From 1995 to 2000, Gross Domestic Product (GDP) growth rate was a record almost 10% annually; it then slowed to about half of that from 2001 to 2007 [10]. During this growth period, the Irish GDP per capita rose dramatically to equal, then eventually surpass, that of all but one state in Western Europe. The exceptional GDP-growth spike of 2015 in Ireland is discussed in more detail in the section 'Recovery since 2014' below.

Over time more than a thousand FDI giants, mostly American global companies, made Ireland the hub of their European operations, including names such as Google, HP, Apple, IBM, Facebook, PayPal, Microsoft, Yahoo, eBay, AOL, Twitter and Intel. Benefitting from the presence of a high concentration of these multinational corporations relative to the size of its domestic market, Ireland ultimately became the world leading exporter of ICT[11] services providing up to 14% of services worldwide in recent years [11].

The growing success of the economy, fuelled by FDI, encouraged entrepreneurship countrywide, allowing people to embrace change and try things differently. An innate openness enhanced a certain ease of doing business and a readiness to engage when opportunities did arise, to release the potential of the Irish economy. Whether in smaller undertakings or with a new business model for an existing industry, innovation was nurtured at all levels. Success stories emerged, like Ryanair pioneering no-frills, cut-price air travel within Europe to carry 800 000 passengers annually 25 years ago and over 140 million now. [12]

5.3.4   Collapse and Bailout

By 2001, the benefits of new jobs created by intensive foreign investment had begun to slow. Still focussed on high growth, Ireland's political leadership and its banking sector turned to the mortgage and construction industries to maintain momentum, causing housing prices to double from 2000 to 2006. Prices continued to soar as tax incentives and laissez-faire lending regulations allowed a massive property bubble to form. The boom ran out of steam in 2007, the building industry collapsed and the country fell into a recession in the wake of the global financial crisis of 2008. The Irish government fatefully guaranteed the liabilities of the country's six major banks for two years until September 2010 and pumped massive sums into the failing sector. As the financial crisis took hold, there was the human toll of a surge in emigration, unemployment that soared to 15% by 2012 and crippling mortgages on negative equity [13].

In late 2010, an international bailout loan of €67.5 bn was negotiated with the EU and the International Monetary Fund (IMF). Ireland's own resources contributed a further €17.5 bn to the Programme through the treasury cash buffer and investments from the national pension reserve funds. This financing, coupled with very strict austerity measures and restructuring, rescued Ireland and allowed the economy to recover at a remarkable pace. The GDP growth rate had rebounded to 4.8% by 2014, by which time the bailout scheme had been exited [14].

5.3.5   Recovery since 2014

The strong recovery of the economy continued and confidence in it grew again. The construction industry began to expand once more and the banks benefitted from a robust, more fit-for-purpose, regulatory framework. A new tax relief in 2015 led to a rush of multinationals transferring Intellectual Property (IP) assets to Ireland. To capitalise on a minimal tax rate, Apple adjusted its accounting procedures to run all European sales through its Irish

---

[9] UK economist Kevin Gardiner, head of global equity strategy at the investment banking unit of global bank HSBC, coined the term Celtic Tiger in 1994, comparing Ireland's economic take-off to the Asian tiger economies.
[10] The Organisation for Economic Co-operation and Development (OECD) has 35 member states worldwide
[11] ICT services include information, computer and telecommunications

office. This distorted the country's official statistics to produce an annual increase in GDP of 26% (cf. Fig.2). Following State-aid investigations by the European Commission (EC) concerning the tax-ruling practices of Member States, Apple was ordered in this case to pay €13 bn in arrears [15]. Appeals are still pending but the tax loophole was duly closed. The Central Bank of Ireland has since recommended the use of modified Gross National Income (GNI*)[12], which is adjusted and excludes the profits that foreign firms remit back to their own countries, as an arguably more meaningful instrument for economic surveillance in Ireland. In 2018, Ireland's real GDP grew by 6.7% to reach an annual total of €312 bn. A breakdown of the percentage per sector for the economy is detailed in Fig. 3. GNI* in 2018 was estimated at €197.5 bn [16].
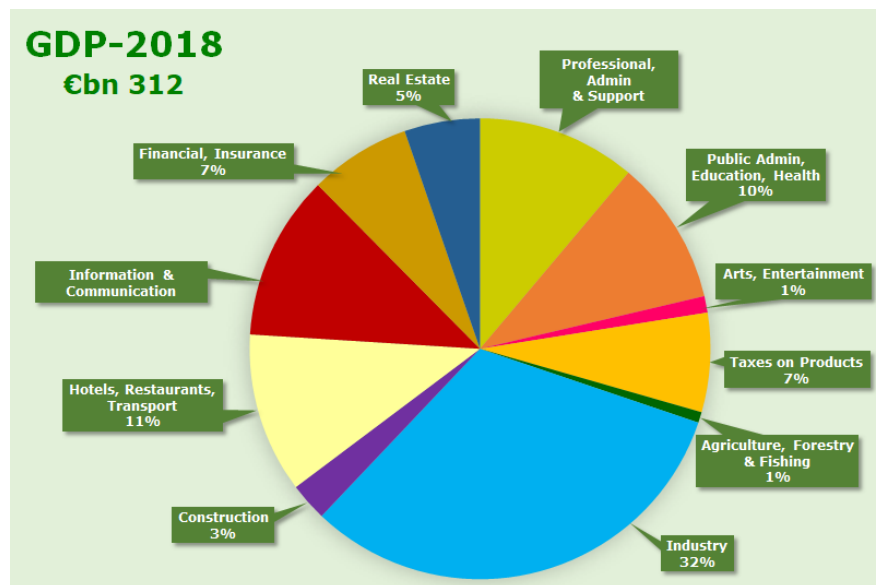
Figure 3: Breakdown of Ireland's GDP in 2018
(Source: data from Central Statistics Office, https://www.cso.ie/)

5.4 Prosperity and Population Correlation
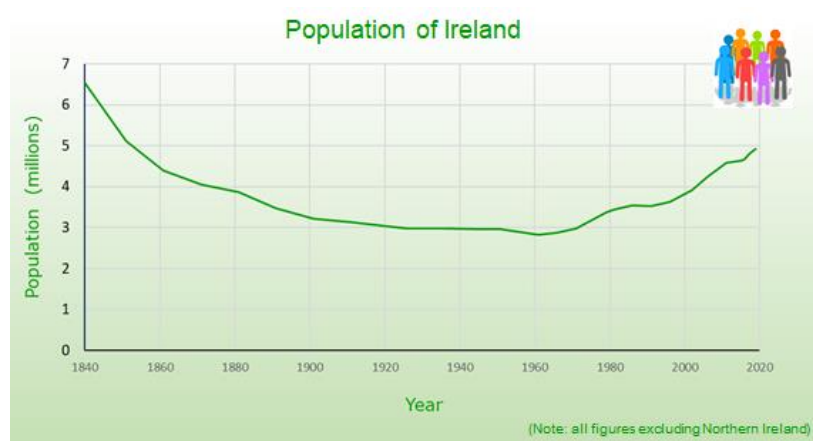
Figure 4: Progression of the population of Ireland
(Source: Central Statistics Office data, https://www.cso.ie/en/census/censusthroughhistory/)

---

[12] Modified GNI (GNI*) is an indicator that was recommended by the Economic Statistics Review Group in 2016. It is designed to exclude globalisation effects, which are disproportionally impacting the measurement of the size of the Irish economy without being considered relevant in explaining the resources available to the domestic population.

A correlation between economic progress and population levels in the longer term in Ireland is clearly shown in Fig.4. In the wake of a devastating famine in the mid-19th century the population of 6.5 million people[13] fell dramatically. It continued to decrease for over a century as many were forced to emigrate in search of employment prospects elsewhere, most typically in the UK or the US. Despite high birth rates, a population low of close to 2.8 million was reached in 1961 [17]. Thereafter, as the economy improved, numbers had by 1986 increased again by 25%. The depressed conditions in the 1980s reversed the growth trend once more, due to a gross emigration in that decade of some 450 000 people from a total population of approximately 3.5 million [18]. This was a disheartening drain of human capital.

During the prosperous Celtic Tiger years, the population rose again steadily. To meet labour demands, a phenomenon new to Ireland developed: significant immigration, comprising both returning Irish and an inflow of non-nationals. Today's population of 4.9 million includes over 12% non-Irish residents, mainly from the UK and other EU countries. Studies show Ireland to be the EU-28's most youthful country and to have the largest proportion of children aged 0-14 years. In 2016, some 39.5% of the population was aged 0-29 years, the EU average being 33%. The workforce currently available in Ireland is well-educated with more than half of those aged 24-34 years having third-level qualifications. [19,20]

5.5   Challenges to the Economy

Notable challenges to the economy remain. Government efforts are concentrated in: transitioning to a low-carbon economy, augmenting productivity, increasing labour-force participation, enhancing skills and improving both the health services and the supply of housing [21]. Despite progress, the homelessness rate since the recession continues to rise with some households experiencing poverty and social exclusion. The paralysis of the construction industry over several years, while the population continued to increase, gave rise to excess demand for accommodation in large cities and a resulting housing crisis, especially in Dublin. Among major European cities, average rents there are second only to London [22].

Brexit looming on the horizon leaves Ireland deeply concerned, especially for the agri-food export industry, where additional tariffs or certificates may become necessary to continue trading with the UK. A hard EU border to Northern Ireland would damage mutual trade benefits across many sectors and could compromise the peace agreement implemented there. The threatened no-deal scenario would be highly disruptive, although the Irish government's extensive preparedness and contingency efforts should help mitigate negative effects [23]. Recent observations and studies suggest that the Irish economy, while continuing to grow strongly, has already absorbed some of Brexit's adverse impact over the last three years [24]. Furthermore, a significant overhang of public debt remains since the crash and bailout years. A prudent approach to managing the public finances will continue to be required, to reduce public indebtedness to lower and safer levels, particularly given the degree of integration into the globalized economy and susceptibility to fluctuations there.

5.6   Conclusions

In embracing technological and other transformational change, the economy of Ireland has demonstrated itself to be resilient, innovative, and globally connected. It has thus emerged to find its own unique position within the greater union of Europe, as a small but open and export-oriented economy. These same assets also make for vulnerability, due to a dependency on FDI, international trade and influences of global markets. After some hard lessons learned, the appropriate fiscal policies implemented over recent years have placed Ireland in a stronger position to better weather current challenges and to continue to reduce the significant debt burden acquired during the financial crisis of a decade ago. Prospects for the Irish economy

---

[13] Figure does not include the population of today's Northern Ireland

are good today, although clouded with some uncertainty, particularly concerning Brexit. Paradoxically, risks associated with that schism may also represent opportunities in the future for a country that has proven adept at transcending limitations and expectations.

5.7   References

[1] Bradley, John. "The history of economic development in Ireland, North and South." Proceedings-British Academy, vol. 98, pp. 35-68. Oxford University Press Inc., 1999. https://www.thebritishacademy.ac.uk/sites/default/files/98p035.pdf, accessed 29th August 2019

[2] Industrial Development Authority (IDA) Ireland, https://www.idaireland.com/about-ida/history, accessed 29th Aug 2019

[3] European Commission, https://ec.europa.eu/ireland/about-us/impact-of-EU-membership-on-Ireland_en, accessed 29th August 2019

[4] European Commission, Impact of EU membership on Ireland, https://ec.europa.eu/ireland/about-us/impact-of-EU-membership-on-Ireland_en, accessed 29th August 2019

[5] Enterprise Ireland, Horizon 2020, http://www.horizon2020.ie/ireland-still-a-net-contribution-to-eu-funds/ accessed 29th August 2019

[6] European Commission, Common Agricultural Policy – Ireland, https://ec.europa.eu/info/sites/info/files/food- farming-fisheries/by_country/documents/cap-in-your-country-ie_en.pdf accessed 29th August 2019

[7] Dorgan, Sean. "How Ireland became the Celtic tiger." Heritage Foundation, Issues, June 23 (2006).

[8] Walsh, Aidan, and Chris Sanger. "The historical development and international context of the Irish corporate tax system." A report commissioned by the Irish Department of Finance, EY (2014).

[9] Berry, Frank. "Irish economic development over three decades of EU membership." Czech Journal of Economics and Finance (Finance a uver) 53.9-10 (2003): 394-412

[10] International Monetary Fund, https://www.imf.org/en/Countries/IRL, accessed 29th August 2019

[11] OECD (2017), OECD Digital Economy Outlook 2017: 127-8. (OECD Publishing, Paris). http://dx.doi.org/10.1787/9789264276284-en, accessed 29th August 2019

[12] McWilliams, David. "Renaissance Nation: How the Pope's Children Rewrote the Rules for Ireland." Gill & Macmillan Ltd (2018).

[13] International Monetary Fund, https://www.imf.org/en/Countries/IRL/ireland-lending-case-study, accessed 29th August 2019

[14] European Commission, Ireland's Economic Future: an EU perspective (2016) https://ec.europa.eu/ireland/sites/ireland/files/irelands_economic_future_-_an_eu_perspective_final_for_web.pdf, accessed 29th August 2019

[15] https://ec.europa.eu/ireland/news/é-cinneadh-aontais-eorpaigh-nach-mór-do-apple-€13-billiún-aisíoc-le-héirinn_en, accessed 29th August 2019

[16] https://www.cso.ie/en/releasesandpublications/ep/p-nie/nie2018/mgni/, accessed 29th Aug. 2019

[17] Central Statistics Office, Census through History, https://www.cso.ie/en/census/censusthroughhistory/, accessed 29th August 2019

[18] Hayes, Treasa, and Ruth BT Mattimoe. "A Historical Profile of the Irish Economy and Irish Government Economic Policies with regard to the Enterprise Sector." (2002): 79-108.

[19] European Commission, https://ec.europa.eu/eurostat/statistics-explained/index.php/Being_young_in_Europe_today_-hdemographic_trends#Past.2C_present_and_future_demographic_developments_of_children_and_young_people, accessed 29th August 2019

[20] Central Statistics Office, Population and Migration Estimates. https://www.cso.ie/en/statistics/population/populationandmigrationestimates/, accessed 26th April 2019

[21] https://dbei.gov.ie/en/What-We-Do/Business-Sectoral-Initiatives/Future-Jobs/#, accessed 29th August 2019

[22] https://ec.europa.eu/eurostat/documents/6939681/7243182/Booklet_2019_rents_2018_e_DRAFT.pdf/1321ca38-8039-4f95-aade-434e9550462e, accessed 29th August 2019

[23] https://www.dfa.ie/brexit/getting-ireland-brexit-ready/governmentcontingencyactionplan/ Brexit Contingency Action Plan, Publication of Brexit Contingency Action Plan Update, 29th Aug. 2019

[24] McQuinn, K., O'Toole, C., Matthew Allen-Coghlan and Economides, P., 2019. Quarterly Economic Commentary, Summer 2019. ESRI Forecasting Series.

6 DigiCulture: The Impact of Digital Competences on Creative Industries

Diana ANDONE

Politehnica University Timisoara, Romania

6.1 Abstract

The shortage of digital skills in Europe reported in 2016 in "European Digital Progress Report EDPR" of the European Commission: 45% of Europeans have insufficient or no digital skills. Based on the Digital Economy and Society Index (DESI) index of 2017 there are big differences between the countries that are partners in this project. Denmark has one of the most advanced digital economies in the EU, while Lithuania and Austria are in the middle, but Romania and Italy have the lowest scores on the DESI. Studies performed by authors in the cultural and creative industries, in the last 3 years in different countries showed a large majority scoring lower or basic level for the 21 digital competences. The usage of web, mobile, social and analytical tools is permeating the length and breadth of the culture, creative industries, areas which until recently have been reluctant to embrace the use of the new technologies. Eurostat 2017 identifies young adults from the creative industries as the most at risk for unemployment from the 22-36 years old, and lack of entrepreneurial and digital skills.

We aim to create a sustainable and efficient open education program - DigiCulture - dedicated to adult learners with low digital skills and low-qualified adults involved in the creative industries sector. This paper analyses the need for such an educational program and presents the instructional modelling for an open, online and blended learning, training program based on a Massive Open Online Course model and the UniCampus virtual environment. The modelling takes into consideration the existing UniCampus, which is further developed in order to integrate the requirements of low digital skills adults, Open Education, e-assessment and a mobile environment. The DigiCulture educational program will be fully integrated in the UniCampus as an online component, a blended learning model and easy-to-access features in the mobile app.

Keywords: digital skills, MOOC, blended learning, virtual learning, creative industries, adult training.

6.2 Introduction

"Digital Culture - Improving the Digital Competences and Social Inclusion of Adults in Creative Industries" is a EU funded project under the Erasmus+ Strategic Partnerships scheme. The project aims to create a sustainable and efficient education program dedicated to adult learners with low digital skills and low-qualified adults involved in the creative industries sector from Romania, Italy, Austria, Denmark, Lithuania, UK and Ireland. The main outcomes include the Digital Skills and Social Inclusion for Creative Industries MOOC Courses available online and through blended learning, the Integrated Virtual Learning Hub including an innovative mobile app aimed at low-skilled and at-risk adults, the Digital Skills e-assessment tool and Open Badges for Digital Skills. Together they will provide important new opportunities for low-skilled adults to access knowledge, gain new digital skills and inter-cultural competences and improve their chances of finding employment or performing better in their current employment. The project addresses a gap in creative industries (CI) education, where there is low emphasis on the use of new digital technologies, entrepreneurship (project management) and both recent graduates and existing employees lack important skills.

The shortage of digital skills in Europe reported in 2016 in "European Digital Progress Report EDPR" of European Commission: 45% of Europeans have insufficient or no digital skills. Based

on the Digital Economy and Society Index (DESI) index of 2017 there are big differences between the countries that are partners in this project. Denmark has one of the most advanced digital economies in the EU, while Lithuania and Austria are in the middle, but Romania and Italy have the lowest scores on the DESI. Studies performed in the cultural and creative industries, in the autumn of 2016, 2017 in partner countries showed a large majority scoring lower or basic level for the 21 digital competences. The reasons driving this skills shortage are not hard to identify. The usage of web, mobile, social and analytical tools is permeating the length and breadth of the culture, creative industries, areas which until recently have been reluctant to embrace the use of the new technologies. Eurostat 2017 identifies young adults from the CI as the most at risk for unemployment from the 22-36 yo, and lack of entrepreneurial and digital skills.

The OECD's Survey of Adult Skills (2013/14) supported by the Commission's DG Education and Culture is a survey conducted in 40 countries measuring the key cognitive and workplace skills needed for individuals to participate in society and for economies to prosper: literacy, numeracy, and problem solving in technology-rich environments. It found that 25% of adults of the EU lack the skills to use ICT effectively. This has direct consequences for the Europe 2020 strategy (Education at a Glance, 2016 edition) overall and for individual countries as digital literacy is now an important factor in economic competitiveness.

'New Skills Agenda for Europe' (EU, 2016) lists critical thinking, problem solving and digital competences as core issues, and all are central to this project proposal. These skills are keys to allowing people to access good-quality jobs and fulfil their potential as confident, active citizens. Digital competence is a Key Competence for Lifelong Learning. Content creation is a dimension of the European Digital Competence Framework for Citizens. In recent years the EC DG Employment, Social Affairs and Inclusion and JRC-IPTS have developed the Digital Competence framework (DigComp) (Vorikari, Punie, 2016). DigComp 2.0 (2016) advocates confident, critical and creative use of ICT to achieve goals related to work, employability, learning, leisure, inclusion and participation in society.

The DigComp 2.0 framework describes digital competences and groups them into five areas: Information and data literacy, Communication and collaboration, Digital content creation, Safety and Problem solving. The DigComp Conceptual Reference Model that includes 21 competences:
1. Information (1.1 Browsing, searching and filtering information, 1.2 Evaluating Information, 1.3 Storing and retrieving information)
2. Communication (2.1 Interacting through technologies, 2.2 Sharing information and content, 2.3 Engaging in online citizenship, 2.4 Collaborating through digital channels, 2.5 Netiquette, 2.6 Managing digital identity)
3. Content creation (3.1 Developing content, 3.2 Integrating and re-elaborating, 3.3 Copyright and Licences, 3.4 Programming)
4. Safety (4.1 Protecting devices, 4.2 Protecting personal data, 4.3 Protecting health, 4.4 Protecting the environment)
5. Problem solving (5.1 Solving technical problems, 5.2 Identifying needs and technological responses, 5.3 Innovating and creatively using technology, 5.4 Identifying digital competence gaps).

Today, being digitally competent means having competences in each of these five areas, which have also been included in the EuroPass CV since 2015. These were the starting points in the rationale for this project as well as the wider need for adult education to improve digital skills.

6.3 DigiCulture Project Objectives

The DigiCulture - Improving the Digital Competences and Social Inclusion of Adults in Creative Industries project aims to create a sustainable and efficient education program dedicated to adult learners with low skills in the creative industries from Romania, Italy, Austria, Denmark,

Lithuania, UK and Ireland. The project focus on openness and inclusive in education. It involves the use and development of an open online and mobile course Digital Skills and Social Inclusion for Creative Industries, built as a Massive Open Online Course (MOOC), an innovative adult educational program of 13 modules available in English, Romanian, German, Italian, Lithuanian, Danish and Gaelic, integrating new Open Education Resources (OER) and accessible to people with limited digital skills. The diverse partnership reunites adult education centers from technical universities, art and humanities universities, SMEs with expertise in eLearning and in art, professionals in eLearning associations and associations for European Capital of Culture 2020 and 2021, involved as partners and associates.

The project targets young adults who are unemployed, staff and volunteers of European Capitals of Culture, creative industries adults with low digital skills, at levels of seniority, experience or level of craft, actors in traditional skills activities, museums, media, architecture, humanities. Many cultural actors are not attached to any formal institution, being freelancers, members of disadvantaged groups (unemployed, with mental health problems, disabilities or economically challenged) or from minority groups. Gaining digital skills will improve their career opportunities by providing access to new marketing tools, new distribution markets through Internet access and ecommerce, and adding the possibility of new forms of digital expression to their work.

The Objectives of DigiCulture are:
1. To enhance awareness of the need for training in digital skills for the creative industries
2. To design and validate cross-country Guidelines for Digital Competences for Creative Industries
3. To create an Integrated Virtual Learning Hub as an online and mobile
4. To design, develop and deliver a Digital Skills and Social Inclusion for Creative Industries Course, OER translated into all partners' languages, delivered as a mix of blended learning course and, a fully online MOOC type course for the target group
5. To improve the achievement and recognition of digital skills through formal and informal learning by introducing Digital Skills e-assessment and Open Badges for adult education in CI
6. To provide engaging and effective learning experiences in the Digital Skills for CI course
7. To enhance collaboration between education providers, universities, cultural and heritage institutions and associations, cultural actors, workers and volunteers
8. To provide evidence about how achievement, assessment and validation of digital skills contributes to the uptake of new skills in creative industries

6.4 Conceptual Guidelines for Digital Competences for Culture

The concept of Digital Competences and Skills are very important within European educational policies. As already stated, recent definitions of Digital Competences and skills are provided in DigComp 2.0 (based on DigComp2.0: The Digital Competence Framework for Citizens Report (Vorikari, Punie, 2016) by JRC Science). The five competence areas (information and data literacy, communication and collaboration, digital content creation, safety and problem solving) that are broken down into 21 digital competences will be investigated during the DigiCulture project, by producing a Conceptual Guideline.

This guideline will seek to identify:
1. which of the 21 competences are more relevant to the cultural and heritage sector,
2. which skills are needed at different work levels and in different cultural areas,
3. how the skills can be gained through an online MOOC course or a blended learning course,
4. how open education methodology can be applied to this sector,

5. how can Open Badges contribute to improving and validating the digital skills of cultural and heritage actors,
6. what considerations need to be taken into account for both cultural and heritage actors and higher education institutions training for these skills,
7. what are the most promising pedagogical and technology-enhanced learning concepts, approaches and methods in achieving better digital skills for cultural and heritage actors,
8. How MOOC-type courses can improve digital skills,
9. how these guidelines can be transferred to other sectors such as tourism.

Massive Open Online Courses (MOOCs) have experienced a rapid take-up by students and educators, involving a large number of users. MOOCs are an integral part and one of the most exciting related products of the Open Educational Resources (OERs) phenomenon, instruments that are playing an ever-growing role in many countries' educational policies. The great diffusion of such free courses raised, after the initial experiences, a series of critics (Daniel 2012, Dillahunt et al. 2014, Hollands & Tirthali 2014, Rohs & Ganz 2015, Schuwer er al. 2015). These were mainly directed at the following issues: dropout rates, low participation from Third Countries, lack of pedagogic rigour in the design of MOOCs together with a lack of quality criteria (Stracke, 2014). Despite all this, thanks to their dissemination and ease of use, MOOCs can become an excellent tool for the promotion of abilities and competences connected to the world of work, of lifelong and autonomous learning.

For many years now, cultural institutions and museums have been interested in the promotion of artistic and cultural heritage by means of the new forms of technology, mainly in the field of distance and digital learning. Through the use of MOOCs, cultural and heritage adult education has the opportunity to broaden the areas of integration for new technologies, while, at the same time, developing new teaching techniques for different users. In 2013, the New York Museum of Modern Art (MoMA), created a MOOC addressed to museum operators and educators. Over the first four weeks, it was able to reach 17,000 users from all over the world (Mazzola, 2013). In 2015, the University of Leicester initiated the "Behind the scenes at the 21st Century Museum" MOOC, probably the first example of an accessible online course, created with the support of National Museum Liverpool. The project underlined the importance of shared management among museums and Universities in the planning and implementation of the MOOCs. Such methodology significantly improved the quality of the proposed contents and, in a broader sense, also museum and academic didactics (Parry et al., 2016).

The aim of integrating digital resources and opportunities in education (especially in the field of cultural and heritage) has to be seen in the light of 21st century learning. In their work titled "21st Century Skills: Learning for Life in Our Times" (2009), Trilling and Fadel create a framework of transversal skills necessary to prepare society for the complex realities of the 21st century. The skills - critical thinking, creativity, communication and collaboration, or the 4 C's – are particularly relevant to the cultural and heritage sector as the sector is an ideal vehicle to integrate the 4Cs in education. Through education about culture and heritage, adult learners are encouraged to think out of the box, which stimulates creativity. Moreover, cultural and heritage education is often done in collaboration, for instance when learners perform together or prepare a common presentation.

6.5 Conceptual Framework for Digital Competences for Culture and Heritage

This project output addresses pending issues related to innovation and integration of digital resources and opportunities in cultural and heritage education and serves as a theoretical basis for the partnership, both during the project and for the continuation afterwards.

Elements of the framework (non-exhaustive):
- Possibilities offered by cultural and heritage education for the enhancement of twenty-first century learning skills

- Potential role of digital competences and resources in cultural and heritage adult education, within the context of twenty-first century learning
- Pending research questions on digital resources and methods in cultural and heritage education. The pilot phase and the subsequent evaluation will contribute to the formulation of answers to these questions.
- Overview of the state of the art of research about digital competences for cultural and heritage sector.

Given these questions, the framework is also relevant to external parties performing research on digital integration and innovation in education, cultural and heritage education and 21st century learning. Desk research for the creation of the framework will be conducted at the beginning by all partners involved and will consist of:
- Creating a list of articles and materials, related to 21st century learning, the use of (innovative) digital resources in adult education, cultural and heritage education, that are relevant for other partners in order to be well-prepared for the next phases of the project.
- Gathering and formulating these questions, preparing presentations about specific themes for the first transnational project meeting and studying the suggested articles and materials.
- Internal discussion at management level about issues and questions relevant to include in the framework, given the long-term strategy of the organization.

6.6   Integrated Virtual Learning Hub - Online and Mobile MOOC Platform

In 2014, the Politehnica University of Timisoara took the initiative to create and offer the first Romanian MOOC. The initiative goes under the name of UniCampus and is intended to be an independent platform used by several Romanian universities. At the moment, UniCampus is offered only in the Romanian language, with courses based on open educational resources and with no tutor support. The platform is not yet adapted to the mobile environment and has a fairly low level of interaction. It currently offers no credentials or open badges integration.

This project output is dedicated to the adaptation, further implementation as a whole unit and performance of usability testing on an integrated online and mobile virtual learning hub for developing digital competences in the culture and heritage sector using Open Educational Resources (OERs), Tools and Practices. This development will be based on the Romanian MOOC platform UniCampus, which will host the course for the project duration and beyond. The course in each partner language will also be able to be integrated into other online platforms (of partner universities) as communication between the platforms will be assured by the Single Sign-on web protocol and the development implies standardised SCORM features. The technical conception and the architecture of the integrated online and mobile platform will incorporate the core components or services as described in the conceptual guidelines.

Digital Skills for Culture Course - a MOOC based structure to include course materials developed during the project as well as User Generated Content, Open Educational Resources and other forms of Open Content as cultural and heritage examples and study cases; Open Learning Activities, peer-to-peer activities, virtual/blended learning

Digital Skills E-Assessment - different forms of digital self-assessment including digital evidence (such as testimonials, digital assets, e-portfolios) applied as elements of formal and informal learning and supporting distributed assessment, Digital Skills for Culture Badges - digital recognition of the skills gained based on current concepts such as Open Badges,

Digital Skills for Culture Data - an online database of the incorporated users, with integrated learning analytics features which will provide real-time information to improve student retention, prevent dropout and better understand the achievement of the desired competencies by the learners,

Digital Skills for Culture Mobile - a mobile application interface for accessing and interacting with the Digital Skills for Culture Course, which will also allow learners to save locally on their mobile phones small snippets of information or knowledge in order to have them at hand for use when needed in their real-life activities as cultural actors.

The development of a Virtual Learning Hub (VLH) will need to focus furthermore on the development of a responsive interoperable interface, with simple features adapted to low digital skills adults, implementation of social software, integration of tools for mobile learning, development of a common working space, inclusion of adaptable and semantic features and learning analytics, integrated self-assessment, validation of open digital credentials, and mobile access to course and personalised information.

The VLH development will imply an interdisciplinary approach from web technologies, mobile technologies, Web 2.0, interactive media and audio-video technologies, open access and tools from semantic technology. It will exist in all partners' languages (EN, RO, DE, IT, LT, DK) with a possible extension to other languages which will allow communication at European, national and regional levels.

The VLH is an innovative multilingual ICT-based environment to promote collaborative learning using connectivist social networking as an instructional method, OERs as the main content, and open digital credentials as recognition and validation of digital skills which can be applied to all ages, genders, cultural backgrounds and levels of digital education in order to promote social inclusion at a digital level. Development of the VLH will respect the W3C Consortium Web Content Accessibility Guidelines (WCAG) 2.0 which ensures ease of use for people with disabilities. Both the user-friendly interface and the mobile interface will encourage all users to access the VLH, engage in a variety of open learning activities, connect with other cultural actors and develop their own digital skills.

6.7   The Digital Skills for Culture Online Course (DSC)

The training program Digital Skills for Culture will be developed as an online course with integrated MOOC and OER tools, resources and solutions, translated into all partners' languages, and designed specialy for low digital skills adults. This project output will be based on the results from the studies and implemented in the VLH. It will be delivering the knowledge to integrate the credentials and will be interdependent with the pilot. It will be validated by the evaluation. This is the core output of the project.

Digital Skills for Culture Course is designed based on Conole's 7Cs Framework of Learning Design, using innovative methods such as the MOOC Design Canvas (Alario-Hoyos, 2014), "Learning through Design" (Bartoletti, 2016). Principles will include "sMOOC Step by Step", but will also take into consideration quality standards (Quality Assurance Subjects Benchmark Statements and the framework of European Cooperation on Adult Learning Policy and the Quality Assurance in Non- Formal Adult Education (Epale report, 2016) and national regulations regarding adult education) - as a free Massive Open Online Course – MOOC based on Open Educational Resources (OER).

The course will promote an innovative approach that will include several methods of learning design, familiar to the university partners who all have experience in online course design, in MOOCs development and in providing support in blended learning. We expect that this course will have an impact at different levels on the learners - as well as improving their digital skills, it will introduce adult learners to self-regulated learning by rethinking the assessment process. By scaffolding their further development, it will also increase the success rate for cultural actors from vulnerable socio-economic classes (who can have better access to know-how).

The design team composed of project partners will encourage the exploration of various teaching and learning models and leverage digital tools to create an adapted and personalised learning experience for adults, supporting networked learning and reflection. The new principles, which will be implemented in ICT courses designed for continuing education will

include: new course materials using simple terminology, multimedia examples, interactive online activities, real-life problem-based exercises, building e-portfolios, e-assessment and peer-to-peer assessment, reflection in blogs, but will also be using existing OERs and examples provided by the cultural institutions partners or associated partners in the project. The course will encourage collaborative learning by including discussion forums, wikis and teamwork activities which will be enhanced in the blended-learning piloting phase. The MOOC will provide learners with a clear course map, with milestones and "must do's", and a schedule with tasks, assignments and deadlines. This will increase the perception of learners as active participants in the course, will improve their engagement in order to avoid drop-out and will empower them to become independent learners.

The MOOC course will be fully integrated in the Virtual Learning Hub with an online component on UniCampus and easy-to-access features in the mobile app. Successful courses require careful planning and continual revision. It is important to define successful strategies and collect feedbacks from learners taking the course. Course planning is a continual process in which all the steps above are strongly connected, and it will undergo continuous revision during the piloting activity.

Once the pilot testing of the courses is finished, they will be revised and their resources and methodology will be redesigned in MOOC format. The final Digital Skills for Culture MOOC released will be completely free for use and every OER developed will be released into major OER repositories on the web. As the course will contain new and important information about the use of ICT in different areas, it will be transferrable to other sectors where digital skills are essential, but currently at a low level, such as tourism. Being an online course, any adult will be able to connect and acquire the desired skills.

To build a valid curriculum, partners will refine the course goals, in order to fit the latest digital media innovations and requirements of the cultural sector, and design the concept and curricula for the Digital Skills for Culture Course as a unified course. The Course content will be based on the five areas of digital skills and the 21 competences as defined in DigCom2.0. Each course module will be planned to respond to one or two competences and to cover the transversal competences of communication and collaboration.

Based on the existing target group analysis performed by the partners the planned course content modules are:
1. The Internet, World Wide Web and introduction to the digital world
2. Digital content (including wikis)
3. Copyright and Open Licenses
4. Digital Curation - Digital Libraries and Museums
5. Digital Humanity
6. Digital storytelling
7. Digital audiences, Digital analytics (Google, Facebook, Twitter, SEO)
8. Social media for culture
9. Augmented and Virtual Reality
10. Mobile apps and mobile media
11. Digital management and communication in culture
12. Presenting digitally
13. Online and mobile digital media tools (audio-video)

6.8   Conclusions

The project will directly train 1,200 people online and through blended learning. A further 25,000 people - members of local communities, adult education centres, universities, associations which support enhancing digital skills, policy makers and local and regional government bodies - are another significant group which will benefit indirectly from activities organised by the project. At the end of DigiCulture all the tools and materials will be under the

Creative Commons License, available online or on DSC mobile app available for all. All partners will keep promoting this also after the project is finished.

6.9   References

[1] ECDL - Perception and Reality: Measuring Digital Skills in Europe, 2013, available at: http://www.ecdl.org.ro/m/en/news-article/new-ecdl-foundation-position-paper-perception-reality-measuring-digital-skills-in-europe_611.html

[2] EU, European Commision - New Skills Agenda for Europe, 2016, available at: http://ec.europa.eu/social/main.jsp?catId=1223

[3] European Council conclusions on developing media literacy and critical thinking through education and training, 2016, available at http://www.consilium.europa.eu/en/press/press-releases/2016/05/30-31-eycs-conclusions-developing-media-literacy/

[4] Lynda Ginsburg, John Sabatini and Daniel A. Wagner | Published in Learning to Bridge the Digital Divide, 2000, available at https://www.oecd.org/site/schoolingfortomorrowknowledgebase/themes/ict/basicskillsinadulteducationandthedigitaldivide.htm

[5] DESI, EC Digital Economy and Society Index (DESI), 2016, available at https://ec.europa.eu/digital-single-market/en/desi

[6] Vorikari, Punie, 2016, DigComp2.0: The Digital Competence Framework for Citizens report by the by the JRC Science, available at https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/digcomp-20-digital-competence-framework-citizens-update-phase-1-conceptual-reference-model

[7] Italian `DIGITAL CULTURAL HERITAGE AND TOURISM. Recommendations for cultural institutions http://www.isfol.it/piaac/Rapporto_Nazionale_Piaac_2014.pdf, Italian Agency for Digital Culture, Set of guidelines http://www.athenaplus.eu/getFile.php?id=428, http://egov.formez.it/sites/all/files/programma_nazionale_cultura_formazione_competenze_digitali_-_linee_guida.pdf

[8] DICHE" ('Digital Innovation in Cultural and Heritage Education in the light of 21st century learning' http://www.diche-project.eu/project

[9] Digital strategy 2016-2020 (Denmark, 2016)

[10] Danish Ministry of Finance, Local Government Denmark and Danish Regions: A Stronger and more secure digital Denmark, The Digital strategy 2016-2020, May 2016

[11] Vasiu, R., and D. Andone. "MOOCs-The Romanian experience." Web and Open Access to Learning (2015)

[12] Sharples, Mike, Dan Corlett, and Oliver Westmancott. "The design and implementation of a mobile learning resource." Personal and Ubiquitous computing 6.3 (2002): 220-234

[13] Downes, Stephen. "Places to go: Connectivism & connective knowledge." Innovate: Journal of Online Education 5.1 (2008)

[14] Losada, B., Urretavizcaya, M., & Fernández-Castro, I. (2013). A guide to agile development of interactive software with a "User Objectives"-driven methodology. Science of Computer Programming, 78(11), 2268-2281

[15] Mosakhani, M., & Jamporazmey, M. (2010). Introduce critical success factors (CSFs) of elearning for evaluating e-learning implementation success. Educational and Information Technology (ICEIT), IEEE.

[16] Wehipeihana, Nan, et al. "What Does it Take to do Evaluation in Communities and Cultural Contexts Other Than Our Own?." Journal of multidisciplinary evaluation 6.13 (2010): 182-192.

[17] Rogers, Everett M. "Diffusion of Innovations: modifications of a model for telecommunications." Die Diffusion von Innovationen in der Telekommunikation. Springer Berlin Heidelberg, 1995. 25-38.

[18] Verjans, S., et al. "Beyond the Hype-Towards a Research Methodology for Assessing Institution-wide Relevance of Novel Educational Technologies.", 2006

[19] Daniel, J. (2012), "Making Sense of Moocs: Musings in a Maze of Myth, Paradox and Possibility", Journal of Interactive Media In Education, http://jime.open.ac.uk/articles/10.5334/2012-18/

[20] Dillahunt, T., Wang, Z., Teasley, S.D. (2014) Democratizing Higher Education: Exploring MOOC Use Among Those Who Cannot Afford a Formal Education, International Review of Research in Open and Distributed Learning (IRRODL), 15(5).

[21] Hollands, F.M. & Tirthali, D. (2014) MOOCs: Expectations and Reality, Full Report. Center for Benefit-Cost Studies of Education, Teachers College, Columbia University.

[22] Mazzola, L. (2013). MOOCs and Museums: Not Such Strange Bedfellows After All, http://Mo.Ma/2ddfdzd

[23] Parry, R., Moseley, A., Gretton, N., Tunstall, R., & Mobbs, M. (2016). Why MOOCs Matter: The Consequence of Massive Open Online Courses for Museums, Universities and Their Publics

[24] Rohs, M., & Ganz, M. (2015). MOOCs and the Claim of Education for All: A Disillusion By Empirical Data. International Review of Research in Open and Distributed Learning (IRRODL), 16(6).

[25] Schuwer, R., Gil-Jaurena, I., Aydin, C.H., Costello, E., Dalsgaard, C., Brown, M., Jansen, D., & Teixeira, A. (2015). Opportunities and Threats of the MOOC Movement for Higher Education: The European Perspective. International Review of Research in Open and Distributed Learning (IRRODL), 16(6).

[26] Stracke, C. M. (2014), The Concept of Open Learning for Opening Up Education, In Stracke, C. M. et Al., Changing the Trajectory. Quality for Opening Up Education, Berlin: Logos Verlag Berlin.

[27] Trilling B., Fadel C. (2009). 21st Century Skills: Learning for Life in Our Times, San Francisco: Jossey-Bass

[28] Griffin, P., McGaw, B., and Care, E. (Eds.). (2012). Assessment and Teaching of 21st Century Skills. Dordrecht: Springer

[29] Care, E., and Griffin, P. (2014). An approach to assessment of collaborative problem solving. Research and Practice in Technology Enhanced Learning, 9(3), 367-388

[30] Griffin, P. (2013). Old school or new school? Teach future skills and traditional subjects together. The Conversation. Retrieved from http://theconversation.com/old-school-or-new-school-teach-future-skills-and-traditional-subjects-together-18179

[31] Griffin, P., Bui, M., and Care, E. (2013). Understanding and Analysing 21st Century Skills Learning Outcomes Using Assessments. In S. P. Rosemary Luckin, Peter Goodyear, Barbara L Grabowski, Joshua Underwood and Niall Winters (Eds.), Handbook of Design in Educational Technology (pp. 512). New York: Routledge.

[32] Griffin, P., Care, E., Bui, M., and Zoanetti, N. (2013). Development of the Assessment Design and Delivery of Collaborative Problem Solving in the Assessment and Teaching of 21st Century Skills Project. In E. McKay (Ed.), ePedagogy in Online Learning: New Developments in Web Mediated Human Computer Interaction Hershey, PA: IGI Global.

7 New Public Management in Higher Education

Johann GÜNTHER

Jianghan University, Wuhan, China; State University for Telecommunications, St. Petersburg, Russia; Danube University, Krems, Austria

7.1 Abstract

New Public Management (NMP) is based on new management methods that have been used decades ago in business and industry. At the end of the 20th century, these methods were also introduced in the public administration to modernize public administration.

NPM uses management by objectives (guidance through goal agreement), by decision rules (delegation of), by exception (simple decisions), by delegation (inclusion of many employees), by systems (decisions by the system) and by results (results-oriented). This led to more project management, flat hierarchies, stronger customer focus, target agreements, greater depoliticization of the administration, lean management, total quality management, benchmarking and outsourcing of various activities.

With the changes in the university system that began in recent decades, NPM also moved into higher education. Privatization, liberalization, state-owned and private universities made monitoring facilities with an accreditation system and quality control necessary. A free market economy has been created by law in the tertiary sector of education. In reality the areas have different standards. State universities are 'autonomous', but they have academic agreements with their ministries. Universities are more and more commercialized and like companies. The rector or president is the general manager and he is the only decision maker. He has a management responsibility for academic and economic issues. Governments call this decentralization and independency. With the help of the Governance Equalizer, studies have been carried out in various countries to highlight the advantages and disadvantages of the NPM system for universities.

7.2 New Public Management

New public management was only introduced in the public administration sector towards the end of the 20th century. It was previously developed in the industry and private sector. It went hand in hand with a reform of the public authorities. The administration has been modernized. Public administrations suddenly used techniques and tools from the private sector.

These tools and techniques influence the management style in several directions:
- Management by Objectives (guidance through goal agreement)
- Management by Decision Rules (delegation of decisions)
- Management by Exception (simple decisions = employee)
- Management by Delegation (Inclusion of many employees)
- Management by Systems (decisions by the system)
- Management by Results (results-oriented)

Management reached a new dimension.

7.3 Contents NPM - Efficiency Criteria

These are the contents and efficiency criteria of NMP:

- Project Management:
  Project management is based on teamwork with the aim of achieving a common goal. Within this there is included the whole process of undertaking the work: initiating, planning, executing, controlling and finalizing. The object is, to produce a complete project.
- Flat Hierarchies:
  A boss was responsible as an executive for only a few people. With the new management tools, the responsibility has expanded to a much larger number. This was only possible by more delegated decision authority.
- Customer Focus:
  In public administration, the citizen was considered as a customer. Not as a supplicant. At the university, students were seen as part of the organization.
- Target Agreements:
  Following the delegation of power, goals had to be defined. With every employee the goals to be achieved were defined in an agreement on objectives.
- Conversion of official Status:
  The status of each employee changed. Each individual acts like the owner of his own „One Man Company".
- Depoliticization of the Administration:
  Decisions are made objectively and less politically.
- Lean Management:
  Delivering more value with less waste in a project context. Especially in the public administration there was too much self-government, which is switched off and reduced with lean management.
- Total Quality Management:
  Makes a permanent climate where employees continuously improve their ability to provide on demand products and services.
- Benchmarking:
  Dimensions like quality, time and cost are measured regulary.
- Contracting Out:
  Also called „Outsourcing". Jobs they can be done better by external experts are transferred to external companies.

The core elements of NPM are a stronger market orientation, interruption of administrative units (enabling authority, agencyfication), reorganization of the company organization, modernization of accounting and introduction of controlling concepts to control results. A stronger customer orientation brings both sides of an agreement closer together. The customer becomes a partner. Due to the new management style, a new type of skilled people is needed. This leads to a stronger performance orientation in personnel policy. In general economization forces the staff to choose scarce resources to competing ends, and economize (seeking the greatest welfare while avoiding the wasting of scarce resources). Public administration got higher effectiveness and efficiency in the provision of state services.

7.4   Neo-Weberian State

A Neo-Weberian State proclaims that members of the same social class share the same life chances. Internet helps, that all citizen have the same rights. This has been the success of NPM in the 21st century. A good example for this is China and in universities it changed the relationship between university and students.

7.4.1   New Weberian: China

The Chinese government evaluate people by good conduct. It is a project, which will be in full operation in 2020. It started in 2017 as a pilot project in cities. In this project individuals,

companies and authorities will be evaluated as will universities. The evaluation is based on a rating like it is used in rating agencies with AAA (= excellent) to D (= dishonest).

Examples for offenses:
- Driving the car through red traffic lights.
- Debts not paid.
- Specifications against
  - environmental regulations or
  - trademark rights not respected
- Negative mark at exams.

The sanctions are like:
- No ticket for high speed train or flight
- No subsidies
- From public tenders excluded
- End of studies

The basis to do so is IT and the internet which in China is very well developed. The company Foxconn produces 0.5 million iPhones daily in Zhengzhou. In Beijinh 2,2 million bikes can be rented via an App. Beijing has 6,5 million cars and with actions like renting bikes, the government wants to reduce cardriving. The central communicatioon App is WeChat, which is the Chinese version of WhatsApp. It is used by 2/3 of the Chinese population. WeChat is used for shopping, paying, taxi, news, money transfers, loan etc. The input is given by voice (spoken) or by typing (keybord). Online payments are highly developed and it has 11 times the volume like USA. The volume of online business is two times biger then in USA.

Figure 1: *City of Shanghai, China*

7.5   NPM in Higher Education

NMP entered to higher education with the political decision of "Autonomization". Universities got the right to make decision by themselfes (without government). Management and budgetery responsibilities were decentralized to the universities. With global budgets university management has strict profit responsibility. This made new organizations. Universities are more and more commercialized and act like companies. The rector or president is the general manager with responsibility for academic and economical issues. He is the only decision maker, but he has a management with distributed responsibility. Governments call this decentralisation and independency.

The risk of this system is, that small units and small scientific subjects get lost. Management concentrates on main business fields. Institutes with many students and low production costs creates better results. One teacher for several thousand students brings more profitability than a small group of students with expensive laboratories. Owner of a university sets targets to the management and the university as a company is controlled via a board. The board sets targets

and controls. In state owned universities the government acts with a representative board as owner. Often board-members are politically positioned. Under these rules the quality very often is put under pressure. Quantity and profitability has for hand. Quality assurance departments inside the university can monitor the standards. The government control the quality via quality assurance agencies.

Under Neo Weberian influence the relation between students and teachers has changed. It changed from a hierarchial and customer oriented relation to partnership:

- Hierarchy Orientation
  The system is input oriented. The professors know everything. Students have to follow them and their instructions.
- Customer Orientation
  After the student demonstrations in the 60s of 20th century the status of students changed to a relation like "customer". They became customers of universities and were handled like this.
- Partnership Orientation
  In the 21st century students became partners and members of the university. This lead to a cooperation between teachers and students, which is called NEO WEBERIANIAN RELATION.

The partnership relation shows a clear impact on the drop out rate of universities. Untill the 21st century everybody was allowed to enter a university. There was no selection process for the entering to higher education. The drop out rate was very high. This changed at beginning of 21st century with more entrance or placement tests. The volume of students is limited and the entranbce test is the instrument to fullfill this. BUT: teachers take the responsibility to bring the students to a successful end. A low drop out rate is a major factor. If it is high, it is negative for the university. The relation between students and professors is evaluated regulary.

With decentralization of desicions and partnership several new tools came into operation:

- charging of tuition fees
- entrance examinations
- professors hold just four-year contracts
- evaluation of lecturers by students

The evaluation of teachers by students have impact on on salaries and career.

7.6 Networks

Democratic systems have changed. People are no longer members of societies, they are members of networks. The same change is within universities. A university can not be anymore a standalone organisation. It can not be isolated and work just with own staff. Like in industry, a university must be member of a network. Inside these networks, they exchange results and experiences, which makes it possible to reach targets faster.

7.7 Governance Equalizer

Each component of governance equalizer gives an in-depth analysis of higher education. The five dimensions of GE in higher education are:

- State Regulation
  - traditional top-down authority
  - regulation by directives
- Academic Self Governance
  - role of professional communities in university system
- Stakeholder Guidance
  - direct goal setting and advice

- Managerial Self-Governance
  - hierarchies within universities as organizations
- Competition
  - for scarce resources (money, personnel, and prestige)
  - between universities not on "real" markets
    but on "quasimarkets"

Governance Equalizer (GE) shows the ideal situation, the current status and a tendency. GE is most developed in Anglo-American universities. They have a long tradition and experiences. The result of GE can show
- a decreasing situation like in Kazakhstan or India
- an improving system like in Ukraine
- a high-level market, but heavy regulated like in Switzerland
- partly liberalized markets like in Austria
- no New Public Management - everything is regulated like in higher education instituts for military subjects.

New public management has changed the area of higher education and the governance equalizer is an instrument for evalution.
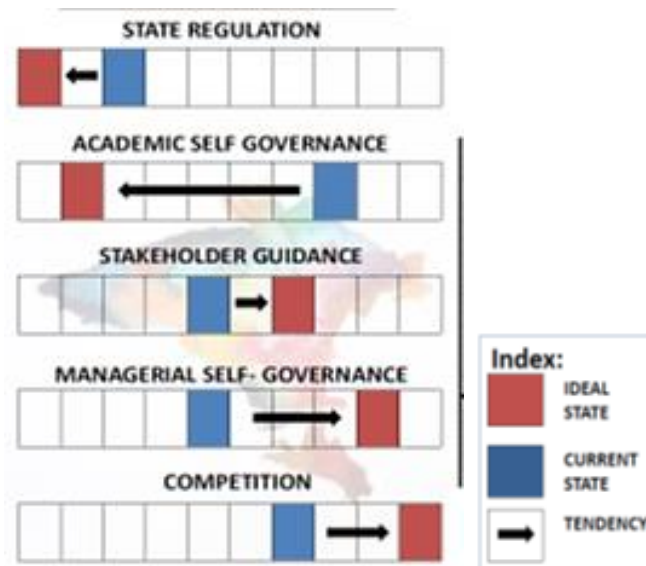
Figure 2: Sample of governance equalizer.

Higher Education in Switzerland

Schweiz
Suisse
Svizzera
Svizra

Before the mid 90ies:
Decentralized HE-System in CH

- Numerous of different reglements and conditions for HE institutions due to the federalistic system and the various different financing systems each type of HE-Institution
- High academic selfregulation
- Low autonomy in financial aspects
- Low competition between the institutions (input orientated financing system)

1995 – 2010: First steps to a more centralized HE system in Switzerland:

- With education and science becoming increasingly internationalised and globalised, joining forces became necessary in order to strengthen Switzerland's competitiveness and achieve a more binding cooperation between the Confederation and the cantons
- Signing the Bologna Decleration
- Implementation of severalacts and reglements in order to transfer authority to the university Conference and the HE institutions

2011- 2016: The coordination of the HE System in Switzerland is implemented by law.

- The federal government and the cantons needed to sign agreements and defer certain tasks to joint bodies such as the Swiss University Conference. The framework for a united gouvernance of the HE-System in Switzerland is implemented.

Relevant Milestones

- **1995**: Establishment of univeristies of applied sciences
- **1999**: Switzerland signed the Bologna-Declaration
- **1999**: The University funding Act ist passed. More binded cooperation between the confederation and the cantons. Transfering authority over the issuing of university education directives to the university conference (for preparing Bologna-process)
- **2004**: Switzerland becomes an associate member of the European Union's Research and Innovation Framework Programmes (FPs)
- **2006**: A new constitutional article on education is passed:
  - An explicit obligation to coordinate and cooperate in the field of education;
  - Shared responsibility between the Confederation and the cantons for coordinating and ensuring quality assurance in higher education;
  - Uniform regulations that harmonised study levels and transfer requirements, academic continuing education, the recognition of institutions and funding principles for universities.
- **2011**: The Higher Education Act (HEdA) is passed: FCA-CHE clarifies the joint bodies' responsibilities and defines coordination principles for tertiary education in Switzerland. It further defines the Confederation's constitutional obli-gation to financially support the cantonal universities and universities of applied scieces. The HEdA came into force in 2015, replacing the University Funding Act and the Universities of Applied Sciences Act.
- **2013**: The State Secretariat for Education, Research and Innovation (SERI) is founded. With this change, education, research and innovation were now under one federal roof for the first time. The gouvernance of the HE-System on a macro level ist assured.

Tendencies

SR   SG   ASR   MSG   C
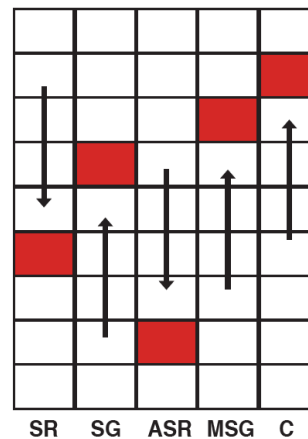
The current gouvernance equalizer		Future prospects in HE	
State Regulation (SR)	• A centralized gouvernance of the HE-System on a macro level ist assured. • Harmonised financial funding system for the members of each type of HE-Institution • By building this framwork by the state, the direct regulation policies of HE institutions has decreased (coordinating role of the state)	**State Regulation**	• The state regulation will be limited to strategic alignements for the HE-System in CH • Policies for partnerships with the private sector are going to be promoted • Due to the accepted mass immigration initiative in 2014 the strategy 2017-2020 focuses on promoting young talents in research and innovation.
Stakeholder Guidance (SG)	• The influence of several different joint bodies increases • The university council authorises various commitees from the private economic sector depending on different topics.	**Stakeholder Guidance**	• The influence of joint bodies from the private economic and industrial sector increases
Academic Self-Regulation (ASR)	• The implementation of NPM-approach trough state regulation policies and stakeholder guidance has reached the inner-organisational structures. • The academic self-regulation has decreased (f.e. external qualitiy and output evaluations, objective agreeements etc.), but there are still elements of academic self-regulation, especially in a informal way.	**Academic Self-Regulation**	• Neoliberalism objectives can not become more important than academic objectives. • Higher involvement oft he academic personal in the management is needed
Managerial Self-Governance (MSG)	• The managerial self-gouvernance has increased. • Several new positions within the „third space". • The managerial self-gouvernance ist not yet professionalized.	**Managerial Self-Governance**	• The managerial self-gouvernance will increase and become more professionalized
Competition (C)	• High competition between the HE-Institutions: performance related financing system and increasing number of HE institutions (implementation of university of applied sciences as „equal valued but different") • High international and global competition in research and in between HE-Organisations	**Competition**	• High competition between the HE-Institutions: performance related financing system and increasing number of HE institutions (implementation of university of applied sciences as „equal valued but different") • High international and global competition in research and in between HE-Organisations

References:
- De Boer, H.F.et.al (2007): On the Way Towards New Public Management, The Governance of University Systems in England, the Netherlands, Austria and Germany in Jansen, D (eds.), New Form of Governance in Strassbourg: Council of Europe Publishing. Eurypedia, Statistik Austria.
- SBFI (2016): Hochschulen und Forschung in der Schweiz. Reviewed from www.sbfi.admin.ch/campus-switzerland-d

MaRIHE Erasmus Mundus
Sara Bachmann

Figure 3: *Balance Score Card in Higher Education in Switzerland, Sara BACHMANN, Danube University Krems 2016*

74

HIGHER EDUCATION IN UKRAINE

MaRIHE — Erasmus Mundus — Master in Research and Innovation in Higher Education

by Kateryna Suprun and Uliana Furiv
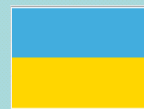
Population: **45,49 million**
GDP (2016): **$90.62 billion**
Expenditure on HE & Research (2016): **5,2%**

Line chart (2005–2015): Private HEIs, Public HEIs

Bar chart (2005, 2010, 2012, 2014, 2015): Students of state HEIs, Students of private HEIs, Government-subsidized students

Governance Equalizer (2005-2020) — SG, EG, ASG, MSG, C — Current, Ideal, Goal 2020

Timeline:
- 2002 — Law on HE
- 2005 — Bologna Process
- 2013 — Revolution of Dignity
- 2014 — New Law on HE
- 2020 — FP8 Horizon
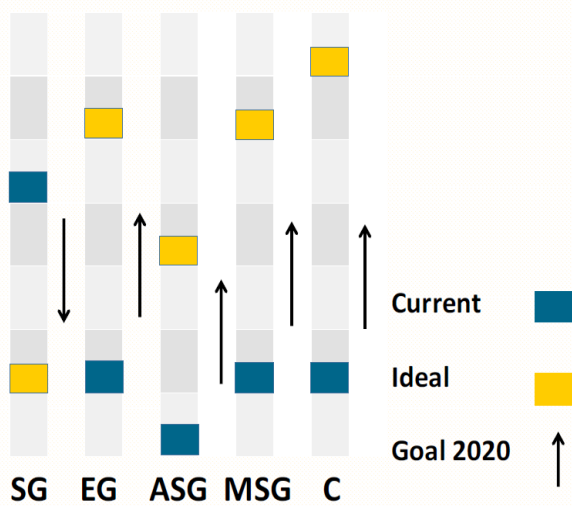
2005-2013

SG – Top-down excessive steering regulation of Ministry of Education as a supreme higher education actor.

EG – Limited participation of external stakeholders - Department of Labour, Ukrainian Association of Student Self-Governance (UASS), e.g. student bodies merely have right to exert influence on educational policies.

ASG – Academic Unions (Boards of Academics, Academy of Pedagogical Sciences) define and regulate 30-35% of their workload.

MSG – Education authorities are appointed from among academics lacking knowledge, skills and competences of NPM. Absence of understanding and unwillingness to implement changes in accordance with the Bologna Process.

C – Sporadic development of the best practices and overall legging behind results in generally low competitiveness on both the national and international arenas, and hinders integration processes.

Current trends

✓ inconsistency of policy making due to vague definition of learning outcomes and benchmarks

✓ absence of competent personnel in higher education

✓ corruption and subsequent inequality in access to higher education

✓ political instability, bureaucracy in governing structures and weak civic society

✓ massification of higher education

✓ progressive and up-to-date claims do not work

✓ discrepancies de jure - de facto in terms of law implementation

2014-2020

SG – Decreasing state steering powers and promoting deregulation by the Law on HE 2014.

EG – Devolving powers of licensing and accreditation of HEIs from Ministry to National Agency for HE QA. Strengthening of academic integrity by means of anti-plagiarism campaign (SAIUP, national repository). Promoting students' QA involvement.

ASG – Attempt to establish strong academic tradition with considerate decision-making power.

MSG – Increased academic and financial autonomy accompanied by disposing of paternalistic management style.

C – Promoting HE-business-R&D cooperation, focusing on human capital and knowledge-based economy. Transition from centralized state funding with predesignated resources allocation to automatic voucher order ('money follows students'). Fostered engagement in EHEA and ERA.

References:
Ministry of Higher Education of Ukraine (2014). *Law on Higher Education.* Communication of Verkhovna Rada, № 37-38. Retrieved from http://zakon5.rada.gov.ua/laws/show/1556-18.
National Report regarding the Bologna Process implementation (2009-2012). Retrieved from http://media.ehea.info/file/Ukraine/28/7/National_Report_Ukraine_2012_572287.pdf.
Shandruk, S., Shatrova, Z., (2015). *Higher Education Reform in Ukraine during the Transition Period: On the Path to Renewal.* Journal of Education and Practice, Vol.6, No.6. Retrieved from http://files.eric.ed.gov/fulltext/EJ1083597.pdf.
Stepko, M., (2004). *Ukraine's National Report on the implementation of the Bologna Process.* Towards the EHEA. Reports from new members of the Bologna process. Retrieved from http://media.ehea.info/file/Ukraine/28/1/National_Report_Ukraine_2005_572281.pdf.
Кармазіна, О., (2015) *Основні показники діяльності вищих навчальних закладів України на початок 2014/15 навчального року.* Державна служба статистики України. Статистичний бюлетень. Київ. Retrieved from https://ukrstat.org/uk/druk/publicat/Arhiv_u/15/Arch_vnz_bl.htm.
Picture source: Flag of Ukraine. Retrieved from https://commons.wikimedia.org/wiki/File:Flag_of_Ukraine_corrected.png.

September, 2016

Figure 4: *Balance Score Card in Higher Education in Ukraine, Kateryna SUPRUN; Uliana FURIY, Danube University Krems 2016*

Higher Education in Kazakhstan
The Governance Equalizer

By Alina Meloyan

MaRIHE
Erasmus Mundus
Master in Research and Innovation in Higher Education

Fast facts:
Presidential republic
Astana
2,7 million km²
17,7 million residents

Post-Soviet Period (since 1991)
- Adoption of the Law on Education (1992/1999);
- Centralization of HEI;
- Growing number of private universities.

Adoption of Bologna process (since 2010)
- The State Program on Education Development for 2011-2020;
- Reduction in number of HEI
- Adoption of a 3-cycle model of HE (Bachelor, Master and PhD).

Past (1991-2009)

SR
- Total centralization of HEIs;
- State compulsory standards of Education.

ASG
- Subordinate role of professorial staff;
- Professorial staff is underrepresented in the panels within the HEIs.

SG
- The Ministry of Education is the main stakeholder;
- No external investment into HEIs.

MSG
- Rector is appointed by the Ministry of Education;
- Rector in his turn appoints deans and heads of the departments and other administrative units.

C
- No competition among public HEIs what led to the degradation of the admission requirements;
- A lack of academic professionals with relevant credentials, a lack of financial and technical provision.

*SR – State Regulation
ASG – Academic self-governance
SG – Stakeholder guidance
MSG – Managerial self-governance
C - Competition

SR | ASG | SG | MSG | C

Current state | Ideal state | Tendency

Current (2010-2016)

SR
- Decentralization of the HEIs;
- Introduction of the State Educational Development Policy of the HEIs.
- HEIs infrastructure belongs to the state; salaries partially come from the state budget, partially from the university profit.

ASG
- Rudimentary role of professorial staff in the decision making process;
- Initiation of the Supervisory Board at 10 public universities to implement the principles of collegial management.

SG
- Public universities: The Ministry of Education is the only stakeholder, however the HEIs are transformed into the organizations with JSC elements;
- Private universities: Board of Trustees that comprises the rectorate and the stakeholders.

MSG
- Academic Council is the key body that represents the university and makes crucial decisions on how the HEI should function;
- Rectorate is a managerial university body that administrates the educational process and coordinates the activities of the departments.

C
- Competition for resources and funding;
- National Agency for Accreditation and Ranking of HEIs;
- Distribution of state scholarships on the basis of university ranking (national/state/regional).

Future (2016-2020)

SR
- Extended autonomy from the state regulations;
- Variation of funding resources;
- Entrepreneurial type of HEIs.

ASG
- Supervisory boards at both public and private universities

SG
- Attracting industries into HEIs as stakeholders with minor share;
- Developing the concept of Board of Trustees.

MSG
- Creating quality control departments within universities;
- Rectorate is in charge of HEI.

C
- Developing the systems of national and international accreditation;
- Reliance on private funding rather than public one.

References:
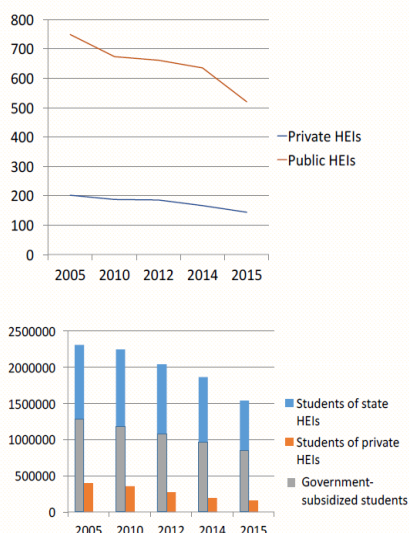- De Boer, H., Enders, J., Shimank, U. (2007) On the Way Towards New Public Management? The Governance of University Systems in England, the Netherlands, Austria, and Germany. New Forms of Governance in Research Organizations. Springer Netherlands - pp 137-152
- Álvarez-Galván J. (2014) A Skills beyond School. OECD Reviews of Vocational Education and Training. Review of Kazakhstan. https://www.oecd.org/edu/skills-beyond-school/A-Skills-Beyond-School-Review-of-Kazakhstan.pdf
- Zinovyeva,A., Mustafina A. (2015) Higher Education in Kazakhstan. The Governance Equalizer. MARIHE. Cohort IV

Figure 5: Balance Score Card in Higher Education in Kazakhstan, Ali na MELOYAN, Danube University Krems 2016

7.8 References

[1] Birnbaum, Robert (2000): Management Fads in Higher Education, Chapter 1, San Francisco.

[2] De Boer, Harry, Enders, Jürgen, Schimank, Uwe (2007): On the Way Towards New Public Management? The Governance of University Systems in England, the Netherlands, Austria, and Germany, in: Jansen, D. (Ed.), New Forms of Governance in Research Organizations. Disciplinary Approaches, Interfaces and Integration, Dordrecht, 135 - 152.

[3] Ginsberg, Benjamin (2011): The Fall of the Faculty, Chapter 6, New York

[4] Hediger, Philipp: „Analysis of Governance Equalizer for Switzerland", Donau-Universität, Krems 2018

[5] Hood, Christopher (1991): A Public Management for all Seasons, in: Public Administration 69, 3 – 19.

[1] Husen, Marsela Giovani: „Public Higher Education Institutions in Indonesia: A Paradox of Autonomy?, Master's Thesis Danube University, Krems 2016

[6] Kolokythas, Georgios: „Digital transformation through digital leadership and examples of digital transformation", Vienna 2019

[7] Kligyte, Giedre, Barrie, Simon (2011): Collegiality versus Managerialism – the Binary that Binds us.

[8] Kreibich, Christine: „Das Hochschulwesen in Österreich, Governance Equalizer", Donau-Universität, Krems 2018

[9] Pausits, Attila: „Die Universitäten der Zukunft oder was wir von Machiavelli und Humboldt lernen sollen" in Günther Johann „Veränderungen in einer Generation - Essays von Wissenschaftlern, Künstlern, Philosophen, Dichtern und Managern", Linz 2019, Seite 217-230

[10] Rainer, Eva: „Analyse des Hochschulwesens in Österreich an Hand des Governance Equalizers", Krems 2018

[11] Sarrica, Cláudia; McQuenn, Andrew; Samuelson, Shane: „State of Higher Education 2015-16", OECD Higher Education Programme, (IMHE), 2017

[12] Sporn, B. (2003): Convergence of Divergence in International Higher Education Policy: Lessons from Europe, Publications from the Forum for the Future of Higher Education.

[13] Ziegele, Frank (2008): Budgeting and Funding as Elements of New Public Management, unpublished study material, University of Oldenburg.

8 CEFTA'S Impact on Kosovo's Economy

Petrit HASANAJ
Iliria College, Pristina, Kosovo
Besmir AHMETAJ

8.1   Abstract

This paper is made up of many important points ranging from Economic Groëth, the Regional Economic Integration Process and many important points of the Cefta member countries' agreements. The purpose of the paper is to analyze the role of trade relations, foreign investments also to analyze the export and import of goods and services as well as many other important issues regarding the economic relations of Kosovo with the member countries of the Free Trade Agreement of Central Europe (CEFTA). With the declaration of independence in February 2008 and with the recognition of the majority of the states of the region, Kosovo raised its status and legitimacy in the region. As a result, Kosovo managed to act and coordinate its economic and political activities in general with other countries of the region as equal to at least those states that recognized its status as independent. In addition to being the youngest state in the region, Kosovo is one of the smallest states both in size and its economic impact in the region. The very fact that we are in the Balkans and the Balkans is an integral part of Southeast Europe with the claims that one day we are in the European family showed the need for the integration processes to be updated, advancing, but with a common monitoring of all progressive European forces.

8.2   Introduction

Trade relations within the Western Balkans region are regulated by the Central European Free Trade Agreement (CEFTA). CEFTA is a pretty deep integration mechanism, as it covers ways of expanding trade in goods and services by eliminating trade barriers between signatories.
In addition, it aims to promote investment by establishing impartial, sustainable and predictable rules. It further provides for the protection of intellectual property rights in accordance with international best practices. In addition, it harmonizes provisions on modern commercial policy issues, such as competition and state aid rules. It also includes clear and effective dispute resolution procedures. Last but not least, this agreement aims to provide a framework for the signatories to prepare for EU membership. For Kosovo CEFTA has not met its expectations; other obstacles and blockades still prevail. The most prominent example was the blockade of Kosovo goods by Serbia and Bosnia and Herzegovina after Kosovo introduced new customs stamps following the declaration of independence in February 2008. Kosovo took reciprocal measures against the two countries by blocking entry of Serbian goods in Kosovo and charging Bosnian goods with the customs tariff in force before CEFTA. This issue was finally resolved in September 2011. Less significant 'incidents' between Kosovo and other CEFTA signatories include Macedonia, in the case of wheat exports, Albania, in the case of potatoes and pellets for food animals, and other cases.

8.3   Kosovo's Economic Relationships with CEFTA Member Countries

8.3.1   Background of the Establishment of CEFTA

CEFTA (Central European Free Trade Agreement) is a free trade agreement that currently involves seven countries of the South East European (Western Balkans) region: Albania, Macedonia, Montenegro, Serbia, Bosnia and Herzegovina, Kosovo and Moldova. . The first

CEFTA agreement was signed by Poland, Hungary, the Czech Republic and Slovakia in December 1992 and entered into force in July 1994. Through CEFTA these participating countries were mobilized to bring them closer to the Union's political, legal and economic institutions. European, thereby strengthening their democracy and market economies. Slovenia joined CEFTA in 1996, Romania in 1997, Bulgaria in 1999, Croatia in 2003 and Macedonia in 2006. Since all previous CEFTA parties had joined the European Union in 2007 and left CEFTA, it was decided for CEFTA to extend to the remaining Balkans outside the EU. By this time, Albania, Kosovo, Macedonia, Montenegro, Serbia, Bosnia and Herzegovina, Croatia and Moldova had signed a large number of bilateral free trade agreements under the Stability Pact for South Eastern Europe. These were replaced by a single multilateral agreement - CEFTA. But in reality, being a multidimensional agreement, CEFTA is much more than just a customs tariff agreement.

Likewise, every country that is in the process of joining the EU has now become a member of CEFTA. From an economic point of view, CEFTA will assist economic development in the region through liberalization and trade development. World experience has proven that countries that close trade doors close development. Albania of the communist years and present-day North Korea are typical examples of the failure of isolation and door-closing policies. Since ancient times, trade exchanges have been the most important factor in the cultural and economic development of regions, states, and empires.

8.4   Kosovo Trade Exchanges with Cefta Countries

Kosovar society still faces a number of problems and difficulties in joining the current streams of international development separately in the economic sphere. Thus, the issues related to Kosovo's foreign trade, namely the overall trade situation, give an overview of the current economic situation, in a way the level of economic development expressed by the foreign trade indicators, and thus the analysis of the performance and volume of trade. foreign trade reveals the actual situation of the domestic production sectors. In the goods sector, the balance of foreign trade is quite negative followed year after year. Given that the foreign trade sector is of particular importance in economic development, therefore, trade policy is one of the main instruments of general economic policy. Above all the figures give a clear picture of the trade balance of Kosovo which has a very high evident trade deficit for years exceeding 2 billion euros. Another situation is in the services sector where year by year the balance of trade in services is positive, generating revenues in the Kosovo budget and making the sector more competitive.
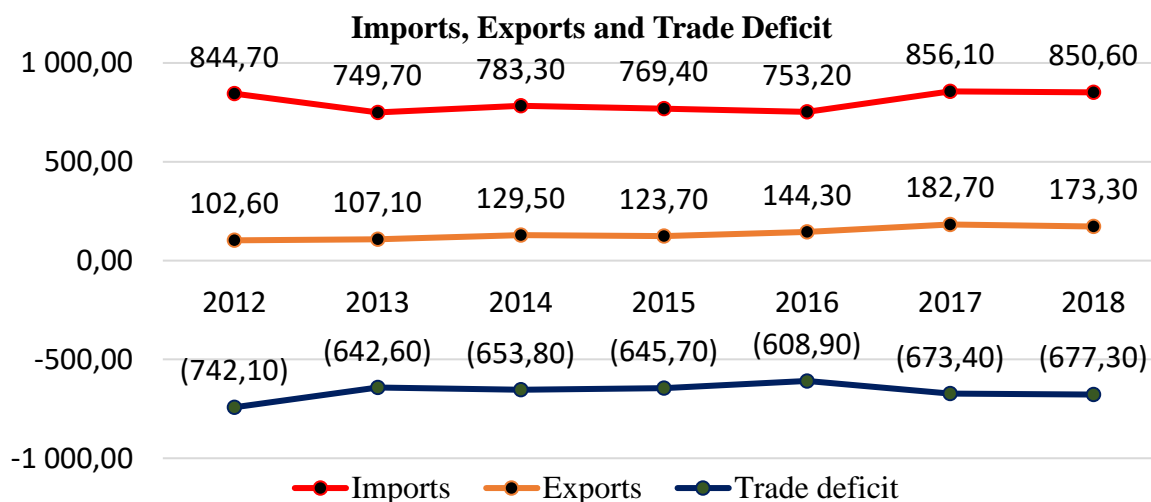
Figure. 1. *Imports, Exports and Trade deficit.*
Source: Central Bank of the Republic of Kosovo, Monthly Statistical Bulletin, March 2019.

In 2018, Kosovo's exports to CEFTA countries amounted to EUR 173.30 million, an increase (61.80 percent) from 2013. The main export partners from CEFTA countries are: Albania, Macedonia, Serbia and Mali black. Whereas, imports from CEFTA countries in 2018 amounted to EUR 850.60 million, up by 13.46 per cent from 2013. The countries with the highest share of imports were: Macedonia, Albania and Serbia.

Data from External Trade in Kosovo show a trade deficit during these years, namely EUR 667.30 million in 2018, compared to a deficit of EUR 742.10 million in 2013, thus the trade deficit has decreased compared to the previous years. Earlier, though still at very high values. Exports cover imports (20.37 percent). Export of goods in February 2019 was 24.0 million euros, while import 232.7 million euros, an increase of (7.4 percent) for export and (13.4 percent) for imports compared to the same period of the previous year 2018.

8.5 Flow of Kosovo's Foreign Direct Foreign Investments with CEFTA Countries

Foreign Direct Investment (FDI), in its classical form, is defined as a physical investment that a foreign entrepreneur invests in a country of non-origin, committing his own financial funds, with a view to returning that investment. The OECD (2008) FDIs are defined as: "an investment made by a company in a non-originating country for the long-term benefit of this investment". Foreign direct investment is a category of investment by resident enterprise (direct investor) in one economy, with long-term business interest in an economy other than the country of origin of the direct investor.
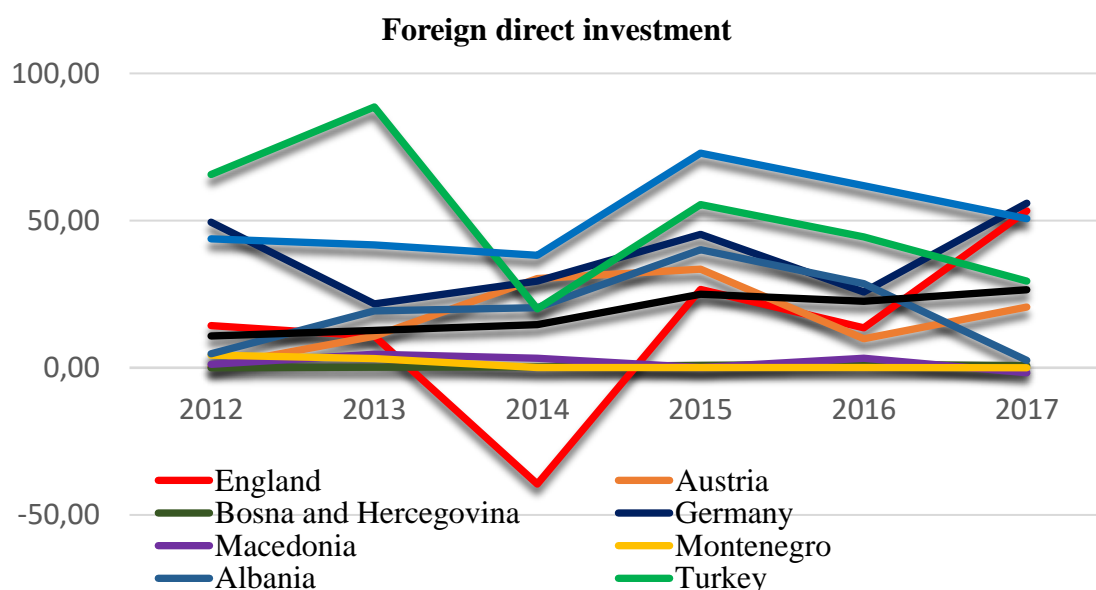
Figure 2. *Foreign direct investment.*
Source: Ministry of Trade and Industry, Kosovo Industry Development Report, 2017.

As we can see graphically, in 2017 we saw an increase in foreign direct investment from countries like England, Germany, USA, Austria etc, compared to a year ago, where the value of these investments was less. Negative values of FDI in this period are recorded by the Netherlands with -14.10 million euros and Macedonia -1.70 million euros with investments.

The country that invested most in Kosovo is Germany with about 60 million euros, followed by countries like England with 53.30 million euros and Switzerland with about 50 million euros investment.
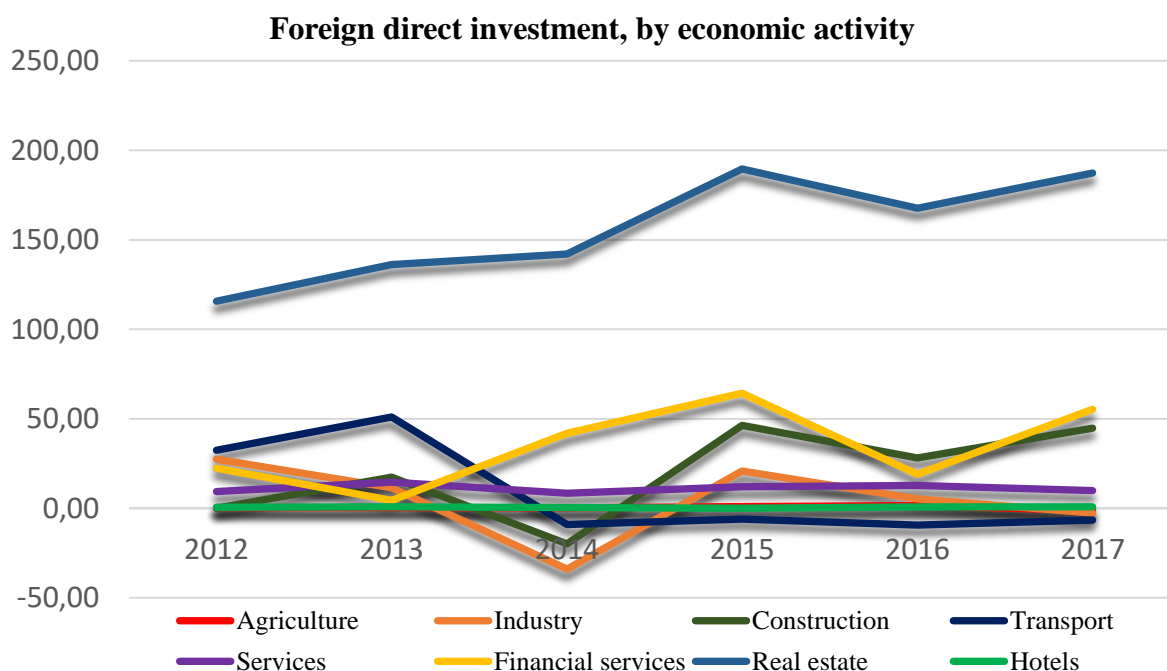
Figure 3. *Foreign direct investment, by economic activity.*
Source: Ministry of Trade and Industry, Kosovo Industry Development Report, 2017.

FDI in Kosovo during 2017 amounted to about 230 million euros. The most attractive sector for foreign direct investment again was real estate, which accounts for about 53.47% of the total value of these investments. Other sectors with the highest value of absorbed FDIs were construction with EUR 44.70 million, followed by financial services with EUR 55.30 million. At the same time, compared to the previous year, the highest value of FDI was in the financial services and construction sector, followed by real estate and mining, which is still of negative value. The sector of Agriculture, Industry, Energy, Transport and Communication continues to remain at negative value in 2017. Foreign investment in Kosovo, as well as in various countries in the region, is spread across different sectors of the economy. Only a small portion of these investments are made in the manufacturing sector, while the remainder is largely for real estate and leasing, as well as for construction and financial services.

8.6   Conclusion

Kosovo joined CEFTA at a time when it was facing a high trade deficit and underdeveloped economy. CEFTA membership came as a way out of this crisis, as it was believed that by integrating into a wider free market, foreign investors would invest in Kosovo, local producers would be able to export more easily and Kosovo would do a step towards EU membership. After CEFTA membership, none of this happened. Foreign investment was halved, the trade deficit remained the same, local producers were more discriminated against than other CEFTA member countries (both due to lack of quotas, but also due to the inability to export products to Bosnia and Herzegovina. Serbia). Due to low economic development, Kosovo has been disadvantaged under CEFTA. This has been exacerbated by the blockade of Serbia and Bosnia on Kosovo products. This blockade of domestic products marked a decline in exports, making it difficult for local companies to exist. The Kosovo government changed customs seals, but was not determined to send the symbols to the end, insisting on representing Kosovo's institutions rather than through UNMIK. Faced with this crisis, local companies were forced to find alternative ways to export their products. So they chose two routes: exporting goods through a new country (which increases costs by 5-10%) or searching for new markets. The second led export to the European Union to increase significantly.

In view of these and the losses being caused to Kosovo by the failure of Serbia and Bosnia to apply the CEFTA Agreement, we recommend:
1. We propose that there be reciprocity with Serbia and Bosnia and Herzegovina.
2. Applying quotas. The Government of Kosovo should set quotas for the protection of some local products, which will provide and make these products more competitive in the domestic market, vis-à-vis imported ones.
3. Or, abandonment of CEFTA and signing of bilateral agreements with the states separately.

Statistics show that Kosovo did not benefit from CEFTA as initially expected. If Croatia joins the European Union, and Bosnia and Serbia continue to block Kosovo products at the border, then Kosovo would have to exit the CEFTA agreement and sign bilateral agreements with Albania, Macedonia and Montenegro. . The application of reciprocity measures as required by Kosovar businesses implies a breach of the CEFTA agreement and as such would be unacceptable, so leaving this agreement would be the best solution in this case. However, this should remain the last option, after all other legal avenues have been tried.

8.7   References

[1] Kristo Ilia, "International Business", Tirana, 2004

[2] Ahmet Manqellari, Sulo Haderi, Dhori Kule, Stefan Qirici, Introduction to Economics.

[3] Selmanaj Selman; Globalization and transition; Pristina; 2005.

[4] Brumblla Spiro; investments; Tirana, 2004.

[5] Mancellari Ahmet; International Trade; ADA; Tirana; 2004.

[6] Bunjaku Flamur; Direct Foreign investments; Artin; Pristina; 2016.

[7] Govori Fadil; International Finance; Pristina; 2010.

[8] Ministry of Trade and Industry, Kosovo Industry Development Report for 2017.

[9] Ministry of Trade and Industry, Kosovo Industry Development Report for 2016.

[10] Central Bank of the Republic of Kosovo, Monthly Statistical Bulletin.

[11] Central Bank of the Republic of Kosovo, Financial Stability Report, 2018. Annual Report 2017,

[12] Central Bank of the Republic of Kosovo, Macroeconomic Development Report.

[13] Central Bank of the Republic of Kosovo, Exports and imports by trading partners.

[14] Central Bank of the Republic of Kosovo, Exports and imports by economic categories

[15] Agreement amending and extending the Central European Free Trade Agreement, CEFTA 2006

[16] Institute for Applied Sciences Studies - ENG

[17] Effects of Kosovo-EU Stabilization and Association Agreement Impact on Trade 2017

[18] Ministry of Trade and Industry, Kosovo Industry Development Report for 2016

[19] Central Bank of Kosovo, Monthly Statistical Bulletin.

[20] http://www.institutigap.org/documents, Kosovo at CEFTA

[21] http://ask.rks-gov.net

9 Self-Driving Cars: The Digitization of Mobility. The Technology Behind it and the Impact on our Society

Felix EDELMANN
Helix IT Consulting e.U., Austria

9.1 Abstract

This paper discusses the implementation of autonomous vehicles with the aim of providing an overview of this current topic and to present hurdles and forecasts from a technological and sociological point of view.
Keywords: self-driving cars, social impact

9.2 Introduction

The automotive industry continues to invest heavily in intelligent vehicle technology, from driver assistance systems to fully autonomous vehicles that no longer require human intervention. This trend towards the introduction of "robots on four wheels" is bringing newcomers from the IT industry into the scene and is making significant changes to the nature of mobility and many aspects of everyday life. It seems certain that autonomous vehicles will increase road safety and efficiency as they mature. At this stage, it also seems certain that the future of autonomous vehicles is imminent and that any remaining issues and concerns will not constitute insurmountable obstacles. It is therefore only a matter of time before the first market-ready self-propelled cars come onto the market.

9.3 Levels of Automation

The automation of vehicles can be divided into five levels ranging from driver assistance to full self-driving [1] (see Fig. 1).

Level 1. Most cars are already there today. Current driver assistance systems support the driver during the driving task and thus ensure greater safety and comfort. This includes the active cruise control with stop & go function, which regulates the distance to the vehicle in front independently, or the collision avoidance and passenger warning with city brake function, which is designed to prevent collisions by an automatic braking process.

Level 2. Semi-automated driving is already a reality in most high-end cars, with its driver assistance systems including steering, guidance and traffic jam assistants. The car can automatically brake and accelerate and, unlike Level 1, also semi-automatically take control of the vehicle. The remote-controlled parking function allows cars—for the first time—to park in driverless mode in narrow parking bays. As with Level 1, however, the driver is always responsible for driving and cannot turn attention away from traffic.

Level 3. Today we are approaching level 3. At that level, the driver gains more and more freedom from the driving task and is able to permanently turn away from the traffic under certain conditions and completely delegate the driving task to the vehicle. By means of highly automated systems, the vehicle can operate completely

independently over long distances and in certain traffic situations, e.g. highway driving. However, the driver must be ready to take control of the vehicle at any time.

Level 4. Level 4 is the precursor to autonomous driving, whereby the vehicle navigates most of its journey independently. Level 4 automated driving technology has evolved to the point where the self-driving car can handle even highly complex urban traffic situations, for example, mastering an unexpected construction site without the intervention of the driver. As with level 3, the driver must still be able to take over the driving task, if necessary, with the car signaling the driver to take control. If the driver ignores the car's warnings to take control, the system has the authority to transfer the car to a safe condition, such as stopping. However, it is conceivable that the driver could go to sleep temporarily.

Level 5. While level 4 still requires a driver, level 5 is autonomous driving, whereby the vehicle is completely driverless. In contrast to levels 3 and 4, driving or a driver is not required in completely autonomous driving - the steering wheel and pedals therefore become unnecessary. The vehicle takes over all driving functions. All persons in the car thus become passengers. One of the social benefits is that this will create new mobility options for people with disabilities. The complexity, or the requirement for technical solutions, is extremely high. Therefore, completely self-driving vehicles will initially only be traveling at relatively low speeds in city traffic.

Figure 1: *Five levels of vehicle autonomy.*
Source: https://www.automotivelectronics.com/sae-levels-cars/

9.4   Technology and Sensors

Driverless cars are powered by technology [2] (see Fig. 2), which includes sensors and communication devices.

- Sensors:
  Lidar-based laser range finder
  Front camera for near vision
  Front and rear radar
  GPS navigation

Ultrasonic sensors
Altimeters, gyroscopes, and tachymeters inside the car

- Communication devices:
    Vehicle to roadside V2R
    Vehicle to infrastructure V2I
    Vehicle to vehicle V2V
    Vehicle to everything V2X
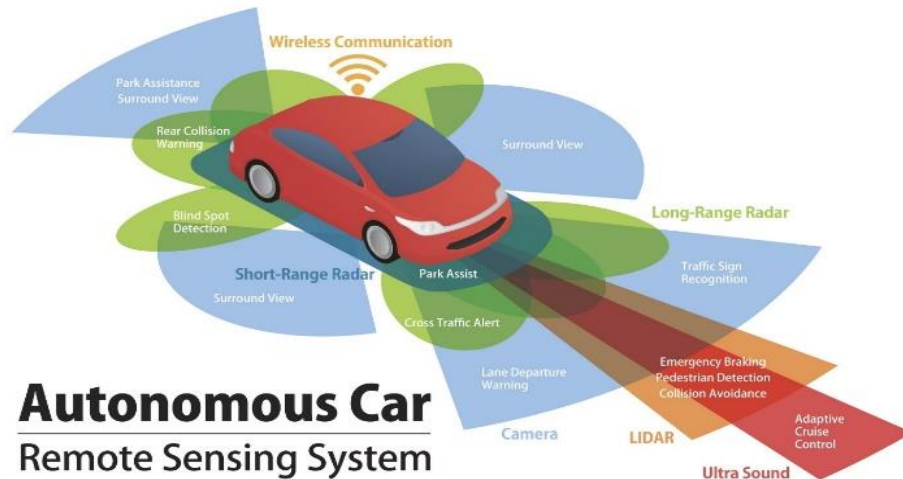
Figure 2: *Autonomous car remote sensing system. Source: https://innovation-destination.com*

9.5   Safety and Social Benefits of Self-Driving Cars

About 99.9% of all accidents are caused by humans. In EU 28 there were around 25,300 fatalities and 135,000 serious injuries in road accidents reported in 2017 [3]. An ambitious goal is aimed by "EU Vision Zero", striving for zero fatalities by 2050, reducing fatalities and serious injuries by half by 2030 [4]. This can only be achieved by automated driving in addition to significantly increasing safety.

Important social benefits can be accomplished by improving access to transportation. Independence and quality of life for the entire population, particularly for those of advanced age, illness or disability.

Urban and rural areas require different considerations. Individual car ownership has a disproportionately high importance in the countryside. This must also be taken into account from the point of view of the ageing rural population. For many older people, "life" in the city is no longer affordable. Individual mobility has a high impact on the "older" generation. Also, the costs for traffic services like meals on wheels, caretaking and school buses are high.

At Seestadt Vienna, which is an urban development area of Vienna, self-driving buses (see Fig. 3) will go into service by 2019 [5]. Physical infrastructure of the test track includes the following features:

- 2.2 km (each direction)
- Maximum allowable speed is 30 km/h
- Passengers and one operator
- Adaptations: bus stop bays, GNSS reference station via 3G/4G and WLAN
- Digital infrastructure, digital map, prerecorded and manually edited
- Mobile data connection 3G/4G

Figure 3: *Self-driving bus at Seestadt Vienna. Source: https://www.mobillab.wien/autobus/. Johannes Liebermann, Wiener Linien*

9.6 Future Scenarios

We are approaching the end of the traditional automotive era. Travel will be in standardized modules. Fully autonomous modules with no capability for the driver to exercise command. Modules will be owned by mobility service providers like Uber [14] or Ly[15]ft. Human-driven vehicles will be legislated off the highways. Tipping point: when 20 to 30 % of vehicles are fully autonomous.

It will be figured out that human drivers are causing 99.9 % of accidents. This will result in questioning the existance of large vehicle fleets, the future of car manufacturers and car dealers. (*Source: Bob Lutz, former vice chairman and head of product development at General Motors. He also has held senior executive positions with Ford, Chrysler, BMW and Opel).*

9.7 Impact on Society

In addition to increasing security and social benefits, as with any new technology, there will be far-reaching social consequences. Fewer truckers means fewer motel stays, means fewer rest stops, means less services personnel. Conforming to traffic laws means less traffic policing, means fewer traffic tickets, means less revenue for municipalities. With 135,000 seriously injured by car accidents every year in the EU, a decline to almost zero will have a huge impact on the insurance and health care system. The full scale of these economic shifts will be impossible to realize until they are upon us, but the one thing we can know for sure is that they will influence almost every aspect of society.

9.8 Conclusion

From the first automobile in 1889 to about 1.2 billion worldwide in 2019, we have experienced 130 years of automotive history. But the next 10 years will change our life and our mobility like never before. (*Source: Helmut Klaus Schimany Bundesinitiative eMobility Austria).*

---

[14] https://www.uber.com/

[15] https://www.lyft.com/

9.9 References

[1] Chatterjee, V. (2018), Society of Automotive Engineers (SAE) Automation Levels for cars. A detailed explanation of all the defined levels. http://www.automotivelectronics.com/sae-levels-cars/

[2] Yaakub S. Hayyan, Alsiba M (2018), A Review on Autonomous Driving Systems. International Journal of Engineering Technology and Sciences (IJETS). http://journal.ump.edu.my/ijets/article/download/2800/451

[3] EU Press release (2017), Road Safety: Data show improvements in 2017 but renewed efforts are needed for further substantial progress. https://ec.europa.eu/commission/presscorner/detail/en/IP_18_2761

[4] EC (2019), EU Road Safety Policy Framework 2021-2030 - Next steps towards "Vision Zero". https://ec.europa.eu/transport/road_safety/sites/roadsafety/files/move-2019-01178-01-00-en-tra-00_3.pdf

[5] Wiener Linien (2018), Wiener Linien: Fahrerlose Busse in Seestadt unterwegs. https://www.vienna.at/wiener-linien-fahrerlose-busse-in-seestadt-unterwegs/5868598

10 The Message Execution Time in Dependence on the Number of Clients on the UKZ2018 Server

Basri AHMEDI
University "Kadri Zeka", Faculty of Computer Science, Gjilan, Kosovo
Xhevdet THAQI
University "Kadri Zeka", Faculty of Computer Science, Gjilan, Kosovo,
Ekrem HALIMI
University "Kadri Zeka", Faculty of Computer Science, Gjilan, Kosovo,
Selami KLAIQI
University "Kadri Zeka", Faculty of Computer Science, Gjilan, Kosovo,
Liridon HOTI
University "Kadri Zeka", Faculty of Computer Science, Gjilan, Kosovo,

10.1 Abstract

Each application requires minimum hardware conditions that are required and that are necessary for execution on a PC. If these applications are deployed into a server which provides 24 hour services, the method to finding minimum hardware performance is even more complex. This is so because now the application execution will not only depend on the performance of the internal hardware components of the PC but also from other parameters such as bandwidth, number of users at the same time, load quantity, application generation that executed etc. Each of these areas has an impact on the execution time of server and server actions. In this case, the time of execution of the message delivery to a user group is dealt with using the Moodle 3.2. which is located on the server with IP 80.80.173.124. From the measurements made, the execution time increases with the increase in the number of end-user messages. These measurements are made by taking into account the conditions of the computer network to which the server is connected, the internal hardware components of the server, the software components, and the version of Moodle application itself. Measurements are made by making changes in increasing the number of users who receive the message at the same time from the server and by increasing the characters in the message. From the resulting data it turns out that increasing the number of participants and increasing the number of characters in the message increases the execution time. This finding comes out of the measurements made on the server established under these conditions at the Kadri Zeka University that currently provides e-Learning services and has 1604 users.

Keywords: execution time, Moodle, number of participants, server

10.2 Introduction

In this paper the message is an element for analysis, the message in Moodle. Time and code needed by the server to send a message depending on the size of the message, comparison. The time and code that the server needs to send a message depending on the increase in users, comparison. The data showing the execution time is obtained from the UKZ server.

10.3 Execution Time in Server

Each application has minimum hardware requirements for execution on a PC. Applications installed on the server as web applications will not only depend on the performance of internal PC hardware components, but also on bandwidth, number of users, load quantity, hosts. In this paper we have analyzed the execution time of sending the message using Moodle 3.2. which is on the server.
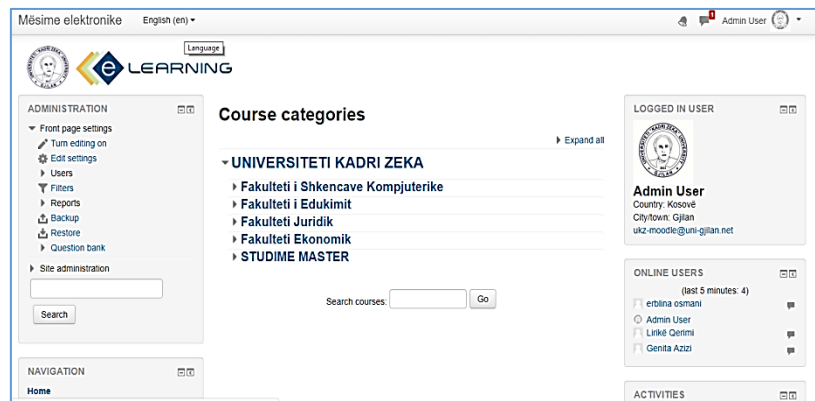
Figure 1: Platform Moodle ver.3.2

We have read the execution time in the generated code on the server which is shown in the following figure.

```
2019-04-26 22:03:54      CLIENT -> SERVER: --b1_142837b832d492f4a74a46660b3d64ce

2019-04-26 22:03:54      CLIENT -> SERVER: Content-Type: text/html; charset=UTF-8

2019-04-26 22:03:54      CLIENT -> SERVER: Content-Transfer-Encoding: quoted-print
able

2019-04-26 22:03:54      CLIENT -> SERVER:

2019-04-26 22:03:54      CLIENT -> SERVER:

0

-----------------------------------------------------=

2019-04-26 22:03:54      CLIENT -> SERVER: --------------
This is a copy of a message sent to you at "M=C3=ABsime=
2019-04-26 22:03:54      CLIENT -> SERVER:  elektronike". Go to http://80.80.173.1
24/message/index.php?user=3D36&id=3D=
2019-04-26 22:03:54      CLIENT -> SERVER: 7 to reply.
2019-04-26 22:03:54      CLIENT -> SERVER:
2019-04-26 22:03:54      CLIENT -> SERVER:
```

Figure 2: Generated code for sending a message from Moodle

10.4 Performances of the Moodle 3.2 Server

An easier way to use this platform is to deploy it to a server. In the absence of a high-performance server that has a high cost, we can use an ordinary PC. Even a regular PC can be configured as a server to provide the same services. To configure Moodle on the server, these support applications must be installed: Windows Server R12 with IIS (CIS), C ++, PHP, MySQL or Maria DB. Finally Moodle ver 3.2 is installed and configured.

10.5 Material and Methods

The analysis material is received from the message generated by the Moodle at the moment the server sends this message to one or more users. Two situations were analyzed and measurements were made. One is when the message being sent increases the number of characters that this message sends and the run time is analyzed. In the message are set 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30 characters. From the data obtained it is seen that the execution time is not dependent on the size of the message.

	Message size / number of characters	Time / s	Generated code on the server
1	1	3	953
2	2	3	956
3	3	3	958
4	4	3	960
5	5	3	962
6	6	3	964
7	7	3	966
8	8	3	968
9	9	3	970
10	10	3	972
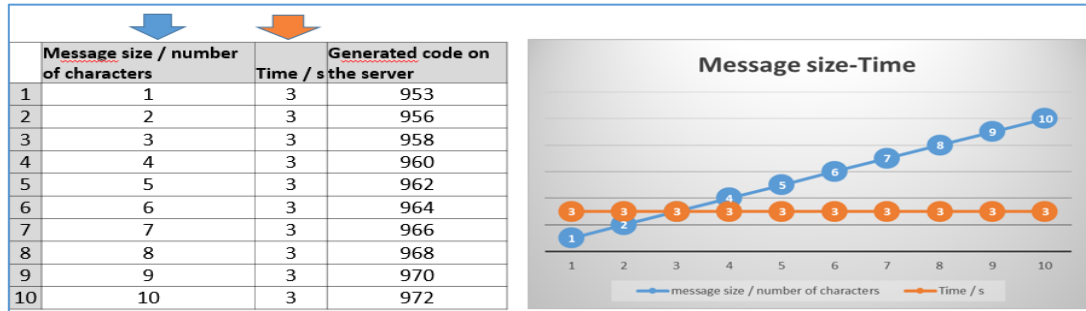
Figure 3: Time and code needed by the server to send a message depending on the size of the message, comparison.

The other situation is when an unchanged message is sent by 1, 5, 10, 15, 20, 30, 50, 150 users (email address). In this case the number of users has increased from 1 to 150 and for this number of users it will be seen that the execution time is increased. This is seen in the table and graph below. The method used has been empirically validated. There are two types of measurements:
   - Increased the number of characters in messages sent to only one user by noticing the execution time
   - The number of users has increased, noticing the execution time

the number of client e-mails	Time / s	generated code / pages
1	3	6
5	9	30
10	18	60
15	26	89
20	34	119
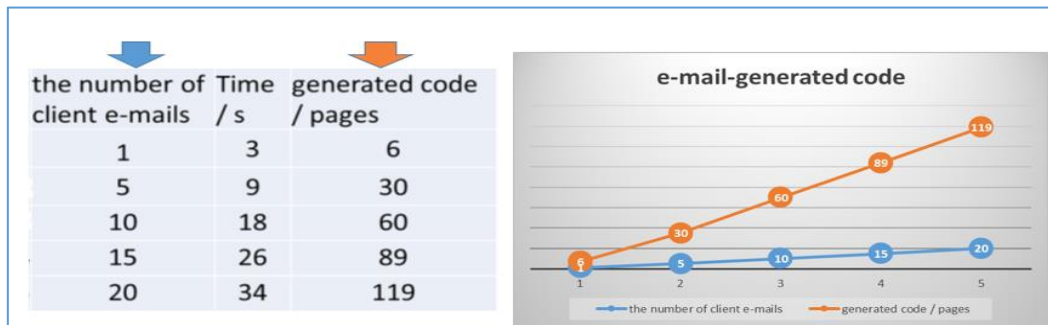
Figure 4: Time and the code that the server needs to send a message depending on the increase in users, comparison.

10.6 Conclusions

The increase in run time does not change if we increase the message size. The execution time increases proportionally with the increase of the number of users where the message is sent. This finding comes from measurements made on the server created under the conditions at Kadri Zeka University, which currently offers e-Learning services and has 1604 users.

10.7 References

[P1] Judith V. Boettcher, Rita-Marie Conrad, The Online Teaching Survival Guide: Simple and Practical Pedagogical Tips (2nd Edition), Jossey-Bass, 2016

[P2] Caroline Haythornthwaite, Richard Andrews, Jude Fransman and Eric M. Meyers "The SAGE Handbook of E-learning Research" (2nd edition), Sage Publications Ltd., 2016

[P3] Ruth Colvin Clark • Richard E. Mayer, "e-Learning and the Science of Instruction", Published by Pfeiffer, San Francisco, 2011

[P4] Basri Ahmedi, Xhevet Thaqi, Ekrem Alimi, The advantages of Creating a New Account in Moodle by Users Themselves and by the Administrations, IAFeS Edition, Volume 6, Corfuz, 2018

[P5] Ahmedi, B., Mitrevski, P., "On the Development of Methodology for Planning and Cost-Modeling of a Wide Area Network", International Journal of Computer Networks & Communications, Vol. 6, No. 3, pp. 1-20, 2014

[F1] http://80.80.173.124 (Access 2019)

[F2] http://80.80.173.124/user/action_redir.php(Access 2019)

[F3]http://80.80.173.124/course/view.php?id=36 (Access 2019)

[F4] http://80.80.173.124/course/view.php?id=36 (Access 2019)

11 Challenges and Opportunities of Improvement of Quality in the Process of Curriculum Development at University of Prishtina "Hasan Prishtina"

Besnik LOXHAI
University Pristina, Kosovo
Merita BERSIHA
University Pristina, Kosovo

11.1 Abstract

At University of Prishtina "Hasan Prishtina" process of curriculum development is the primary process for assuring and improving the quality of teaching and learning. The quality processes of curriculum development, by University of Prishtina is considered as e main activity which should be followed by self-regulatory processes based on rigorous standards. Study programs of University of Prishtina "Hasan Prishtina" are evaluated based on a self – evaluations report by Kosovo Accreditation Agency, analyzing how well they meet these standards, in light of their mission. The University of Prishtina "Hasan Prishtina", as the largest and biggest public university in Kosovo, with thirteen faculties with 147 study programs in three levels of studies (Bachelor, Master and PhD), and around 45.000 students, has internal mechanisms for insuring the quality of study programs. Even though the process of quality improvement is very well fixed at the University, where every year many study programs are passing through the self-evaluation process, steel University of Prishtina "Hasan Prishtina" is faced with new challenges to be in line with European standards and trends. Internal evaluation standards of curriculum development should meet with external evaluation standards and requirement which are defined by Kosovo Accreditation Agency. In this research paper, authors will analyze the processes, procedures and standards of curriculum development and based on evidence and findings, authors will comes with conclusions and recommendations for the improvement of curriculum development processes.

Keywords: Curriculum Development, Quality Assurance, Internal Evaluation, Accreditation, Teaching and Learning.

11.2 Introduction

In the last decade of this century, University of Prishtina "Hasan Prishtina" (UPHP) has resulted in positive changes in terms of implementation of modern reforms in line with the Bologna process. Efforts for changes, without doubt, have been challenging but also accessible. The reform have begun with the implementation of ECTS, quality assurance, teaching orientation to learning outcomes and curriculum development procedures, developing research, last but not least is the orientation of higher education towards the needs of the labor market. The implementation of the Bologna process at University of Prishtina "Hasan Prishtina" started in the academic year 2001/2002; these were the first attempts to reform of study programs (curricula) according to the Bologna process. At this time, the only institution of higher education in Kosovo was the University of Prishtina. Reforms of the study programs at the University have begun with the implementation of 3 +2 +3 degree study system and implementation of ECTS - credits. This trend continued until academic year 2006/2007. During the 2006/2007 UPHP began reviewing the study programs for establishing a better connection

of ECTS credits withstudents workload and consolidation of programs based on the European Harmonization Process of Curricula (TUNING).

In 2008, the reform process continued with the preparation for the process of self-evaluation.The process of self-evaluation has been the first step towards the self evaluation process in order to analyze quality of provided services by UPHP. Preparation of self-evaluation report was followed by a series of activities, where the process also had a comprehensive mobilization of the University, ranging from academic staff, administration staff and students. The process has contributed to the activation of quality mechanisms. University of Prishtina asked to identify shortcomings of the educational process, from providing administrative services, review of curricula and teaching performance by academic staff, infrastructure of University, teaching spaces, hygiene etc. This process is followed by the assessment of quality, through questionnaires for assessing the quality in University level and the level of academic units.

11.3 Organizational Structure of Quality Assurance at University of Prishtina" HasanPrishtina"

In order to continuously improve the Quality of the services UPHP in 2007 has established Academic Development Office. The Academic Development office was established with the aim to promote and apply the objective of the Bologna Process for integration in the European Higher Education Area. The office comprises of:
- Quality Assurance Unit
- Curriculum Developmentand ECTS Coordination Unit
- Monitoring the Process of Accreditation
- Centre for Carrier Development
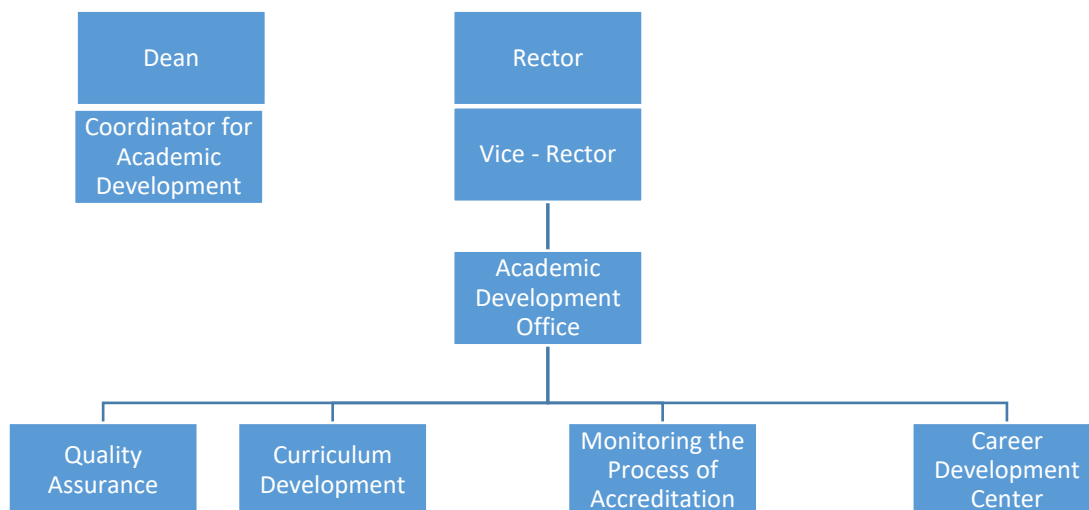
Figure1. Organization Structure of Academic Development Office

11.3.1 Academic Development Office and Quality System at University of Prishtina "Hasan Prishtina"

The Quality Assurance Unit is charged with assisting academic and administrative units in continuously improving the quality of their services and ensuring the highest standards are

maintained in accordance with UPHP Statute[16], Law of Higher Education in Kosovo, and ENQA's set of Standards and Guidelines.

The higher authority in the reporting structure at the University of Prishtina "Hasan Prishtina" for Quality issues is University Senate. In central level of University exists Quality Assurance Committee. The Committee is a Sub-Committee which reports directly to the University Senate through the Vice-Rector for Quality Development[17] .

Figure2. *Quality Assurance System*

11.3.2 Quality Assurance Tools and Mechanisms at University of Prishtina "Hasan Prishtina"

The UPHP, as a public University, has a responsibility for internal quality assurance and control and this is specified in the Law on Higher Education in Kosovaand the Statute of the UPHP. The Quality Assurance Committee developed Quality Assurance Guidelines for the University which is a document that contains policies and procedures on the quality assessment and implementation of actions following the recommendations, which were approved by the University Senate and are in compliance with the University Statute and the ENQA Standards and Guidelines.

The main mechanisms which regulate Quality Assurance activities at UP are:
- Law on higher education in Kosovo.
- Statute of University of Prishtina "Hasan Priahtina", and
- Quality Assurance Guidelines

Through the mechanisms mentioned above UPHP leads three very important processes;
1. Internal evaluation process
2. External evaluation process, and
3. Process of Accreditation

11.4 Internal Evaluation Process

In order to monitor the quality of academic and administrative services, as proposed by the Quality Assurance Committee, the Senate has approved a number of data collection

---

[16] See Statute of University of Prishtina
[17] See Quality assurance Guidelines

instruments for quality assurance; these includequestionnaires for academic staff, questionnaires for administrative staff, and questionnaires for students.

In addition to the quality surveys mentioned above, according to the University Statute, course evaluation by students is organized at the end of every semester (usually in December and April) through anonymous questionnaires and this is coordinated by the Deans in cooperation with the department heads under the leadership of the Vice-Rector for Quality Development and the approval of the University Senate. The results of these questionnaires are used by departments in order to improve the quality of teaching and learning at the University.

From 2008 until today, since the university has started to implement instruments and mechanisms for quality and course evaluation process, the challenge for UPHP was to increase number of programs and courses evaluated per year and also to increase the students' involvement in process of course evaluation.

In academic yare 2009/2010 have been included only 4 academic units in the course evaluation process, which is very small number if we compare with number of faculties which operate under umbrella of UPHP. The goal of course evaluation process was not only to identify gaps and lacks of teaching performance but also to install quality culture to the Students and University Stuff. The next two years University of Prishtina has increased the number of academic units, programs and courses in the course evaluation process, where the challenge was to increase the number to 100 % of course evaluation for semester.

11.5 External Evaluation Process

All providers of higher education are subject of quality monitoring and evaluation of the Kosovo Accreditation Agency in accordance with the law on higher education and acts under the Law[18]. It is very important to note that, external evaluation process must be followed by the internal evaluation process in order to achieve minimum quality criteria for accreditation. Although, even if evaluation of study programs past through internal evaluation process, the final evaluation of quality of study programs offered by the UPHP is done by Kosovo Accreditation Agency. Structure of the internal and external evaluation process and accreditation is shown in Figure 3.
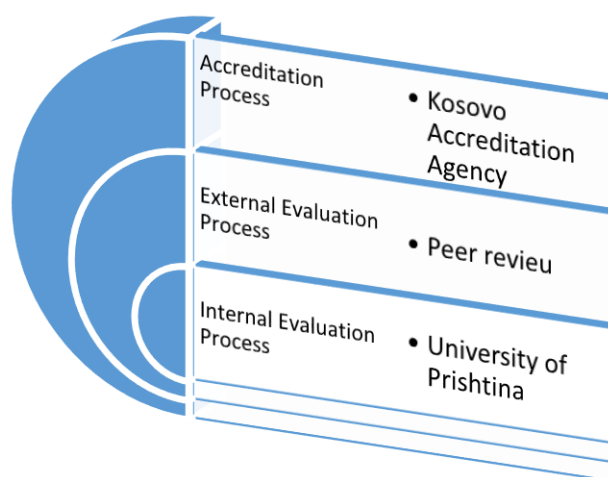
Figure 3. Structure of the internal and external evaluation process

---

[18] Low on higher education of Kosovo

11.6 Accreditation Process

Accreditation is a formal and transparent process providing internationally compatible standards to examine whether institutions and/or study program offered at university level comply with minimum quality requirements[19]. The UPHP as legal entity is obliged with a law for higher education to undergo the accreditation process in order to fulfill minimum quality criteria required by Kosovo Accreditation Agency. Procedures and activities which UPHP undertake before applying for accreditation are as follows:

Prior to the preparation for the accreditation process, it is critical that all staff members of the faculty/unit/department under review are fully briefed on the methodology of the assessment process. To foster a sense of ownership of the process and common purpose is not only vital to the success of the review but it is also key to the creation and maintenance of a quality culture. At the start of the process, the faculty/department/unit under review should select a group to form a Coordinating Committee which is charged with putting together the Self-Assessment Report for submission to Kosovo Accreditation Agency, which is the first step in the process of accreditation. The self Assessment Report contains all relevant information regarding to Faculties and Study Programs offered by academic units. The Academic Development Office (ADO) supports the Coordinating Committee in all matters related to the preparation of the self-assessment report. The Coordinating Committee is liaised with the ADO and agree dates for meetings in order to monitor progress and check the final draft of the self-assessment report prior submission to the KAA for accreditation. After the SAR past through internal evaluation process and after faculty concluded that all criteria required by the accreditation agency and governing bodies of the University are undertaken then UPHP make a decision to proceed the evaluation reports to Accreditation Agency for Accreditation.

11.7 Conclusions

This paper presents the quality mechanisms at the UPHP and also tries to explain the impact of these mechanisms on quality improvement and development. The impact has been shown through some indicator as:
- Internal quality assurance system
- External quality assurance system, and
- Accreditation process

Even if the quality assurance system at UPHP has shown changes in this last decade, still exists space for quality improvement and development. Due to the fact that quality assurance and improvement is not act but process which continuously must be improved, challenges for next year's regarding to Quality Assurance/improvement at University of Prishtina will be oriented in digitalization of internal Quality Assurance system in order to be more efficient in managing quality system.

The components where needs to be focused in order to increase efficiency in Quality Assurance System are:
1. Quality Assurance related to administrative meters
    - In line with ESG, revising and Improving Quality Assurance mechanisms
    - Digitalizing quality assurance system of monitoring
    - Establishing quality system on the bases of PDCA model (plan-do-check-act)
    - Setting rules for constant evaluation of results and follow-up measures (from evaluation to Quality Assurance)
2. Quality of Curricula
    - Reviewing/Revising Learning Outcomes in line with labor market needs.
    - Reviewing/Revising Students workload and methodology of teaching.

---

[19] See web page of Kosovo Accreditation Agency   "www.akreditimi-ks.org"

11.8 References

[1] McGhee, P. (2003). The Academic Quality Handbook, pp. 53-231.

[2] Orsinger, Ch. Editor. (2006). Assessing Quality in European Higher Education Institutions. Dissemination Methods and Procedures, pp. 5-147.

[3] Kohoutek, J. Editor. (2009). Implementation of the Standards and Guidelines for Quality Assurance in Higher Education in the Central and East – European Countries, pp. 11-51.

[4] Bryan, C. Clegg, K. Editors (2006). Innovative Assessment in Higher Education, pp. 37-48.

[5] Bologna Working Group on Qualification Frameworks. (2005). A Framework for Qualification of The European Higher Education Area. Pp, 75-88.

[6] Law on Higher Education in Kosova (no. 2011/14, dated 09/09/2011). (Article 15).

[7] Status of University of Prishtina "Hasan Prishtina". (Article 216).

[8] Quality Assurance Guidelines. University of Prishtina "Hasan Prishtina".

[9] Internal Evaluation Raports. University of Prishtina "Hasan Prishtina".

[10] Web page of Kosovo Accreditation Agency "www.akreditimi-ks.org"

12 Patent Regulations as an Obstacle to Innovation Rather than an Incentive

Matthias GELBMANN
Q-Success, Austria

12.1 Abstract

Patents have been used for centuries as an incentive to spend time and money on innovations. However, patents also hinder potential innovations as they limit access to existing inventions for non-patent holders. This paper argues that recent technological and economic developments have made the negative impacts of patents even more pronounced and looks at alternatives to the current patent system, which have the potential to increase the benefits they could bring to society.

Keywords: patents, innovation, regulations

12.2 Effects of Patents

Patents are meant to encourage people and corporations to spend time and money on innovations. This is achieved by granting monopolies to use an invention. Millions of patents are granted every year world-wide [1]. Thus, it could be argued that patent regulations are indeed effective in promoting innovations. The number of patents a country or an organization holds, is actually frequently used as an indicator for the innovative capacity of that entity.

However, that view is incomplete and misleading, as it omits two key aspects. First, in order to assess the impact of patents, we need to compare the stimulus for innovation created by patents to alternative regulations that do not use patents. We will discuss alternatives to patents further below.

Second, we need to take the effects of monopolies into account. Monopolies are generally considered to have a negative impact on societies [2]. Modern societies have various forms of competition laws, with the goal to prevent the formation of monopolies, as they would hurt consumers while only few would benefit. It is a bit of a paradox, that at the same time regulators freely grant monopolies in the form of patents. Even if patents succeed in encouraging innovation, that positive effect may be outweighed by the drawbacks of monopolies. In the context of patents, the problematic effects of monopolies are economic and scientific.

12.2.1 Economic View of Monopolies

Monopolies can bring enormous economic benefits for the monopoly holders, as they can ask prices for products and services that are independent from the costs of delivering them. These high prices, which are often a multiple of market prices, are the costs society must bear. One of many examples is Imatinib, an essential medication used to treat cancer. Novartis has a patent on that drug in USA, where they sell a 1-year supply per patient for $146,000. At the same time, Novartis lost the patent case in India, where the drug has subsequently been sold for a price of $400 [3].

The argument for patents is, of course, that inventions might not be made without incentives. If this is the case, the society would have the disadvantage that the invented product or service would not be available. This disadvantage, however, would be small, because the monopoly price is generally set near the achievable maximum. If people value a product at $x, then the monopoly price will be set just below x, so that the gain from purchasing the product is positive for the consumer, but very low. Without monopoly, the market price might be substantially below x, so that there is a significant gain when the product is available for purchase. If, in the

absence of patents, the invention would be made anyway, the benefit of the new product for society is much higher.

We will show below that the assumption that invention would be made anyway is indeed realistic and that alternatives to funding research exist. Even if one assumes that patents encourage investments in research, the opposite effect also exists. The pure existence of patents does in many cases prevent investments in innovations. It can be quite a challenging task to ensure that the expected result of investments for innovation does not violate existing patents. The risks of potentially violating patents and the costs of evaluating and mitigating these risks is often high enough to decide against investing in research in the first place.

12.2.2 Scientific View of Monopolies

From a scientific point of view, patents restrict the flow of scientific progress. Any invention is based on many inventions made before. Any software patent in the world, for example, is based on thousands of inventions that make computers and software possible. Access to a patented invention is restricted, as the patent holder normally asks for a license fee to allow the invention to be used. While some uses of an invention may justify paying the license fee, many others may not, or at least it may be difficult to find someone bearing the increased economic risk to finance further inventions. Thus, scientific progress, whose promotion ironically is the very reason why patents exist, will be hampered.

12.3 Problems with Patents

In addition to the problematic monopolies introduced by patents, there are many additional problems coming from the practical implementation of patent laws.

12.3.1 Questionable Patents

There are a huge number of patents, whose level of invention is so low, that it is quite unthinkable that the invention, if we even want to call it that, would not have been made in the absence of incentives. Many examples are in the field of software patents. The most famous questionable software patent is probably the Amazon 1-click-order patent [4], that streamlines the checkout procedure for customers of an e-commerce website by saving them one or two mouse clicks. It is a typical software patent that any working programmer could "invent" three times before breakfast, as the software entrepreneur Joel Spolsky phrases the problem [5]. Nevertheless, companies had to pay license fees to apply this method, which potentially makes online shopping more expensive for consumers in certain cases.

Another example of a very questionable patent is a patent for a method of swinging on a child's swing [6]. It is a kind of sideways swing that certainly millions of people had done in the past before someone was granted a monopoly. Besides the questionable patents based on low levels of invention, there are other areas where patents are debatable for ethical reasons due to their nature, for example patents on living creatures.

12.3.2 Patent Applications

Some of the reasons why questionable patents are granted lie in the patent application procedures. It is often a challenging task to examine a patent application, to judge on the patentability of an invention. Some of the criteria used by patent laws cannot be verified objectively, for example the requirement that an invention must be non-obvious and sufficiently inventive. That results in decisions that many experts in the respective fields would deem as unjustified.

The underlying reasons for such debatable decisions are often low funding of patent offices. Studies suggest that the time allocated to review patents is in many cases insufficient, resulting in too many patents being granted [7]. This is based on the fact that granting a patent is less labour-intensive than to justify its rejection. In those cases where patents are rejected, the

patents are often re-applied for with minor modifications in the rejected parts, until, it seems, the patent finds a less diligent officer who choses the path of the least resistance by granting the patent. From the patent office point of view, there can also be an economic benefit in granting questionable patents, as the fees for rejected patents are significantly lower [8].

An important example of a bad patent and the consequences it can have is the case of Theranos, where Elizabeth Holmes applied for a patent to make certain blood tests with a minimal amount of blood. The patent application has been rejected several times, but was granted after 4 years and several re-applications. The patent gave Theranos enough credibility to convince investors, which eventually gave the company a $9 billion valuation. It turned out that the device described in the patent application did not exist and the operation ended as a fraud court case.

12.3.3 Patent Trolls

Patent trolls are generally described a non-practising entities, which monetize their patent portfolios by asking companies active in that area for license fees. Non-practising means that they own patents, but have no intention to actually use the invention other than as a means to collect fees. This can be seen as a misuse of the patent system, because the original idea of patents, namely to stimulate innovation, is not the business model of patent trolls. Unfortunately, this business model is quite successful, because the easiest, quickest and often the cheapest way out of a patent infringement law case often is to pay the fee, even if the justification is questionable. Many companies cannot afford to have an ongoing court case for years. Studies show, for example, that 41% of software startups see significant operational impacts from patent troll lawsuits, which cause them to exit business lines or change strategy [9]. That is an example of patents actually slowing down innovation rather than stimulating it. A remarkable outcome of the Theranos case mentioned above was that the only marketable asset the company had after the fraud became known was its patent portfolio. Obviously, even the most questionable patents can still be used by patent trolls to make money.

12.4   Alternatives to Patents

Do we have any alternatives to the current patent system that avoid or at least mitigate its disadvantages?

12.4.1 No Patents

The most straightforward alternative is to abandon patents completely. There would certainly still be innovation taking place, but it is impossible to prove that the speed of innovation would not slow down. There are a few examples of countries without a patent system in relatively modern times. The Netherlands abandoned their patent laws in 1869. There was no noticeable lack of innovation after that decision. Nevertheless, the Netherlands reintroduced patent laws due to international pressure in the context of trademark protection in 1912 [10]. Switzerland did not have a patent law as we know it before 1907, again without being visibly disadvantaged in terms of innovation power [10].

Abandoning patents would additionally have the effect of saving the substantial cost of obtaining and enforcing the patent. That money could be used directly for innovation instead. When deciding whether abandoning patents would be a risk, it is helpful to notice that many innovations cannot be patented anyway, yet they are still invented. Examples for this is finding new use for existing drugs, which is actually quite common. The original patent holder for the drug does benefit in such cases, not the one making the innovation. Another example is finding negative properties of drugs or other products, which can be an extremely important discovery, but cannot be patented.

12.4.2 Improved Patent System

While abandoning the patent system may seems a bit extreme and risky, improving the existing system would certainly be helpful without much need for radical change. One obvious change would be much-increased requirements for the level of invention. Trivial patents like many of the software patents should never be granted. Another aspect that can easily be improved is the period of validity of patents. In most countries, patent monopolies are granted for 20 years. For much of the fast-changing industries that time frame might easily cover the whole life-span of an invention. Innovations introduced in mobile phones 20 years ago are hardly relevant today. A shortening of the patent time period depending on the industry would be more aligned with the initial intention of patents than the fixed time span.

12.4.3 Other Incentives for Innovation

Improving the patent system by being much more restrictive when granting patents would ideally be combined with reinforcing other incentives for innovation. All the alternative incentives described here exist already and are tried and tested methods, but they could and should be used much more intensively, although they come with their own drawbacks. One idea that most countries already implement in one way or the other is to grant some form of tax reduction for research expenses. That stimulates innovation while avoiding the disadvantages of monopolies. The challenging task here is to set up criteria to determine which type of research is worth supporting and which is not. A more direct approach is to use public funding to finance research. In the US, basic research is already 80% funded by government and non-profit organizations [11]. Only more product-focused research is primarily funded by private entities. Advanced purchase commitments are occasionally used, for example in the medical field, to reduce the risk involved in research spending, and thus encourage innovation. If there is a guaranteed market, research expenses can also be more easily justified in the absence of guaranteed monopolies.

Innovation inducement prizes are contests, which grant a certain amount of money to whoever delivers some innovation result, for example to find a new cure for a certain disease. This method has been used in history in various fields, and interest in it has again increased in recent years. It can be an efficient way to promote research in a certain area and to achieve a fast dissemination of the research results at the sane time. Its main drawback is that as a centralized decision process it cannot compete with the ingenuity triggered by decentralized processes. Therefore, innovation inducement prizes cannot be a general means to curb innovation, but wherever they are applicable they would reduce the dependency on patents.

Cost sharing regimes are a way share research expenses among market participants who benefit from the results. It avoids the often frivolous price setting practices by monopolists as it limits the prices to be paid with the actual expenses, and at the same time it avoids the free-riders effect of a regime without any restrictions on the use of research results. Cost sharing regimes are already mandated in some areas, for example to prevent repeating the execution of the same animal testing multiple times by different organizations. A more wide-spread use of cost sharing regimes could lead to a more efficient utilization of research results.

12.5 Obstacles

Considering the problems with patents described above, and the available alternatives, why don't we change our patent regulations? There are primarily two obstacles. First, most of the proposed alternatives would require international coordination. For example, one country funding research with their taxpayer's money and making the results available for the whole world would not be fair unless other countries do the same. Ideally, already existing international organizations would be used to implement such schemes, but this is currently outside their focus most of the time, and that would need to be changed.

The biggest obstacle, however, is probably the influence big international corporations have on law makers. Big companies hold many patents (IBM, for instance, holds more than one hundred thousand patents [12]) and these patents are an essential part of their assets. Abandoning the patent system would have a severe impact on their value and on their way of securing their market position. They would use their influence to prevent any changes, just like they use their influence to shape tax regulations in a way favorable to them.

12.6 Conclusions

This paper shows the main weaknesses of the current international patent system. It is a troubling fact that these problems will only get more serious over time because of two developments. First, some of the areas where these problems have the most severe impact have become more important in the last decades and will be even more important in the future. These areas include IT technology, medicine and biology. Second, globalization has the positive effect of spreading innovations faster and faster, with substantial benefits to mankind, but at the same time, the problems affecting innovation caused by the patent system now have an immediate negative global impact. This paper also shows, that improving the situation is feasible, but requires substantial and coordinated effort. For the time being, as the World Intellectual Property Organization puts it, ironically, the system of patent monopolies benefits from not being innovative [11].

12.7 References

[1] World Intellectual Property Organization, Statistics Database

[2] Posner, Richard A. "The social costs of monopoly and regulation." Journal of political Economy 83, no. 4 (1975): 807-827.

[3] Hagop Kantarjian, "The Arrival of Generic Imatinib Into the U.S. Market", https://www.ascopost.com/issues/may-25-2016/the-arrival-of-generic-imatinib-into-the-us-market-an-educational-event/ (retrieved 2019-08-27)

[4] US patent number US5960411

[5] Joel Spolsky   , "Victory Lap for Ask Patents", https://www.joelonsoftware.com/2013/07/22/victory-lap-for-ask-patents/ (retrieved 2019-08-27)

[6] US patent number US6368227B1

[7] Frakes, Michael D., and Melissa F. Wasserman. "Is the time allocated to review patent applications inducing examiners to grant invalid patents? Evidence from microlevel application data." Review of Economics and Statistics 99.3 (2017): 550-563.

[8] Michael D. Frakes and Melissa F. Wasserman, "Decreasing the patent office's incentives to grant invalid patents", Brookings Institution, 2017

[9] Chien, Colleen V., "Startups and Patent Trolls" (September 28, 2012). Stanford Technology Law Review, Forthcoming; Santa Clara Univ. Legal Studies Research Paper No. 09-12.

[10] R Cullis "Patents, inventions and the dynamics of innovation: A Multidisciplinary study" ISBN 9781845429584, 2007

[11] Committee on Development and Intellectual Property, World Intellectual Property Organization, "Alternatives to the Patent System that are used to Support R&D Efforts, Including both Push and Pull Mechanisms, with a Special Focus on Innovation-Inducement Prizes and Open Source Development Models", CDIP/14/INF/12, September 19, 2014

[12] https://www.research.ibm.com/patents/ (retrieved 2019-08-27)

13 Digital Transformation through Digital Leadership and Examples of Digital Transformation

Georgios KOLOKYTHAS
Hellenic Open University, Athens, Greece

13.1 Abstract

Technology nowadays plays a significant role in our daily activities and the rapid as well as continuous technological advancements in the last decade have imposed their rhythm. They affect the humanity in such a disruptive way that anyone who wants to attend these changes should be continuously up to date with all the recent developments. Within this context the meaning of digital transformation is materializing, affecting every sector of the human activity. Though these changes equip someone with the necessary capabilities to sustain his existence in our modern world, often through digital transformation we observe phenomena of job polarization. New job opportunities are generated which demand advanced technological skills, while simultaneously the most repetitive tasks with the minimum requirements of skills are set aside. Therefore there is a need of capable leaders who can find the balance between the skills in hand, by making sure that the employees share equal opportunities of being educated on new technologies.

Within the context of digital transformation in this paper our effort is to locate the best attributes a digital leader should have in order to cope up with the survival of his organization through the digital era. After a short introductory part to digital transformation and the phenomenon of job polarization it causes, we are going to examine the required skills an appropriate digital leader should encompass, in order to lead to a successful digital transformation. Later on we will try to identify the most characteristic styles of leadership and offer some examples of digital transformation. Finally we are going to study the DESI index concerning the engagement of new technologies within the organizations.

Keywords: digital transformation, digital leadership, disruption, job polarization, new technologies

13.2 Introduction

Due to the fact that digital transformation is adopting to any type of organization and it is formulating according to its needs, there is not a clear and unique definition and guidelines of digital transformation. The point up to everybody agrees is that digital transformation is the process of harmonizing the organization to the environment of new technologies. And because technology never cease to evolve, digital transformation does not have a clear ending point but rather is an on-going process. As Martin Wilckens, Senior Manager of HR Digital & Innovation department of Deutche Telekom, stated each organization should begin the transformation process with any means available and start with small steps, so as to build a strong digital environment. Apart from the tools that can help the businesses on this pathway, the proper utilization of Artificial Intelligence as well as robotics can boost the organizations to create their own tools in order to serve them better to their transformation effort.

From all the above we can clearly realize that digital transformation is not just a trend that will vanish after a while, but rather it is here to stay and grow through the organizations. New ideas are being introduced and to the farther extent new job positions are being generated. However, often the zealous to undertake the transformation process in the best way creates phenomena like job polarization, where new jobs are generated that demand higher technological skills,

while simultaneously tasks with the minimum requirements are being set aside. This practically means that the new needs that are generated through the job creation seek for personnel with higher knowledge on digital and new technologies and at the same time workers with lower digital skills are in danger of lay-off, since the machines are replacing them in the repetitive routine tasks. Therefore actions should be organized by the companies in order to educate as much as possible their employees of all levels, so as to minimize the effects of phenomena like job polarization.

As we have said previously the process of digital transformation may not provide a typical guideline, which implies that in order to be able such a process to characterized as viable for the organization there should be the suitable person who will set some ground rules to be followed. Such a person encompasses the characteristics of an accountable and responsible leader, who could apply the suitable digital strategy for the success of the organization. Within this context this paper will try to underpin the essential meaning of digital leadership that could lead to a successful digital transformation. Then the typical characteristics of a digital leader will be mentioned and an effort to allocate the basic leadership styles will be made. Furthermore an array of examples of companies that have applied a digital transformation process will be mentioned. Finally we are going to conclude with a report of a newly established index, which explores the levels of adoption of digital technologies within our society.

13.3 Digital Leadership and Required Skills

As digital disruption sweeps across every major industry there is no doubt that any type of organization needs a new kind of leader, a digital leader who can build teams, keep people connected and engaged and drive a culture of innovation, risk tolerance and continuous improvement. The term may be relatively new and there is no given definition of it, however, we can certainly say that this kind of leader is destined to undertake the role of a technology pioneer not in the terms of understanding how technology works, but how he can effectively use it to create competitive advantage. The role of the leader nowadays is not very different from those leaders over a hundred years ago, where we observed the uptake in electricity by enterprises. The focus and devotion on new technologies is analogous to that era. Sure enough the leader should be not only a person who understands thoroughly the digital world, but also an individual who can set a prototype of inspiration and trust. With this characteristics the employees are willing to follow his directions, in order to guide the organization to its digital transformation. However, in their effort to apply the best suitable approach to digital transformation most of the leaders make the mistake to believe that the establishment of fully equipped websites, social media and online activity makes them successful digital leaders. It goes far beyond that, as digital transformation is about the creation of a new philosophy and mentality of the organization. Therefore some of the roles that a proper digital leader should undertake are:

- Use data driven analysis rather than subjective analysis
- Set vision rather than inspiration
- Develop citizen based strategy rather than inside-out plans
- Outline coherent action rather than disjointed performance programs
- Focus on outcomes rather than outputs

Usually the role of the digital leader goes to the chief of the IT department, due to the fact that the director of that section is more able to understand and implement the mentality of new technologies. However, it is important to clarify that the digital leader is equally important to the organization as the chief financial officer or the head of any other department. So, in this framework any person of responsibility within the organization can be an accountable digital leader.

It is up to each organization to identify the person who gathers the most important attributes of a digital leader and delegate him to enlighten the way to success and competitive advantage. The most important attributes that characterize a digital leader are:

- Communication: a proper communication strategy should be developed by the digital leader so as to inform anyone within and outside of the company about the steps that are going to be followed for a successful transformation
- Vision: is the trait that makes digital leaders stand out and is the only way that employees will trust and follow them to the pathway that will make them move on in this digital era
- Digital literacy: the person who will take the role of a digital leader should at least be able to utilize effectively all the modern technologies for the purposes of the organization. There is a gap between the generations, since the millennials are born inside the technology, so it is easier for them to apprehend it, while the older generations called the digital immigrants strive to understand the way digital technologies work
- Strategy: the most important activity of a digital leader is to unite the organization's personnel under the umbrella of a well-structured digital agenda, so as to cultivate the proper digital culture that will inspire everyone to participate in the viability of the organization within this modern digital world
- Innovation: the key to innovation for leaders is to keep abreast of developments in the digital sphere and ensure the workforce is embedded in a culture that values innovation and takes risks to trial new platforms and technologies
- Risk-taking: innovation is impossible without risk and as Mark Zuckerberg the CEO of Facebook stated, in a world that is changing really quickly, the only strategy that is deemed to fail is not taking risks
- Adaptability: the way to be flexible and quickly adjust to any obstacle or opportunity may be given by the rapid changes of technology is a crucial element in the character of a digital leader
- Talent spotting: a digital leader is not a lone wolf but rather a team player and through his effort to guide the organization to its digital transformation, he should be able to spot the employees who present a talent in dealing with digital matters and be able to develop these talents and make them valuable assistants to the digital agenda

To summarize for any type of organization that wishes to enroll in the game of the digital world so as to be able to survive, they should consider thoroughly the matter of developing a proper digital agenda through the effective promotion of the digital leader, following the steps below:

- Rethink the organization's leadership model so as to include innovation and team work
- Identify the likely digital leaders in the organization and cultivate their talents
- Ensure accountability
- Promote younger people into leadership much faster
- Foster risk-taking and experimentation through leadership strategy
- Move beyond traditional leadership training

13.4 Digital Leadership Styles

As we have seen in the previous section, digital leadership encompasses all the characteristics of the traditional leadership, with the only difference that it utilizes effectively and for the benefit of the organization the digital technologies and all the developments deriving from them. Through this section we will make an effort to identify the most important leadership styles in this digital era. We have found two different studies with a different approach to the types of digital leadership, the five Cs and the four Vs, therefore below we present both of them. Nevertheless their common point of view is the recognition that digital leadership is a game played by teams and not individually.

According to Kasey Panetta, a contributor at Gartner research and advisory company, identifies five ways through which a team can be managed in order to reach to the desired digital transformation and competitive advantage and these are:

- Commander: this is a style often seen on more experienced or self-managing teams which focuses to a specific goal and their leaders delegate decisions and actions while providing direction, objectives, rewards and a certain pace
- Catalyst: within the entrepreneurial or innovative teams is more often to meet the catalyst style of leadership, where the focus is on action and their leaders instigate and motivate to help generate creative options through a framework for innovation
- Coach: when the focus of the team is on performance then it is characterized as operational or action-oriented and the person in charge provides real-time feedback to improve skills and execution, taking the role of a responsible person who guides and directs
- Collaborator: in teams that are relatively new and quite inexperienced it is more possible to find this style of leadership, with focus to execution and the director of the team supporting and modeling the best practices through his direct involvement
- Consultant: finally in teams that are more conservative or they are just evolving the style of leader consultant is more probable to be implemented, where the focus is on outcome and the leader uses his personal experiences, insights and knowledge so as to efficiently advise his team and make it contribute to planning and long-term outcomes

On the other hand Stijn Viaene, a Professor in digital transformation, formulates his leadership model through a matrix including two axes, with connectivity through people and ideas on the vertical one and development through opportunity and capability on the horizontal axis, providing the following four leadership styles:
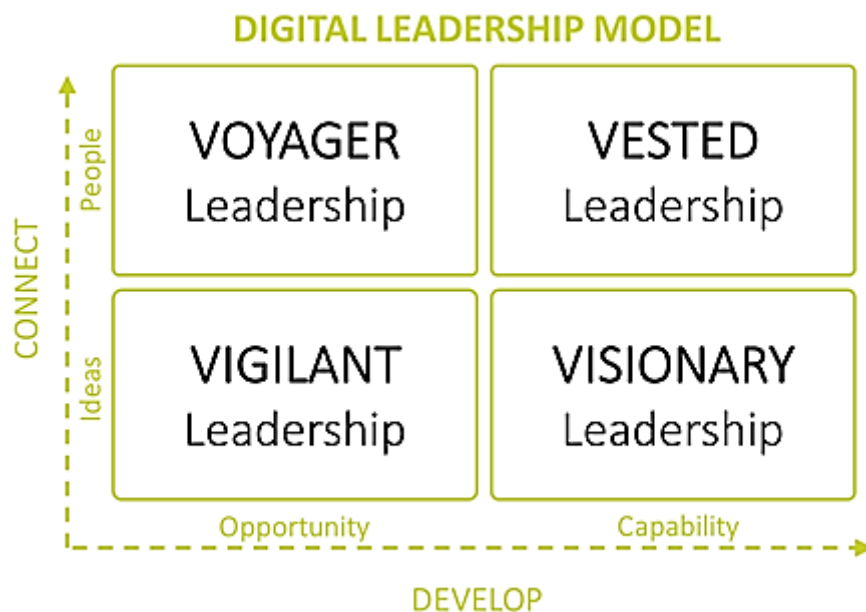
Figure 1: Digital leadership Model

- Vigilant: leaders who take on this role are trying to navigate their way through turbulent times of digital disruption. They are constantly scanning the environment, including far beyond the boundaries of their organization or sector, looking for ideas and opportunities
- Voyager: this type of leadership succeeds in tapping into the creativity of individuals and teams, turning abstract opportunities into concrete solutions through experimentation
- Visionary: leaders who take on this role paint a convincing and ambitious picture of a successful digital company. They make sure that everyone in the organization feels as if they are striving towards a common goal
- Vested: this type of leadership actually puts the entire organization, like a well-oiled machine, on the pathway to successful digital transformation

13.5 Digital Transformation Cases

13.5.1 Nurses Education

Through the continuous developments of the ICT sector new means of managing a business are being introduced, which affect organizations from all the areas of industry and consequently health care department as well. The expansion of the broadband services and the usability of mobile devices alternate the classical way of training of nurses through four trending areas:
  • Expanded electronic health record (EHR) use and interoperability, an online collaboration of doctors and nurses from various fields, assisted by cloud services, that allows them to exchange valuable information concerning the health status of the patient and the proper treatment for him.
  • Increased influence of technology wearables for both patients and practitioners, permitting the most accurate communication with the patient and the right understanding of his symptoms and health status. It is most probable to see in future nurses being equipped with small devices like contact lenses or glasses on which with the aid of algorithms various biometrical data of the patients are going to be displayed.
  • Big data and data analytics do not only accelerate scientific advances, but also enable new mods of discovery making this way the predictions of the healthcare system more accurate and up to the point. The creation of massive electronic archives as well as the proper utilization of data mining and predictive analytics methods and tools can support in the best way the medical decision.
  • Patient engagement in directing and managing care is materializing through the expanded use of social media. The patient is able to communicate easier with the healthcare team through the activation of e-visits or other electronic communication and aid them to a proper data collection for the best suitable diagnosis.

13.5.2 CIN in Japan

The Clinical Innovation Network is one of the ten projects form a challenge initiated by the Liberal Democratic Party of Japan in June 2015 aiming to have a significant policy effect by 2020 and allow Japan to achieve high economic growth and innovation. It is actually an online registry for the efficient clinical development of new drugs, medical devices and regenerative medical products. Within this registry various categories have been made according to the disease they are referring to, so as to offer to people the opportunity to be informed about the generation of advanced drugs and even participate in the product generation process through their comments on other tested remedies and their results.

13.5.3 "HUANGSHAN 168"

The company Beijing Tourye Outdoors Culture Communication Limited was founded at the late 2008 and is operating in the field of outdoors activities' organization and especially in hiking planning. Major attraction is considered the area called Huangshan 168, which offers pleasant routes through nature. Due to the increased preference of this area the company decided to use every suitable digital mean of technology, in order to sustain the trails secure and offer to the visitors an integrated and memorable experience. The data that the company gathered and manipulated regarded the ground morphology as well as the hydrogeological formulation of the area.

For the best mapping of the area and the possibility of new trails' discovery have been used drones with attached camera and a GPS locating system so as to record every detail of these routes. Furthermore all the participants are equipped with GPS devices for reasons of personal security and their faster tracking by the rescuers in case of emergency.

Within the framework of digital transformation of the company, electronic platforms of social networking have been designed for the most accurate information of existing and new expedition members, as well as the best designing of the offered hiking programs.

13.5.4 Kutesmart Platform

Another example coming from China is this of the clothes production industry Red Collar Group, which was founded in 1995 so as to serve both the local as well as the foreign markets. For the increase of competitiveness and the faster response to the market the industry moved to the production of clothes on order, so as to utilize effectively the available sources.

Of great importance is considered the use of a mobile unit that was equipped with all necessary three dimensional technologies for the most accurate measurement of the size of each customer. Also the company designed a system of personalized order, so as to give the ability to every customer to manage effectively their own order. With this new way of order planning the designing and warehousing costs were decreased up to 90% and the production cost is only 10% more than mass production, a fact that led to the increase of profit margins up to 25%. Furthermore the company adopted a flatter organizational structure which offers great flexibility in the managing activities and increases its effectiveness. By avoiding the strict hierarchy the company managed to minimize the number of its departments making in this way much faster the response time to the customers. Due to this fact there was a fall in managing expenses up to 20%.

Moreover a modern digital platform was designed on which could participate more clothes and other accessories' producers so as to offer an integrated dressing suggestion to the clients. This interconnection was achieved through the development of a digital ecosystem named KuteSmart, which also includes businessmen from similar sectors. Therefore the company is more able to be accurately informed for the needs of the customers and serve them in the best suitable way.

13.5.5 LKAB Mining Company

A very successful example of application of new digital processes is the one of the Swedish mining company LKAB which is cooperating with the technical company Monitoring Control Center for the remote maintenance of mining mechanical equipment. Due to the fact that the maintenance of excavating machinery until now was keeping them out of use for a quite long period, in order to be dismantled so as to be able to locate the malfunction, the companies decided to put on basic parts of the machinery digital sensors that would send various measurement data to the analysts of Monitoring Control Center. After that the analysts were being connected via a digital platform with the technicians of LKAB so as to guide them to the most accurate location of the malfunction or the part of the machinery which had to be repaired. In this way they were managing to face efficiently whichever case of malfunction without keeping the machinery for a long time out of order.

With the application of the digital sensors the problem diagnosing procedure is consisted of four stages: the collection of measurements, the problem diagnosis, the scheduling of interventions and finally the completion of maintenance. Through this maintenance on demand system the companies managed to combine knowledge and skills of people in remote locations and apply them effectively on machinery maintenance.

13.5.6 Cases from Greek Market

Greece has just recently designed its National Digital Strategy, therefore is far behind in the chase of digital transformation in relation to other European countries. However, as new generation networks are being developed and the level of technological skills remains pretty above average, the country can look forward with optimism. In the public sector and the local governance there is no much of improvement due to the lack of resources and the absence of national digital strategy so far. Nevertheless, we can observe some cases from some municipalities which make an effort to approach the digital era through transformation. The greatest improvement is being noted on private sector, where especially large organizations recognize the need for digital transformation and create new job positions with that direction.

Startups in particularly can lead the way to the digital world because they come up with new ideas and greater spirit for facing the difficulties of the digital era.

One of the speakers of the HR Forum 2018 was Ms. Elena Papadopoulou, Chief Human Resources Officer of OTE Group, the largest telecommunication services provider in Greece. Ms. Papadopoulou referred to big ICT projects undertaken by OTE Group both in public and private organizations, contributing in their digital transformation process. She referred to the role of HR in businesses, which is called to co-formulate the new business operating model and to participate actively in the decision-making process. The new infrastructures should be more lean and agile and programs for education of employees on new technologies should be developed. Concerning the adoption of digital transformation by OTE Group itself, Ms. Papadopoulou said that the Group's HR strategy is based on three pillars, growth mindset, agility and finally learning and development. The target of this strategy is to cultivate a culture of constant skills improvement, so as to aid the personnel define their role in the new ecosystem. Simpler organizational structures are being designed and new and flexible models of working and cooperation are being generated. However, the most important is that the Group offers equal opportunities of education on digital skills to its personnel cultivating at the same time innovation. Completing her speech Ms. Papadopoulou mentioned that maybe technology is a valuable partner in this digital era but it cannot change the world by itself. It is up to humans, with the assistance of technology, to create a better world.

Always one step ahead of the advances in the world of technology Xerox continue to play crucial role in the era of digital transformation by offering solutions of computerization of processes in the internal environment of a business. Especially Xerox Hellas is considered one of the best Xerox subsidiaries in Europe and for six years have been awarded for its working environment. The CEO of Xerox Hellas Mr. Vasilis Rampat describes that Xerox itself is evolving providing technology, innovation and services on digital transformation matters. The company develops many applications, software and technological solutions which computerize business procedures, assisting in this way the businesses to communicate, connect and work faster and efficiently. Such an example is an integrated software for banks which includes all the kinds of transactions of the banking system and the loan approval for example is operated at a rate of 80% faster than in past. Also for businesses operating on tourism an innovative application is Xerox Easy Translator, which gives them the ability to translate a document automatically in more than 45 languages.

The benefits of artificial intelligence in every aspect of our lives foresaw Mr. Charis Laoudis CEO of Ira Media and brought in Greece the integrated platform Leadmark. A solution which introduces the world of brand marketing into the benefits of artificial intelligence predicting with an accuracy of more than 80% all the parameters that ensure the success of a campaign. We are speaking of a program that is fed with an array of data, country's macroeconomic details, weather conditions, numbers of products sold on certain periods, etcetera and the program recognizes how they interact with each other and how they practically affect the sales and product demand. The outcome of this procedure is the model of the best mixture of marketing activities and the minimum required budget for the goal achievement. This program encompasses also the technology called TV Attribution, which practically measures the effect on sales from TV channels or kinds of TV programs and zones. Furthermore, the platform respects all the recent laws on protection of personal data and never publishes any lists of these. The reason that artificial intelligence was chosen was the need to develop something that would offer added value to the companies, something that as Mr. Laoudis points out is not fully understood by large organizations in Greece and that is why the aim of such technology by Ira Media were the foreign markets as well.

13.6 Digital Economy and Society Index

Digital Economy and Society Index (DESI) is a complex summary of basic indicators depicting the digital performance of every E.U. member state and how high they score in digital

competitiveness when compared to the other member states. It measures the performance indicators of five main categories:

- Connectivity, which measures broadband network coverage within the region of each member state
- Human capital, regarding the people equipped with the proper digital skills
- Use of Internet, by citizens and to what extend
- Integration of Digital Technology, in industries and business sector
- Digital public services, measuring the amount of public services can be conducted online by each member state.

It was published recently and this is the reason why the chronological span of data is so limited and it concerns the 28 countries consisting the European Union. Additionally, in 2016 the International Digital Economy and Society Index (I-DESI) was published in order to broaden the data coverage and offer chances of comparison to the newly added countries in question, USA, Japan, Korea, China, Australia, Canada, Russia, Switzerland, Norway, Iceland and Turkey. In fact the responsibility of the publication was received by a contractor who was about to calculate the index from 2013 to 2017, or as recent as possible when these years are not available.

The above mentioned categories are further analyzed into various sub-categories. For the purposes of our research we are going to focus on integration of digital technology in order to grasp the general trend of businesses regarding digitalization. Then the analysis that follows have been done by taking under consideration the demand level of ICT specialists, an outcome of the phenomenon of polarization we have mentioned earlier.
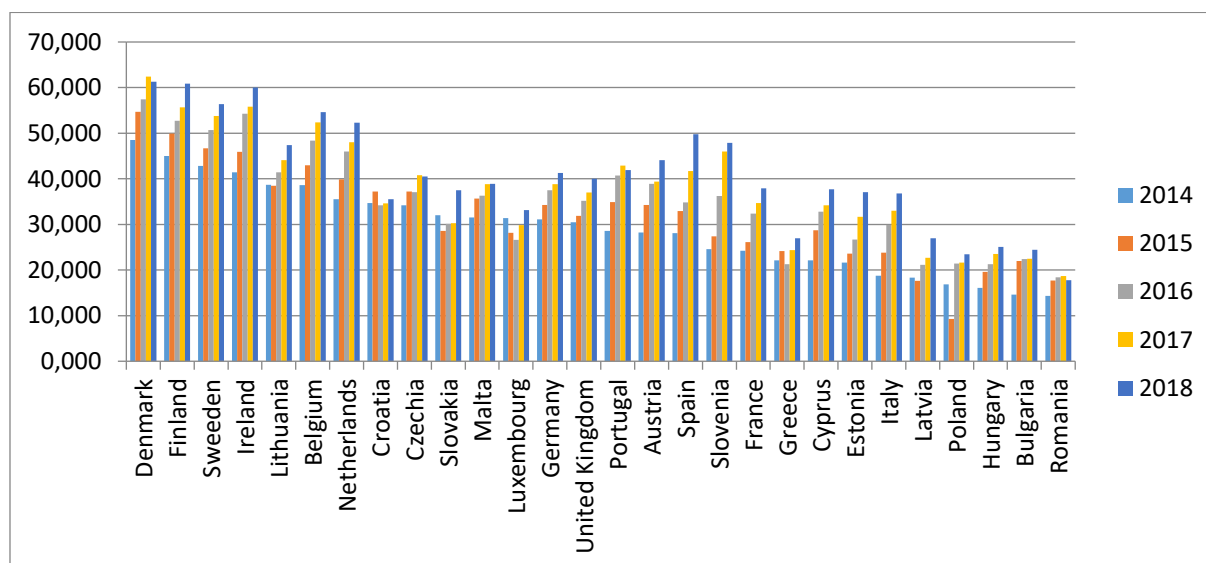
Figure 2: ICT Specialists Scores

At a first glance on the overall DESI score we can observe that Denmark, Sweden, Finland and Ireland are located at the top of the board, as they present the highest scores, while the lowest scores are achieved by Poland, Hungary, Romania and Bulgaria. However, the highest scores do not automatically mean that they are the best in every category of factors. Denmark with 92% of its population being regular internet users, appears also one of the highest shares of ICT specialists. Furthermore the adoption of digital technologies rate remains on top among the European countries and a large percentage of Danish businesses turnover comes from e-commerce. In Sweden where 91% of the population uses internet, despite the high ranking on ICT Specialists researches show that demand for ICT professionals surpasses the supply. Thanks to the great adaptability of businesses on digital technologies Sweden maintains a high ranking. With a high percentage of users with basic digital skills Finland scores equally high on STEM graduates. Also there is a quite big adoption of new technologies rate.

Due to a range of successful programs Ireland manages to reduce any skill shortage problem with the simultaneous increase of competitiveness. However, on the business sector there is still room for improvement regarding utilization of digital technologies. Indeed, these countries with a low unemployment rate share a more effective absorbing rate of the ICT professionals, unlike Poland, Hungary, Romania and Bulgaria, where a pretty high unemployment rate blocks the absorbing of ICT skilled personnel. Half of the Polish population have got no digital skills and along with a low percentage of population with a STEM degree, drag down the development of the economy. Moreover, a low turnover on e-commerce leads to a bad adoption of digital technologies rate. Due to the long recession period and the low percentages of internet usage by the population Hungary is not the ideal case for digital technologies engagement. However, Hungary proves to be a moderate performer in effective utilization of digital technologies. Finally, both Romania and Bulgaria suffer a severe gap of digital skills among their population and their adoption of digital technologies rate are among the lowest in Europe, with a negative effect to the development of their economy.

13.7 Conclusion

Unlike any other transformation process digital transformation does not have a clear starting and ending point, but it is rather an on-going procedure due to the fact that it concerns the effort of an organization to evolve on the digital world. In order to avoid phenomena like job polarization, which generate a discrimination within the working environment, the person with the most appropriate characteristics should be declared a digital leader and take the responsibility to guide properly the organization. It is up to the hands of the digital leader to exploit the new technologies in the most efficient way so as to create a competitive advantage. Nevertheless, we should always have in mind that digital transformation is a team work, thus the digital leader should inspire and enhance the communication within working groups.

13.8 Articles and Internet Sources

[1] Risling, T. (2016). Educating the nurses of 2025: Technology trends of the next decade. Nurse education in Practice, 22, pp. 89-92

[2] Matsushita, S. Tachibana, K. and Kondoh, M. (2018). The Clinical Innovation Network: a policy for promoting development of drugs and medical devices in Japan, Drug Discovery Today, 00(00), pp. 1-4

[3] Zhou, N. et al. (2017). The role of information technologies (ITs) in firm's resource orchestration process: A case analysis of China's "Huangshan 168", International Journal of Information Management, 35, pp. 713 – 715

[4] Ying, W. et al. (2018). Social informatics of intelligent manufacturing ecosystems: A case study of KuteSmart, International Journal of Information Management, 42, pp. 102 – 105

[5] Jonsson, K. Mathiassen, L. and Holmstrom, J. (2018). Representation and mediation in digitalized work: evidence from maintenance of mining machinery, Journal of Information Technology, 33, pp. 216 – 232

[6] McIntosh, S. (2013). Hollowing out and the future of the labour market, BIS Research Paper of Department for Business Innovation & Skills, 134, pp. 31 – 34

[7] https://digitalmarketinginstitute.com/blog/03-04-18-the-most-in-demand-skills-in-digital-leadership

[8] https://searchcio.techtarget.com/definition/digital-leadership

[9] https://www2.deloitte.com/insights/us/en/focus/human-capital-trends/2017/developing-digital-leaders.html

[10] https://www.gartner.com/smarterwithgartner/how-to-adapt-your-leadership-style-for-digital-business-infographic/

[10] https://www.vlerick.com/en/research-and-faculty/knowledge-items/knowledge/how-different-types-of-leadership-contribute-to-the-success-of-your-digital-transformation

[12] http://www.capital.gr/epixeiriseis/3292044/to-paradeigma-tou-psifiakou-metasximatismou-tou-ote?fbclid=IwAR1b9ztsdBghRXzS9iHia1mCE75QsfJnj1MUA7A3pxA3glDKgECfK7391XU

[13] https://webtrails.gr/articles/digital-transformation-in-greece/?fbclid=IwAR36BipqgmrzIKGn88mVcovDxQzK8qj4ASxb95A5GcLMtGofBwHDbO_95gI

[14] http://www.fortunegreece.com/interview/o-psifiakos-metaschimatismos-klidi-gia-tin-anaptixi/?fbclid=IwAR3671OHcA7a9gJemAhLCJbupICkp_F82NTBXWhhKyLKuITo4-kUCt-kDw0

[15] http://www.fortunegreece.com/interview/i-techniti-noimosini-ston-kosmo-tou-marketing/

[16] http://www.fortunegreece.com/interview/o-martin-wilckens-sto-disrupt-greece-odigi-ti-deutsche-telekom-stin-psifiaki-epochi-ke-mas-taxidevi-sto-2028/

[17] https://www.zdnet.com/article/what-is-digital-transformation-everything-you-need-to-know-about-how-technology-is-reshaping/

[18] https://www.ionology.com/what-is-a-digital-leader/

[19] https://digital-agenda-data.eu/charts/desi-composite#chart={%22indicator%22:%22DESI_SLIDERS%22,%22breakdown%22:{%22DESI_1_CONN%22:5,%22DESI_2_HC%22:5,%22DESI_3_UI%22:3,%22DESI_4_IDT%22:4,%22DESI_5_DPS%22:3},%22unit-measure%22:%22pc_DESI_SLIDERS%22,%22time-period%22:%222018%22}

14 Promotion of Innovation and ICT in the Progression of Economic Growth and Country Development

Arbnor Pajaziti
Faculty of Mechanical Engineering, University of Prishtina, Kosovo

14.1 Abstract

Innovation and Information and Communication Technology (ICT) are necessary to have sustainable development, improve processes, increase competitiveness, provide creative solutions and require qualified human resources, and that is why we need to connect the economy with education. Kosovo has the population with the youngest demographics in Europe and has the potential to turn a big opportunity for economic development. Kosovo is making great progress in the field of innovation and technology to have sustainable development of the economy, to improve processes, to increase competitiveness, to provide creative solutions and require qualified human resources. The digital agenda in the Western Balkans is becoming a reality and it is expected that these countries will integrate on this fast and equitable agenda of Europe. The commitment of Kosovo's citizens is to move towards a new society, a new society that can be built by building the economy and it must be a digital economy. To make the transformation for the next decade with the aim of the digital economy, the transformation of the economic thinking that is not an easy task, but is a process that has to be run by the state or by the community, since young generation is moving faster than the institutions. The young generation accepted the digital economy, they are living with it, and they want to transmit the knowledge.

Keywords: Innovation, ICT, Entrepreneurship, Digital Economy.

14.2 Introduction

Economic growth is based on technology, innovation and, more broadly, knowledge. In addition, Information and Communication Technologies (ICT) are key tools in promoting innovation activities, technology diffusion, and knowledge generation within societies. Indeed, as Information Society paradigm matures, effective use of ICT becomes an indispensable device in promoting sustainable growth [1].

There is concern that developing countries are deprived of the opportunities for economic growth and life improvement generally enjoyed by advanced economies because of the scarcity of ICT, particularly limited Internet connectivity. The lack of ICT is understood to be an important factor contributing to the widening of the gap between 'developed' and 'developing' countries, as shown by world socio-economic indicators published in the annual reports of international development agencies, such as those from the World Bank and the United Nations Development Programme (UNDP). Many high profile initiatives have been undertaken to remedy this problem. They typically aim to create awareness on the benefits of ICT, raise investment, and promote policy measures for the deployment of telecommunications infrastructures and the diffusion of ICT applications in all societal sectors [2].

Due to the unfavorable business environment and the lack of a creative entrepreneurship culture, Kosovo lacks innovative enterprises, which are the main contributors to job creation in the developed Western economies. Based on the SME Development Strategy 2012-2016 with vision 2020, Kosovo is still in the process of completing the basic institutional, legal and regulatory requirements related to SME policies. For this reason, in 2017, the Government of the Republic of Kosovo established the Ministry of Innovation and Entrepreneurship with the

fundamental aim of stimulating innovative activities in Kosovo, which will increase economic and institutional productivity through the development of information technology and efficient entrepreneurship. The two most important departments operating within the MIE are: Department of Innovation (with Division for Innovation, and Division for Technology), and Department of Entrepreneurship (with Division of Entrepreneurship Development and Division of SMEs Promotion and Advocacy).

The main objectives of MIE are to: (i) promote innovation and information technology in the service of economic growth and development; (ii) entrepreneurship development through training / consultancy programs; (iii) consolidation of the ICT fund to support the development sectors of the economy; (iv) the creation of a fund and the institutional support of women and young people in entrepreneurship; (v) the establishment of institutional coordination mechanisms between science, the private sector and policy-making. The specific objectives of MIE are:

1. Promotion of innovation by economic sectors in the service of economic growth and development;
2. Establish institutional coordination mechanisms among science, the private sector and policy-making;
3. Entrepreneurship development through training / consultancy programs;
4. Consolidation of the ICT fund and creation of funds for the support of development sectors (with focus on women and young people);
5. Supporting SME development for facing competitive pressures in the region, the EU and other markets.

Government through financial and non-financial schemes as well as training aims to support: (1) new products; (2) new production methods; (3) new supply methods; (4) the extent of new markets; as well as (5) new business organization methods. In order to further develop the innovation field, the Innovation Council has been established to ensure the establishment of a fund for promoting innovation, the development of public-private partnerships for investment in innovation, the consolidation of the legal infrastructure for "angel investors" and stimulation of innovative science accelerators. In order to support Innovation and Entrepreneurship in function of economic empowerment and creation of new jobs, the Ministry of Innovation and Entrepreneurship (MIE) in March 2019 has made a public call for Start-Up in the field of Innovation and Entrepreneurship.

In support of start-up and innovation businesses, government-level budget has been increased to promote Innovation and Entrepreneurship. By 2018, MIE has allocated over 10 million euros in total. Of this value, over 7 million euros have been allocated to the category of subsidies and transfers to be invested to support entities that within their mission and responsibilities address the innovation field and have a direct impact on SME performance growth and existing start-up businesses. Over 2 million euros from the government budget are intended to be invested in the creation of four Innovation and Entrepreneurship Centers and their functionalization (renovation, laboratory equipment and other accompanying equipment).

The "Start-up" Innovation and Entrepreneurship Funding Program is designed to finance new businesses and initiatives / ideas for creating new innovative businesses for the purpose of economic development and the creation of new job. "Start-Up" funding aims at the economic empowerment of young people, in implementing innovative ideas and business plans. The total call value is 1 million euros.

Approved grants are used to support the creation of innovative enterprises and the promotion of young people and women in business, so that the shared tools will impact on:

• Production or service activities in the field of ICT;
• Increasing export capacity;
• Opening up new jobs;
• Investing in research and development;
• Increase of competitiveness;
• Improving work processes and developing new products;

- Raise the level of youth.

14.3 SWOT Analysis

Based on the information presented in the National Strategy for Innovation and Entrepreneurship, the strengths, weaknesses, opportunities and threats of Kosovo in terms of innovation and entrepreneurship are summarized in the SWOT table below. Although the weaknesses currently seem to exceed the strengths, consultations with various stakeholders have shown the existing potentials in specific areas, where megatrends and social challenges provide prospects and opportunities for future development. Table 1 presents the SWOT analysis derived from the conducted analysis [6-7].

Strengths
Sustainable economic development and steady growth in the last decade; Innovation and Entrepreneurship are high on the political agenda and are well represented, Existence of the Ministry of Innovation and Entrepreneurship; Increasing the harmonization of Kosovo's industrial and innovative policy with EU policies and support programs for SMEs; Legislation and Strategic Sustainable ICT Framework; Good interconnection between municipalities, combined with the availability of hardware and software.
Weaknesses
Low Public Investment in Innovation and Entrepreneurship; Low private sector ability to invest in innovation; The institutional framework of innovation and entrepreneurship has not yet been met; Insufficient coordination between public institutions and private companies; Poor coordination between training and education actors; The academic sector is not willing to provide services to the private sector as a provider of innovation solution; Lack of creativity for academic-industrial cooperation; The legal framework related to innovation has not been completed.
Opportunities
The availability of a small number of graduate but well-educated professionals; The youngest population in Europe, capable of facing the digital transformation of society and industry; The growing number of highly innovative and competitive firms at the international level (mostly from the ICT sector); Rapid development of mobile and internet infrastructure; ICT as a facilitator for the digitization of other important industries; Good level of cooperation between companies; Cooperation between the private sector, the education sector and the government.
Threats
Insufficient co-operation between public and private actors may hamper rapid progress; The unclear role and low capacity of innovation intermediaries hinder their role in supporting the national industry to become more innovative; Brainstorming of young well-educated entrepreneurs due to lack of business opportunities; Innovative firms leave Kosovo or are purchased from foreign firms; The offer of ICT graduates does not meet industry demand; Lack of public investment in innovation and entrepreneurship will not lead to the desired impact.

Table 1. SWOT Analysis

14.4 Prioritizing Kosovo's Sectors with high Potential for Economic Development

A number of thematic pillars have been set for achieving strategic objectives and supporting innovation and entrepreneurship in Kosovo. These pillars form an integrated portfolio of support measures that can quickly adapt to changing market conditions and needs [7].

These pillars are as follows:
1. Developing an integrated system for innovation in the Republic of Kosovo and advancing the conditions of the legal and fiscal framework;

2. Increase the potential for innovation in Kosovar enterprises;

3. Support innovation and entrepreneurship among young people and women in businesses;
4. Promotion and treatment of innovations in sectors with potential for economic development.
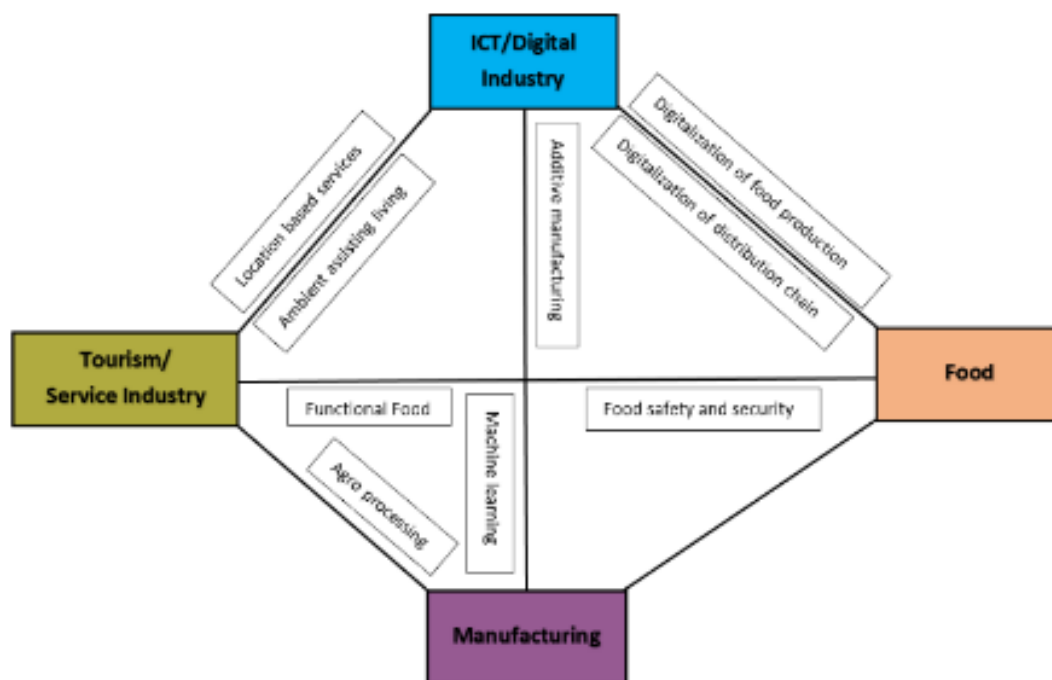
Figure 1: *Diamond of synergy S3 of the Republic of Kosovo [7].*

However, Pillar 4 emphasizes a more vertical and non-neutral intervention logic, for better review of capacity and transformation opportunities, and to create critical mass in new innovative areas with growth potential above the average. Transformational activities are innovation-related activities carried out by a group of stakeholders targeting the same (technical, market or industrial) field, having the potential to significantly transform existing industries as follows:

• ICT and the interconnected digital industry;
• Food production and processing;
• Industrial production;
• Tourism and interconnected service industry.

The S3 Diamond Symbol for Kosovo grouped the four identified Priority Fields and assumes the identification of Transformational Activities between them (Fig. 1).

14.4.1 Up to date Activities Related to the Implementation of MIE Plans

Promotion of innovation by MIE was done through the establishment of four regional centers of innovation and entrepreneurship (Ferizaj, Prishtina, Mitrovica and Prizren) [10]. In October 2018, in the municipality of Ferizaj, the project for the Center of Innovation and Entrepreneurship in Ferizaj was finalized, a project which will create extraordinary employment potential through the preparation of adequate jobs. Investments in this project are clear evidence of the economic agenda for job development in the region of Ferizaj. In November 2018 was inaugurated the Innovation and Entrepreneurship Center at the University of Prishtina "Hasan Prishtina" (UPHP). This center will be a space for students to work on their ideas for various projects that will contribute to opening new businesses and developing existing ones that enable new jobs. The Innovation and Entrepreneurship Center of the Faculty of Mechanical Engineering (FME) of UPHP will provide counseling and training aimed at linking

our students' knowledge with the market and the economy. The Center's accomplishment marks a step further in view of the objectives pursued by the Center for Reforms at this university, aiming to link the studies with the industry and the labor market, where the product of this will be the innovative and creative student.

The financing of the project for renovation of the premises of the FME-UPHP laboratory facility for the needs of the "Innovation and Entrepreneurship Center in UPHP" at the Faculty of Mechanical Engineering was made by MIE, while the realization of the project was done by the university itself. The Innovation and Entrepreneurship Center will provide space intended for UPHP students, innovative entrepreneurs in the process of para-incubation and incubation and for young people interested in professional innovation. In addition, this Center will also be available for other individual innovators who can use, for their research, innovative ideas. Some of the Laboratories of the Center have begun to equip with equipment that will serve for professional training, see Fig. 2.

Figure 2: MPS (Modular Production System) at the Laboratory of Mechatronics, FME-UP.

In March 2019, a new Innovation and Entrepreneurship Center in Mitrovica has been opened, where there will also be training, labs, investment, research and development for students, teachers, businessmen and all those who have ideas. This is the Center for Innovation at the University of Mitrovica "Isa Boletini" that will make a sustainable link among university, education and business.

In January 2019, the Innovation and Training Park in Prizren was opened, pointing out that Prizren will become the regional center for innovation in the Western Balkans, see Fig. 3. This Park will be functionalized in the space that has been used by German KFOR in Prizren and will be the opportunity for economic development of Kosovo through the creation of space for young people and the internationalization of Kosovo in the digital economy. It is foreseen that various companies that deal with the aforementioned fields will be operating. Its environments are thought to turn into a Kosovar-German center. In an area of 44 hectares, there are 36 large objects. In this country will focus on educational and educational institutions, which will prepare new staff, ready for the labor market. ALG "Loyola-Gymnasium" school has also announced the opening of a training Center.

Figure 3: Park of Innovation and Training in Prizren.

14.4.2 Other Centers of Innovation and Entrepreneurship in Kosovo

Innovation Centre Kosovo (ICK) was founded in 2011 to support entrepreneurship, innovation and commercially based business development, with a focus on information and communication technology. The center supports both start-ups and existing companies with the potential for growth [11]. ICK is a center whose aim is to connect research and development component of scientific field with the business sector, focusing on creating new job opportunities oriented towards the future, based on knowledge and new technology.

ICK offers incubator services, mentoring, consulting and training to entrepreneurs and managers in business planning, accounting, finance, product/service development, marketing/ sales, human resources, technology development and transfer and matchmaking with local, regional and international businesses, see Fig. 4.

Figure 4: The ICK Training Department [11].

ICK will both create new jobs through the businesses that supports and train young people for jobs in the broader marketplace. ICK will be a hub for connecting new ideas and technology with human and financial resources to create or expand commercially viable companies that can successfully fill the needs in the market, generating sales, trade, local productive capacity and skilled employment [11].

BONEVET (Albanian word for DO IT YOURSELF) is a non-profit and non-formal educational institution established in 2014 by the private Foundation UNE E DU KOSOVEN based in

Prishtina [12]. BONEVET is a children-friendly environment designed to stimulate children's curiosity, imagination and creativity. Children are encouraged to actively play, make their own games, work together with other children, program robots, make prototypes with 3D-printers and CNC's, solve riddles and puzzles, design and make puppet theatre's, understand the importance of values, develop their communication skills, read books and learn languages, see Fig. 5.

Figure 5: The completed project of the children at the BONEVET educational institution [12].

Only during the year 2017 more than 500 children have attended various classes and in excess of 50 makers, girls and boys, have gained technical and soft-skills in various hands-on projects.

BONEVET has made an important positive impact within the community of Gjakova, and it continues to give hope to the community that was left to itself after the conflict, because many educated and skilled people left home to look for jobs elsewhere [12]. Following the example of Gjakova a second Maker-Kids/Make-Space BONEVET was founded in Prishtina in 2017. In year 2018 more than 700 children are expected to attend various classes in robotics, science, mathematics, electronics, mechanics (CNC and 3D-printing), chess, arts and languages [12].

14.5 Conclusions

The future of Kosovo should be related to the young generation that means to supply them with professional competence, in order to cope with the competitiveness locally, regionally and internationally in order to change the society. The law on innovation and entrepreneurship should be the goal of the government to have the national strategy on innovation, to have the digital coalition, to deploy the funds that have been created for innovation. The set-up of several centers for innovation and entrepreneurship will play the role to share the knowledge among the young generation through training to acquire appropriate skills in business requirements in this regard.

14.6 References

[1] M. Balboni, S. Rovira, and S. Vergara. ICT in Latin America A microdata analysis. LC/R.2172, June 20011. Printed in Santiago, Chile – United Nations.

[2] Ch. Avgerou. The Link between ICT and Economic Growth in the Discourse of Development. London School of Economics, UK. M. Korpela et al. (eds.), Organizational Information Systems in the Context of Globalization © Springer Science+Business Media New York 2003.

[3] Dieter Ernst & Bengt-Åke Lundvall. Information Technology in the Learning Economy - Challenges for Developing Countries. DK-9220 Aalborg OE, October, 1997.

[4] Sherif Kamel, Dina Rateb, and Mohamed El-Tawil. The Impact of ICT Investments on Economic Development in Egypt. The Electronic Journal on Information Systems in Developing Countries, (2009) 36, 1, 1-21.

[5] Andrew Watkins, Theo Papaioannou, Julius Mugwagwa, Dinar Kale National innovation systems and the intermediary role of industry associations in building institutional capacities for innovation in developing countries: A critical review of the literature. Elsevier, 2015, 1407-1418.

[6] Assessment of the Innovative System of Kosovo, OECD, March, 2013.

[7] National Strategy for Innovation and Entrepreneurship (2019-2023), Ministry of Innovation and Entrepreneurship.

[8] Bengt-Åke Lundvall et al. Handbook of Innovation Systems and Developing Countries - Building Domestic Capabilities in a Global Setting. Denmark.

[9] Rouben Indjikian and Donald S. Siegel. The Impact of Investment in IT on Economic Performance. Implications for Developing Counties. World Development Vol. 33, No. 5, pp. 681–700, 2005.

[10] https://www.min-rks.net/

[11] https://ickosovo.com/

[12] https://www.bonevet.org/

15 Cultures of Compliance: Innovative Learning Design in Banking and other Heavily Regulated Industries

David EVANS
JME Associates, UK

15.1 Abstract

Trainers and learning designers working in heavily regulated industries face many challenges. The purpose of this paper is to examine barriers and propose solutions in such circumstances. The paper is based on several years' experience of working with both wholesale and retail banks in the UK and the EU. Banks experience time and resource pressures to accommodate internal and externally required training needs. These can have negative effects employee motivation, engagement and the relevance of training. The relevance of the concept of a learning organisation is assessed, and several practical recommendations are outlined for trainers and learning designers working in regulated industries

Keywords: regulated industry, training schedule, rewards, accreditation.

15.2 Prisons
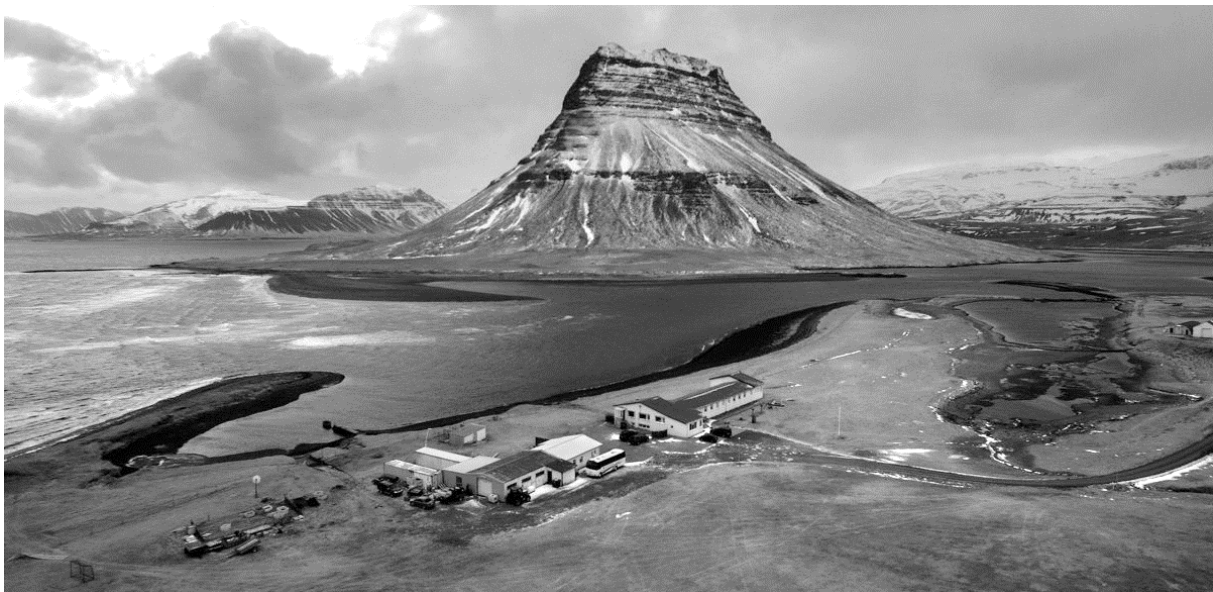
Figure 1: Photograph of a prison.

Fig.1 shows a photograph of a prison, but not one that needs armed guards, walls or razor wire. Totally secluded on a wind-swept coast, it's an old farmhouse bound by the Atlantic Ocean on one side and fields of snow-covered lava rock on another. To the east looms Snaefellsjokull, a dormant volcano. There's only one road back to civilization.

Kviabryggia Prison is where the former chairman and chief executive of Kaupthing Bank and a couple of dozen of their colleagues were incarcerated as a result of trials that followed the collapse of what was then the country's number one lender. Bankers from other Icelandic banks were also imprisoned, together with a few in Spain and Ireland (although not in the same prison).

In contrast, no bank executives in the USA or the UK have been convicted for their roles in the crimes committed prior to the 2008 banking crisis. A few notorious individuals involved in rogue trading such as like UBS's Kweku Adoboli, or those convicted of Libor / Euribor rate rigging have been punished, but those who simply defrauded ordinary people got away with it. Some lost their jobs, but in the longer term few really lost much of significance.

The reason for this introduction is not simply to bemoan the evils of finance but to situate it in the context of training and learning in industries like banking, pharmaceuticals and medicine that are or should be heavily regulated. Possibly social media companies will join this list in the future. Learning is vital to prevent fraud and bad practices from occurring, but if it is too rigidly controlled, it doesn't achieve the desired results. The aim sometimes seems to be more about proving that training has occurred, rather than being able to demonstrate the benefits of such training. This paper discusses whether banks can really be learning organisations, looks at some of the problems of designing innovative training for banks and finally suggests a few ways forward.

15.3 Background

After teaching and managing IT and learning technology in colleges for many years, I have spent most of the current century designing training materials and systems for banks – initially wholesale training in credit risk management for mainly Dutch banks (ING, ABN AMRO and RaboBank) with Moodys, and more recently, contact work on retail bank training for Banks like Lloyds, TSB and Santander. Gradually the focus has moved from paper based to online and blended learning, although of course many of the learning principles remain the same.

Part of the purpose of recent changes in regulatory practices in the UK has been to create a situation in which financial institutions are not allowed to provide advice on the products they are selling. This has required a massive retraining of sales staff whose role up until then had been to actively promote (that is, advise consumers to buy) the products they were selling. From about 2012 onwards, they were not allowed by law to do this, and similar changes to culture and approach are happening elsewhere. At the same time of course, banks were desperate to keep selling products such as mortgages, loans and insurance, without which their profitability and shareholder value would plummet. During the run on Northern Rock, a UK building society that collapsed in the financial crisis during 2008, it was notable that while desperate calls to its helpdesk went unanswered, calls to insurance sales lines were still picked up within a few rings. This produces a very thin tightrope on which training has to be conducted very quickly.

Serious regulation of banking dates back to the GlassSteagall Act in the USA which separated commercial and consumer banking after the great depression in the 1930s. One result of the free market economics of the 1980s onwards was increasing competition, mergers and acquisitions and the pressure to generate new income streams. This led banks and other financial institutions to move more and more into persuading their existing customer base to buy products they did not really need, and to capture customers from their competitors. During this period, many of the regulations that controlled financial institutions were relaxed. However, the crisis of 2008 brought a return to heavier regulation, although implementing it has been piecemeal.

15.4 Training in Banks

Banks generally provide training for their staff in the following areas

Induction to standard roles at all levels – introductory, supervisory and senior management

Mandatories - this is training that is required by law to ensure that staff are up to date with changing financial regulations, health and safety, money laundering and so on. In recent years this has been joined by anti-terrorism.

Compliance - higher level processes to ensure that safeguards, systems etc are in place to meet other legal and technical requirements.

Selling – new products, which is mainly how banks make their money

Processes - the routine detail on how to do things and to get things done. Often this involves convoluted ways round outdated and inefficient processes using inadequate software

Updating in all role relevant skills

Many people assume that most bank staff are based in branches or offices. In fact, these days very few are. Most of those not in call centres work from home. Equally, relatively few are now full time salaried staff – most are day rate contractors.

Lengthy face to face training is being reduced, although it remains the norm for management training. Elsewhere, the pattern is more often a one day introduction followed by paper based open learning or eLearning.

15.5 Learning Organisations

One framework within which to examine training in banks is to use the notion of a learning organisation. In his book, The Fifth Discipline, Peter Senge defines a learning organization as a group of people working together collectively to enhance their capacities to create results they really care about. The key question is, Can banks, and similar industries which are very tightly regulated become learning organisations? Senge suggests that a learning organisation has the following five characteristics:

Systems thinking. Learning organizations try to measure the performance of both the organization as a whole and its various components. If only some parts of what the organisation does are measured, or regarded as important, the organization will fall short of its goal. Banking has a problem here, in that they find it difficult to hide the fact that making money is vastly more important than anything else. Although in theory customer service is important, in practice it inevitably comes a poor second.

Personal mastery. This is a commitment by individuals to the process of learning. Learning is more than just acquiring information; it is expanding the ability to be more productive by learning how to apply skills to work in the most valuable way. Research shows that most learning in the workplace is incidental – what Arets and Jennings call the 70:20:10 model. Personal mastery also involves a focus on work-life balance and well-being. Here, banks and security dominated industries fare a bit better – there's more working from home, recognition of informal learning, and rewarding those who display a real commitment to self improvement. However, frequent reorganisation also often involves sacrificing learning and experience to other more important corporate goals.

Mental models. Personal mental models describe what people working in an organisation can or cannot detect. Selective mental models limit peoples' observations and learning organizations need to challenge these defective models. Individuals tend to mix what Argyris and Schön call espoused theories, which are what they intend to follow, with theories-in-use, which are what they actually do. Whats needed is often called double or even triple loop learning. Similarly, organizations tend to have 'memories' which preserve certain behaviours, norms and values - the Japanese concept of madogiwa zoku – "the window-seat tribe" - older workers with no particular skills other than several decades of experience of organisational culture can prove priceless.

Equally, unwanted values need to be discarded or unlearned. For organizations, problems arise when mental models evolve beneath the level of awareness. I would suggest that heavily

regulated organisations fare less well here – patterns of behaviour and ways of working can become very ossified, and fear of unwanted consequences deters people from trying anything that might be considered risky.

Shared vision. The most successful visions build on the individual visions of the employees at all levels of the organization, and the creation of a shared vision can be hindered by simply trying to impose the company vision from above. Ideally, creating a shared vision fosters the development of trust through communication and collaboration and encourages people to share their own experiences and opinions, thus enhancing effects of organizational learning. Banks, like many large organisations are good at creating vision statements or slogans which sound deep, but which can prove rather nebulous in practice. Santander devised the phrase "Simple, Personal, Fair" a few years ago and spent a lot of time trying to fit everything they did into these terms.

Team learning. Learning organizations encourage things like boundary crossing and openness. In meetings members learn from each other by concentrating on listening, avoiding interruption, taking every idea seriously and responding positively. Learning organizations need very good knowledge management structures, allowing creation, acquisition, dissemination, and implementation of knowledge.

In banking, various parts of the organisation often seem to be in conflict rather than harmony – training messages need to satisfy both marketing (who are keen to promote products as widely as possible and promise the earth) and legal compliance departments who are terrified of anything which is not shrouded in warning notices (the value of your investment can go down, you may lose all your money etc).

15.6 Problems

Banks and other heavily regulated industries face a series of problems. In the first instance, since 2008 there is the overbearing fear of the regulator. The motivation to complete training is simply to satisfy regulators requirements, promoting little to no intrinsic motivation for the trainee.

Trainers do not feel any ownership for the training as it is delivered to them in a predetermined package, language and size. In the same way, those being trained do not connect personally to the training or feel anything that would convince them to engage in this training or the behaviours it advocates on a voluntary basis. Consequently, much training is very standardized and inflexible. This promotes rote learning or learning that just focuses on ticking boxes – what is sometimes referred to as a sheep dip.

Managers expect training to be delivered cheaply, quickly and immediately without any kind of awareness of the skills involved in creating suitable resources. As a result, there is always a severe lack of skilled training designers and up to date training resources – hardware, software and graphics. Banks are complex organisations, often formed from the incomplete merger of several different businesses over time, each of which had its own hardware and software platforms, let alone its own culture. Integration is always a work in progress and very slow.

There's also a misapplication and misunderstanding of Just In Time principles. Good quality elearning takes upwards of 50 hours to produce 1 hour of content - frequently much more if video is involved - and it takes skilled designers. However, many organisations are tempted to do this more cheaply by expecting the trainers themselves to create it using cheap and cheerful skill free software. Consequently, there's a lot of moving from specialised eLearning software to online platforms such as gomo which are not in themselves bad, but tend to produce learning that is rather samey. Even more disastrously, some managers now believe that specialised elearning software is not necessary, as everything can be created with PowerPoint and interactive PDFs.

The delivery of the training depends on the effectiveness of communication and the accessibility of infrastructure such as the e-learning platforms or LMS. For the most part, learning in banks is governed by the LMS and is recorded simply as having completed a reasonable percentage of a course, or achieved 80% in a MCQ test. Testing is carried out by multiple choice questions (MCQ), often produced by trainers with no expertise in designing MCQ – as result, passing the test by following simple rules (if in doubt, select the longest answer, or all of the above) works well for many learners. Features of learning platforms such as glossaries or wikis created by learners are considered anathema, as students might get things wrong and spread erroneous information.

15.7 Conclusions

Often, there's too much reliance on flat, unmemorable scenarios, and tediously familiar clip art and stock photos – what Carmen Simon describes as smiling people pointing excitedly at blank laptop screens. The design and production of imaginative and effective training which adheres to learning, graphic design and technological best practices does need to be taken more seriously and recognised as a key business advantage rather than simply an unnecessary expense.

Much mandatory training is tedious, both for those producing it and for those required to undergo it. As a consequence, it's also entirely forgettable, which is the opposite of what especially things like health and safety, spotting money laundering or terrorist financing are supposed to be. Some of the best training development I have been involved with incorporates story telling, humour and imaginative use of graphics.

Where appropriate, introducing something unusual – names, images, photos – and even, where appropriate, a touch of humour can make a big difference. It is often more effective to create stories rather than expositions. In one course I was involved with a few years ago, the trainers designing the face to face elements used a game where the prize was a pink elephant. This gave us the idea of naming all the characters in the online parts of the course with the word elephant in different languages rather than the usual boring Mr A, Mrs B and so on. When these bizarre names (Slon, Norsu, Dramblys) were queried, we simply suggested that participants google them – which always resulted in pictures of elephants.

Whether classroom based, paper based or online, training needs to inspire and motivate to prevent it becoming simply a way of wasting time by ticking boxes. Learning designers always try to find ways of saving time, effort and errors by reducing duplication in the production of learning materials – from experiments in modularisation to SCORM. The bank Santander use a simple system called knitted notes, where chunks of learning of different sizes (15 minutes to several hours) and in diverse formats (text, audio, video) are catalogued and can be bolted together very quickly to produce a new course. Although not perfect, and often requiring quite a lot of soldering, it is inevitably a lot quicker and more reliable than starting from scratch every time new training is needed.

But the best advice for the production of all training in tedious, complex or heavily regulated areas is to keep it as simple as possible. Avoid convoluted text and unnecessary jargon. Spend time designing simple diagrams that explain rather than confuse. Use images rather than words. Learning design, like leadership and a few other things works best when you don't realise it's there.

15.8 References

[1] Argyris C & Schön D (1974) Theory in Practice: Increasing Professional Effectiveness, San Francisco, Jossey-Bass

[2] Arets J & Jennings C (2016) 702010 towards 100% peformance, Sutler Media

[3] Senge, P (1990) The Fifth Discipline: The art and practice of the learning organization, London, Random House

[4] Simon, C (2016) Impossible to Ignore: Creating Memorable Content to Influence Decisions, New York, McGraw-Hill

16 Digitalization of the Teaching Process at the University in Gjilan

Ragmi MUSTAFA
University "Kadri Zeka", Gjilan, Kosovo
Fatmir NUREDINI, student; **Ilir NUREDINI**, student, **Liridon ALIMI**, student

16.1 Abstract

This is a project with objectives to study and to apply the surface of the hardware and software part of the panel with LED diode lamps. Much more is focused on the programming of LED matrix diodes located on 16X96 electronic panels, respectively 16 rows of 96 columns. Also, there is elaborated the study of the mode of operation, composition, coding and use of software for panel diodes. In the focus of all this is the introduction of diode panels in use at "Kadri Zeka" University exactly at the Faculty of Computer Science to provide digital information to students, professors or anyone passing through the premises of the university what is happening inside the classrooms of the Faculty of Computer Science. This happens in real time in accordance with the schedule of lectures and exercises in the respective classrooms of the FCS. In fact, this project explains in detail the concept of LED diodes and microcontrollers, their features, operation, power supply and work with 0 [VDC] and 5 [VDC] voltages, respectively 0 and 1 logic bits. Meanwhile, the project also explains how coding, software building that locks, and unlocks LED diodes on a 16X96 LED diode panel, thereby producing text on the panel (display, screen) in static, mobile, animation or up-down, left and right movements according to the time allocated to the timers of the microcontrollers. Such action achieves the goal of the digitalization project of the classrooms of the Faculty of Computer Science.

Keywords: LED diodes, light-emitting diode panels, digitization, microcontrollers, memory, microprocessors, programming codes, software.

16.2 Characteristics of LED Matrix Panel

The panel that is the object of study and review is not the most qualitative in the market, but performs the function for which it is explored, and any other model works according to the same principles.

Figure 1: LED display 96x16 unlit diode

Figure 2: Two panels physically connected presenting the inscription of the University

Model	HD – E65
Type of chip	Only supports green color
Distance between LEDs	10 [mm]
Supply voltage and electricity	5 [V] 40 [A]
Luminance	≥ 7500 cd/m^2 (in the external environment)
Module light format	32 X 16 LED
LED number for module	512 LED
Panel Dimensions	110 x 10 x 22 [cm]
The amount of power consumption	20 [W] – 40 [W]
Number of modules	3
Angle of view	120° horizontal, 60° vertical
Working temperature	-20 [°C] ~ +60 [°C]
Supply to the city's electrical network	Alternative energy 100 ~ 240 [VAC]
LED diode for panel	96 X 16 LED
Total number of LEDs on the panel	1536 LED

Table 1: *Characteristics of LED panel 96 X 16 diode; [7]*

The digital desktop is able to emit static text, motion, displacement, animation, cyclic, scroll, slug, blinker, that text moves from left to right, from right to left, bottom-up, top-down similar. Show the correct time, date, temperature and even one or more rows depending on the number of diodes according to the line of the display. Relatively high resolution. 24 Types of animation can be selected for text you can adjust the speed of the text movement. The possibility of the timer display option that automatically locks the device programs within certain time intervals. Through the USB card after in the computer is formed a text, the module is programmed and it can be stored and then transferred to USB connected to the appropriate port of the diode panel and transferred as text on the display. The text on the digital display is easily programmed through software that works in the Windows operating system. The system recognizes and can perform different types of fonts that are used on the Windows operating system. The LED panel programming is performed through the respective software installed on the personal computer and transferring the program through Memory Floppy to the USB port, via RF and Wi-Fi technologies! LED is the abbreviation of English words "light-emitting diode", that is, a light-emitting diode. The illuminating diode is built in the same way as the usual semiconductor diode. It will work if it is polarized on the right side. The intensity of the light is regulated by the current which flows through the diode also exponentially. The diode will not emit light when it is polarized in the opposite direction. The color of the light emitted depends on the type of semiconductor and the added impurities. The diode produced by gallium phosphate (GaP) emits red light while that of gallium arsenide phosphite can emit light green or yellow. The graphic symbol and characteristics of the light-emitting diode are shown in Figure 3 as follows:
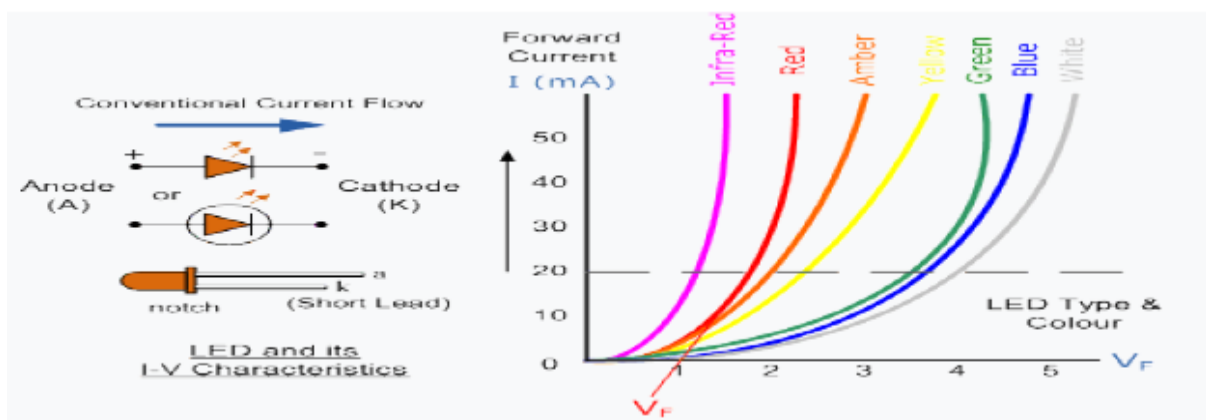

Figure 3: *Characteristics of LED diodes; [5]*

The advantages of lighting diodes are:
- small size
- safety at work
- long term service
- work with tensions and small currents
- small losses of electricity, great work speed; Use: [4] and [5]

LED Light-emitting diode are used for signaling, through which the locked or unlocked status of an electronic circuit is indicated. Especially they are implemented in bright light indicators or indicators. Blue light (Blue) emits LED diodes in the electromagnetic waveband from 450 to 500 [nm] - (nanometers). Green light (Green)emits LED diodes in the electromagnetic waveband from 500 to 600 [nm] - (nanometers). Red light (Red) emits a Led diode in the electromagnetic waveband from 600 to 690 [nm] - (nanometers). At the moment of power supply of LED diodes with semiconductor material content of gallium arsenide phosphite and its positive polarization leads to electron bulging causing the production of light waves in the range of 550 to 640 [nm]. Breaking light on the conic lenses of the observer's eye (human) creates a sense of perception of the green color according to the spectrum of the colors of the light waves. In other cases, semiconductor material and semiconductor diodes will produce light beams at other intervals of the value length and create a sense of perception of the respective color, always according to electromagnetic spectrum ranges of electromagnetic wavelengths.

16.3 Disadvantages of LED Usage

LEDs are more expensive currently than other lighting technologies. LED performance generally depends on the ambient temperature in which it works. By operating the LED at high ambient temperatures, this may result in overheating of the diode and lead to damage (drilling effect) and to malfunction.

16.4 Microcontrollers

The microcontroller [3] contains microprocessor, memory and a large number of peripheral devices such as timers (timer relays), serial ports, input / output input terminals, numerators, analog inputs and so on. All of these are within a silicon circuit in the form of a built-in system. Examples of built-in systems are: calculators, computers, and smart cell phones. The microcontroller system architecture has changed from time to time, but what is left behind is the programming language C. The programming language consists of alphanumeric characters, syntax of commands, functions which constitute a program code comprehensible to man, respectively the programmer. On the other hand, the execution of the programming code on the computer is performed when the program code is compiled in the machine language. This implies that each alphanumeric sign of the programming code is converted to the binary code (0 and 1 logic) according to the international agreement according to the ASCII table or the extended EBDCIC table. This, in effect, represents the string of square time voltages of the lowest level 0 [VDC] and highest 5 [VDC] respectively. Meanwhile, 5 Vdc voltage supplies LED light-emitting diodes, which causes LED diode brightness, while 0 [VDC] voltage fails to arouse the illumination of LED diodes. All input data is placed in the microcontroller memory. From the microcontroller memory, the input data is processed in the microprocessor for processing and the results obtained according to the respective software or programming code are stored in the memory and transmitted to the respective ports of peripheral devices and in this case the 96 x 16 diode panel diodes sorted within an electonic plate. If the microcontroller memory inserts the letter B and the voltmeter (voltage measuring instrument) it will be possible to measure the voltages of each bits in turn we will show the voltage measurements as in the following figure 4:

0 [V], 5 [V], 0 [V], 0 [V], 0 [V], 0 [V], 5 [V], 0 [V], që në fakt paraqet numrin binar:

0   1   0   0   0   0   1   0 .
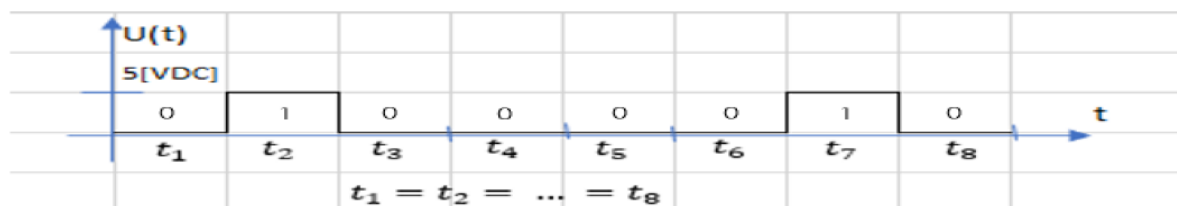
Figure 4: Chart tensions 0 [VDC] 5 [VDC], presentation by binary numbers 1 and 0 logic

Presentation of binary 1 voltage with voltage 5 [VDC] or any other value depends on the technical characteristics and electronic components of the microcontroller system. 8-bit string: (01000010)2   belongs   to   the   decade   number   (66)10   because: $(01000010)=0 \cdot 2^0+1 \cdot 2^1+0 \cdot 2^2+0 \cdot 2^3+0 \cdot 2^4+0 \cdot 2^5+1 \cdot 2^6+0 \cdot 2^7=2+64=66=(66)10$ viewed at the ASCII - code table, this belongs to letter B (see Appendix B).

16.5   Why work with binary numbers?

Programming of built-in electronics such as microcontrollers consists of communication with hardware devices that are related to the microcontroller, as well as the devices located in the microcontroller itself (memory, processor, time relay and the like). Let us consider the microroller to which four light-beam diodes are connected to the output as shown in Figure 5.
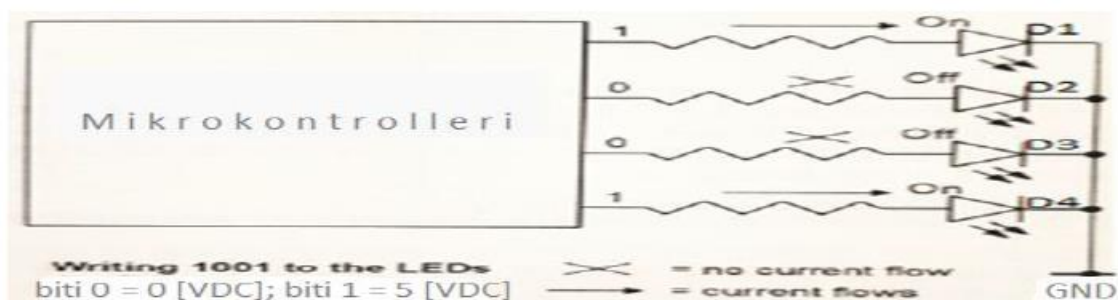
Figure 5: Logic circuit, how the diodes are turned on by the microcontroller; [3]

To connect the LEDs D1 and D4 to the LED diode, these LEDs will be able to depict binary digits 1 0 0 1. As binary numbers [3] are archived in the form of voltage levels. Indeed, we connect the 5 [VDC] voltage to the diode D1, 0 [VDC] anodes with the diode D2, 0 [VDC] anode with the diode D3 and 5 [VDC] anode with the D4 anode diode. In this case, the LEDs D1 and D4 will illuminate while the LEDs D2 and D3 will not illuminate.

16.6   Memories

In microcontrollers and built-in systems there are two types of memories [3], called ROM and RAM.

16.7 Microprocessor Access to Peripheral Memory and Devices

The microprocessor contains the addresses (Adress Bus), the Data Bus, and the Control Bus. The memory connection with the processor is performed through the respective buses of the two main microcontroller devices. When the microprocessor is supplied with power its programmer is set to 0. If the permanent memory (RAM) that contains the program is connected through the microprocessor circuit, the microprocessor will receive the first instruction (instruction is a binary number) of the programming code and executes it. The microprocessor program counter increases for one and receives the next programming instruction at address 1 of the memory and executes it. The microprocessor programming counter continues to increase for one by enabling execution of the codebook instructions to the latest programming instruction as in Figure6.
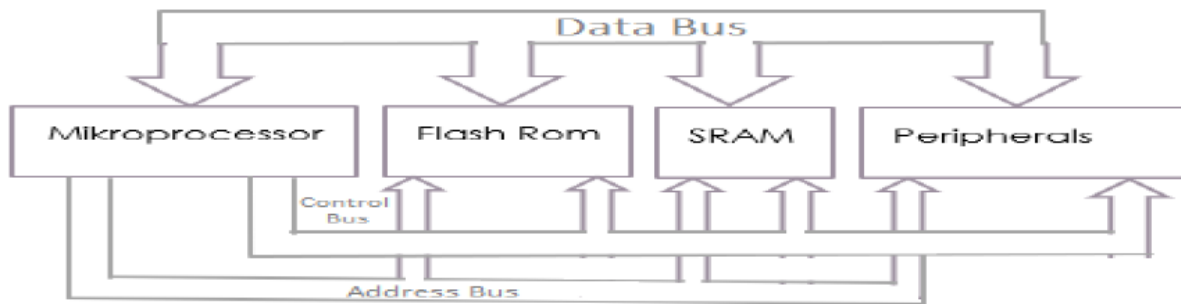
Figure 6: Connecting microprocessor with memory and peripheral devices

16.8 Pints and Microcontroller Ports

Microcontrollers possess a relatively large number of pin counts known as input / output pins (I / O - Input / Output) of general implementation. Pints are defined as outputs serving to connect the microcontroller output connections as in the present case for switching and disconnection of LED lighting diodes as well as input pints for reading logic levels 0 or 1 located in the microcontroller pin.8-bit microcontrollers possess 8-bits ports that represent pin I / O groups labeled as ports A (PORTA), B (PORTB), C (PORTC), and so on.The programming code example C in the programming language C for diode input is defined as follows:

```c
int main(void)
{
DDRB = 0x20;   // set bit 5 of DDR register which makes PB5 an output
while(1)
{
PORTB = 0x20;  // swich LED on
Delay();
PORTB = 0x0;   // swich LED off
Delay();
}
}
void Delay(void)
{
volatile unsigned long count = 100000;
while (count--);
}
```

Figure 7: Programming code example

The result of this programming code in the programming language C is that in the electronic plate where LED diode is connected, the same to lock it or unlock it or LED diode to pulsate

by locking and unlocking at a high frequency! The file: io.h located at the beginning of the program code enables the registry to be accessible for access. Setting logic 1 to the set bit position in the DDRB registry creates the corresponding pin declaration option as OUTPUT PIN on the PORTB port. In the cycle while (1) the PORTB register is set to enable the diode LED to light up, provided that the corresponding bit in the log has the logical value 1, the same bit is again set but in logical value 0 in order to disconnect the LED diode light. Calling the Delay () function between the LED diode switch lock ensures that the LED diode remains in the locked state and disconnected enough at a high frequency so that it is visible to the human eye, creating the impression of the constant illumination. With the while (count) command is reached that the program cycle is repeated whenever the counter count = 100000 decreases for one to the 0 value when also the command while (count--) gets the false value. This actually determines the timing of the LED dialing switch disconnection. At the end of this time according to volatile unsigned long count counter (100000) the program comes out of the cycle and completes its work.

16.9 The HD-E65 LED Panel Software

The HD-E65 LED panel software, consisting of 96 LED diode arrays and 16 rows also LED diodes (96X16) is known as: HD2016; [7]
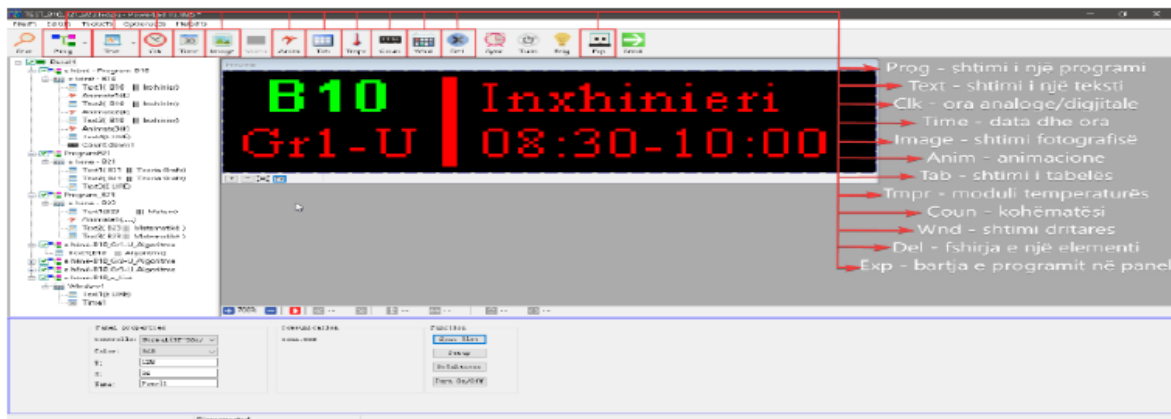
Figure 8: The look of the PowerLed 96X16 Test software

PowerLed is a software used for programming RGB matrix panels, it contains a collection of tools that can be used to program different panels.

PowerLed consists of:
  ▪ Menu bar
  ▪ Toolbar
  ▪ Window class
  ▪ Virtual Panel Window
  ▪ Feature Window

16.10 Menu Bar

The software for programming LED Panels contains menus by which we work and manipulate with PowerLed. With this software you can choose text with a great opportunity of using different fonts, setting the analogue but also the digital clock, adjusting the time of text display on the screen, full programming according to a time period for one or more days, weeks, months and so for several years. Meanwhile, a temperature thermometer (Type: AM2301) can be set for temperature measurement. The LED panel, according to the software, can also be used for numbering by increasing or decreasing number, as a device can be used for the

numbering of vacancies in a smart auto parking. Next, some programming methods will be displayed according to the menus defined by the programming software.
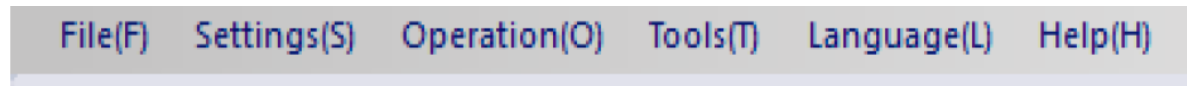
Figure 9: *Menu bar*

16.11 Conclusions

There are many ways of digitalization that could happen on the university areas, one of them we have used to digitalize our campus in the university using LED display panels. In our project this feature of panels who do have all the possibilities to write the information and the data could be transfer using USB disk it was very helpful on communicating with the LED panels in our University campus. The software that uses codes makes it easy to write the text, make animations, and set timers to the LED display panel. We have tested and fully implemented on our university campus where we have digitalized all possible information for students, professors, and others who do use our campus.

This was very helpful with U disk exporting the parameters to the LED diode panel display and was quite easy for the places where the panels are reached by people but for the places where the panels are placed on the high height it could not be easy to put the program each time you change. In order to make easier to put the parameters to panels for the future work we do propose there could be done also communication using RFID and wireless technology.

16.12 References

[1]. Milman-Halicias: Integrated electronics analog and digital circuits and systems, 1972

[2]. SK Bhattacharya, Electrical and Electronic Engineering Materials, Khanna New Delhi, 2000

[3]. C programing with Arduino, author: Warwick Smith

[4]. Philip Burgess, 32x16 and 32x32 RGB LED Matrix, Adafruit learning system

[5]. D. Hearn, M. Pauline Baker: Computer Graphics with OpenGL, Third Edition, SAD, 2004

[6]. Introduction Engineering Technology, 2008

[7]. HD2016_Operation_manual_V1.0

[8]. http://learn.adafruit.com/32x16-32x32-rgb-led-matrix

[9]. http://www.circuitstoday.com/interfacing-8x8-led-matrix-with-arduino

[10]. https://www.youtube.com/watch?v=7gKcGkaIUxM

[11]. https://www. wspublishing.net/aver-c

[12]. https://www.atmel.com

17 Application of Risk Management Principles in Strategic Governance of the Country's Social Economic

Uliana AFTAKHOVA
Perm National Research Polytechnic University, Russia
Irina PERLOVA
Perm National Research Polytechnic University
Panayotis H. YANNAKOPOULOS
University of West Attica

17.1 Abstract

The article confirms the urgency to develop state policy, which is a mechanism of coordinated strategic and tactical management of the country social-economic system on the basis of the principles and methods of risk management. The purpose-strategic, social-oriented and social-cost approaches to management and methods for analyzing social-economic processes in terms of the importance of human factor and risks for the of the country's economic potential development. The described theoretical and methodological provisions were tested on the example of the social and economic system of the Perm Krai.

Keywords: strategic management, tactical planning, risk, preventive risk management, social and economic system.

17.2 Introduction

Current economic realities show that our society needs a fundamentally new paradigm of governance that will allow for effective management of opportunities, while at the same time for preventing the development of unfavorable factors and situations. It is necessary to manage not only the events and their consequences, but also the risks as probabilities of a whole range of mutually replacing events occurrence [1, 2].

The key objective of state policy is supposed to develop adequate management solutions that are likely to allow for the planning and achievement of tactical and strategic goals of the country's socio-economic system development [3]. Thus, state policy becomes a system of preventive risk management, i.e. a set of rules for making public decisions in the field of risk management arising in society, with the help of specialized economic instruments.

The phenomenon of risks and instruments of their minimization does not lose its historical relevance. There are known attempts of prophets and fortune tellers of Ancient Rome and Ancient China to develop risk management techniques on the basis of ritual procedures. In particular, on the basis of the ancient Chinese "Book of changes" strategic state decisions were made for many centuries. It is this work today to be considered the first comprehensive risk management system. It is well known that behind the scenes of the Delphic Oracle there was a large group of priests working, collecting and analyzing various world information [4].

Despite such a long history of study, so far modern science has not developed an unambiguous theory of risk management. Since there is no common understanding of the "risk" category, the article authors define it as an activity related to the decision-making process to overcome uncertainty in the country's social-economic system.

Risk management is a procedure that is methodologically close to exact sciences [5]. Any social-economic system is described by its objective characteristics (parameters), which are inherent to it at any given moment of time. Therefore, the level of uncertainty characteristic of

each parameter of this system will differ depending on the change in the external and internal environment. Thus, the strategic objective of risk management involves the fulfillment of a designated mission of the system, the achievement of its goals and objectives, the implementation of its strategic plan, and actions that assess the change in the state of the system in relation to the fulfillment of its mission. Ongoing risk management involves actions that actually ensure the implementation of mechanisms for day-to-day advancement of the system towards its goal. Thus, risk management system unites all actions that contribute to reducing the probability and magnitude of the system deviation from achieving its own strategic goal [5].

The paradigm of preventive risk management is based on the theory of integrative management, according to which the subject of management carries out navigation through risky landscapes. The movement trajectory of the object under control is a navigation strategy (ensuring stable development of the subjects of the Russian Federation and stable common economic growth, as a consequence) and navigation tactics (tasks solved to achieve a strategic goal, based on the methodical forecasting tools, allowing to preventively minimize risks). In the table (see Table 1) there are the comparative characteristics of the current dominant paradigm of risk management and the paradigm of preventive management proposed by the authors.

The results of the study made it possible to identify the functional features of the preventive risk management system, which are presented in the table (see Table 2).

Feature	Current paradigm of risk management	Paradigm of preventive risk management
Model of risk management	Each subject manages risks independently	Risk management system is centrally implemented coordinated by a governing body
Type of risk management process	Occasional	Continuous
Aim of risk management	Competitive recovery and increase in investment attractiveness of branch, region, state	Growth in population well-being
Nature of management	Post factum management	Preventive scenario forecasting
Risk management object	Primarily insured and financial risks	All risks spectrum
Market orientation	International markets priority	National markets priority
Integrated effect	Economic	Social - economic

Table 1: *Comparative characteristics of risk management paradigms*

Function	Contents
Axiological	definition of the working population value and their subsequent generations on the basis of economic development potential of industrial production
Limiting	restriction of industry negative impact on the life quality of the population by improving working conditions and environmental activities of industrial enterprises
Stimulating	arrangement of favourable conditions for self-realization and maximizing the well-being of the entire population

Stabilizing	ensuring sustainable progressive industrial development by minimizing negative socio-economic and environmental impacts and intensifying innovation and technological modernization as a result of human potential
Compensating	compensation for the negative impact of industrial development on the life quality of the population
Evolutional	ensuring coevolutionary development of industry and civil society or mutual development of industrialization and civilization
Harmonizing	harmonization of systemically interconnected solutions of social, ecological, innovative, technological and branch tasks of regional and national economy development, minimizing damage to each of these spheres

Table 2: Contents of functions of preventive risk management system in the social - economic system

These functional features defined the content of the management fad of risk management "Social-SOS" (see Fig. 1).
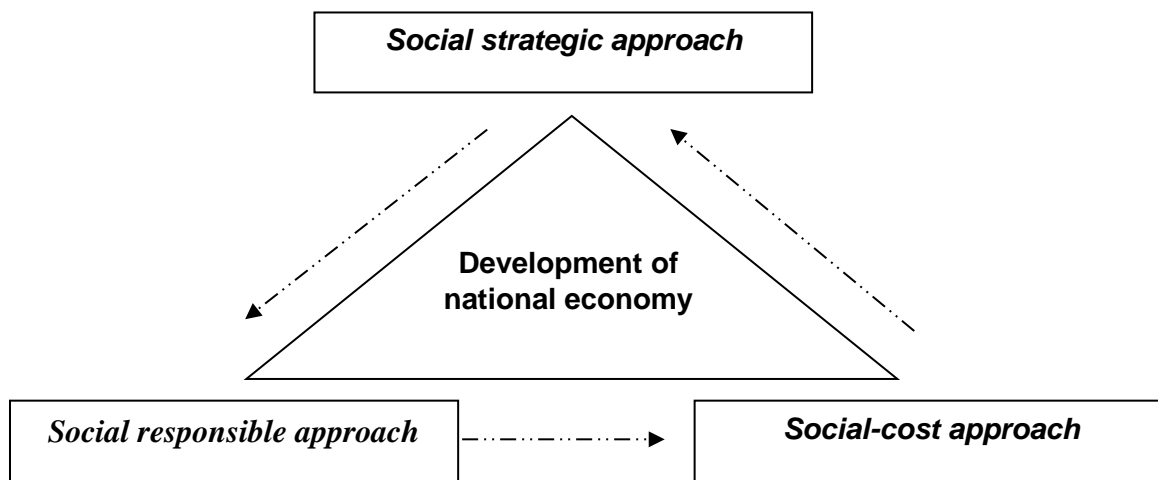
Figure 1: Management concept of "Social-SOS" in the system of preventive risk management

The proposed concept is to implement simultaneously three main approaches to the management of the social-economic system;
- social-strategic approach, consisting of priority social and environmental goals identification while designing, creating and developing the production;
- social-responsible approach, assuming the determination of a mechanism to redistribute powers and responsibilities of social-economic system management subjects according to the criterion of the significance of change dynamics regarding the decisions taken by the subjects to achieve development social goals;
- social-cost approach, which provides designing of institutional mechanisms for the system development, adapted to real situation in world markets, arising from economic objectives of modernization in the long and short term, and based on the assessment of existing experience of negative social-economic, social-ecological and ecological-economic consequences of innovation-technological reformations in terms of money equivalent.

17.3 Methodology

17.3.1 Sample

To identify the risks affecting the social-economic system of the country, the authors' team conducted a survey in 30 subjects of the Russian Federation, the most significant from the population size point of view. In each subject, 20 people were interviewed.

The general expert group covers 600 people and consists of two subgroups, surveyed in an equal proportion:

1) experts whose income level exceeds the average per capita per the subject of the Russian Federation;
2) experts whose income level does not exceed the average per capita per the subject of the Russian Federation.

The results of the survey made it possible to identify the following risks whose manifestation was noticed in all subjects of the Russian Federation studied (see Table 3).

№	Feature
r.1.	Reduction in consumer demand
r.2.	Increase in professional morbidity
r.3.	Deterioration of conditions to found a family
r.4.	Deterioration of conditions to spend leisure time
r.5.	Increased environment pollution level

Table 3: *System of risks in the social and economic system of the country*

17.3.2 Material and Procedure

To implement effective policy, the authors developed risk assessment and management tools. They propose the formulation of a multi-criterion mathematical problem and the search for its optimal solution. Let there be a number of time intervals t_1^i, for each of which social risks are characteristic r_1^n. Every risk is described by a set of indicators j_1^m, quantitatively characterizing the interconnection harmony of the social and economic subsystems of the country. Thus, the state of the social-economic system at each moment of time can be recorded in the following form:

$$\{x_{ir}^j, t = 1 \dots i, r = 1 \dots n, j = 1 \dots m \}, \qquad (1)$$

where x_ir^j – is a set of indicators that characterize the state of the social and economic system during the period t.

To solve the problem, an authors' algorithm was formed, providing a set of developed economic and mathematical mechanisms that allow to assess the degree of manifestation of each risk. These mechanisms and their application sequence are shown in the figure (see Fig. 2).

Due to the model, the impact of the population quality of life on the resulting indicators of the social-economic system is assessed. Consequently, it allows to estimate the economic damage received by the system from changes in the factors of life quality. This damage is estimated as a difference between dependent (resulting) variables of the recursive system before and after the change of any quality of life factor inside the system.

Step 1: Development of a system of indicators for calculating the integrated social tension factor in the social - economic system

Step 2: Normalization of each indicator with linear transformation

$$f = \frac{f_j(x) - fj^{min}}{fj^{max} - fj^{min}}$$

where f_j is the normalized value of the j-th indicator; $f_j(x)$ – is the current value of the corresponding j-th indicator; f_j^{min}, f_j^{max} – the minimum and maximum value of j-th indicator.

Step 3: Determination of each indicator importance

$$\beta_i = \frac{r_{x_ч}}{\sum_{i=1}^{n} r_{x_iч}},$$

where β_i is the importance factor between the population and the $–i$-m indicator; n is the number of factors; r is the correlation coefficient between the factor and the population; x – factors; ч is the population number in the subject of the Russian Federation, million people.

Step 4: Calculation of an integral social tension factor for each risk

$$KCH_{r1\ldots5} = \frac{\sum_{j=1}^{m} j_m * b_m}{5},$$

where KCH_r is the value of integral social tension factor due to occurrence of n-th risk; j_m is the normalized value of the indicator $–$; b_m – is the importance of the indicator.

Step 5: Calculation of the complex coefficient of social tension in a subject of the Russian Federation as a whole

$$KKCH_r = \sqrt[5]{KCH_1 * KCH_2 * KCH_3 * KCH_4 * KCH_5}$$

where $KKCH_r$ is a complex coefficient of social tension in the subject of the Russian Federation;
$KCH_{1\ldots5}$ – integral coefficient of social tension on social risks 1…5. 1…5

Step 6. Identification of severity level of risks manifestation in a subject of the Russian Federation

0,00-0,30 – minor
0,31-0,50 – moderate
0,51-0,70 – significant
0,71-1,00 – critical

Step 7. Assessment of the profit loss costs from exposure to risks

$$\begin{cases} Ч = a_{11} + a_{12} * КЖ_i \\ У_{пр} = a_{22} * Ч + a_{23} * КЖ_i + a_{24} * x_1 \\ У_y = a_{31} * У_{пр} + a_{32} * Ч + a_{33} * КЖ_i + a_{34} * x_1 + + a_{35} * x_2 \end{cases},$$

where $Ч$ is the population in the region under study, million people; $КЖ_i$ is the life quality of the population in the region under study; $У_{np}$ is the volume of industrial production in the region under study; $У_y$ is the scope of services provided in the region under study; a_{ij} is the required parameters of the regression equation in the system; x_l is state expenditure on the purchase of industrial goods in the region, million rubles.
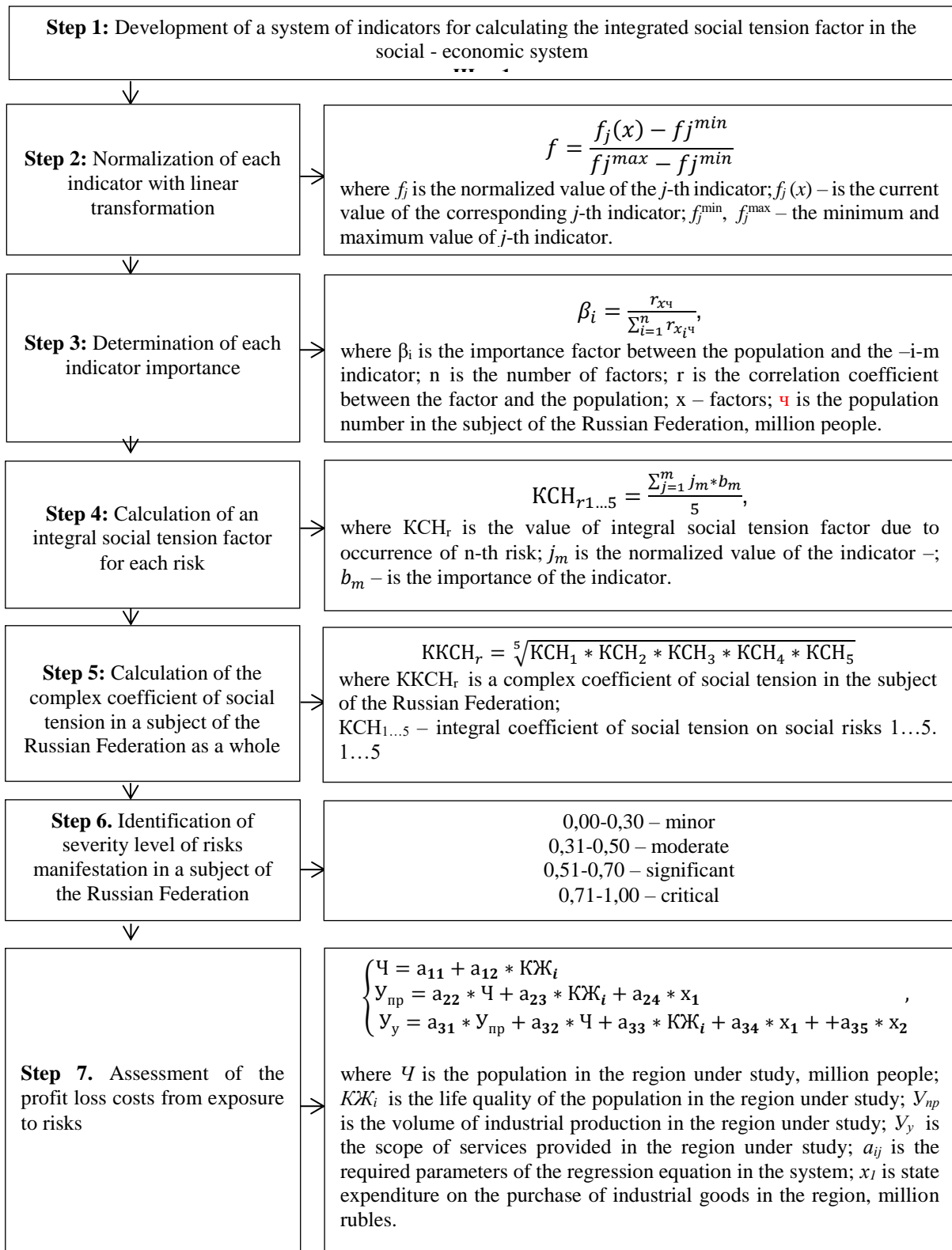
Figure 2: *Algorithm of carrying out assessment of risks appearing in the social -economic system of the country*

17.4 Results and Discussion

The authors' proposed method was tested on the example of Perm Krai. The econometric model obtained for this subject of the Russian Federation has the form:

$$\begin{cases} \text{Ч} = 5{,}627 * \text{КЖ}_\text{I} \\ \text{У}_\text{пр} = -69{,}8984 * \text{Ч} + 499093{,}8 * \text{КЖ}_\text{i} + 5{,}262104 * \text{x}_1 \\ \text{У}_\text{у} = -0{,}54416 * \text{Ч} + 0{,}1102 * \text{У}_\text{пр} - 235{,}86 * \text{КЖ}_\text{i} - 0{,}0442 * \text{x}_1 + 1{,}35563 * \text{x}_2 \end{cases}.$$

The results of the approbation calculation of the KCH and KKCH in 2016 in Perm Krai, made according to the authors' model, are presented in table 4.

KCH$_1$	KCH$_2$	KCH$_3$	KCH$_4$	KCH$_5$	KKCH
0,024	0,021	0,014	0,042	0,001	0,012

Table 4: *Degree of risk manifestation in Perm Krai in 2016.*

As can be seen, this subject of the Federation is characterized by a small degree of risk, i.e. it can be concluded that the social - economic policy pursued in the region is effective. Nevertheless, the authors recommend the implementation of a set of measures aimed at minimizing the probability of increasing the risk level in Perm Krai, which ensures the reduction of lost profit costs by transforming it into an additional source of development of the social-economic system of the Russian Federation subject.

17.5 References

[1] Supporting Innovation: Managing Risk in Government Departments / Report by the Comptroller and Auditor General, National Audit Office, 2000. P. 80. URL: http://www.nao.org.uk/publications/9900/managing_risk_in_gov_depts.aspx/9900864.pdf .

[2] Risk: Improving Governments Capability to Handle Risk and Uncertainty. Summary Report of Cabinet Office. 2002. URL: http://www.cabinetoffice.gov.uk/media/cabinetoffice/strategy/assets/su 20risk.pdf .

[3] Guide to Integrated Risk Management. Treasury Board of Canada Secretariat, 2011. URL: http://www.tbs-sct.gc.ca/tbs-sct/rm-gr/guides/girm-ggirpr-eng.asp .

[4] Viatkin V.N., Gamza V.A. Maevskiĭ F.V. Risk-menedzhment: preventivnoe upravlenie. – M.: AP <<Nauka i obrazovanie>>, 2013. – P. 12

[5] Williams, A.S., Smith M.L., Young P.C. Risk Management and Insurance / A.S. Williams. – McGraw-Hill, New York, 1995

18 Analysis of Perspective Cadastre and NSDI in Digital Kosovo

Murat MEHA
University Pristina, Kosovo

18.1 Abstract

The beginning and the continuation of the third millennium, the 21st century, has come with many additions and technological changes that have clearly influenced the accessing and the security increase of immovable property data everywhere in the world. During this period, the cadastral information system and SDI data were successfully developed in Kosovo by introducing the geoinformation for geometry and geographic position of the immovable property. Registration of immovable properties in cadastral registers through the cadastral information system has provided precision, security, and stability in the free land market. It was precisely that approach to immovable property that was urgent to allow for economic development of the country. This article does not deal with the long history of the cadastre development in Kosovo, as it is not a subject of this article, but it is worth noting that the history of the cadastre and property registration in Kosovo can be split into three periods:
   a) until 1989,
   b) the period 1990-1999 under the influence of discriminatory laws from Serbia, and
   c) the third period 2000-2019.

The 2000-2019 period has met the standards of "Cadastre 2014", which was given by FIG in 1994 in relation to the preparation of the vision for modern cadastre development in the next 20 years. The results of the 2014 cadastre vision were published in 1998 by the International Federation of Surveyors (FIG), called the digital cadastre and registration of immovable property period. Therefore, this period of the cadastre is characterized by the updating of immovable property, moving from the analogue system (maps, forms and registers) to the digital system, with a positive impact on increasing the security of investment in agriculture, energy, mining, infrastructure etc. The geospatial data generated in Kosovo according to the cadastral requirements for immovable property is the core of three annexes with 34 topics deriving from the Inspire EU / 2007/2 Directive. The post Cadaster 2014 and EU Directive Inspire are highly relevant as a policy and basis for envisaging the cadasters and NSDI of tomorrow. In this way, institutional coordination between actors on land administration in throughout the territory of Kosovo will be analyzed.

Bases or core spatial datasets are: Land cadaster, Building cadaster, Utility cadaster, register of spatial units, Topographical datasets, and Agricultural land usage database. The traditional cadastral system was not sufficient to fulfill the citizens' requirements regarding cadastral and NSDI data. Nowadays, based on new cadastral system in Kosovo, the following processes have become easier: managing and maintaining the list of spatial data sets; managing the detailed descriptions of the spatial data themes; managing the spatial information geo-portal; and harmonizing and maintaining the metadata information system. This cadastral system and its results will be described in this article, of course interpreted through GIS. The relations between Spatial data services and Cadastre has provided a quality increase of data sharing, fast access to data, and has enabled locating divergences between graphical data and immovable property register. As it is described on the article Seeger (2008) many experts, citizens, producers and non-producers are all interested in open data, so all these approaches are in favor of transparency and decision making.

This article will show the vision for the future development and activities. In this case, we note how the usage of the open data is necessary to have access and transparency in the immovable property and land market in R.Kosovo.

Key words: Cadaster, NSDI, immovable property, data quality, geoinformation.

18.2 Introduction

Land registers, cadastral records, cadastral maps and other land documents around the world have their own history, depending on the historical developments of the country. The cadastral system so far is mainly developed in two versions:
- analog version, pencil and paper,
- digital versions, GIS software's.

Some valid clarification regarding these two versions of development, preparation and presentation of the version of real estate data is needed. Generally, the analog version of the cadastral system is characterized by the presentation of data by purpose through technical description, drawing and writing on paper and media similar to the letter. The analogue documentation has started with cadastral maps compiled from various data sources: from graphical measurements from field surveys to geodetic instruments (theodolites to GNSS), based on existing geodetic networks of the state. The technical description starts with the official reference system coordinates, in the analog data format with their attributes. The analogous cadastral system has long served in Kosovo from 1929 until 2004.

Immovable properties regardless of the format of their data preparation, they are valid geoinformation, directly related to the data security and economic and social development of the country. Cadastral data creates the necessary information for making the necessary decisions and for further development of the cadastral system. It is known that cadastral data enables the creation of a structured cadastral information system, because as such have the required value. The beginning and the continuation of the third millennium, the 21st century, has come with many additions and technological changes that have clearly influenced the accessing and the security increase of immovable property data everywhere in the world.

Technological progress significantly influences the development of the digital version of cadastral data, of course, as a result of land use and land registration requirements. The key components of impact related to digital developments in Kosovo with a particular focus on the development of the digital cadastre are:
- globalization through technological development,
- increasing the demand for a multidimensional cadastre,
- free land market
- transparency

These innovations or digital platforms have been strongly supported by experts from different backgrounds in Kosovo, improving their knowledge and preparing to enter and apply the rules in an information society, Long Life Learning LLL (Learning Society). Digital platforms are quite appropriate in research, especially in decision-making for land administration.

18.3 The Future of the Cadaster

The beginning and the continuation of the third millennium, the 21st century, has come with many additions and technological changes that have clearly influenced the accessing and the security increase of immovable property data everywhere in the world. The impact of global trends on technological development in digitalization in Kosovo has been made through:
- implementation of the European Community rules in Western Balkan countries (including Kosovo) for the digitization of real estate data,
- creation of National Spatial Data Infrastructure (NSDI) for the entire territory of Kosovo.

For each point in the definition boundary polygon and the building in 2D digital cadastre interpreted via GIS are the coordinates in the state coordinate system ... The plot area with marked boundaries on the ground with physical signs (stone, concrete or just physical mezπa) with the coordinates presented on the map, recorded in the cadastral records, is called the legal surface in the two-dimensional cadastre. These cadastral data fulfill the conditions for managing, managing and determining the location for rural areas. While for urban

environments, 2D cadastral data has been shown to be insufficient due to the complexity of presentation and viewing in three dimensions. Since the beginning of the digitalization process, requests for cadastral data have increased since the last decade of the 20th century. So rightly, the digital cadastre is called multidimensional cadastre.

18.4 World Trends on the Collection and Interpretation the Cadastral Data

Cadaster is dynamic process, always requiring new better solution for the land registration and free land market to support economic development of country. Main cadastral development are:

Analog Cadaster. Cadastral data are on registers and cadastral maps since 18th century when we head the first registration first European cadaster. Analog Cadastral systems (pencil and paper) were mainly established to serve a legal and/or a fiscal purpose

Cadastre 2014. This cadaster is based on digital database, operating on GIS system. A Vision for a Future Cadastral System. The cadastral mapping will be dead, ongoing live modeling. Statement 3 on cadastre 2014, (Kaufmann 1998).

Cadastre 2020. This is the Cadaster is based on GNSS and on total stations-geodetic measurement, means coordinate cadaster. The Cadastre 2014 is the base for the coordinate cadastre and very important to provide required services to the private and public institutions. Models of Cadastre 2020 is going to fulfill aspects of functioning cadastral systems, with the secure and updated content of cadastral data, easy access to these data and better connection and harmonization with other GIS systems

3D Cadaster is a new approach of maintenance cadastral unites: land parcels, buildings and utilities.

18.5 From 2D to 3D Cadaster

Man is a good researcher of good things from the earth. He conducted these researches in order to improve living conditions by linking welfare to rational use of land. 2D cadaster we can call parcel cadaster-horizontal cadaster. The aim of 3D cadaster is to integrate data of land parcel with the data of building and utilities in the parcels that are on, under and above the ground.

Traditionally, land administration and management, is made on the basis of cadastral data, cadastral maps and registers started from records in Ga-Sur 2500 B.C. designed in size 7,6x6,8cm. Circumstances and life requirements in time have influenced the way of organization, administration, management and land use. So, cadastral data are core data for the immovable property and in total of NSDI. In these terms of this conclusion many authors have added questions about the validity of the geoinformation as follows: How will data be valued in the future and what are the key implications, in this terms what will the value for business for society and for individuals around the world?

18.6 Perspective of 3D Cadastre in Kosovo

Registering the rights of a 3D parcel should provide certainty of ownership, protection of rights and unambiguous spatial location. In European no on of countries continue with the analog cadastre but in the world the situation can be different. Therefore, still we can consider, cadastral jurisdictions in the world, that maintain cadastral database on the concepts of analog registration me and paper-based cadaster.

Based on the 3D cadastre development and analysis in several European countries: Sweden, Germany, the Netherlands, Norway, etc. Figure 1 summarizes the proposed methodology for establishing a 3D real estate cadastre in Kosovo.
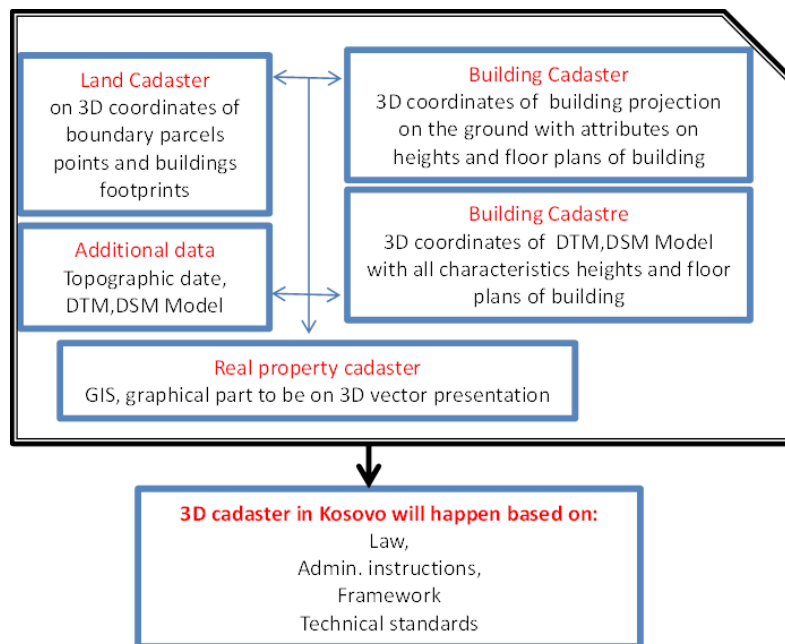
Figure 1: *Proposal to establish 3D cadastre in Kosovo*

18.7 Cadaster and NSDI for Land Managing in Kosovo

The basis for the formation of the NSDI is the data on immovable property. Geoinformation and other information together, are related to the designation of a location that forms the actual infrastructure introduced through the GIS system. The National Spatial Data Infrastructure (NSDI) is preceded by the state's legal base and strategy. Geospatial data has been produced before the law, but based on the strategy for NSDI, which means that even after the adoption of the law, it will be an obligation to continue the harmonization according to the European directive INSPIRE.
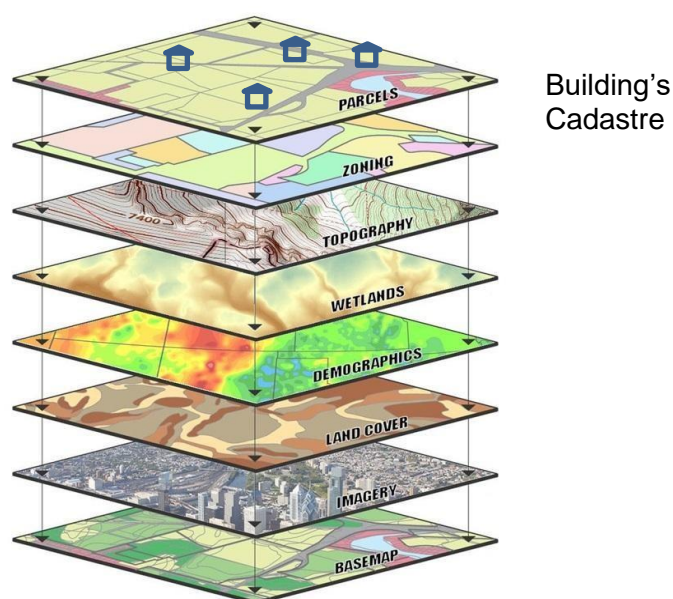
Figure 2: *Organizing open data in Kosovo*

Geoinformation is associated with land that is an important and expensive resource that needs to be efficiently managed to move towards maximizing production and other services required. Geoinformation through GIS technology therefore provides solutions to:
- fulfillment of citizen and state requirements in general for the use of land by providing up-to-date geoinformation.
- providing transparency for the flow of geoinformation and other information in the decision making process, from one manufacturer or user to another, and what obligations it has,
- analysis of policy development based on geospatial data in the definition of priorities,
- selection of necessary geoinformation resources,
- setting standards of implementation and methods for their monitoring,
- Improving the existing geoinformation and land information system by incorporating it into new multi-dimensional technological systems and models.

A good example of the use of geoinformation and other information through the GIS system is the compilation of Kosovo Map Plans completed in June 2019. Kosovo's Zoning Map is a document according to the Law on Spatial Planning, a requirement for implementation in all Kosovo Municipalities. The implementation of these maps enables coordination of actions, harmonization of measures and activities in the period 2020-2028. It also interrupts the negative phenomena by facilitating monitoring of planned developments in space with a clear presentation before decision-makers. The source of geoinformation with other information for the compilation of the Zonale Map was from the main governmental producers, starting from orthophotos, cadastral maps, topographic maps, land cover and others as shown in figure 2.

18.8 Future SDI in Kosovo

Spatial Data Infrastructure (SDI) has been recognized since the early 1990s when its policy development preparations begin. SDI is the result of three components: demand-supply-technology, which in the open market usually go together. For the development of the SDI, the state governments have been careful to provide the institutions and then citizens with quick and secure access to spatial data.

Many authors have analyzed how valuable SDI-NSDI has a key role in monitoring and managing data, as well as data that have a significant role in decision-making. The answer comes: technology is playing a significant role in changing the way to manage and monitor all geospatial and textual data everywhere in the world. We're in a digital economy where data is more valuable than ever see next two sentences and below figure 3.
- "the world's most valuable resource is no-longer oil but data"
- immovable property and cadastral plot, is not only certificate and map,

What will this mean for economic growth for business, for society and for individuals around the world is in brief described below in the figure 3.

Figure 3: Data: "the worlds most valuable resource. America v China – The battle for digital supremacy . Source: economist. Photos: David Parkins
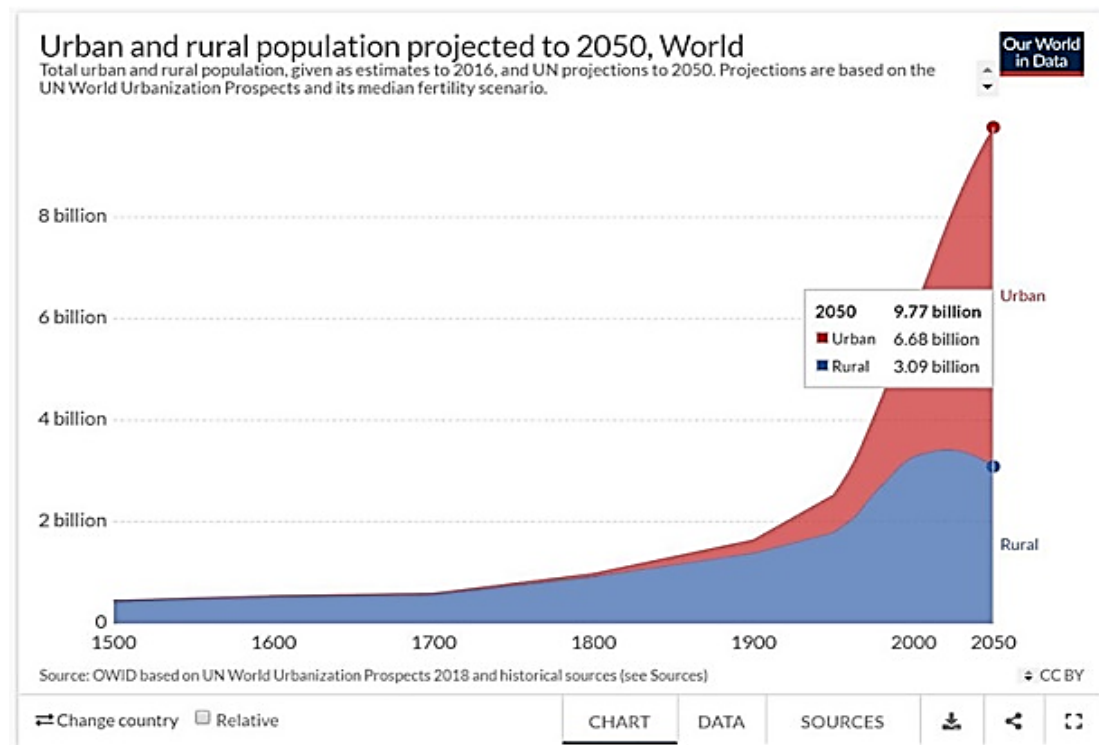
Figure 4: *Urban and rural population in projected data.*

From the brief description of the context related data provided in this chapter, means no progress without data. "When your business is growing, more and more people have opinions about which steps need to be taken. It helps to work with a 'good data beats opinion' philosophy". In the context of growing urban population, the UN analyzed the growth of urban, smart cities and rural population in the world. Results of the projected population in 2050 are shown in figure 4 (www.economist.com).

18.9 Variety of Geo-Spatial Data in Kosovo

The state geoportal in Kosovo offers over 70 topics with open data and are in the process of harmonization according to the INSPIRE directive figure 5. Combinations of topics for carrying out tasks and research using GIS software and WMS can be done by using data from the state geoportal: http://geoportal.rks-gov.net/. It was estimated that in Kosovo over 70% of local and central government decisions are made based on geospatial data. Geo-information on geoportal with open data contains different thematic maps of different scale, five orthophoto layers for the entire territory of Kosovo, DTM and other data from different geoinformation producers. Figure 5 shows clearly the inability to use closed data that is an oasis in itself and the possibility of using open data and combining them from different manufacturers with open roads in all directions
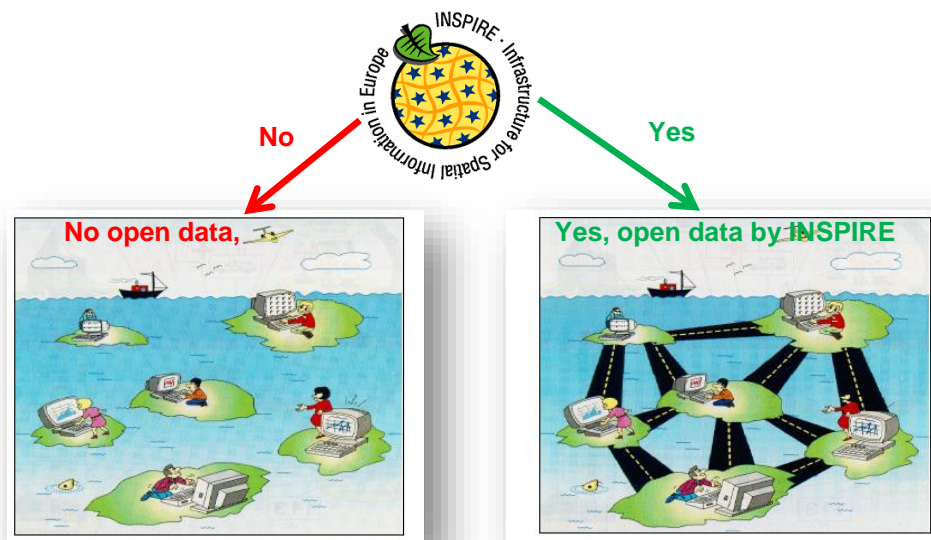
Figure 5: *Organizing the open data in Kosovo*

As was explained, using WMS services in combination with, geoportal and ArcMap or other software, selecting data by attributes or by location you can go directly to the required topic see the figure 6.
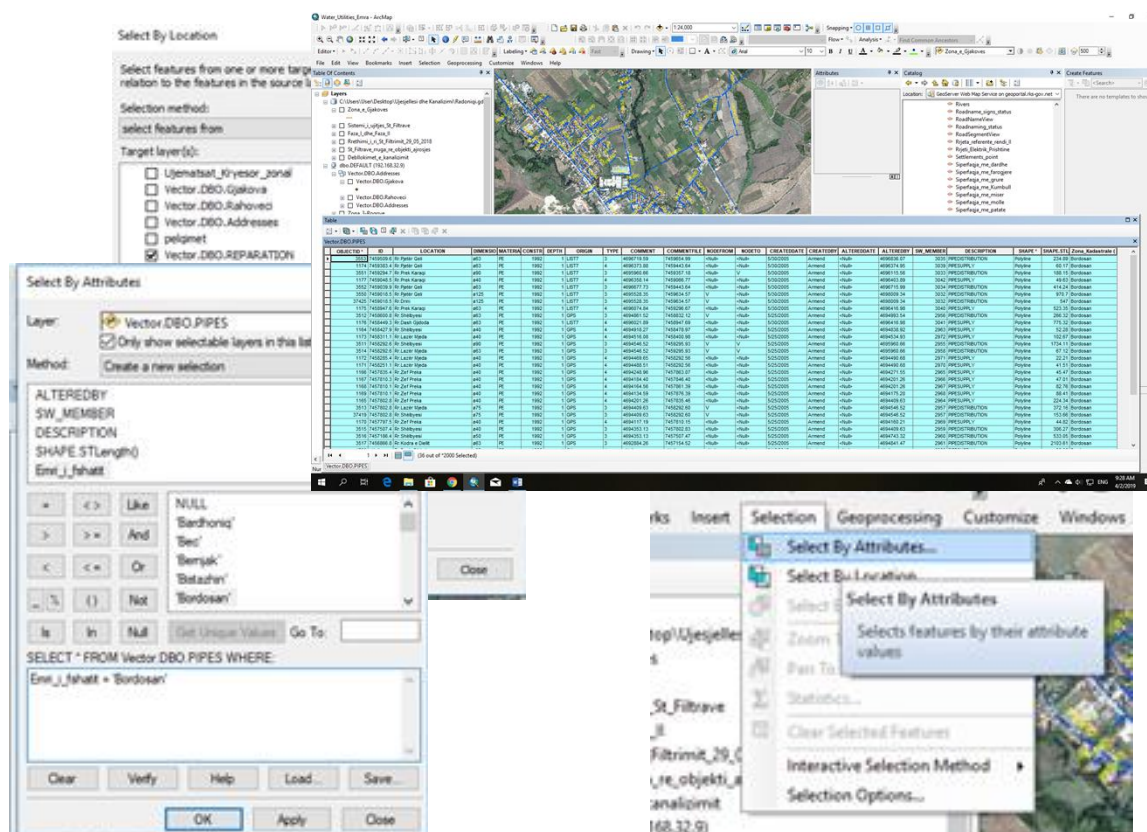
Figure 6: *Selecting data by attributes or by location*

Digitization and harmonization of geoinformation for Kosovo was characterized by great demands for enormous expansion of urbanization because there were wrecks of over 100,000 dwelling houses of war in Kosovo in 1998-99. All this is in line with the INSPIRE Directive 2007

/ EC / 02 and its guidelines for interoperability and overall for the harmonization of geospatial data.

Western Balkan countries, including the Republic of Kosovo with EU financial assistance or special assistance as Swedish SIDA with various European experts have organized trainings (2014-2019) valid through the INSPIRATIN project and the IMPULS project.

From the research of international and local experts on geoinformation in the Western Balkan countries, there is a great need for the digital society:
- Spatial data, accessible and easy to use for everyone
- Spatial data providers are responsible/accountable for data reuse
- Quality and variety of spatial data are determined by user needs
- Spatial data are transparently described and published
- Spatial data are available without restrictions (open data)

At the same time was concluded that there are lack of:
- structures or specialists especially in charge for the geospatial information;
- infrastructure to support the maintenance of the geo-information;
- hardcopy format, not digitized;
- digital form but not update;
- impossible to Access;

18.10 Summary

Based on the INSPIRE Directive, based on collected and analysis data is shown a very good and feasible perspective of the combination of cadaster with NSDI for digital Kosovo. The facts and future needs were well analyzed and the implementation of NSDI will be successful. The central and local government have created conditions for manufacturing, analyzing, demining and archiving of geospatial data. Very important element that should be offered to all stakeholders, producers and users of NSDI is the legal basis, which is submitted to the Government, and should be approved quickly by the Parliament of R. Kosovo. Co-operation among all Stackeholders for NSDI is carried out on a voluntary basis with the aim of realization:
- to collect, archive, analysis and share data
- to increase services efficiency, to harmonize and improve quality of data, to share information with the private, public sector and citizens.
- transformation of all geodata at the national coordinate system,
- to follow EU trends on cadastral and NSDI developments.

Thanks for supporting the development of the NSDI system in Kosovo with financial and professional support from the World Bank, European Union and individually from Norway (Staten Kartverket), Sweden (SIDA) and Japan (JICA).

18.11 References

[1] Enemark, S., Williamson, I. P., & Wallace, J. (2005). Building modern land markets in developed economies. Journal of Spatial Science, 50(2), 51–68. http://dx.doi.org/10. 1080/14498596.2005.9635049.

[2] FIG (1999). The Bathurst Declaration on Land Administration for Sustainable Development. FIG publication no. 21. Published by The International Federation of Surveyors (FIG) ISBN: 87-90907-01-9, December 1999, Frederiksberg, Denmark.

[3] FIG (2016). 3D Cadastre. FIG joint commission 3 and 7 working group on 3D cadastres. http://www.gdmc.nl/3dcadastres/

[4 Geoportal (2019). http://www.geoportal.rks-org (Accessed 17.04.19)

[5] Meha M. Joep C, Çaka M, Murati R. 2015.: Towards Integration of Cadastral Land Information System in Republic of Kosovo (61). WCS-CE - The World Cadastre Summit, Congress & Exhibition. Istanbul,Turkey, 20 –25 April 2015

[6] Michael Bell (2010). SOA Modeling Patterns for Service-Oriented Discovery and Analysis. Wiley & Sons. p. 390. ISBN 978-0-470-48197-4Bennett, R., Tambuwala, N.,

[7] Rajabifard, A., Wallace, J., & Williamson, I. (2013). On recognizing land administration as critical, public good infrastructure. Land Use Policy, 30(1), 84–93. https://doi.org/10.1016/j.landusepol.2012.02.004.

[8] Rohan F. Britto 2017: Data is TODAY the world's most valuable resource. Published on May 30, 2017.

[9] http://www.fig.net/pub/figpub/pub21/figpub21.htm

[10] https://www.linkedin.com/pulse/data-today-worlds-most-valuable-resource-rohan-f-britto.

[11] https://www.gpsworld.com/surveyors-and-smart-cities-partners-in-technology/

19 Semantic Abilities of Greek-speaking Students with Learning Difficulties

Panos H. YANNAKOPOULOS
University of West Attica, Greece
Katerina AFANTENOU
Aristotelian University of Thessaloniki, Greece
Fani NASIKA
Clinical Linguist, Athens, Greece

19.1 Abstract

The aim of this study is to profile the semantic abilities of students with learning difficulties in a narrative context. More specifically, specific case studies of Greek-speaking students will be presented where students narrate stories orally. These narratives are analyzed in terms of the participants' semantic abilities with the use of PRISM-L and PRISM-G profiling tools which are being adapted in the Greek language. The findings are discussed in terms of intervention implications regarding special education.

Keywords: Semantic abilities, PRISM-G, PRSIM-L, learning difficulties

19.2 Introduction

Research evidence demonstrates links between language difficulties and learning difficulties [1, 2, 3]. Someone's ability to tell a story involves a number of higher level skills such as language and cognitive skills [4]. More specifically, the ability to tell a well-structured story involves the ability to sequence events, to use specific and precise words, to understand cause-effect relationships, etc. [5]. Research shows that, compared to typically developing students, students with learning difficulties have difficulties in storytelling [6]. Difficulties may be evident in comprehending and depicting structural parts of a story, such as story grammar elements, or in expressive semantic and morphosyntactic skills. Weak narrative skills may affect academic school performance [7]. Thus, the aim of this study is to profile the semantic skills of two students with learning difficulties during story-telling.

19.3 Methodology

19.3.1 Sample

The narrative speech samples were collected from two participants. Participant A was a 13-year-old boy diagnosed with learning difficulties while participant P was a 13-year-old girl diagnosed with ADHD and learning difficulties.

19.3.2 Material and Procedure

The speech samples were collected through story-telling. More precisely, the participants were asked to narrate the Red Riding Hood story. The collected samples were analyzed with the use of PRISM [8], which was adapted into Greek [9]. PRISM comprises two distinct profiles. The first concerns profiling the relationship between semantics and the mental lexicon (PRISM-L) and the second profiles semantic abilities at a grammatical level (PRISM-G) that is thematic-role structures. PRISM-L includes a list of 61 semantic fields, which consist of 239 semantic sub-fields. This list can be used to delineate the lexical range as well as the semantic areas an individual might use. The semantic fields, moreover, are presented in the list in an acquisition order.

On the other hand, PRISM-G includes five developmental stages, with specific thematic sequences (e.g., Actor + Activity, etc.), and semantic relationships (e.g., addition, cause, etc.).It can be used to describe the order-of-mention of clauses, as well.

19.4 Results

Regarding participant A, during the narration of the story, he produced 84 content words with a type-token ratio (TTR) of 0.44. These words came from 16 out of 61 (26%) semantic fields, namely man, moving, food, language, making/doing, time, etc. Of these semantic fields, the one with the smallest lexical range was the semantic field of animals while one of the fields with the greatest range was that of verbs expressing movement. Concerning PRISM-G, participant A produced mainly clauses with three (43%) and four or more (28%) semantic elements, which could place him at Stages III and IV. The most frequent combination in Stage III was that of an actor + dynamic verb + a theme/goal element (33%). Concerning the connection between the clauses, there was coordination of two or three clauses (55.5%) and subordination (44.5%). Finally, regarding the order-of-mention of the clauses produced, in one case the order of the clauses was reversed.

With reference to participant P, she produced 58 content words, with a TTR of 0.6, which came from 18 out of 61 (29.5%) semantic fields. The semantic fields covered were mostly man, body, moving, furniture, food, make/do, etc. Of these semantic fields, the one with the smallest lexical range was animals while the ones with the largest range were body and moving. Regarding PRISM-G, participant P produced clauses with three (29%) and four or more (29%) semantic elements. The thematic structures produced mostly included various combinations of an actor + dynamic verb + other semantic elements. As for the connection between the clauses, participant P used coordination of one, two or more clauses (42%) and subordination (33%) while in some cases there was no connection between the clauses. Finally, the order-of-mention of the clauses depicted the order of events of the Red Riding Hood story.

19.5 Conclusions

Overall, it can be seen that both students used less than 30% of the available semantic fields while the lexical range of some of these fields was small. Regarding the thematic structures produced, both students used structures of four or more thematic elements but these represented a small part of the structures produced in general. Therefore, it seems that these students face semantic difficulties at a lexical and at a thematic structure level and they could benefit from a focused intervention in these areas.

19.6 References

[1] Catts, H. W. (1996). Defining Dyslexia as a Developmental Language Disorder: AnExpanded View. Top Language Disorder, vol. 16 (2), 14-29.

[2] Westerveld, M. F., Gillon, G. T., & Miller, J. F. (2004). Spoken language samples of New Zealand children in conversation and narration. Advances in Speech- Language Pathology, 6(4), 195-208.

[3] Bishop, D. V. M., & AMP; Hsu, H.,J. (2014) Sequence-specific procedural learning deficits in children with specific language impairment. Journal of Developmental Science 17, (3), 352–365.

[4] Roth, F. P., & SPekman, N. J. (1986). Narrative discourse: Spontaneously generated stories of learning-disabled and normally achieving students. Journal of Speech and Hearing Disorders, 51(1), 8-23.

[5] Davies, P., Shanks, B., & Davies, K. (2004). Improving narrative skills in young children with delayed language development. Educational review, Vol. 56,271- 286.

[6] Fey, M. E., Catts, H. W., Proctor-Williams, K., Tomblin, J. B., & Zhang, X. (2004). Oral and written story composition skills of children with language impairment. Journal of Speech, Language, and Hearing Research, 47(6), 1301-1318.

[7] Botting, N. (2002) Narrative as a tool for assessment of linguistic and pragmatic impairments. Child Language Teaching and Therapy, 18, 1–21.

[8] Crystal, D. (1992). Profiling linguistic disability. London: Whurr Publishers.

[9] Nasika, F., Afantenou, K., & Kremmyda, G. (2017). Using PRISM to profile semantic ability in Greek. Paper presentd at the 8th Tutorial & Research Workshop on Experimental Linguistics, Heraklion, Crete, Greece.

20 Socio-Medical Characteristics of Girls and Women with Comorbidity of Post-Traumatic Stress Disorder and Depressive Disorders

Valbona ZHJEQI
University Pristina, Kosovo

20.1 Abstract

People with both disorders' PTSD and depression, have graeter risk for health, social and emotional problems. The main purpose of this paper is to assess the prevalence rate of health, social and emotional problems among women and girls with war related post-traumatic stress disorder (PTSD) and depression as associated disorder.

Method: a cohort study for the three-year periods 2013-2015 that analyzed the prevalence of health, social and emotional problems among women and girls traumatized during the war in Kosovo, diagnosed with post-traumatic stress disorder and depresion.

Results: Hypertension was significantly more prevalent among patients with PTSD and depresion than on those without depression, on the former group it was 4.3 times that on the latter. In the field of social problems, almost all of the ones with depression experienced physical torture, 89.6% of the other category were unemployed and 19.3% had behavioural disorders. Regarding emotional problems, 97.8% of the patients with depression have declared anger, 11 times more than in the other group. Similarly, the likelyhood of anxiety is twice more in the former group, twice more ashamed than those without depresion and significantly more self incriminated. Only around 30% have good relationships with the community.

Conclusion: Women with war-PTSD and associated with depression have more physical problems, particularly they have more than 4 times as much hypertension compared to the group without depression. The ones with PTSD and depression are significantly more likely to not be employed, have more anger, feel self-incriminated, and have experienced physical abuse than in the other group. Findings emphasize the necessity for increased care of traumatized persons in order to minimize health, social, and emotional problems in order prevent the trans-generation trauma.

Keywords: PTSD, Kosovo, comorbidity.

20.2 Introduction

During the war in Kosovo, within period January 1998-June 12, 1999, 11.840 people were killed, while 1.450 people are still missing; 20.400 Albanian women were raped, nearly 750,000 were refuges in neighbouring countries (1). Albanians after their return in Kosovo were challenged with traumatic experiences as the missing family members, traumatic experiences of violence, rape, and persecution and destruction of their homes and properties (2). Post-traumatic stress disorder (PTSD) as a mental health condition is triggered by a terrifying event either experiencing it or witnessing it, (3) whereas the traumatic event differs from the stressful event by its intensity (4). In a study conducted in Kosovo, 17.1% of respondents reported post-traumatic stress disorder (PTSD) and there was a correlation between mental health status and social functioning, more traumatic events the worse mental health (5). Mortality rate increased 2.3 times during the war among Kosovar Albanian population in Kosovo, and it correlated with an intensification of the Serbian campaign of "ethnic cleansing"(6).

Untreated trauma also generates other problems: suicide attempts, domestic violence, child trauma, depression, drug addiction, crimes, human beings trafficking and other deviances in society, with serious consequences for families and communities (7). People with both disorders' PTSD and depression, show greater social, occupational, and cognitive impairment, higher levels of distress, and are more prone to attempt suicide (8).

Epidemiological studies in Bosnia (9) and in the United States have shown that psychiatric morbidity is much higher in populations that have experienced war, persecution, and mass violence (10). Another study conducted in 2005, by the Kosovo Rehabilitation Centre for Tortured Victims in cooperation with the Kosovo Ministry of Health, the Danish Refugee Council and the World Psychiatric Association shows that the prevalence of PTSD, depression and emotional distress remains high. Thus, the prevalence of the PTSD in the population was 22% and it was only 3% lower than in year 2000 (11).

One of the worst experiences faced by many women and girls in Kosovo, which, even after many years of the end of the war, is a source of grave consequences for women, their families and society as a whole, is rape against women, used as a tool of war. There is no accurate estimate of the number of women and girls who were raped or suffered from other forms of sexual violence during the war in Kosovo. Some estimates, however, consider that the total ranges from 10,000 to 20,000 victims. The use of mass rape and other forms of sexual violence as part of a strategy of mass ethnic cleansing continues to have significant on-going consequences not only for its immediate victims, but also for their families and communities. The psychological recovery of survivors of sexual violence and torture has been greatly hampered by the stigma and the survivor's fear of being rejected by family and community, created an impediment to her rehabilitation, access to justice, and socio-economic reintegration. The PTSD rate among Albanian Kosovar women is high and its consequences hamper their current social functioning and their quality of life and wellbeing (5, 12, 13, 14).

The main purpose of this paper is to assess the prevalence rate of health, social and emotional problems among women and girls with war related post-traumatic stress disorder (PTSD) and depression as associated disorder.

20.3 Method

A cohort study for the three-year periods 2013-2015 that analyzes the prevalence of the depression among women and girls traumatized during the war in Kosovo, diagnosed with post-traumatic stress disorder. Data source is database of Kosovo Rehabilitation Center for Torture Victims, a non-governmental organization based in Pristina-Kosovo, where clients are those who had experienced various traumatic experiences during the Kosovo war. The total number of PTSD diagnosed cases, recorded in the database was 350 since the cultural sensitivity, who had volunterely disclose their history.and seek for the services in this center. Selection was done systematically, respectively, every second in the database from the total number until a sample of 150 cases was reached.

The criterion for participation in the analysis was the registration at the NGO/Center and the preliminary diagnosis with the PTSD. For the diagnosis of PTSD, the Harvard Trauma Questionnaire- HTQ was used, while the General Health Outcome Questionnaire was used for assessing the physical health status. Diagnostic criteria were the presence of at least five key symptoms over a period of at least one month: at least one symptom of recurrence, at least one avoidance symptom and at least two hyper vigilance symptoms. Excluding criteria was partial PTSD with only some of its symptoms.

The GHQ-28 is used as a community screening tool and for the detection of nonspecific psychiatric disorders, a higher mean score on the GHQ-28 represents poorer mental health status (score range, 0-28). The GHQ-28 is composed of 4 subscales (score range, 1-7): somatisation, anxiety, social dysfunction, and depression. The HTQ combines the measurement of trauma events (part I) and symptoms of PTSD (part II), selected from the

Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Post-traumatic stress disorder is analyzed by age group, dwelling place, marital status. Statistical parameters are calculated such as arithmetic average, the variability measures as the standard deviation, variability interval. The data testing is done by OR.

20.4 Results

Of the sample of 150 Albanian community women diagnosed with post-traumatic stress disorder, in particular are analyzed and presented cases with comorbidity with depressive disorders disaggregated by age, residence and marital status. The age of research subjects ranged from 30 to 64 years. The average age of women with PTSD and depression is 46.5 years and largest participation have group age 40-49 with 62 years respectively 41.4% of women and girls involved in the research. The group age of 50-59 presents 30 or 45% of women and girls. At the age above 50 were 50 subjects or 37.0%. Regarding dwelling place 85 of them or 63% were from country side, (Table 1) whereas 99 of the cases or 63.0% were married, 15 or 14% were unmarried, 18 or 13.3% were widows.

		N	%
PTSD and Depresion		**135**	**100**
Age-group	**30-39**	29	21.5
	40-49	56	41.5
	50+	50	37.0
	Xbar	46.5	
	SD	8.1	
	min	30	
	max	64	
Dwelling place	**Village**	85	63.0
	City	50	37.0
Marital status	**Married**	99	73.3
	Not married	15	11.1
	Divorced	3	2.2
	Widow	18	13.3

Table 1: The structure of respondents with post-traumatic stress disorder and depression by age group, residence and marital status.

Regarding health problems, among patients with PTSD and depression 86.7% have had headache, 54.1% experienced muscle pain, and 33.3% suffered from disorder of appetite. Hypertension was significantly more prevalent among patients with PTSD and depresion than on those without depression, on the former group it was 4.3 times that on the latter. In the control group there were none with thyroid gland problems.

In the field of social problems, almost all of the ones with depression experienced physical torture and 19.3% had behavioural disorders. While all of the ones without depression were employed, 89.6% of the other category were unemployed. Additionally, 44.4% of the ones with depression had experienced having a family member killed during the war.

By the Fisher exact test, there was a significant difference between the two groups, more specifically, there were 70% less tobacco users and 70% less missing family members in the group with depression.

Regarding emotional problems, 97.8% of the patients with depression have declared anger, 11 times more than in the other group. Similarly, the likelihood of anxiety is twice more in the former group. More than half of them have declared that they are ashamed - twice more than those without depresion. By the Fisher exact test, there was significant difference in self incrimination between the study groups (Table 2).

Only around 30% have good relationships with the community. Relations with family and wider community are significantly at some point good with 56.3% and 55.6%, p=0.00 (Table 3).

| Problems | PTSD and Depression | N | % | OR | 0.95 CI | | Fisher Exact |
		135	100.0		Lower	Upper	Prop.Test
Health	Headache	117	86.7	0.0	0.0	NaN	0.218
	Muscle pain	73	54.1	0.8	0.3	2.3	0.787
	Hypertension	70	51.9	4.3	1.2	16.0	0.027
	Disorder of appetite	45	33.3	0.8	0.3	2.2	0.775
	Diabetes	20	14.8	0.0	0.0	NaN	1.884
	Problems with the thyroid gland	18	13.3	infinit	NaN	infinit	0.218
Social	Behavioral Disorders	26	19.3	1.0	0.3	3.6	1.000
	Excessive use of tobacco	23	17.0	0.3	0.1	10.0	0.044
	Excessive use of medicines	21	15.6	0.7	0.2	2.8	0.709
	Unemployed	121	89.6	infinit	NaN	infinit	0.362
	No special interests	108	80.0	1.0	0.3	3.8	1.000
	Family members killed	60	44.4	0.5	0.2	1.6	0.285
	Missing family members	21	15.6	0.3	0.1	0.9	0.031
	Domestic violence	12	8.9	0.0	0.0	0.1	5.542
	Physical torture	132	97.8	0.0	0.0	NaN	1.000
Emotional	Fear	79	58.5	0.9	0.3	2.8	1.000
	Anxiety	117	86.7	1.6	0.4	6.3	0.696
	Anger	132	97.8	11.0	2.0	60.6	0.014
	Shame	73	54.1	1.8	0.6	5.2	0.415
	Self-incrimination	50	37.0	infinit	NaN	infinit	0.007

Table 2: *Health, social and emotional problems among women with post-traumatic stress disorders and depression.*

| Relations | With family | | Wider society | |
| | N | % | N | % |
	135	100	135	100
At some point, good	76	56.3	75	55.6
Not good	17	12.6	22	16.3
Good	42	31.1	38	28.1
Chi-Square, DF=2	38,98		32,84	
p-value	p=0.000		p=0.000	

Table 3: *Social Relations of women with post-traumatic stress disorders and depression.*

20.5 Discussion

Mental health problems and social functioning impaired by war in Kosovo are important issues to address. War-related trauma sequels continue to have a significant impact on the mental health of the Kosovo population even 20 years after the end of the war, and this is evidenced by the high values of PTSD or other mental disorders associated with PTSD as well as their comorbidity with disorders such as physical, emotional and social health disorders.

There are only few qualitative studies on this issue published so far in Kosovo, which affects the weakening of the importance of the problem in Kosovo society. When psychological trauma is less intense, stressful life events play an important role in the occurrence of general psychological symptoms (15).

The findings from this study document the long-term impact of traumatic experiences during the war on physical, mental health and the social functioning of women/girls subjected to these traumatic incidents. The results of the study proved that women/girls in Kosovo who had been exposed to severe traumatic events had post-traumatic symptoms even 20 years after the end of the war and that post-traumatic stress disorder became chronic to a significant proportion of Kosovar women/girls.The findings also confirm the correlation of PTSD and other health, social and emotional disorders. Two studies conducted in Bosnia and Sri Lanka show high

values of disorders such as depression, anxiety, and anger. This is in line, with our study that shows high values of these disorders (16, 17).

Clinical reports of Bosnian refugees in treatment show similar findings for depressive symptoms with rates ranging from 14% to 21% (18), (19) and for PTSD symptoms with rates ranging from 18% to 53% (18), (19), (20), whereas in Kosovo study reveals that almost 90% of them are depressed. In a study among Cambodian refugees, significant dose-effect relationships between cumulative trauma and psychiatric symptoms was revealed, 39.2% of respondents reported symptoms of depression and 26.3% reported symptoms of PTSD, 20.6% reported symptoms comorbid for depression and PTSD (9). In Kosovo comorbidity for PTSD and depression was higher with 90%.

Only 30% have good relationships with the family members or neighbourhoods where they live. These findings are also supported by previous studies which revealed that social support, both prior and after traumatic experience, plays an important role in mediating the development risk of PTSD. In Kosovo case, 90% of all women with PTSD and depression were unemployed and similar in Bosnia most frequent psycho-social problems were insufficient financial resources and a job loss (21).

20.6 Conclusion

Women with war-PTSD and associated with depression have more physical problems, particularly they have more than 4 times as much hypertension compared to the group without depression. The ones with PTSD and depression are significantly more likely to not be employed, have more anger, feel self-incriminated, and have experienced physical abuse than in the other group. Findings emphasize the necessity for increased care of traumatized persons in order to minimize health, social, and emotional problems in order prevent the trans-generation trauma.

20.7 References

[1] Osmani, Jusuf: Krimet e Serbisë në Kosovë 1998- 1999. Agjencia Shtetërore e Arkivave të Kosovës, 2015

[2] De Jong K, Ford N, Kleber R. Mental health care for refugees from Kosovo: the experience of Medecins Sans Frontieres. Lancet.1999;353:1616-1617.

[3] PTSD and Physical Health - PTSD: National Center for PTSD [Internet]. [cited 2016 Oct 28]. Available from: http://www.ptsd.va.gov/professional/co-occurring/ptsd-physical-health.asp

[4] Lene Symes et all. A Risk Assessment Tool to Predict Sustained PTSD Symptoms Among Women Reporting Abuse. J Womens Health (Larchmt). 2016 Apr 1; 25(4): 340–347.

[5] Cardozo B. L, Vergara A, Agani F, Gotway C. A. Mental health, social functioning, and attitudes of Kosovar Albanians following the war in Kosovo. Journal of the American Medical Association.2000;284(5):569–577.

[6] Spiegel PB, Salama P. War and mortality in Kosovo, 1998-99: an epidemiological testimony. Lancet. 2000 Jun 24;355(9222):2204-9.

[7] Kashdan TB, Morina N, Priebe S., Post-traumatic stress disorder, social anxiety disorder, and depression in survivors of the Kosovo War: experiential avoidance as a contributor to distress and quality of life. J Anxiety Disord. 2009 Mar;23(2):185–96.

[8] Janine D. Flory D. J, Yehuda R. Comorbidity between post-traumatic stress disorder and major depressive disorder:alternative explanations and treatment considerations Dialogues in Clinical Neuroscience; 17. 2 2015

[9] Mollica RF, McInnes K, Sarajlic N. et al. Disability associated with psychiatric comorbidity and health status in Bosnian refugees living in Croatia. JAMA.1999;282:433-439.

[10] Weine SM, Vojvoda D, Becker DF. et al. PTSD symptoms in Bosnian refugees 1 year after resettlement in the United States. Am J Psychiatry.1998;155:562-564.

[11] KRCT, Ministry of Health, Danish Refugee Council, WPA, "Long-Term Sequels of War, Social Functioning and Mental Health in Kosovo", Pristina, 2005

[12] Eytan A., Gex-Fabry M., Toscani L., Deroo L., Loutan L., Bovier P. A. Determinants of postconflict symptoms in Albanian Kosovars. Journal of Nervous and Mental Disease. 2004;192(10):664–671.

[13] Toscani L, Deroo LA, Eytan A, Gex-Fabry M, Avramovski V, Loutan L. Bovier P. Health status of returnees to Kosovo: Do living conditions during asylum make a difference? Public Health.2007;121:34–44. & . doi: 10.1016/j.puhe.2006.06.017.

[14] Kang HK, Bullman TA, Taylor JW. Risk of selected cardiovascular diseases and posttraumatic stress disorder among former World War II prisoners of war. Ann Epidemiol. 2006 May;16(5):381-6. Epub 2005 Jul 1.

[15] Klarić M, Klarić B, Stevanovic A, Grković J, Jonovska S. Psychological Consequences of War Trauma and Postwar Social Stressors in Women in Bosnia and Herzegovina. Croat Med J. 2007 Apr;48(2):167–76.

[16] Somasundaram DJ, Sivayokan S. War trauma in a civilian population. Br J Psychiatry. 1994;165:524-7. Medline:7804667

[17] Mollica RF, McInnes K, Sarajlic N. et al. Disability associated with psychiatric comorbidity and health status in Bosnian refugees living in Croatia. JAMA.1999;282:433-439.

[18] Favaro a, Maiorani m, Colombo g, Santonastaso p. Traumatic experiences, posttraumatic stress disorder and dissociative symptoms in a group of refugees from former Yugoslavia. j Nerv Ment Dis.1999;187:306-308

[19] Thulesius h, Hakansson a. Screening for posttraumatic stress disorder symptoms among Bosnian refugees. j Trauma Stress.1999;12:167-174

[20] Drozdek b. Follow-up study of concentration camp survivors from Bosnia-Herzegovina: three years later. j Nerv Ment Dis.1997;185:690-694

[21] Avdibegovic E et all. Somatic diseases in patients with posttraumatic stress disorder. Med Arh. 2010;64(3):154-7.

21 The Effects of Technology on Existing Ways of Governance

Theodore G. RIZOS
Panteion University, Athens, Greece

In our modern world the introduction of new kinds of technology has severely af-fected the conduct of economic transactions on a massive and unbelievable scale. Current levels of development have focused on an innovative, unexplored model of accumulation which is primarily based on flexible specialization. The informative revolution that has dominated every inch of the earth places a particular emphasis on a constant reassessment of the working skills of the employees in many professions altering in a significant way not only the productive process but the whole edifice of the modern administration. The previously almighty industrial unions tend to be replaced by those mainly employed in networks of medium-sized firms who aban-don the earlier rigid bureaucratic structures and form more all-rounded, versatile coordinating mechanisms.

The new technological environment fosters the need for the establishing of collabo-rative alliances that have a keen interest on the sharing of information among a wide array of dynamically-shaped, key economic sectors. It seems evident that we live in the era of globalization where the networks of experimentalism concentrate their efforts on research and on the communication of new knowledge with a tremendous, unprecedented rapidity. However, we should also acknowledge the imperfections of the market mechanism and the pathologies that have ensued with the conquest of nature through Technocapitalism. Therefore it becomes increasingly apparent that the only path in order to avoid the negative repercussions which the diffusion of technology has brought about is through a democratization of technological deci-sions along with a broader reconstruction of the socio-technological platform of so-ciety. It is in this light that neo-corporatist policies can provide a counterbalance by reducing the amount of uncertainty that surrounds us.

Within the current highly volatile and uncertain economic order the main focus of development has been redirected towards an accumulation process based on flexible specialization. The rapid technological advances and the informative revolution necessitate a constant effort for the improvement of the skills that employees offer in order to meet the new demands arising from a renovated form of production. The increasing rate of the spread of technological innovation instigates a restructuring of the inner core of the labour force as it needs to be turned into a multidimensional entity equipped with all-round training on diverse sectors of the production. Initially the industrial partners showed a reluctance to embrace the social implications of the contemporary era. Their excessive concern with the reduction of job opportunities was accompanied by a fear for the lowering of wage standards. However, in the course of time a nascent emphasis emerged on the incorporation of innovative methods at the level of production along with a gradual realization of the beneficial effects of technology and their utilization by everyone involved. Soon it became clear that we live in the new era of technocapitalism where the networks of communication are primarily centered on research. Creativity has been recognized as the most fundamental source in our society through the generation of new kinds of knowledge that it spreads throughout the world. A rejuvenated form of corporatism has emerged that is based on the high-cost of undertaking cutting edge research. For example, expensive, complex and highly sophisticated hardware is required in such fields as bio-informatics, nano-technology, genetic decoding and proteomics.

In an epoch of intangible resources corporations usually have no choice but to externalize their functions and reach out through networks for the intangibles they need. They require enormous persistence, long-term commitment and costly arrangements to be reproduced and sustained. The social character of creativity makes corporate experimentalism more dependent on social mediation than ever before. This societal interference opens up the frontiers of creativity making it necessary for the corporation to be more extrovert than its predecessors in an

attempt to capitalize on the benefits of universal cooperation. The accumulation of technological knowledge confers power to those societies that can adapt faster to the new demands. The boundaries between technology and science have become blurred and the long-standing question of whether technology is driven by science or the inverse has become largely irrelevant.

A major contradiction often arises between the influence that is exerted on creative imaginations by the surrounding social context and the prevailing objective of commodification which praises the extraction of profit in the shortest possible time. Experimentation for fostering seminal thought relies on the gradual cultivation of harmonic relations among professional communities whereas the sheer pursuit of commodification frequently constrains the feeling of trust. The main reason for that is the prevalence of strict regimentation and the compartmentalization of creative processes. For instance, new software codes created on an Open Source framework and posted freely on the web has no market value since it is not sold or exchanged. On the other hand, it carries an enormous amount of social value as it helps many people to deal with their processing problems. Different programmers from around the world can voluntarily make their contribution by designing software that anyone can use or improve upon. Posting all improvements and making them freely available to anyone allows all flaws to be immediately spotted and tackled successfully. Friction is avoided since face-to-face contact doesn't take place in such transactions as banking, financing or the purchase of major items like autos and homes. The net result is a significant reduction in terms of cost, time, effort and space.

A key feature of network relations is that their consequences most of the times increase their utility through their connections with other creative innovations as the possibilities for testing and improvement multiply rapidly. As significant talents are multidisciplinary it becomes harder for most corporate organizations to assemble them internally. The complexity is compounded even further by the acceleration of technological change which typically results in short product cycles, greater specialization and short-life market niches. The preferential, reciprocal and voluntary character of network-based relations and governance emanates directly from a feeling of interdependence and sharing as the web of social links deepens and enhances individual talents. In this way uncertainty is reduced since an aura of mutual understanding is built up over long periods of time. Therefore, contingencies are resolved faster and obstacles are avoided altogether.

The Scandinavian countries showed the way as pioneers in the signing of collective agreements that prescribed the provision of appropriate training of employees directly affected by the introduction of new-born scientific challenges. They catered for the forging of workers suitable for a hitherto unfamiliar environment who possessed the unprecedented right to determine the terms of the automotive renovation capable of intervening in each step of the decisive process. As a consequence, a mileau of trust and mutual consensus was established in the various economic fields which led to the eventual consolidation of a prosperous period of workplace tranquility and social stability. Similarly, countries on the size of Austria and Finland succeeded in adapting themselves with admirable versatility to the fledgling technological deluge smoothening out the abrupt eruption of a globalized market. Their intimate dependence on the demand for competitive international products worked against any imposition of trade barriers making them more susceptible to innovative alterations and forcing them to acquire a unique flexibility. As far as the internal political landscape was concerned the measures implemented prevented the recurrent explosion of reactions on the part of the industrial partners and ensured the equilibrated maintenance the democratic reforms that uplifted the productive capacity of the workforce.

In Finland the established institutions promoted a form of collaborative interaction which stressed the importance of technological reform by facilitating in a dynamic way the urgent redirection of key resources towards highly competitive industrial sectors. This effort produced in its aftermath a keen interest for participation in the research campaigns that were embarked upon by divergent groups involved in the drawing of economic planning. The whole initiative was depicted as part of a holistic approach in which the research undertaking was incorporated

into an elaborate national plan of instilling innovative methods. It gradually forged an organic link between the public and the private sectors inspired by a strong faith in the interplay among diverse attitudes and ideas. In a concerted manner, eminent research institutions, subsidiaries and public authorities joined forces in order to accomplish a bold attempt to diffuse the findings of crucial technological discoveries. The ensuing industrial rejuvenation came about naturally as a concomitant of pursuing congruent aims. Therefore there was a complete absence of wage differential, labour safety was reinforced and economic competition thrived.

As P. Choate made clear the effective utilization of the communitarian field is considered vital in order to track down the necessary resources that foster creativity. As we witness a reality that generates constant information flow along with a thirst for unceasing acquisition of knowledge the accommodative behavior of all parts engaged in the research process becomes a sine qua non for the signing of mutually agreed contracts by the main economic players. The agreements reached should be endowed with a universal character so as to cover the enormous expenses that these projects cause and ensure their timely completion.

Singapore has been one of the early adopters of e-government initiatives and is one of the few developed Asian countries at the forefront of technological advances. It fulfilled four factors presented as critical for a successful e-government infrastructure, an educated citizenry, adequate technical equipment, e-services that citizens need and commitment from top government officials to support the necessary changes with financial resources and leadership. On many occasions the government collaborated with businesses and used e-services to simplify regulatory processes and to supervise the corporations. The promotion of e-democracy improved communication between elected representatives and their constituents. Greater citizen participation was encouraged and common people had the opportunity to learn about potential policy changes before they were enacted and gave their valuable input. Singapore has been ranked consistently among the world leaders in terms of effective regulation, network readiness and other measures of information and communication technology development. The 2000 action plan sought to offer most of the public services online by focusing on identifying customers' needs. It transcended organizational boundaries by integrating inter-agency services and increased the number of citizens that use them.

Through the web the new e-government action plan intended to motivate participants to provide feedback and contribute to the policy review process through electronic consultations. Educational and technological infrastructure elevated literacy levels while availability of affordable broadband access led to the successful implementation of e-initiatives to the whole nation. The most significant aspect of Singapore's efforts was that in addition to the general e-citizen portal there were two sites soliciting suggestions on how to cut waste of resources and red tape. Business, citizens and government employees were asked to express their views with the promise that everything would be kept confidential and be referred to the appropriate ministry in case it was considered worthy of attention. Specific feedback units had been formed where groups of ordinary citizens interested in a particular issue could come together and discuss. It was also mandated that members of Parliament should set aside a time slot each week to meet with members of their constituents. Transparency allowed regulators to gain information and consult all stakeholders thus building some political consensus for their decisions.

Thus, they were able to justify their actions by citing the facts provided to them, making cogent arguments in favour of the public interest. Furthermore, other Ministries such as the Finance department requested public comments through a public consultation link in its website on income tax reform. In 2004 the Singapore 21 Committee held 80 public for a where approximately 6000 members of the society responded in an effort not to leave matters solely in the hands of the government but to become energetic participants in building their own future. This version of social corporatism was responsible for elevating Singapore from a developing to a developed nation within two generations while keeping it a cohesive country despite the existence of a large diversity of ethnic groups. As far as the economy was concerned, the frantic flux of modernizing transformations made unexpected convulsion be dealt with sufficient perseverance and persistence due to the decisive collapse of pre-existing hierarchies. Despite

the fact that the unanticipated technological breakthroughs could be blamed for the onset of a deep rift in the foundations of the economic structure, the country managed to recover with admirable dexterity. An irrevocable transition of power took place from the entrepreneurial monopolies to milder forms of co-existence and a sharing of the productive endeavor and a quest for intangibles. Even a layman could observe an emerging multiplication of social networks and an agonizing search for seminal minds that would carry out the reinvigoration of the social mechanism.

21.1 References

[1] Atkinson, J. & Meager, N. (1986), New Forms of Work Organization, Institute for Manpower Organization, p.4.

[2] Suarez-Villa, L. (2012), Technocapitalism: A Critical Perspective on Technological Innovation and Corporatism, Philadelphia: Temple University Press, p.56.

[3] Choate, P. (2005), Hot Property: The Stealing of Ideas in an Age of Globalization, New York: Knopf, p.79.

[4] Ornston, D. (Sept.2006), "Re-organizing Adjustment: Finland's emergence as a high-technology leader", West European Politics, v.29, No.4, p.788.

22 Circular Economy

Fredrik STOHM KRONFELD
County Administrative Board Stockholm, Sweden

22.1 Abstract

Circular economy has been a hot topic in recent the years. The purpose of this paper is to address some of the challenges and opportunities regarding how to reach a circular economy. Circular economy is a concept where no waste will be produced. One way to summarize the solutions to achieve a circular economy is the phrase "No man is an Island", because it is a complex question with many stakeholders. A system perspective is needed as well as suitable legislation and standards with End of Waste criteria that make it easy in a safe way to turn waste in to products. Developing countries have a good opportunity to gain and take advantages of the transition to circular economy.

Keywords: Circular economy, Sustainability, Recycling, End of Waste

22.2 Introduction

The upbringing of the concept of circular economy is due to the understanding that the earth's resources are used to an extend that is not sustainable. For example, one person in Sweden today consumes resources as if there were 4 globes and gives rise to about 60 tons waste produced directly and indirectly per year [1, 2]. For a long time, "take, make and dispose" has been a normal way of handling products and resources, which symbolizes the linear economy, Figure 1. In the circular economy no waste will be produced, and very little virgin material will be used. Beside the fact that something needs to be done to have enough resources for the future, the idea is that a circular economy will have positive economic effects on the whole society [3].
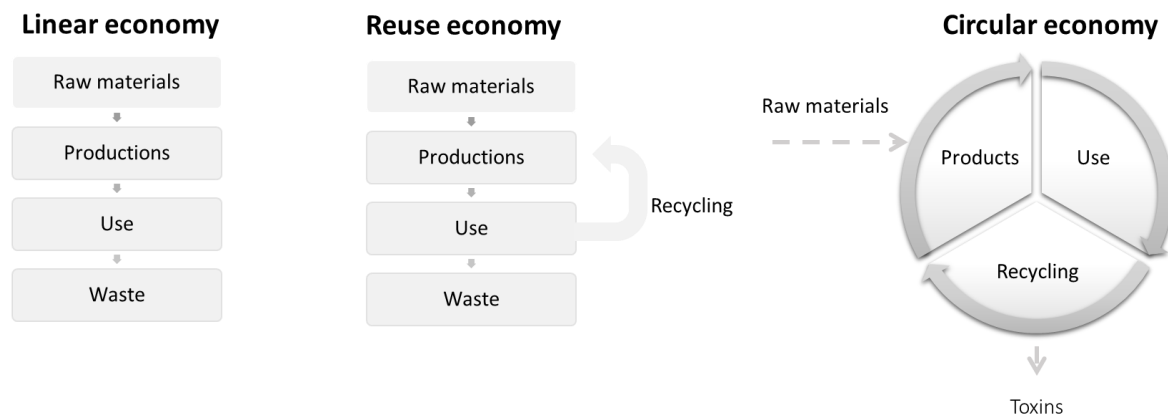

Figure 1: Illustration of the different between linear, reuse and circular economy

Circular economy refers to a society in which resources are retained in the loops rather than waste. The main features of such loops are to reuse and recycle products and materials so that the economic value is maintained. The basis for financial growth should not be at the expense of virgin materials. The only thing that should be added to a circular economy is renewable parameters for instance solar and wind energy, things that humans cannot influence. The idea is that the materials and atoms that exist in the society today should be used infinitely many times. In order to achieve this, the idea is that products or materials should be reused as much as possible. If a broken product cannot be repaired, the parts must be able to be reused or be possible to reuse the atoms to form new products. No toxins should be present in the loops and there should be no waste that cannot be recycled into the cycle. In such a

society, waste is something that should be regarded as a resource that can be reversed in the value chain. One aspect that needs to be included in the calculation for circular economics is how materials that cannot be recycled today should be handled and how toxins should be handled in the future. [3, 4]

22.3   Background

The concept of "Circular economy" had a break throw after the Ellen MacArthurs Foundation's report in 2012. 1966 an article was published concluding that the earth is a closed economic system where economics and the environment consist of circular conditions [5]. As a concept, "Circular economy" has been used by Pearce and Turner in the Economics of Natural Resources and the Environment 1990 [6]. The fact that the concept "Circular economy" received such an impact after 2012 is probably due to the concept was launched at an appropriate time in an easily accessible and educational way. There are also many other concepts on the same theme such as The R-ladder, Steady state economy, Green economy, Bioeconomy, Sustainable development / society, Creadle to Creadle which is a certification of products. Within the EU there are also strategies and policies for achieving circular economy through, for example, the "Manifesto for a Resource Efficient Europe" and "Moving towards a circular economy through industrial symbiosis" [3, 4, 7]

According to Ellen Mac Arthur Fundation, should Europe's manufacturing industry be able to save $ 630 billion annually by 2025 by turning it into a circular economy. The global potential is for consumer goods are $ 700 billion. The EU is estimated to be able to save about € 600 billion annually for waste reduction and increased recycling, while at the same time providing about 2 billion more jobs and reduced greenhouse gas emissions. [3] Globally, carbon dioxide emissions would decrease by about 3.6 Gt carbon dioxide by 2050. [8]

22.4   Business Models

In the context of a circular economy, it is often mentioned that a circular economy will need and lead to new business models. Initially, a great deal of innovation and design of products is needed, as well as changing in the consumer behavior and collaboration between different policy areas. Business models usually refer to how different businesses can benefit from each other such as the use of residual products and energy (industrial symbiosis). Other examples are that the business models contain renewable raw materials or that the product is provided for a function or that the material/product is to be rent out instead of to be sold. The ownership of the material and parts of it will be in hands of the traditional seller/producer and the consumer will rent or leas the product. Products should be Eco-designed that can be repaired or changed so that it can be resold. Shared ownership is something that is usually mention in the circular business models. [3, 6, 9, 10]

Compared to earlier, many materials are used today in a way that reduces the need to produce new ones. One example of such a material is metal that can be remelted to be used for new products over and over again without the need for any major change or energy input compared to new iron to reuse the material. Another example is the secondary market for clothes, mobile phones or cars, these products are also possible to rent. But more and more materials need in the future to be reused and recycled. [3, 7]

Sharing economics is a concept that often is raised when it comes to circular finances. The prerequisites for a sharing economy have been improved through simpler electronic payment solutions and electronic platforms. The environmental awareness, convenience and financial motives are common reasons for to participate in the sharing economics. Problems with this are often that laws and rules are not really adapted for this and that people and companies need to be honest and want to do the right things. [3, 10]

The car is often mentioned when talking about circular economy. The reason for that can be

that they have a low utilization and accounts for a large part of the emissions from steel, plastic and aluminum. If the car is not private owned it may be possible with car with fewer seats that use less material and fuel. Enkvist and Klevnäs report that the circular car model with shared cars reduces the cost and carbon dioxide emissions by more than 70% compared to today. [8]

22.5 Challenges and Opportunities

The challenges to achieve a circular economy today is a lack of the system perspective, procurement, legislation, standards, end of waste criteria and thermodynamics. There are also many other problems to reach circular economy for example because it is difficult to judge the best alternative, low demand for recycled materials and products, that the price to use virgin material is often to low. It is also the case that political strategies, innovations, investments, knowledge and infrastructure for recycling, etc. are needed to reach a circular economy. New business models can be both a challenge and an opportunity. [3, 4, 7, 8, 10]

Circular economy is complex and includes many actors, behaviors and materials so that policy efforts are needed. Policy efforts need to have a holistic perspective and need to be coordinated for efficiency. This applies not at least to regulations and implementations that are very important. The regulatory system affects most things in terms of accounting, deposit, increased requirements for life expectancy, prohibition of environmentally harmful technologies, packaging, guarantees etc. Rules and investments in the waste area are in demand in areas of landfill, End of waste criteria and free mobility. Public investment as a complement to private investment is needed in the form of structural funds and investment in research, meeting platforms, tax incentives (for example, lower tax on repair and higher on the use of virgin natural resources) and campaigns to influence the attitude and stimulate collaboration. To increase the demand for circular business models in public procurement, which gives companies clearer rules how to act and what is expected of them. [3, 4, 7, 8]

Previously, the Lansink's ladder (waste hierarchy) was used to illustrate how waste should be handled. This applies to a great extent even today, but a further focus is needed on that materials and products being recycled. Both to create products where the individual components/materials can be recycled but also in order to create a waste treatment for the products that cannot directly enter in to a new loop. In several areas, work is underway to develop better technologies and new solutions in order to return more material into the material loops. One example of this is that how the incineration residues from energy recovery have been improved where previously non-magnetic metals that were less than 10 mm were not recycled. Today non-magnetic metal residues of about 1 mm are usually recycled today and there is technology for recycle even more [11]. To use recycled aluminum consumes about 5 % of the energy and reduce carbon dioxide emissions by about 98% compared to new aluminum production [8]. However, an improved technology is still required to separate the various metal alloys so that they can be used at a higher level in the waste hierarchy and enter an eternally loop in the circular economy. Techniques for separating metals exist today. In the future better technologies is expected to be used to separate different alloys or use another approach to be able to produce purer metals. Much of the recycled aluminum today is used as cast aluminum. Today there are few attempts produce a higher degree of separation from recycled metals so it can be used in finer aluminum products. The low difference in price between primary and secondary aluminum can be another reason that makes it difficult for secondary aluminum to compete with new aluminum. High security requirements are often imposed on new products that are delivered, and because of that the use of recycled materials can reduce the alternatives. [8]

Another example is that work is in progress on extracting materials is the separation of the salts from flue gas treatment residues. Potassium chloride, sodium chloride and calcium chloride can be extracted and separated from the flue gas treatment residues from when waste is incinerated. [12]

Techniques such as computers and smartphones are products that usually today need for to

be produced example rare-earth metals and that create mining waste. Artificial intelligence is one of the tools that today often need to use these rare-earth metals. The technology makes it possible to speed up development and design, compile and analyze data in order to understand new areas of use. There is a need to create efficient logistics for material flows in order to, for example, achieve circular solutions. Although even if not everything needs to be based on artificial intelligence, it is a fact that digitalization has led to a great opportunity for circular economy by being able to perform calculations and optimizations faster that are more efficient than people can do. The computer capacity makes it possible to maintain, for example, service intervals in order to increase the service life or, in a structured manner, see which parts that is limited, and because of that often breaks down. This follow-up makes it possible to better monitor costs. Manufacturing can also take place with robots, which requires less movement of people. [8, 13]

22.6 Circular Economy in Developing Countries

The circular economy will probably create new goods, products and services. With this, there are both threats and opportunities for developed and less developed countries. The circular economy is basically based on resource management, something that has not been as much focus on in the linear economy. With this, different countries can use their different advantages. [8, 14]. Several ways have been used to describe how financial growth and environmental interest are related. A common illustration of this relationship is an upside down Kuznet curve or also called the environmental Kuznet curve, Figure 2.
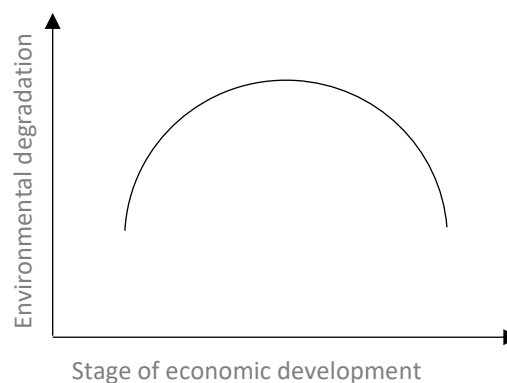

Figure 2: Environmental Kuznet curve.

Facts that have been used in order to obtain the model indicate that at a certain point of economic growth, the focus is more on emissions and environmental issues. The model has received criticism because it does not match or does not include all relevant parameters. However, the model has had a great impact and is often referred to. On the same theme as the model, there are also perceptions that free trade often leads to a better environment [15, 16].

In developing countries, the circular economy has generally not received the focus that would have been needed. One of the problems is the view that circular economy is a way of managing waste while circular economy is more about system thinking and closing the loops. Generally, in developing countries, the change in society is needed and the society is usually not organized as the public and private sectors are in industrialized countries. Developed countries often have a greater diversity/fragmentation, especially in the private sector. There is often a shortage of technology in developing countries and, which makes it more difficult to convert to circular economy [14].

Developing countries often have a large informal sector that already today acts circular through, for example, telephone repairs. What is most often required is investments, among other things, in infrastructure and technology so that these countries also efficiently can handle and repair

products from other countries. These developing countries have a tremendous opportunity because they are not tied to old thoughts and ideas, which often seems to be the case in industrialized countries. What is not to be done, however, is that these countries become dump sites and that there are poor working conditions [14].

Many of the investments that are made in developing countries are based on raw material extraction, which probably is because it is easier to calculate income and expenses in that sector than in new, more untested technologies and business models that are considered higher risk [14]. The circular economy has been formulated in the EU and in the industrialized countries, which has meant that there has not been as much focus on agricultural issues. Agriculture is, for example, an important area that in developing countries in achieve a circular economy [8] [14]. Today, a large part of production is in developing countries, but a large part of consumption takes place in the industrialized countries. In the long run, developing countries will increase their consumption and then they are even more important that there are circular solutions for the earth's resources to suffice [14].

Undeveloped countries have the opportunity not to make the mistakes that developed countries have made in order to create a sustainable host. Much capital is tied up in the developed countries in the linear value chains. Undeveloped countries have the opportunity to see which things have not worked and skip that step and thus that create a strong competitiveness [8].

22.7 Discussion and Conclusions

As can be seen from the content and the reasoning of the concept of circular economy, "No man is an Island" is a good way to summarize the concept. The environmental issue cannot be solved in a separate way. System solutions are needed, the new solutions will probably influence others and it will lead to new ways of thinking and improved activities.

Much needs to be done and there will probably be lots of creative ideas on how materials can be utilized and how to get existing atoms and materials in closed loops. It is important that companies and legislators are at the forefront of the development. Otherwise it is a risk to becoming as did for the Eastman Kodak company the analog filmmaker who did not realize in time the effect of digitization.

A lot of the legislation that exists is good but does not always contribute to the fastest changes. One example is the End of Waste criteria which can be perceived as unclear and obstructing the recycling of materials. There are some troubles with material that could be used as raw material, but it is difficult due to it is classified as waste. Material need to be able to be transported in an environmentally friendly way to one who is suitable to handle the material and bringing it back to society.

One business model that is relatively new and that does not claim to be circular is Airbnb, where housing can be used for temporary housing. The advantages of this are, for example, that land and resources are not used for hotel buildings. Disadvantages are whether this leads to reduced tax revenues and tax evasion because it is easier to control hotel operations than the private person although it should be possible for the company that conveys the lease to submit information to the tax authority. Other parts of this are that it creates uncertainty among neighbors and does not really follow the regulations that tenant-owner associations advocates.

Another new phenomenon are electric scooters. An interpretation of the business model is that it follows many of the parts symbolizes circular economy. The system is based on that you pay for the time it is used and that the scooter can be repaired and upgraded. The question is whether it is renewable raw materials that can be charged with solar energy, or batteries with rare earth metals that maybe not going into the loop or harmful substances. If these can satisfy the entire circular idea, depends much on how the owner takes care of these batteries for charging, how they are collected, if they will have a long life, if they are designed for repair and replacement, if there is a management for how materials can be taken care of, if new, more

efficient batteries are developed or if the components can be used in other applications. It can be questioned whether electric scooters have replaced any other transport need or if it is just an unnecessary supplement that takes more resources than it creates. In the best of worlds, these vehicles have replaced cars that require more material and energy for movement and currently contribute to emissions, the products are repaired, and the raw materials are recycled, and the time savings leading to higher production.

The business model proposed for cars is often some form of rental system were the user rent a car when he needs it. It is relatively common today that transport companies use this model by purchasing transport services to carry out transports they have undertaken to carry out. Price models work as such that the price can be different at what time of the day the material is to be transported in order to the transport company to have as high occupancy on their cars as possible for maximum profitability, in the same way as it currently works in the airline industry. For passenger car transport, these models could work, but it is doubtful what effect they would have. Today cars are used relatively simultaneously, just watch the rush hour and the parking spaces at the shopping center. It is not certain that sharing cars will drastically reduce the number of them. Greater effect would probably have if working hours were distributed more irregularly so that there is no rush traffic or weekends, but the question is whether it is accepted in society. Leasing is a model that to some extent can be considered circular because it can still be the manufacturer who owns the car and thus has ensured that the car can be use for raw material in future production.

The circular economy will probably not be completely circular so that only the substances we already have in circulation are used. As the example of artificial intelligence and earth metals, the development can benefit from the introduction of new materials in the existing flows as it can create benefits. This, of course, should be made aware of which pros and cons it creates. Presumably, the use of the possibilities of artificial intelligence will be able to produce methods for using the materials as much as possible in order to prevent waste or to make existing materials that are reused in the circular economy.

From the literature it can be conclude that developing countries have big potential when it comes to circular economy. Arranging society and the infrastructure to be for a circular economy is likely to be beneficial in the long term. The historical interpretation of which may indicate that high economic wealth gives less environmental impact through more awareness of the environment and that products, materials and atoms need to be recycled. New environmental thinking and activities can be what drives economic growth in the future.

Regardless of what concept is used to describe a sustainable future, the future will continually be in change. As many have said, we cannot continue as we have done. Like the fashion for clothes, the attitude to what is a luxury living and quality of life will vary, owing and use petrol-powered cars or use an electric powered small vehicle. The wise man (Homo Sapiens) will change his life if he has knowledge of what is happening, but he will always benefit his own gains. The fact that the environmental issue has become more actual in recent years (even though these years can be considered many), so has nevertheless the knowledge increased of what threatens humanity, which makes it possible to make decisions.

22.8 References

[1] Väldsnaturfonden WWF, "Living planet report 2018- Svensk sammanfattning," Väldsnaturfonden WWF, 2018.

[2] Ragn-Sells, 2017. [Online]. Available: https://www.ragnsells.se/cirkular-ekonomi/60tonsfragan/. [Accessed 17 07 2019].

[3] SOU 2016, "http://www.sou.gov.se/wp-content/uploads/2016/10/Cirkul%C3%A4r-ekonomi-160125-Final.pdf," [Online].

[4] Ellen MacArthur Foundation, "Towards a Circular Economy," Ellen MacArthur Foundation, 2012.

[5] Product life, "www.product-life.org/en/circular-economy," [Online].

[6] A. Heshmati, "A Review of the Circular Economy and its implementation," Entreprenörskapsforum, 2015.

[7] T. Rood and M. Kishina, "Outline of the circular economy - PBL Netherlands Environmental Assessment Agency," PBL Netherlands Environmental Assessment Agency, The Hague, 2019.

[8] P.-A. Enkvist and P. Klevnäs, "The Circular Economy - A powerful force for climate migration," Material Economics, Stockholm, 2018.

[9] European Commission, "Att sluta kretsloppet – en EU-handlingsplan för den cirkulära ekonomin," European Commission, Bryssel, 2015.

[10] J. Korhonen, A. Honkasalo and J. Seppälä, "Circular Economy: The Concept and its Limitations," Ecological Economics, vol. 143, pp. 37-46, 2018.

[11] ZAR- Stiftung zentrum für nachhaltige abfall- und ressourcennutzung, "Dry discharge at Kezo, Hinwill," [Online]. Available: https://zar-ch.ch/en/home/competencesprojects/dry-discharge/. [Accessed 18 07 2019].

[12] Ragn-Sells, "Ash2Salt," 28 03 2019. [Online]. Available: https://www.ragnsells.se/inspireras/ash2salt/. [Accessed 18 07 2019].

[13] Ellen MacArthur Foundation, "Artifical interlligence and the circular economy - AI as a tool to accelerate the transition," Ellen MacArthur Foundation, 2019.

[14] F. Preston, J. Lehne and L. Wellesley, "An Inclusive Circular Economy- Priorities for Developing Countries," The Royal Institute of International Affairs- Chatham House, London, 2019.

[15] P. Ekins, "The Kuznets curve for the environment and economic growth: examining the evidence," Environment and Planning, vol. 29, pp. 805-830, 1997.

[16] W. A. Brock and S. M. Taylor, "Chapter 28 - Economic Growth and the Environment: A Review of Theory and Empirics," Handbook of Economic Growth, vol. 1, pp. 1749-1821, 2005.

23 Application of Renewable Energy Systems in Ro/Pax Vessels

Vassiliki Th. SOURTZI
Business College of Athens, Shipping Department
Apostolos K. LAZARIS,
University of the West of Scotland, School of Business & Enterprise
Paisley, PA1 2BE, Scotland, United Kingdom
Panayotis H. YANNAKOPOULOS
University of West Attica, Greece

23.1 Abstract

The application of renewable energy resources has been examined based on the area of Vessel1. A Cost Benefit Analysis which is focused on the Net Present Value, the Internal Rate of Return as well as the Payback Period leads to the result that such an application will contribute to both environmental and social profits. The greenhouse gas emission will be reduced by 760 metric tons annually at Port A. At the same time, the social cost will be reduced by $28,120 due to the decrease of CO_2. Moreover, from the questionnaire that has been provided to the local residents at Port A, their awareness of the renewable energy resources has been observed. Lastly, the same research and application of the involved materials can be used in every similar vessel after making minor changes, a fact that proves the importance of the study.

Keywords: Renewable Energy Systems in Shipping; Energy Efficiency; Solar Panels

23.2 Introduction

This paper focuses on energy sufficiency on board passengers' vessels by using existing land based renewable resources applications (solar power systems). Solar power systems will be used in order to make a vessel energetically self–sufficient by reducing carbon emissions from the electricity power station to the environment.

A research is provided in order to make a Ro/Pax vessel self-sufficient during its stay at any port (in this case port A). In this document the "area" on which the research is based, is the Ro/Pax Vessel1. Furthermore, the relationship between a self-sufficient vessel and how the port area is affected by the ship's emissions will be investigated in conjunction with the public opinion of the local population.

The paper's objective is to discuss the results of the above research and to prove whether it is profitable for shipping companies to invest in renewable resources and whether this "innovation" has a considerable positive impact to the environment as well as to public health. More precisely, the following are investigated:
The way through which Vessel1 could be self-sufficient.
The public opinion regarding the environmental orientated issues concerning Port A.
The financial impact of vessel's energy upgrade and the environmental and social benefit regarding this implantation.

23.3 Literature Review

Previous research papers, series of articles, textbooks, thesis and journal papers are used in order to cover the above-mentioned subject. The literature review is divided into two main sectors regarding the environmental and social problem arising from the ships' emissions and

the applicability of renewable resources in shipping industry.

23.3.1 Environmental and Social Problem

MARPOL in the revised Annex VI (2008) provides new regulations regarding the ship-generated emissions to ECA areas, as the main concern is to reduce anthropogenic emissions such as: Sulphur Oxides (SOx):, Nitrogen Oxides (NOx):, Carbon Dioxide (CO2): (IMO, 2016). Studies made by the International Council of Clean Transportation explain how renewable energy can be applicable to vessels in order to reduce air pollution (European Commission, 2002). Moreover, Energy Efficiency Design Index (EEDI) promotes the use of renewable energy for the reduction of emissions (IMO, 2016). Tzanatos (2010) in his research paper states that at the Port of Piraeus, Greece, the NOx and SO2 emissions generated by the passengers' ships represent the 1.2% and 2.5% of the national transport emission inventory respectively, and Greece compromises the 7.3% of the European shipping emissions. Furthermore, according to Sanabra (2013), port emissions do not severely affect the national emissions inventory but are important for the health of the population living in the greater area of the port. The aftermath of the above is, that port emissions have a dramatic impact on human health and on the environment compared to those generated by seagoing ships (Corbet et al, 2007). Additionally, the impact to the crew's health should be taken into consideration regarding their exposure to exhaust emissions (Winebrake, 2009).

23.3.2 Ships and Renewable Energy

From the above, the need to develop sustainable transport is clearly noted. The definition of sustainable transport is described by the OECD (1996) as transport which does not jeopardize the public health and the environment and this can be obtained with the application of renewable energy resources, which "have fewer impacts than traditional resources (i.e. fossil fuels, nuclear etc.)" (Air emissions rates and costs, 2012).

It is well known, that the Aegean Sea has a high supply of solar and wind sources. Hence, the use of renewable resources plays fundamental role in the reduction of fuel consumption and as a result to the minimization of air pollution (Korikla, Nikitakos and Lilas, 2013). Solar Photovoltaic systems (PV) are usually used while the vessel is at port and operating auxiliary engines (McKay, 2011).

The need for lower consumption of energy had been taken into account by ECO Marine Power and therefore, in 2014 Vessel2 was the first vessel in Greece on which solar panels were installed (Ship & Bunker, 2014). The advantage of Ro/Pax vessels is that they have plenty of deck area for such panels. In Vessel2, sixteen (16) (2.32 KiloWatt peak (kWp)) solar panels have been specifically designed to "withstand exposure to saltwater". The panels' dimensions are 1.5m x 0.68m, thus the deck area covered is approximately 15m2 (Atkinson, 2016). From the conducted interview, it is stated that in Vessel2 case the solar power system is working better when the ship operates its daily schedule during the day. During this time the cost of electrical power generation is low and solar power contributes significantly to the total electrical power. Hence, the Vessel2 Project is considered successful.

In our case, Vessel1, is a modern high speed Ro/Pax vessel and has the capacity to carry up to 2,000 passengers and 430 vehicles. Vessel1 departs every Tuesday, Thursday and Saturday from the port A, between 15:00 and 17:00 and it is vital link to many islands in the Aegean Sea. Vessel1 returns to Port A every Tuesday, Thursday and Saturday between 08:10 and 13:10. (BlueStarFerries, 2016). From its time schedule, it is noted that the vessel stays at Port A approximately 13hrs per week and especially during the peak solar power generation times. Therefore, the final goal of this research paper is to make Vessel1 self-sufficient while at port. This means that vessel's auxiliary engines will not be used while at port in order to provide power for covering onboard needs, especially for hotel operations (C40, 2011).

23.4 Methodology

This research is based on primary and secondary data. The primary data was collected through telephone questionnaires in which seven closed-ended questions were included. A sample of 500 people was used in order to conduct the survey. The sample of people was chosen from a pre-determined population (greater geographical area of Port A). These questions were based on the emissions at Port A, and to what extent peoples' lives are affected etc. Moreover, an interview was conducted with the Electrical Director, of the Maritime Company which owns the vessels (Vessel1 and Vessel2). Moreover, the Project Manager of the "Vessel2 Renewable Energy Innovation Project" gave us a clear insight of the importance of environmental improvements in shipping sector. Furthermore, he provided information about the above-mentioned project as well as the first results derived from the trials in Vessel2. Vessel2 is used as a pattern to our research, in order to apply Renewable Energy Systems (RES) to her sister vessel, Vessel1 and to make it self-sufficient during its stay at port. The installation techniques of solar power systems in Vessel1 will not be provided, as this sector is outside of the scope of this research paper.

The secondary data used are considered to be valuable. There are limited sources concerning the application of RES in the shipping sector and how a vessel could become self-sufficient. The Cost-Benefit Analysis has been used in order to compare the cost of this kind of innovation and the benefits that may provide to companies, environment and society.

23.5 Data Analysis

23.5.1 Data Collected from Questionnaire

The purpose of the survey was to identify the public opinion and awareness regarding major environmental orientation issues. In here, we will present more analytically the data collected from the questionnaire. 500 persons were interviewed.

Question 1: *How much do you consider that the air pollution affects the people's lives?*
In this question, we intended to find out if the problem is visible from the local community of the port of Piraeus and how much their daily routine is affected by air pollution. From the results we observe that a great amount of people surveyed are aware of the phenomenon. According to the responses 60,4% (302) replied a lot and 23.4% (117) a little. A percentage of 14% (70) replied a few and 2,2% not at all.

Question 2: *How much do you believe that the emissions of the vessels at the port have an impact to environment?*
This question is used in order to ensure the environmental awareness of the population. From the results we may see that they have full knowledge of the environmental issue. According to the responses the majority, 70,4% (352) replied a lot, and 27.4% (137) a little. A percentage of 1,8%(9) replied a few and 0,4% not at all.

Question 3: *Do you believe that there is a need for change to the current situation regarding the ship-generated emission?*
Although the answer to this question is distinguishable, we need clear evidence in order to continue the survey. We observe that a great percentage of the participants want an emissions management policy. From the other hand, it is noticeable that an amount of respondents stated, "Not interested", this answer is explained by the current financial crisis in Greece which has a huge impact in people's lives and lead to a denial for other issues (McGinn, 2015). In this question 83.2% replied positively, 8,2% replied "maybe", 8% replied that they are "not interested" and 0,6% (3/500) replied negatively.

Question 4: *How much familiar you are with renewable energy resources?*
This question was posed in order to investigate if the population was informed for renewable energy resources and which is the public attitude. From the outcome, we discovered that

the majority was familiar with the use of renewable resources, this was explained by the fact that in Greece during the last years there is a great development of renewable energy projects (i.e. Euboea Wind Energy Project) (Kaldellis et al., 2013). According to the responses 67,6% (338) replied a lot and 29.4% (147) a little. A percentage of 2.2% (11) replied not at all, and a few (4) or 0,8% replied a few.

Question 5: *Do you think that renewable resources would have a positive effect to the reduction of air emissions?*
In relation to the previous question, we tried to have a clear idea of the public opinion regarding the results of the use of renewable resources. The results showed that a great amount of the correspondents have fully knowledge about the positive impact of this kind of energy to the minimization of air pollution. According to the responses 64,2% (321) replied positively ("Yes") and 30.8% (154) "maybe". A percentage of 4.4% (22) replied that they did not know, and three (3) or 0,6% replied negatively.

Question 6: *Who do you think is more responsible to take actions and to enforce measures regarding the air pollution?*
In this question we added a variety of answers, because we wanted to find out according to our respondents who is more responsible for taking measures regarding this environmental issue. From the outcome, it is observed that a great percentage thinks that this subject is under government's jurisdiction. Other people think that shipping companies should enforce environmental policy. According to the responses 30,4% (152) replied "the government", 28.8% (144) replied "the companies", 10.8% (54) replied "the European Union", 8,6% replied "the authorities" and finally 1,2%, (6) replied "the citizens".

Question 7: *Do you think that the municipality of Piraeus should force government to take measures?*
From the answers derived from the above question, we may notice that the population thinks that the municipality of Piraeus can play significant role to the minimization of air pollution by forcing the government to take all appropriate measures. The answers that we were given were: "Yes" 84.6% (423), "Maybe" replied 13% (65) and 2,4% (12) replied negatively ("No").

From the respondents' answers, it is clear that the need for change to the current situation is clearly identified. Furthermore, the air pollution generated by ships' emissions is affecting negatively local people's lives. Moreover, it is observed that the use of renewable energy resources is widespread, and the people are ready to integrate it into their daily routine.

23.6 Cost Benefit Analysis

At this point, Cost Benefit Analysis (CBA) will be conducted in order to evaluate whether the project is worth to be implemented in Vessel1. Financial and environmental aspect will be taken into consideration. The costs and the annual savings that may arise from the project will be analyzed.

In Vessel1 case, we consider that the panels will be installed with the same techniques with the Delos Project. According to a study conducted by Blue Star Ferries concerning Vessel1 case, 100 (50kWp) PV panels will be used and the covered deck area will be approximately 110m2. These amendments are explained by the fact that in Vessel1 solar power system will be operating especially when the ship is alongside in the port. During this time the ship is using power generated from the more expensive and polluting auxiliary diesel engines. Vessel1 energy demand while at port is in total 1MegaWatt (MW), the energy generated by the solar panels will be approximately 1.2MW (the energy generated by the solar panels is higher from the Vessel1 energy demand while at Port). Hence, Vessel1 by turning off its engines, it will be considered self-sufficient during its stay at port.

Furthermore, by using auxiliary engines for this kind of vessel, the Marine Diesel Oil (MGO) consumption is approximately 1.5 tons. From the above, the fuel saved per year will be 100

tons and cost annual savings will be estimated to $50,500, as the current price for MGO is estimated to $505 per ton on 14th December 2016 (Hellenic Shipping News, 2016). Furthermore, the cost of electrical power generation from auxiliary engines is estimated to $0.22/kWh (Blue Star Ferries Study, 2015), thus the annual cost savings will be amounted to $14.630. As a result, the CO_2 emissions to the environment will be reduced up to 760 Metric Tons (MT). Regarding the financing part, it should be mentioned that due to the fact that these kinds of technologies are not mature, banks are unwilling to provide capital for such investments (International Council On Clean Transportation, 2011). On the other hand, European Commission promotes sustainability by offering financial motivation through funding programs. For example, the program "Horizon 2020" is offering 38million euros for "New and Improved Transport Concepts in waterborne transport" (European Commission, 2016). Blue Star Ferries could use the European funding in order to proceed to the investment; however, it is noted that the initial cost is not so high.

From the data provided by the owners, the total cost for installation of solar power system including the Monitoring system (Table 1) and its maintenance costs (warranty period, equipment repairs, planned maintenance and upgrades are included) (Table 2) are presented.

Equipment for Solar Power System	Costs ($)
Marine Grade PV Panels	25,000
Inverters	10,000
MPPT Charge Controllers	2,000
Energy Storage (50kWh)	30,000
Computer Management & Alarm System	8,000
Design, Installation, Installation Materials & Test	25,000
Total	100,000

Table 1: *Total Cost of Installing a SPS*

Years	Maintenance Costs ($)
0	0
1	200
2	200
3	200
4	200
5	200
Total	1,000

Table 2: *Total Maintenance Cost*

23.6.1 Net Present Value

Net Present Value (NPV) calculation will be conducted, for the next five years, in order to find whether the project's result leads to profit or loss. It should be mentioned, that the annual savings are clearly correlated to the price of the MGO, which is a variable component, and it cannot be accurately forecasted. We will calculate the annual savings regarding the cost of fuel by taking into account the current price of MGO ($505 per ton). The sum of total annual savings from fuel ($50,500) and electrical power generation savings ($14,630) is estimated up to $65,130.

Net Present Value Formula: $\text{NPV} = -Co + \sum_{i=0}^{T} \frac{Ci}{(1+r)^i}$

Co= Initial Cost of the investment, Ci= Net Cash flow generated by the project at the time i
T= life of the project, and r= discount rate

Years	Net Cash Flow	Present Value
i= 1	$\dfrac{65{,}130 - 200}{(1 + 0.03)}$	63,038
i= 2	$\dfrac{65{,}130 - 200}{(1 + 0.03)^2}$	61,202
i= 3	$\dfrac{65{,}130 - 200}{(1 + 0.03)^3}$	59,459
i= 4	$\dfrac{65{,}130 - 500}{(1 + 0.03)^4}$	57,423
i= 5	$\dfrac{65{,}130 - 200}{(1 + 0.03)^5}$	56,012
Total		234,096

Table 3: *Years, Net Cash Flow & PV*

$\text{NPV} = -100{,}000 + \left\{ \frac{65{,}130 - 200}{(1+0.03)} + \frac{65{,}130 - 200}{(1+0.03)^2} + \frac{65{,}130 - 200}{(1+0.03)^3} + \frac{65{,}130 - 500}{(1+0.03)^4} + \frac{65{,}130 - 200}{(1+0.03)^5} \right\}$

= -100,000 + (63,038 + 61,202 + 59,459 + 57,423 + 56,012) = -100,000 + 234,096 = $134,096

From the above calculation, it is observed that the NPV>O, this means that the project would be profitable for the company as the gain of this investment would be more than the initial cost (Boundless, 2013).

It should be mentioned that the price of MGO will be increased in the next 2 years as OPEC's countries concluded to a cut production up to 1% of global output in order to increase the oil price (The Economist, 2016). This means that Fuel Annual Savings will be increased, as a result the Project's Annual Cash Inflow will be increased.

23.6.2 Internal Rate of Return

The Internal Rate of Return (IRR) must also be taken into consideration in order to be certain whether the project is worth to be undertaken or not.

IRR Formula: $\quad \text{IRR} = -Co + \sum_{i=0}^{T} \frac{Ci}{(1+r)^i} = 0$

$$0 = -Initial\ Cost + \frac{CF1}{(1+IRR)^1} + \frac{CF2}{(1+IRR)^2} + \sum \frac{CFt}{(1+IRR)^t}$$

Years	Cash Flow ($)
0	-100,000
1	64,930
2	64,930
3	64,930
4	64,630
5	64,930

Table 4: *Cash Flows per annum*

The IRR equals 58%. It is observed that the IRR is very high; this means that the project contains less risk and the expected annual rate of return is equal to 58% (Accounting Simplified, 2012). Furthermore, according to Ragwitz and Breitschopf (2016), the Cost of Capital in Greece regarding the investments in renewable energy resources is approximately 12%, much lower than the IRR, this indicates that the project should be accepted.

23.6.3 Payback Period

Payback period will be used in order to find out the time it will take to the initial cost of the investment to the company. More analytically:

Initial Cost of the investment	$100,000
Annual Cash Inflow	
Fuel Savings	$50,500
Electrical power generation savings	$14,630
Annual Cash Outflow	
Maintenace Expenses	$200

Table 5: *Initial Cost, Annual Cash Inflow and Annual Cash Outflow*

Net Annual Cash Inflow = (50,500 + 14,630) − 200 = 64,930

Payback Period Formula:

$\text{Payback period} = \frac{\text{Initial Cost}}{\text{Net Annual Cash Inflow}}$, $\quad \text{Payback period} = \frac{100,000}{64,930} = 1,5 \approx 2 \text{ years}$

The payback period is very short and in conjunction the initial capital, makes the project more desirable for the company as "it promises quick inflow of cash" and reduces the risk.
From all above, it is understood that this investment is profitable and solar power energy is

considered nowadays "the cheapest form of electricity" (Randall, 2016) as it has lower development costs. As a result, the company should proceed to implement this project in Vessel1 and other companies should take into account RES as alternative energy saving project. This implementation is considered also as an upgrade to the vessel because it increases the vessel's market value.

23.7 Environmental and Social Aspect

From the environmental point of view, our data indicated that only from Vessel1 the annual reduce of greenhouse gas emissions is estimated to 760 MT in the area of Port A. This would minimize the damage cost to the environment arose by the CO_2 emissions (Glossary of Environment Statistics, 1997). This external cost by CO_2 emissions, it is referred as marginal social cost (Lewin, 1982) and it leads to health problems, climate change, reduced agricultural yields etc. In 2015, the social cost of CO_2 emissions was estimated to \$37 per MT (Shelanski, 2015). From the annual reduce of CO_2 only from Vessel1, the social cost would be eliminated by \$28,120. Hence, this elimination of CO_2 emissions will have a considerable benefit to the environment and the society (final users).

23.8 Conclusion

To conclude, after presenting the above. it is clearly observed that shipping companies by investing in RES will have a financial profit by avoiding energy costs and will promote responsible energy policy. The results from the Cost Benefit Analysis gave a clear view that the benefits exceed the costs which has a positive impact to final users (the environment, the society, the companies, the crew members) who will benefit from the implementation of the project. Additionally, from the questionnaire, the outcome is that the local community of Piraeus have a considerable awareness of the renewable energy resources and the impact of the emissions to the public health. Despite the fact that this research has been based on a specific case study, all relevant material used (costs, emissions etc.) can be adjusted in similar vessels after making minor changes. Lastly, as a future proposal the generalization research could also be conducted in order to have a complete perception regarding the tangible and intangible benefits.

23.9 References

[1] Air Emissions Rates and Costs. (2012). *Seattle City Light 2012 Integrated Resource Plan*. [online] [Accessed 15 Dec. 2016]. Available at:
https://www.seattle.gov/light/IRP/docs/APPENDIX12_AirEmissionsRatesandCosts.pdf

[2] Blue Star Ferries Study. (2015). *Blue Star Vessel 1 – Solar Energy Project*

[3] Bluestarferries. (2016). *Blue Star Ferries - Piraeus - Kalymnos - Kos - Rhodes & Astypalea - Vessel 1 - Lipsi - Leros - Nisyros - Tilos - Symi - Karpathos - Kastellorizo*. [online] Available at:
http://www.bluestarferries.gr/en/travel-with-us/domestic-lines/timetables/piraeus-kalymnos-kos-rhodes-astypalea-Vessel 1-lipsi-leros-nisyros-tilos-symi-karpathos-kastellorizo.html [Accessed 23 Nov. 2016].

[4] Bluestarferries. (2016). *Blue Star Ferries - Our Ships*. [online] Available at:
http://www.bluestarferries.gr/en/about-us/the-fleet/our-ships.html [Accessed 20 Nov. 2016].

[5] C40. (2011). *C40: Port of Seattle Cuts Vessel Emissions by 29 percent Annually and Saves 26 percent on En....* [online] Available at: http://www.c40.org/case_studies/port-of-seattle-cuts-vessel-emissions-by-29-annually-and-saves-26-on-energy-costs-per-call [Accessed 8 Dec. 2016].

[6] Castells Sanabra, M., Usabiaga Santamaría, J. and Martínez De Osés, F. (2013). Manoeuvring and hotelling external costs: enough for alternative energy sources?. *Maritime Policy & Management*, [online] 41(1), pp.42-60. [Accessed 15 Nov. 2016]. Available at:
http://upcommons.upc.edu/bitstream/handle/2117/27075/Manoeuvring%20and%20Hoteling%20External%20Costs%20Enough%20for%20Alternative%20Energy%20Sources.pdf

[7] Communication from the Commission COM (2002) 595 final The Clean Air for Europe (CAFE) Programme: Towards a The- matic Strategy for Air Quality

[8] Corbett, J., Winebrake, J., Green, E., Kasibhatla, P., Eyring, V. and Lauer, A. (2007). Mortality from Ship Emissions: A Global Assessment. *Environmental Science & Technology*, [online] 41(24), pp.8512-8518. Available at: http://pubs.acs.org/doi/pdf/10.1021/es071686z [Accessed 26 Nov. 2016].

[9] European Commission. (2016). *Horizon 2020 - Work Programme 2016 - 2017 - Smart, green and integrated transport*. [online] Available at: http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-transport_en.pdf [Accessed 14 Dec. 2016].

[10] Glossary of environment statistics. (1997). *United Nations*, [online] 67. Available at: http://unstats.un.org/unsd/publication/SeriesF/SeriesF_67E.pdf [Accessed 8 Dec. 2016].

[10] Hellenicshippingnews. (2016). *Bunker Prices| Hellenic Shipping News Worldwide*. [online] Available at: http://www.hellenicshippingnews.com/chinese-trading-rivalry-ruffles-asian-oil-markets/ [Accessed 14 Dec. 2016].

[12] International Maritime Organization. (2016). *Air Pollution*. [online] Available at: http://www.imo.org/en/OurWork/environment/pollutionprevention/airpollution/pages/air-pollution.aspx [Accessed 12 Nov. 2016].

[13] Kaldellis, J., Kapsali, M., Kaldelli, E. and Katsanou, E. (2013). Comparing recent views of public attitude on wind energy, photovoltaic and small hydro applications. *Renewable Energy*, [online] 52. [Accessed 7 Dec. 2016]. Available at: http://www.sealab.gr/download/attachments/12189715/RENE(SOCIAL+ATTIDUDE).pdf?version=1&modificationDate=1369519839000

[14] Kotrikla, A., Nikitakos, N. and Lilas, T. (2013). *Air Pollutant Emissions At An Aegean Island Port*. Department of Shipping, Transport and Trade. University of the Aegean.

[15] Lewin, P. (1982). Pollution Externalities: Social Cost and Strict Liability. *Cato Journal*, [online] 2(1). Available at: https://object.cato.org/sites/cato.org/files/serials/files/cato-journal/1982/5/cj2n1-6.pdf [Accessed 13 Dec. 2016].

[16] McGinn, M. (2015). *The harsh realities of the Greek financial crisis*. [online]   The Telegraph Available at: http://www.telegraph.co.uk/expat/expatlife/11765781/The-harsh-realities-of-the-Greek-financial-crisis.html [Accessed 2 Dec. 2016].

[17] OECD (1996). Environmental criteria for sustainable transport. Document OECD/GD(96)136,1996. OECD Environment Directorate's Task Force on Transport.

[18] OECD. (2016). *Differentiated Discount Rates (DDR)*. [online] Available at: http://www.oecd.org/trade/xcred/2016-ddr.pdf [Accessed 13 Dec. 2016].

[19] Ragwitz, M. and Breitschopf, B. (2016). *Higher costs of renewable energies due to unstable energy policy | Fraunhofer ISI*. [online] Isi.fraunhofer.de. Available at: http://www.isi.fraunhofer.de/isi-en/service/presseinfos/2016/press-release-04-2016-cost-of-capital-renewable-energy.php [Accessed 10 Dec. 2016].

[20] Randall, M. (2016). *World Energy Hits a Turning Point: Solar That's Cheaper Than Wind*. [online] Bloomberg.com. Available at: https://www.bloomberg.com/news/articles/2016-12-15/world-energy-hits-a-turning-point-solar-that-s-cheaper-than-wind?cmpid=socialflow-facebook-business&utm_content=business&utm_campaign=socialflow-organic&utm_source=facebook&utm_medium=social [Accessed 16 Dec. 2016].

[21] Reducing Greenhouse Gas Emissions from Ships - Cost Effectiveness of Available Options. (2011). *International Council on Clean transportation*. [online] [Accessed 12 Dec. 2016].Available at: http://www.theicct.org/sites/default/files/publications/ICCT_GHGfromships_jun2011.pdf

[22] Shelanski, H. (2015). *Refining Estimates of the Social Cost of Carbon*. [online] The Whitehouse. Available at: https://www.whitehouse.gov/blog/2013/11/01/refining-estimates-social-cost-carbon [Accessed 10 Dec. 2016].

[23] Ship & Bunker. (2014). *First Installation for Bunker Saving Solar Energy System*. [online] Available at: http://shipandbunker.com/news/emea/485183-first-installation-for-bunker-saving-solar-energy-system [Accessed 30 Nov. 2016].

[24] The Economist. (2016). *OPEC reaches a deal to cut production*. [online] Available at: http://www.economist.com/news/finance-and-economics/21711088-oil-prices-surge-saudi-arabia-and-iran-sign-deal-opecs-meeting [Accessed 3 Dec. 2016].

[25] Tzannatos, E. (2010). Ship emissions and their externalities for the port of Piraeus – Greece. *Atmospheric Environment*, [online] 44(3), pp.400-407. Available at: https://www.researchgate.net/publication/223548115_Ship_emissions_and_their_externalities_for_the_port_of_Piraeus_-_Greece [Accessed 16 Nov. 2016].

[26] Winebrake, J., Corbett, J., Green, E., Lauer, A. and Eyring, V. (2009). Mitigating the Health Impacts of Pollution from Oceangoing Shipping: An Assessment of Low-Sulfur Fuel Mandates. *Environmental Science & Technology*, 43(13), pp.4776-4782.

24 Biographical Notes on Contributors

AFANTENOU, Katerina

Katerina Afantenou is a speech and language therapist and holds an MSc degree in Inclusive and Special Education from the University of Edinburgh. She is a Phd candidate in Aristotle University of Thessaloniki. She has clinical and academic experience. Recent publications where she is co-author are: "Compound production in agrammatis: Evidence from stroke-induced and Primary Progressive Aphasia". Journal of Neurolinguistics, DOI: 10.1016/j.jneuroling.2018.02.009, "Internationalization and Diversity in Higher Education: Implications for Teaching, Learning and Assessment", London: Palgrave. The Global/Local Academic. In D. Killick (Ed.), (2017).

AFTAKHOVA, Uliana

Uliana Aftakhova is a Senior Lecturer at the Department of Economics and Industrial Management since 2008, has published more than 80 papers in international conferences scientific journals. Vice Dean of International Affairs of the Faculty of Humanities. Organised the International Conference on «Nuclear Radiation Nanosensors and Nanosensory Systems" in 2010, in Perm. She is teaching in the Erasmus+ programs at the University of West Attica and she is the International representative of Erasmus+ ICM to the University of West Attica. She is the author of four textbooks, including a tutorial on econometrics and foreign economic relations.

AHMEDI, Basri

Basri Ahmedi received a BSc degree from the Faculty of Natural Sciences Mathematics, Informatics at the University of Tetova, MSc in Computer Science from Seeu in Tetovo and PhD in Computer Science and Engineering Department at the Faculty of Technical Sciences at St. Clement of Ohrid, Bitola, Republic of Macedonia. He is currently Assistant Professor at the University Kadri Zeka at the Faculty of Computer Science in Gjilan, Republic of Kosovo. His research interests include Computer Networking, Graphic Theory and e-Learning. He has published in several scientific journals.

ANDONE, Diana

Diana Andone is the Director of the eLearning Center, Politehnica University of Timisoara, Romania, responsible for planning and implementing eLearning. She runs the team who developed and assure daily integration of the university award winning Virtual Campus CVUPT. In 2017 she led the team in developing the first Romanian MOOCs platform, called UniCampus. She is also lecturer at the Politehnica University of Timisoara, in the area of multimedia and web technologies. She is passionate about the ubiquitous access to technologies and how they can be used to improve people's life. More professional information can be found at: http://elearning.upt.ro. Diana Andone holds a PhD in Designing eLearning Spaces for Digital Students with University of Brighton, UK, an MA in European Studies, an "Learning about Open Learning", postgraduate distance education course at the Herriott-Watt University, Edinburgh, UK; an MSc in Artificial Intelligence at the Politehnica University of Timisoara, Romania. She attended different specialisations in universities in UK, France, Finland, Greece, Germany. Since 1998 she teaches course modules in universities from UK, France, Finland, Italy and Greece. The publication list comprises 8 books and over 90 papers presented at international conferences, she is reviewer for 12 International Conferences, 3 journals, she received 8 best paper awards at different conferences and since 2010 Co-chair at the IADIS WWW/Internet International Conference. In the last years she was involved in 21 EU funded projects. In 2012 she received the EDEN Fellow Title (European Distance and E-Learning Network). She is also involved extensively in several professional organisations and associations as well as acting in the Board of local Romanian NGOs (Pentru Voi Foundation) and a member of Rotary International.

APOSTOLAKI, Ioanna

Ioanna Apostolaki M.Ed. in School Administration. Kindergarten Educator, Member of the Ministry of Education and Religious Affairs

BAJRAMI, Buen

Buen Bajrami, Bsc. of computer sciences
2017-Present: Msc. E-Governance
2015-2016: Exchange student at Univeristät Paderborn, Paderbon (Germany)
09/2018: Seminar for "Eletronic governance" at University of Applied Sciences FH Joanneum, Graz (Austria)

BRATENGEYER, Erwin

Dipl.-Ing. Dr. Erwin Bratengeyer, Center for Digital Teaching and Learning, Danube University Krems. Erwin Bratengeyer has an educational background in philosophy and electronics engineering. He has over 20 years of experience in educational technologies. He works for Danube University Krems since 1996. He organizes conferences all over Europe and lectures internationally on new technologies. Erwin Bratengeyer is Vice President of IAFeS.

DELAMER, Amanda

Dipl.-Ing. Amanda Delamer, MAS; IT Consultant; Solid-IT, Austria. Amanda Delamer qualified as an engineer specialising in microelectronics in Trinity College Dublin and later received an MAS in IT Consulting from the Danube University Krems. She has worked for over 30 years in the IT industry with international companies in different countries. Her work experience includes: hardware development, design/implementation of telephone & data networks, consulting, and customer training. She has lectured in Project Management since 2006.

DRAGOIDOU, Kalliopi

Kalliopi Dragoidou, M.Ed. in Special Education. Kindergarten Educator, Member of the Ministry of Education and Religious Affairs.

EDELMANN, Felix

Ing. Felix Edelmann, MAS, Helix IT consulting. Felix Edelmann has been working in the IT industry since 1972. In 1997 he completed a Master's degree at Danube University Krems, Austria and founded his company Helix IT Consulting. Today he is focused on solutions in the areas of video surveillance, digital signage, mobility and cloud computing.

EVANS, David

David Evans, E-learning Consultant, JME Associates, United Kingdom. David Evans is a learning designer and elearning consultant who has worked with leading international financial institutions including Moody's, Lloyds Banking Group and Santander. For many years he worked in further and community education, and was contractor to and partner in several Tempus and Leonardo projects with 'Politehnica' University of Timisoara and other universities in Romania. His main interests are in the design of learning materials, online tests and the development of learning management systems.

FRANTZI, Anna

Anna Frantzi, Kindergarten Educator, Member of the Ministry of Education and Religious Affairs

GELBMANN, Matthias

Dipl.-Ing. Matthias Gelbmann, Managing Director, Q-Success. Matthias Gelbmann studied computer science and applied mathematics at the Technical University in Vienna, Austria. He started his professional career as researcher in an artificial intelligence lab. Since then he held several technical and managerial positions in a variety of IT companies. He is now Managing Director of a consulting company he founded in 2001.

GÜNTHER, Johann

Prof. Dr. Johann Günther, Jianghan University, Wuhan, China, Saint Petersburg State University for Telecommunications, Russia, Visiting Professor at Danube University Krems, Austria. Secretary General IAFeS (International Association for eScience).
2010 and 2011 vice chancellor University of Buraimi (foundation rector/president)
2007 – 2010 Director of Agency for European Integration, Office Prishtina, Kosovo
2004 – 2007 Executive Director University of Applied Sciences St.Poelten, Austria
1999 – 2004 Vice-president Danube University (Austria)
1996 – 2004 dean of "Telecommunication, Information and Media"
1979 - 1996 lectures at the University of Vienna
1986 professor of the State University of Telecommunication in St. Petersburg
After studies at University Vienna in several positions in industry. Publications: more than 50 books, 2 in seven languages, participation in more than 60 compendiums and more than 200 articles in specialist journals.

HALIMI, Ekrem

Ekrem Halimi received a BSc degree from the Faculty of Natural Sciences Mathematics, at the University of Tirana, MSc in Mathematic in Tirana and PhD in Tirana University. He is currently Assistant Professor at the University Kadri Zeka at the Faculty of Computer Science in Gjilan, Republic of Kosovo. His research interests include Algeebra I, II, Graphic Theory, and e-Learning. He has published in several scientific journals.

HOTI, Liridon

Liridon Hoti received the Bsc IT degree at the Faculty of Computer Engineering at the University of Prishtina. He also completed his postgraduate studies by taking the Msc Faculty of Science at the Faculty of Computer Engineering at the University of Prishtina. Currently he is PhD in Computer Science. From 2010 he works as a teacher at various faculties. He was recently engaged as a teacher in holding exercises at the Faculty of Computer Science at Kadri Zeka University. He is Director of Information Technology at ARKEP / Government of Kosovo. His interests are: Network Security and Communication Network Protocol. He has published a series of scientific articles in various international journals.

KALEMIS, Konstantinos

Konstantinos Kalemis is an Instructor at the National Centre for Public Administration and Local Government (E.K.D.D.A.) in Adult Education and Lifelong Learning and assigned at the Department of Primary Education (PTDE) in National and Kapodistrian University of Athens. For the last three years he serves as a Refugee Education Coordinator Is also a Member of the Department for the Coordination and Monitoring of the Refugee Education of the Ministry of Education and Religious Affairs. He has authored a large number of scientific articles, studies and papers in Educational Congress and Seminars. His interests focus on the introduction of New Technologies as an alternative teaching process and the design of new curriculum plans for the open and d-Learning. His research interests also include the education of immigrant ethnic minorities focusing on the gifted and talented students and aim to advance the theory and technology of natural language and knowledge processing, especially semantic analysis that bridges the gap between language and knowledge, by the novel use of both machine learning and inference methods. Member at the New Club of Paris, took place in the Mutual Learning Workshops (MLW) organized in Romania in the period October 2012 – May 2013 which have been developed in the frame of the Project "Quality Assurance in Higher

Education through Habilitation and Auditing" initiated by the Executive Agency for Higher Education and Research Funding of Romania (EUFISCDI).

KLAIQI, Selami

Selami Klaiqi was born on 08.07.1984 in Gjilan, graduated from the Faculty of Electrical Engineering and Computer Science and received the Bachelor of Computer Engineering in 2009, while in 2014 received the Master of Science in Computer Science and Engineering, now PhD candidate in Computer Science. From 2007-2009 he works as IT Manager at Antika Electronics, since 2009 works as an ICT professor at the "Ismail Qemali" High School in Kamenica, since 2010 is an ECDL trainer in Kosovo and since 2015 is an assistant in "Kadri Zeka" University in Gjilan at the Faculty of Computer Science in the subjects: Distributed Systems, Introduction to Artificial Intelligence, Object Oriented Programming, Introduction to Computer Graphics, E-Governance, and Master in E-Governance in Subjects: Developments in Cloud Computing and Applicable Programs in E-Government.

LAZARIS, Apostolos

Apostolos Lazaris received his B.Sc. (Hons) in Physics from the University of Athens, Physics Department (Top 3rd of Class). His post-graduate studies took place at the University of the West of Scotland, where he received a Master's Degree in Information Technology with Management (With Distinction/Top of Class). Additionally, he studied Leadership at Harvard University, Kennedy School of Government. Dr. Lazaris received his PhD from the Business School of the University of the West of Scotland. He has worked as an IT manager and consultant in ample enterprises, leading change. Furthermore, he has been the CEO at Ready4bet. He is now Lecturer at the University of Athens, School of Economics and Political Sciences - Department of Economics.

LIANG, Dong

PhD Dong Liang, Professor at Jianghan University Business School, China, is mainly engaged in the research of enterprise strategy and government strategy. Education backgroud: Bachelor of engineering: in 1982 graduated from wuhan university of technology (Wuhan, China), Departmentof automobile engineering; major: the internal combustion engine. MBA: graduated from the University of California (USA) in 2001; PhD: graduated from Wuhan University of Technology (Wuhan, China) in 2008. Working experience: engineer, Diesel engine plant in Wuhan (China) 1982-1985; assitant of general manager, China Railway International Trade Group (Wuhan, China) 1998-2002. Now: professor, PhD, business school of Jianghan University (Wuhan, China), teaching course: strategy mangement, marketing, deputy director: a key research bases on the social sciences (Hubei province, China), - Wuhan city circle manufacturing strategy and the development research center; consultant: Wuhan city business bureau, technology bureau, administration of industry and information technology, human resources and social security bureau.

MEHA, Murat

Murat Meha Graduated in 1980 and Master degree in 1988 at the Faculty of Geodesy in Zagreb, PhD at the University of Tirana (999). Mr. Meha is a full-time Professor at the University of Pristina (since 1988). From 1995 – 2005 he lectured at the University of Tetovo, some lecturers at University Mother Tereza, Skopje, Macedonia. Researcher for one month (2008) at the TU Vienna. Afterwards lecturer for one week in 2009 at University of West Hungary. In 2009 has visited the cartography unit at the State Department in Washington DC. He attended a special training on SDI in Tokyo (2015). Managerial and professional activities - Manager at Enterprise NSH "Ferronikeli" 1999-2005 until its privatization. CEO of Kosovo Cadastral Agency (2003-2006 and 2010-2018). The most important developed, managed and implemented projects are: Cadaster Reconstruction, Building Cadaster, Kosovo Cadastral Land Information System (KCLIS), KOPOS, Address Register, Geo-Portal www.kca-ks.org; establish digital cadaster according to the "Cadastre 2014" model. Publications: Main

publications of Mr. Meha are related to cadaster, geodesy, cartography, land administration and management. He has published up to 150 professional and scientific papers in professional journals, symposiums, conferences and congresses, and has led international scientific sessions in Washington, Kuala Lampur, Skopje, Leuven, Tokio, Tirana etc. Most of the papers are published in the web pages of: FIG, ICC, Euro Geographics, WPLA, CELK Center, FAO, GIM International etc. Over 200 professional and science presentations. He published 10 professional books, 3 professional translated books, 4 geographic atlases, 5 thematic maps of Kosovo, 2 professional manuals. Projects: "Inspire" 2010-2014, and "IMPULS 2014-2018" TEMPUS 2014-2016, Curricula for Msc. of Geodesy. ERASMUS+ Ka2 CBHE project BESTSDI (574150-EPP-1-2016-1-HR-EPPKA2-CBHE-JP) 2016-2019, as project partner team leader.

NASIKA, Fani

Fani Nasika is a Clinical Linguist and a Speech and Language Therapist. She completed her doctoral studies at the University of Reading (UK) with her thesis focusing on morphosyntactic deficits in aphasia. She has worked for the University of Patras and the Aristotle University of Thessaloniki while she has collaborated with Canterbury Christ Church University and the University of Wales.

PAJAZITI, Arbnor

Dr. Arbnor Pajaziti, MSc, University Professor, Department of Mechatronics, Faculty of Mechanical Engineering / University of Prishtina. Arbnor Pajaziti, born in 1961, Peja, Kosovo, is the university professor at the Faculty of Mechanical Engineering, University of Prishtina, Kosovo. He has published several scientific papers in the field of robotics to different International Conferences and Symposiums, including the application of several control schemes, neural network controllers, fuzzy logic controllers and genetic algorithms to industrial robots, mobile robots, legged robots and multiple robotic systems.

PAPATHANASIOU, Vasiliki

Vasiliki Papathanasiou Kindergarten Educator, Member of the Ministry of Education and Religious Affairs.

PERLOVA, Irina

Irina Perlova is Assistant Professor at the Department of Foreign languages, linguistics and translation. She has got quite a substantial experience in translating articles on economics, econometrics, has published 30 scientific papers in international and national refereed journals, 10 papers in international conferences on the issues of students' independent hypertext reading. She is teaching in bachelor and master partnership programs with Chinese Universities. She is the author of 12 textbooks, including a tutorial on econometrics.

RAGMI, Mustafa

Mustafa Ragmi Education Degree: Primary, secondary, university and academic-PhD. University of Prishtina, Faculty of Engineering, Electro technical section, Department of Electronics, 1982-1987 (ten semesters) and thesis; Graduated Engineer of Electro techniques. University of Tirana, Faculty of Economics, Tirana, 2011-2013; Dep. Mathematics, Statistics and Implemented Informatics; Graduated PhD in Information Systems. Work: Univerzity of "Kadri Zeka" Gjilan as professor of: Assistant Professor in bachelor level: Software Engineering, Sensors and Interfaces, Introduction to Computer Graphics, Communication Technology in Business, Digital Business, Computer Systems Management, e-Business Building, Projects in SEW and IE, Business Informatics, Information and Communication Technology, Electronic Business, Business Informatics, Assistant Professor in Master Level Courses: Computer Systems, Information Management Systems. Principal

subjects/occupational skills covered: Expert in industrial process control with automatic and computer control, NETSTAL-industrial machines (Injection Moulding Machine).

SOURTZI, Vassiliki Th.

Vassiliki Sourtzi is a lecturer at Business College of Athens.

STELLA, Ypsilanti

Ypsilanti Stella is a Kindergarten Educator, Member of the Ministry of Education and Religious Affairs.

STOHM KRONFELD, Fredrik

Fredrik Stohm Kronfeld received a M.Sc. and Dipl.-Ing. in Chemical engineering from the Royal Institute of Technology (KTH), Sweden, in 2012. He currently works at the County Administrative Board in Stockholm, Sweden, with permits and supervision of environmentally hazardous activities. Between 2012 and 2018 he worked at Ragn Sells a company involved in waste management, environmental services and recycling. The work was primarily with optimizing and development of treatment methods of ashes and other waste materials. He has an interest in environmentally friendly and profitable solutions.

THAQI, Xhevdet

Prof.dr. Xhevdet Thaqi has more than 16 years of experience as a University Mathematics Teacher at the University of Prishtina, University of Barcelona and now at the Public University "Kadri Zeka" in Gjilan. All this work has been done, partly thanks to the fact that he is fluent in different languages; starting from Albanian as mother tongue, Serbo-Croatian, English, Spanish and Catalan. As part of his professional work he is heading different researches, bachelor, master and doctoral thesis like "Using IT in the secondary school of the Municapilty of Ferizaj and application of the program SPSS", "Analysis of mathematical textbooks for secondary school in Kosova in the wind of contemporary teaching and suggestions for future", "Learning to teach geometrical transformation". He worked at the Faculty of Education of UP, on the project "Discovering Geometrical Transformations and development of Geometrical thinking" by Xhevdet Thaqi in 2010 supported by WUS-Austria at the Faculty of Education of UP in cooperation with Oslo&Akershus Unversity College, on the project "Master program for Vocational Teacher Education" by Xhevdet Thaqi and Ronny Sannerud, Sept. 2011-May 2012 supported by NORAD at the University of Pristina on the project "Modernizing Teacher Education at University of Pristina (Med@UP) no.544023", as member of the team, within TEMPUS programme. At the University of Gjilan, Erasmus+ Project "Green Tech: Smart&Green Technologies for Innovative and Sustainable Societies in WB" no. 551984-EM1-2014-1-ES-ERA MUNDUS-EMA21, Xhevdet Thaqi as coordinator of the University, supported by European Commission. Currently, he is Dean of the Faculty of Computer Sciences at Public University Kadri Zeka in Gjilan.

VALBONA, Zhjeqi

Zhjeqi Valbona was born in Prishtina, Kosovo on 20.03.1970. Education: Specialist of Social Medicine at National Institute of Public Health of Kosovo. Doctoral and postdoctoral studies finished at Medical University of Vienna., Austria. Working experience: Teaching Assistant since 1998 and Professor Assistant since 2018 at Medical Faculty, University of Prishtina, Kosovo.

VASIU, Radu

Professor Radu Vasiu, Dept. of Communications, Faculty of Electronics, Telecommunications and Information Technologies, Politehnica University of Timisoara, Romania. Director of the Multimedia Research Centre. President of the Politehnica University of Timisoara Senate. Radu Vasiu received his MSc and PhD degrees in Electronics and Telecommunications

Engineering from the Politehnica University of Timisoara, Romania in 1982 and 1997, respectively. His research interests in the last years are in the area of open data, smart cities, mobile applications, e-learning, multimedia and web technologies. Since 1993 he was involved in more than 30 international projects (Tempus, Phare, Socrates, Leonardo da Vinci, Life Long Learning, FP6, etc), especially in the field of multimedia and e-learning, both as coordinator or as contractor. He is now the President of the Politehnica University Senate and the Director of the Multimedia Research Centre. He acted as invited professor in different universities from UK, Finland, France, Austria, Greece and Netherlands. The publication list includes 12 books and more than 100 papers presented at different international conferences. He was involved in 32 research or international cooperation projects. Currently, prof. Vasiu acts as President of the International Association for e-Science (IAFeS) that promotes at international level the use of ICT in science and technology. He is also a member of IEEE Computer Society and IEEE Communications Society, European Association for Telematics Applications (EATA), European Distance and E-learning Network (EDEN), International Association of Science and Technology Engineers for Development (IASTED) and of the Commission for European Integration of the Romanian Academy, Timisoara branch.

YANNAKOPOULOS, Panos

Panos Yannakopoulos, Professor of University of West Attica, Department of Informatics and Computer Engineering since 2010, Faculty member since 1998. He has published 35 scientific papers in international refereed journals, 107 papers in international conferences and 11 in Greek ones. Member of the Governing Body of the University (2012-2017), Member of the Hellenic NARIC Committee (2013-2016). Erasmus Insitutional Coordinator 2017-18. He organised the NATO Conference on «Nuclear Radiation Nanosensors and Nanosensory Systems" in 2014, in Tbilisi. He has been teaching in postgraduate partnership programs with British and American citizens since 2000 and he is the Academic Coordinator of the CyberSecuity graduate program. He is the author of four Academic books. He has participated at both National (THALES) and European research programs (Erasmus KA2, FP7 and currently H2020).

ZHONGWEI, Zhang

Zhang Zhongwei, Jianghan University Graduate School of Business, China, His main interest is in research of marketing and service engineering.

IAFeS Editions

Volume 1:
„Challenges of Industrial Clustering in the 21st Century"
ISBN 978-3-9503983-0-4

Volume 2:
„Open Data and Big Data – The Impact on Digital Society and Smart Cities"
ISBN 978-3-9503983-1-1

Volume 3:
„Supply Chain Concepts for Steel Industry - Implementing new concpets for Improved Profitability and Competitive Advantage" by Daniel JUNG
ISBN 978-3-9503983-2-8

Volume 4:
„Smart Learning"
ISBN 978-3-9503983-3-5

Volume 5:
„Aristotelian Thinking - Impact on the Technological Evolution and Social Progress"
ISBN 978-3-9503983-4-2

Volume 6:
„Access to Knowledge in the 21st Century – The Interplay of Society, Education, ICT and Philosophy"
ISBN 978-3-9503983-5-9

Volume 7:
„Innovation and Digitalization in Emerging Economies"
ISBN 978-3-9503983-7-3

IAFeS
International Association for eScience

The association, whose activity is not directed towards profit, aims:

- to promote the development, education and research in the area of eScience: Information and communications technology (ICT), telecommunications, e-learning, e-media, e-commerce, e-government, e-democracy, e-culture, e-health, …
- to promote young researchers in these areas
- to offer an exchange platform for experts
- to offer an international co-operation platform

IAFeS
Biberstrasse 4/4
A 1010 Vienna
Austria

https://www.iafes.net/