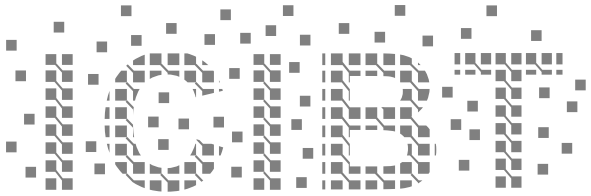
ICIBT

International Conference on Innovation in Business and Technology

JUNE 10th, 2022

PROCEEDINGS BOOK

KOLEGJI UNIVERSITAR BEDER
UNIVERSITY OF ECONOMICS AND HUMAN SCIENCES IN WARSAW
PRISHTINË Kolegji AAB CILËSI. LIDERSHIP. SUKSES!
UK FAN S. NOLI
UNIVERSITETI MESDHETAR
EPOKA UNIVERSITY



INTERNATIONAL CONFERENCE ON INNOVATION IN BUSINESS AND TECHNOLOGY

Editors:
Assoc. Prof. Dr. Tidita Abdurrahmani
Dr. Arti Omeri, PhD
Publication Languages: English
Edition: 1st Edition
Number of Pages: 264

ISBN: 978-9928-4590-9-1
Publisher: Bedër Press,
Publication Year: 2023
Pagination: Erjet Mucollari

Printed in: Tirana Adress: Beder University College, Rruga Jordan Misja, Tirana

JUNE 10th, 2022

PROCEEDINGS BOOK

Organizer - Bedër University College,Faculty of Technology and Business

Contents

EDITORIAL BOARD

EXECUTIVE COMMITTEE

Assoc. Prof. Dr. Tidita Abdurrahmani (Conference Chair)
Dean Faculty of Technology and Business
University College Bedër, Albania

Dr. Arti Omeri (Conference Co-Chair for Organizational Issues)
University College Bedër, Albania

PhD. Sofokli Garo
University College Bedër, Albania

Dr. Elda Dollia
University College Bedër, Albania

Dr. Ndricim Ciroka
University College Bedër, Albania

Dr. Irena Shehu(Correspondence Coordinator)
University College Bedër, Albania

MSc. Eduina Maksuti
University College Bedër, Albania

MSc. Kriselda Sulcaj
University College Bedër, Albania

MSc. Edlir Spaho
University College Bedër, Albania

MSc. Klevis Topi
University College Bedër, Albania

MSc. Erjola Osmani
University College Bedër, Albania

MSc. Erilda Ajaz
University College Bedër, Albania

PM Fatjona Likaj
University College Bedër, Albania

MSc. Malvina Sukaj
University College Bedër, Albania

MSc. Erjet Mucollari
University College Bedër, Albania (PR Office)

M.Sc. Elida Mehalla
University College Bedër, Albania

Foreword by the Editors

Dear colleagues, participants to ICIBT 2022

The Faculty of Technology and Business *Beder University College*, was the initiator and creator of one the largest national and regional academic events bringing together technology, business and sustainable development under the overarching impact of the dimension of innovation, the 1st ***International Conference on Innovation in Business and Technology 10 June 2022, ICIBT 2022***.

The concept of the conference came first of all as a synchronization of four important cornerstones to the development of societies nowadays technology ,business, innovation and digital transformation, but also as an attempt to bring together academia, business entrepreneurs, and computer science professionals to get engaged in knowledge transfer on the most debatable issues under the challenges posed by Covid 19.

The main aim of the conference was to bring together leading experts from the business and public sector, and the academic community in the field of innovation, enabling the presentation of good practices and exchange and transfer of knowledge and experiences with the aim of stimulating innovation and creating an adequate environment for its development. On the focus of the conference was one of the most important development challenges of our time, and that is - how to best adopt and implement the innovation processes in business and technology by at the same time contributing to the sustainable development of the country?

The event hosted innovators, education leaders and representatives of the academia, business entrepreneurs, and computer science professionals attending several breakout sessions across 6 tracks.

Partners to the conference were ***University of Economics and Human Sciences Warsaw, Epoka University,AAB College Kosovo, Mediterranean University Tirana, and University of Korca***

The conference was organized in 6 tracks, 10 thematic sessions, with a representation of contributors from 5 nationalities,60 papers, 100 participants, organized in a hybrid format.

The conference tracks and the thematic sessions have attempted to cover most of the domains technology, innovation and entrepreneurship are of impact and these are not few namely Education, Management and Marketing, Finance, Medicine, Law, Arts and Multimedia, Corpus Linguistics and Translation Studies.

The authors of 60 abstracts who presented their research independently or in co-authorship were selected based on their excellence and invited to submit their full-length manuscripts. All the submitted full papers were entered a double-blind review process in which each manuscript was reviewed by two reviewers. After a positive review and the editorial process, the following scientific papers were finally accepted for publication and are presented in this book. The topics of the presented manuscripts are from different fields of Technology, Business and Sustainable Development

We would like to thank the authors for their excellent work, prompt revisions and kind correspondence. Also, we would like to thank the keynote speakers, the members of the Organizing Committee and the administrative staff of Bedër University College as well as our department's students who all invested effort and time for this book to be published and to whom we wish to express our gratitude.

Finally, we would like to thank Bedër University College, for recognizing the importance of this book and for the support to finalize its publishing.

We hope this book will provide a good reference point for researchers and professionals in different fields of Technology, Business and Sustainable Development.

Organizing Board ICIBT 2022

CONFERENCE CONCEPT NOTE AND TRACKS

Innovation, today, is one of the most important sources of developments in business, education, media, technology, medicine and many other fields. Experts of many fields point out that the GDP growth in developed economies is mainly as a result of the level of innovation.

Innovation often comes to each of us as the creation, development of new products with the aim of improving efficiency and competitive advantage. But innovation is not solely represented by new devices, ideas or methods, but also by the process of uncovering new ways to do things. It can also pertain to modifying business models and adapting to changes to achieve better products and services. Innovation is vital in the workplace because it gives individuals and companies an edge in penetrating markets faster and provides a better connection to developing markets, which can lead to bigger opportunities.

Some companies have taken on board the idea that their increased power puts new demands on them. They are much concerned about the innovative practices, facilities and approaches they need to engage in order to ward off economic decline. But at the same time they are trying to find ways to harness innovation to solve humanity's most pressing challenges and respond to the need for perpetual transformation.

Universities have a special role as key actors in the development of new ideas, strategies and practices and approaches. Although universities are the most important generators of knowledge, knowledge transfer and commercialization of research represent a big challenge to the more intensive development of innovation.

COVID-19 epidemic has brought suffering to all. Businesses such as retail sector, brand owners, manufacturers and key distributors have been hard hit for almost one and a half year. While unfortunately some companies were not able to survive the epidemic, those who stayed on were obliged to rethink, repurpose and rebuild their business models in order to keep up with the sales and create new value in the post-epidemic era. Some brands have in fact responded swiftly to the changing economic landscape and still managed to release new products in this challenging time. Digital transformation is indeed the "hope" to businesses under the new normal. Anyone who tries to keep its presence in the sector, whichever it is, could no longer turn away from the benefit brought by the transformation.

With the assistance of IoT devices, the movement of raw materials and inventory could be easily tracked. Furthermore, the implementation of blockchain technology and social media analytic tools throughout the production could provide real-time traceability at any point of the supply chain, generate and analyse useful data for management to make prompt strategic business decisions anytime, anywhere, thereby generating more new values to their products and services.

The main aim of the conference organized on June 10th 2022 was to bring together leading experts from the business and public sector, and the academic community in the field of innovation, enabling the presentation of good practices and exchange and transfer of knowledge and experiences with the aim of stimulating innovation and creating an adequate environment for its development. On the focus of the conference was one of the most important development challenges of our time, and that is - how to best adopt and implement the innovation processes in business and technology by at the same time contributing to the sustainable development of the country?

Given that the current cooperation between universities and the business sector has been mainly based on individual initiatives without a consistent and institutionalized approach, the organization of such an event aimed at contributing to an institutionalized cooperation in between the business sector and the academia and therefore enable the transfer of best practices in between the two. This type of cooperation would in turn promote national and regional economic growth, open up job opportunities but also promote an increasingly more essential role of higher education in this regard and reduce the gap that exists between research institutions and the business sector by in this way increasing the innovative capacity of the academic community.

The event hosted innovators, education leaders and representatives of the academia, business entrepreneurs, and computer science professionals attending several breakout sessions across 7 tracks namely

1. ***TECHNOLOGY AND COMPUTER SCIENCES,***
2 *ECONOMY, MANAGEMENT AND MARKETING*
***3.*SUSTAINABILITY, ENTREPRENEURSHIP AND DIGITAL TRANSFORMATION IN INDUSTRY**
4. DIGITAL TRANSFORMATION IN THE FINANCIAL SECTOR
5. IMPLEMENTATION OF IT IN EDUCATION AND SCIENCE
6. DIGITAL HEALTHCARE INNOVATIONS

CONFERENCE TRACKS AND THEMES

TRACK 1. TECHNOLOGY AND COMPUTER SCIENCES

1. Digital transformation and evolutionary computing
2. Applications of information technology
3. Intelligent robotics and autonomous agents
4. Information visualization
5. Mobile banking and digital payment.
6. Digital certificates and digital signatures.
7. IT products and their impact on economy
8. Cyber security
9. Intellectual property
10. Computations and networking.

TRACK 2. ECONOMY, MANAGEMENT AND MARKETING

1. Regional Integration and Macroeconomic Dynamics Beyond COVID-19 Pandemic
2. Post-COVID-19 economic recovery
3. Tourism Sector in Times of High Uncertainty
4. Industries and Enterprises for Restart and Recovery
5. Leadership for innovation
6. Innovations in Human Resource Management
7. Innovation Management and innovative business models
8. Digital Transformation and Management Information Systems
9. Entrepreneurship and Innovation
10. E-business and E-commerce
11. E-marketing
12. Digital markets and marketplaces
13. Operations and Supply Chain Management
14. Strategic Management and Corporate Governance
15. Business Intelligence
16. Crisis Management
17. Customer Relationships Management (CRM)
18. Impact of Covid-19 on Economy
19. Risk management and Innovation

TRACK 3: SUSTAINABILITY, DIGITAL ENTREPRENEURSHIP AND DIGITAL TRANSFORMATION IN INDUSTRY

1. Digital business models for innovation for sustainability
2. Forms of entrepreneurship successfully exploiting digital technologies for sustainability
3. Sustainable entrepreneurial ecosystems and digital technology
4. Business ethics, entrepreneurship and sustainability
5. Dynamic capabilities and digital transformation in entrepreneurship
6. Corporate environmental sustainability
7. Environmental strategies, performance and reporting
8. Circular business models; value chains and trade
9. Platform economy business models
10. Open innovation in digital age
11. Internationalization and digitalization of open innovation networks
12. Working from Home and Job Satisfaction During the Pandemic Times
13. Organizational behavior and online/remote work
14. Innovation and business challenges
15. Sustainable business decision-making
16. Dynamic innovation and sustainable development
18. Innovation in the region and sustainable development
19. Pandemics, wellbeing, sustainable development and digital entrepreneurship;
20. Digitally instilling ethical principles into corporate governance: micro, meso and macro perspectives;

TRACK 4: DIGITAL TRANSFORMATION IN THE FINANCIAL SECTOR

1.Innovations in Financial Technology
2.Innovations in Financial Services
3. Innovations in Financial Information
4. Insurance and Capital Markets
5. Emerging technologies in finance
6. Advanced financial services and solutions
7.New financial instruments
8.Digital finance, money, banking, and insurance: Bitcoin, cryptocurrency, ICO, token offerings, future of payments, e-banking, e-finance.
9.Safety and security in Digital and Open Banking solutions.
10.Covid-19: financial technologies supporting economic resilience.
11.Green financing
12.Regulatory updates in Financial Sector.
13. Ethical, cultural, and social implications of finance digitization

TRACK 5: IMPLEMENTATION OF IT IN EDUCATION AND SCIENCE

1.Theoretical and applied problems of adaptive, individualized and personalized learning.
2. Information technologies of adaptive, individualized and personalized learning.
3. Problems of professional training in the blended learning framework.
4. Information and communication technologies in education.
5 .Information technology in research.
6. State-of-the-art areas of software development for education.

TRACK 6: DIGITAL HEALTHCARE INNOVATIONS

1. Digital Technology Solutions for Healthcare Providers and Hospital Systems
2. Health information technology (HIT)
3. Digital healthcare ecosystems development
4. Application of advanced technologies (AI, IoT, VR/AR, etc.) in healthcare
5. Barriers and drivers of digital healthcare adoption

KEYNOTE SPEAKERS

Woei Hung, Ph.D.
Professor, Graduate Director
Instructional Design & Technology
Department of Teaching and Learning
University of North Dakota

WHAT CAN TECHNOLOGY DO FOR EDUCATION?"

Short Bio: Woei Hung is currently a professor and graduate director of the Instructional Design and Technology Program at the University of North Dakota. He received his Ph.D. in Learning Technologies from the University of Missouri-Columbia. He is a former chair and program chair of the Problem-based & Project-based Learning SIG in the American Educational Research Association (AERA), as well as an executive board member and treasurer of the PAN PBL Association of Problem-Based Learning and Active Learning Methodologies. He is currently the co-editor for the Interdisciplinary Journal of Problem-based Learning and has served as an editorial board member of the journal for many years. His research areas focus on problem-based learning (PBL), project-based learning, problem design, team-based complex problem solving, types and difficulty levels of problems, systems thinking and modeling, microlearning, and creativity. He has published numerous journal articles, book chapters, and edited books in the areas of PBL problem and curriculum design, and the effects of PBL in enhancing students' higher order thinking skills, instructional technology and strategies, and creativity

Prof.Assoc.Dr.Elisabeta Osmanaj

Msc Indrit Shkupi
Breakout Session Main Speakers

IMPLEMENTATION OF DIGITAL PLATFORMS FOR TEACHING, THE CASE OF THE FACULTY OF EDUCATION SCIENCES IN THE FRAMEWORK THE T@SK PROJECT.

Short Bio: Mr. Indrit Shkupi was born in Berat, Albania on 18.05.1985 and grew up in Tirana.

He completed his 5 (five) year high school studies in Electronics at the "Harry T. Fultz" High School in Tirana, then he started his Bachelor studies in "Business Administration", at the "New York" University in Kosovo, to continue Professional internship at the Rochester Institute of Technology in Orlando, USA and finally a Bachelor's degree in "Business Administration", at the "New York" University, Tirana. Also, Mr. Indrit Skopje attended the Professional Master studies in "Information Technology" at the University "Aleksadër Xhuvani", Elbasan and the Master of Science studies in Information Engineering with the profile "Security of information systems" at the Faculty of Engineering, Informatics and Architecture at the European University of Tirana.

Professional career includes employment in various sectors, in the private sector and in the state sector, specifically at the University of Tirana and the University "Aleksandër Xhuvani" Elbasan. Also, Mr. Shkupi has continuously carried out various certifications, among which we mention; Installing and configuring Windows Server 2012 r2; Administering Windows Server 2012; Server Virtualization with Windows Server Hyper-V and System Center Specialist; CCNA 2; etc.

Currently Mr. Indrit Shkupi holds the position of Head of the IT Sector in the Directorate and in the Directorate of Standards and Curricula at the University "Aleksandër Xhuvani" Elbasan.

MA and PhD Gianluca Mattarocci
Associate professor of Banking
University of Rome Tor Vergata

GLOBAL SUPPLY CHAIN AND RISK OF DISTRESS IN THE POST-COVID ERA

Short Bio: Gianluca Mattarocci (MA and PhD) is Associate professor of Banking at the University of Rome Tor Vergata, Adjunct professor of Corporate Finance at LUISS, Adjunct professor of Corporate Finance and Real estate at LUISS Business School, Visiting professor at Athens University of Economics and Business, and Visiting professor at Georgian National University (SEU).

He has published more than 100 articles, book chapters and book with national an international publishers on the topic of Real Estate, Corporate Finance, and Credit Portfolio Management.

AUTHOR CONTRIBUTIONS

MSc. Edlir Spaho
Department of Computer Science
Bedër University College
espaho@beder.edu.al

PERSONALIZED E-LEARNING MODELS: A SYSTEMATIC MAPPING STUDY

Abstract

Online learning is a tangible reality today that has a growing trend due to the rapid development of information and communication technologies in education. These systems aim at facilitating the learning process without limiting it in space and time. The adaptation of these systems, taking into account the individual differences of each learner, increases significantly the effectiveness, performance and motivation of the e-learner. This paper presents a summary of the models used to enable personalization for each e-learner including personalization components, data mining models and techniques, and interaction tools between the learner and the content of personalized e-learning.

Keywords: *learner model, personalized e-learning system, personalization components, data mining models, data mining techniques*

1. Introduction

Nowadays the trend of learning using electronic devices is on a continuous growth, due to ease of access to information, diversity of information, low-cost, etc. This has led to the traditional classroom teaching being shifted to a virtual environment, without having the limitation of time and place, so to access the necessary information without being in a certain place and time.

One of the biggest gaps in the explanation of a content in the classroom as well as in traditional online courses is the explanation in a particular form or pattern considering that all understand in the same way and with the same effectiveness. The huge amount of information generated by online courses and the need for an explanation of the content according to the level, knowledge and skills of the learner has brought the need for the creation of different models and methods to convey the information in different ways to each learner (Jando, Hidayanto, & Harjanto, 2017).

2. Related Work

Rapidly increased data generated from online courses has led to new methods and techniques for creating customized e-learning systems. Some Systematic Mapping Studies (SMS) are realized in this field where the main ones to be mentioned the are the study realized by (C & S, 2007), which has the main objective of Educational Data Mining, also an Learning Models-focused SMS has been realized by (Hlioui, Alioui, & Gargouri, 2016). *Analysis of data mining techniques applied to Learning Management Systems (LMS) for personalized education has been prepared by* (Villegas-Ch & Luján-Mora, Analysis of data mining techniques applied to LMS for personalized education, 2017), *Integration of Knowledge Management and E-Learning Models* has been prepared by *(Judrups, 2015), a* SMS of data mining of web-based learning systems *has been prepared by* (Villegas-Ch, Luján-Mora, Buenaño-Fernandez, & Román-Cañizares, 2017), comparison of LMS and Adaptive Educational Hypermedia Systems (AEHS) to analyze improvement with the use of Data Mining has been prepared by (Karagiannis & Satratzemi, Comparing LMS and

AEHS: Challenges for Improvement with Exploitation of Data Mining, 2014) and a comprehensive classification of collaboration approaches in E-learning has been prepared by (Al-Abri, Jamoussi, Kraiem, & Al-Khanjari, 2016). Most of the SMSs take into consideration one or another aspect of Personalization of e-Learning Environment. Our SMS contribution deals with generalizing and analyzing different aspects of Personalization of e-Learning Environment.

3. Research Methodology

This Systematic Mapping Study (SMS) has been conducted based on guidelines provided by (Kitchenham, Budgen, & Brereton, 2015), with the main stages shown in Figure 2. This part summaries the protocol of our SMS, including the research questions used to structure the study; the search strategy, inclusion and exclusion criteria were used; and the rules for extracting data and classifying primary studies.

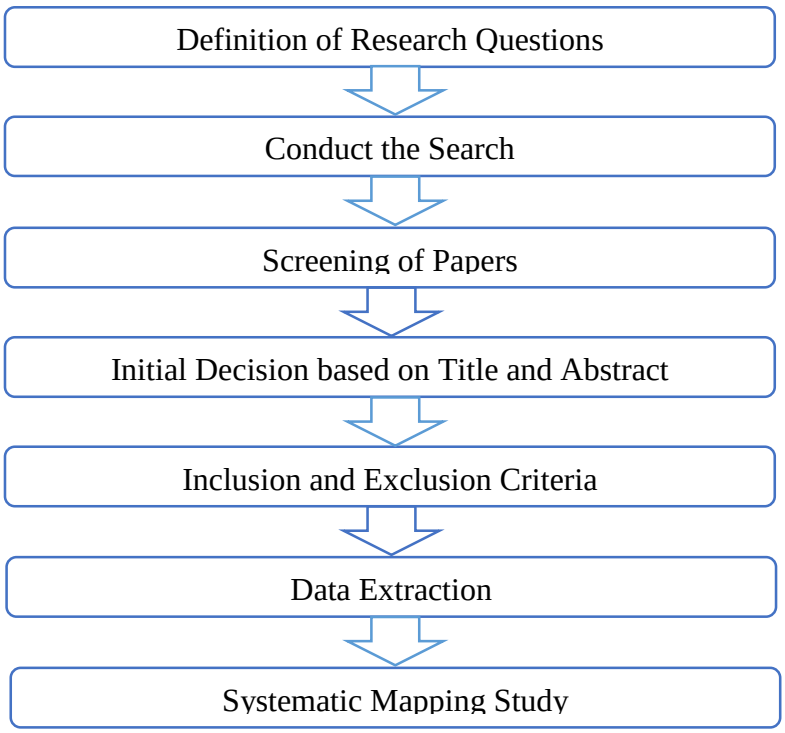


Figure 1: The Mapping Study Process

3.1. Research Questions

The following research questions and motivations are given to explore the components of personalized e-learning model, tools of interaction between and the content of personalized e-learning, data mining models and techniques used in personalized e-learning, theories behind used to build a personalized learning model, to the effectiveness and success of personalized e-learning learner:

No.	Research Question	Motivation
RQ1	What are main Learning Styles and their components?	To identify most used Learning Styles in e-learning, their main components, advantages and drawbacks of each of them.
RQ2	What are main personalization components to build a personalized e-learning model?	To identify most commonly used personalization components in order to build adaptive e-learning model and weight of each personalization parameter.
RQ3	What are main data mining models and techniques used in the e-learning domain to make it personalized?	To identify and analyze most commonly used data mining models used in the e-learning domain to make it personalized advantages and drawbacks of each of them in order to increase learner personalization and performance.
RQ4	What tools are generally used to process the interaction between the learner and the content of personalized e-learning?	To identify and analyze most commonly used interaction tools between the learner and the content of personalized e-learning.

3.2. Research Process

The search process should ensure that keyword usage can be relevant to the research question. To conduct this research, we followed the steps described by (Kitchenham, Budgen, & Brereton, 2015) and (Brereton, Kitchenham, Budgen, Turner, & Khalil, 2007) for construction of search strings for all the articles, papers and journals we have retrieved as follow:

1. Identify major terms and synonyms by terms that are used in the research questions.
2. Identify different spellings and synonyms for major terms.
3. Use the Boolean operator "OR" to link alternative spellings and synonyms.
4. Use the Boolean operator "AND" to link major terms.

This resulted in the following keywords used in this search: E-learning OR Distance Learning OR Electronic Learning OR Online Learning AND Component OR Parameter AND Personalized OR Adapted AND Model OR Architecture AND Data Mining OR Knowledge Discovery in Databases OR KDD OR Data Pattern Analysis.

The digital libraries used to conduct this research were the Institute of Electrical and Electronics Engineers (IEEE) Xplore Digital Library, Association for Computing Machinery (ACM) Digital Library, and Elsevier ScienceDirect.

3.3. Inclusion and exclusion Criteria

Originally papers are evaluated based on their title if they are to be considered or not. If analyzing the title could not bring to a decision was studied the abstract, even if after studying the abstract we couldn't be able to make a decision then read and conclusions.

For the inclusion or exclusion of a particular study we have implemented the inclusion and exclusion criteria based on (Abuhlfaia & Quincey, 2018) as in the tables below:

No	Inclusion Criteria
1	Papers published between January 2014 and February 2019.
2	Written in the English language.
3	Peer-reviewed literatures
4	Paper which includes a description of evaluation about the usability of e-learning and has a clear method.
5	Papers which contains and describes data mining method and tools

Table 1. Inclusion Criteria

No	Exclusion Criteria
1	Duplicate papers from the same study in different databases.
2	Publications not written in English.
3	Publications not directly related to our topic.

Table 2. Exclusion Criteria

3.4. Data Extraction

The number of papers analyzed at the first stage was 50 papers. Subsequently, based on paper's abstract, conclusions and exclusion and exclusion criteria, 34 papers were selected for analysis where 20 of them are published in different conferences while 14 of them are published in different journals. The results of the selected papers are given in the table below.

Source Database	Studies Found	Candidate Studies	Selected Studies	References
ACM	22	15	11	(Teimzit, Mahnane, & Hafidi, 2018), (Gkontzis, Kotsiantis, Tsoni, & Verykios, 2018), (Chow, Yacef, Koprinska, & Curran, 2017), (Shivanagowda, Goudar, & Kulkarni, 2017), (Wang, Sy, Liu, & Piech, 2017), (Chanaa & El Faddouli, 2018), (Liu, Du, Sun, & Zhai, 2017), (El Fouki, Aknin, & El. Kadiri, 2017), (Shi, Peng, & Wang, 2017), (Daud, et al., Companion Proceedings of the 26th International Conference on World Wide Web Companion), (Hu, Zhang, Chu, & Ke, 2016)
Elsevier Science Direct	29	21	10	(Tarus, Niua, & Yousif, 2017), (Birjali, Beni-Hssane, & Erritali, 2018), (Kolekar, Pai, & Pai M.M, 2018), (Xie, et al., 2017), (Yi, Zhao-xia, Xiao-huan, Ming-ming, & Wen-tian, 2017), (Sergio, et al., 2017),

				(Garrido, Morales, & Serina, 2016), (Gulzara, Leema, & Deepak, 2018), (Zhou, Huang, Hu, Zhu, & Tang, 2018), (B.Saleenaa & S.K.Srivatsa, 2015)
IEEE	25	17	9	(Herath & Jayaratne, 2017), (Al-Abri, Al-Khanjari, Kraiem, & Jamoussi, 2017), (Karataev & Zadorozhny, 2017), (Karagiannis & Satratzemi, Comparing LMS and AEHS Challenges for Improvement with Exploitation of Data Mining, 2014), (Bhatia & Prasad, 2015), (Al-Abri, AlKhanjari, Jamoussi, & Kraiem, 2018), (Samina, Xu, Iftikhar, Zhu, & Misha, 2018), (Halawa, Shehab, & Hamed, 2015), (FeiZhou, QingPan, & Huang, 2017), (Lepouras, Katifori, Vassilakis, Antoniou, & Platis, 2014)
Total	**76**	**53**	**30**	

Table 3. Summary of Selected Papers

3.5. Classification Scheme

Classification scheme is done in accordance to research questions and results of research questions. Firstly, we reviewed all papers' abstract and conclusions and if it wasn't possible to properly classify the paper we read introduction part and in a lot of cases we had to analyze all the paper with details.

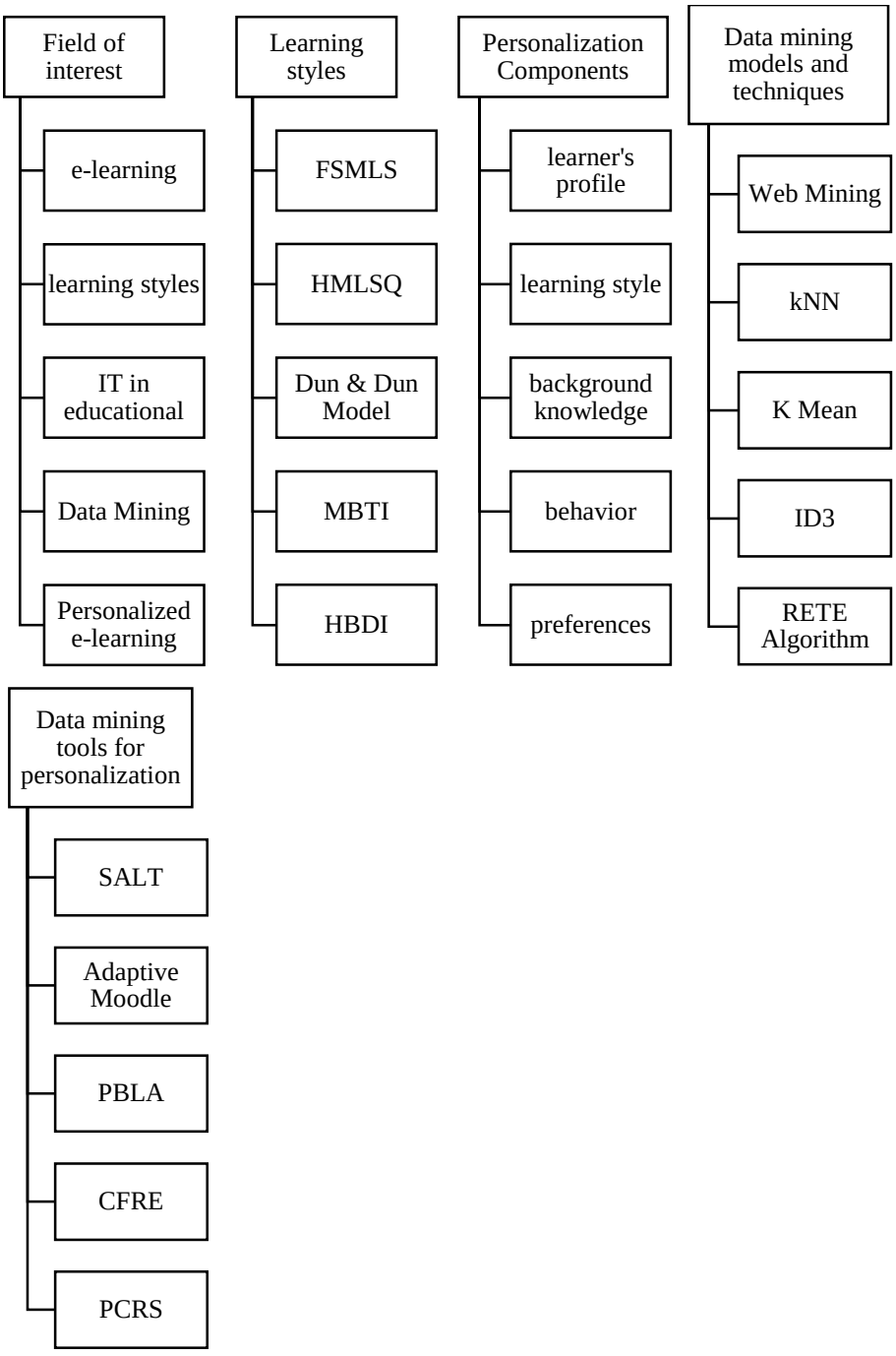


Figure 2. Classification Scheme

4.Results and Discussions

To answer all research questions, we extracted most relevant information from all papers in accordance with research questions then we analyzed by summarizing, and correlating it to answer research questions. The results are as follow:

4.1 What are main Learning Styles and their components?

As it is shown on Table 4, main learning styles extracted from reviewed papers are:

Theory	Description	No of Papers	References	Percentage
FSLM	Felder-Silverman Learning Style Model	7	(Teimzit, Mahnane, & Hafidi, 2018), (Chanaa & El Faddouli, 2018), (Kolekar, Pai, & Pai M.M, 2018), (Xie, et al., 2017), (Yi, Zhao-xia, Xiao-huan, Ming-ming, & Wen-tian, 2017), (Al-Abri, Al-Khanjari, Kraiem, & Jamoussi, 2017), (Al-Abri, AlKhanjari, Jamoussi, & Kraiem, 2018),	23.3%
Hybrid	Combination of different components	4	(Shivanagowda, Goudar, & Kulkarni, 2017), (Tarus, Niua, & Yousif, 2017), (Gulzara, Leema, & Deepak, 2018), (Karataev & Zadorozhny, 2017),	13.3%
KLSI	Kolb Learning Style Inventory	1	(Shi, Peng, & Wang, 2017)	3.3%
MBTI	Myers-Briggs Type Indicator theory	1	(Halawa, Shehab, & Hamed, 2015)	3.3%
Unspecified	There is no clear explanation of theory used	7	(Chow, Yacef, Koprinska, & Curran, 2017), (Liu, Du, Sun, & Zhai, 2017), (El Fouki, Aknin, & El. Kadiri, 2017), (Hu, Zhang, Chu, & Ke, 2016)	23.3%

			(Sergio, et al., 2017), (Herath & Jayaratne, 2017), (Samina, Xu, Iftikhar, Zhu, & Misha, 2018)	
LA	Learning Analytics	3	(Gkontzis, Kotsiantis, Tsoni, & Verykios, 2018), (Daud, et al., Companion Proceedings of the 26th International Conference on World Wide Web Companion), (Lepouras, Katifori, Vassilakis, Antoniou, & Platis, 2014)	10%
Other	Different approaches	7	(Wang, Sy, Liu, & Piech, 2017), (Birjali, Beni-Hssane, & Erritali, 2018), (Garrido, Morales, & Serina, 2016), (Zhou, Huang, Hu, Zhu, & Tang, 2018), (B.Saleenaa & S.K.Srivatsa, 2015), (Bhatia & Prasad, 2015), (FeiZhou, QingPan, & Huang, 2017)	23%
Total		**30**		**100%**

Table 4. Used Learning Styles

- **Felder-Silverman Learning Style Model (FSLM)** with main components of reflection (active, reflected), reasoning (inductive, deductive), Sensory (verbal, visual) and progression (sequential, global).
- **Myers-Briggs Type Indicator (MBTI)** with the main components of thinking/feeling, judgment/perception, introvert/extravert and sensing/intuitive.
- **Kolb Learning Style** with main components of concrete experience (doing, having an experience), reflective observation (reviewing, reflecting on experience), abstract conceptualization (concluding, learning from

experience) and active experimentation (planning, trying out what we have learned).

- **Hybrid Models.** Some of hybrid models we have retrieved from our SMS are combination of E-Learning Ontology, Learning Resource Ontology, Learner Model Ontology (Felder-Silverman Model of Learning Style) as described in (Tarus, Niua, & Yousif, 2017), or Domain Model and Question Model, Video Learning Resources, Readable Learning Resources as described in (Shivanagowda, Goudar, & Kulkarni, 2017), or social learning framework, crowdsourcing, online social networks, and complex adaptive systems as described in (Karataev & Zadorozhny, 2017) or a combination of N-Grams and Domain Ontologies as described in (Gulzara, Leema, & Deepak, 2018).

4.1 What are main parameters to build a personalized e-learning model?

Finding the most influential parameters for personalization of e-learning is one of the most difficult processes in building a personalized e-learning model, because human nature itself is very complex. After screening the analyzed research papers some of the personalization components that we can mention are learner personality, learner prior knowledge, learner behavior, learner interests and preferences.

Component	Description	References	Percentage
Personality	Learner's Profile	(Gkontzis, Kotsiantis, Tsoni, & Verykios, 2018), (Liu, Du, Sun, & Zhai, 2017), (Daud, et al., Companion Proceedings of the 26th International Conference on World Wide Web Companion), (Hu, Zhang, Chu, & Ke, 2016), (Gulzara, Leema, & Deepak, 2018), (B.Saleenaa & S.K.Srivatsa, 2015), (Herath & Jayaratne, 2017), (Samina, Xu, Iftikhar, Zhu, & Misha, 2018), (FeiZhou, QingPan, & Huang, 2017),	30%

	Learning Style	(Gkontzis, Kotsiantis, Tsoni, & Verykios, 2018), (Chanaa & El Faddouli, 2018), (Kolekar, Pai, & Pai M.M, 2018), (Xie, et al., 2017), (Yi, Zhao-xia, Xiao-huan, Ming-ming, & Wen-tian, 2017), (Al-Abri, AlKhanjari, Jamoussi, & Kraiem, 2018), (Samina, Xu, Iftikhar, Zhu, & Misha, 2018)	23%
Knowledge	Background Knowledge	(Shivanagowda, Goudar, & Kulkarni, 2017), (Wang, Sy, Liu, & Piech, 2017), (Liu, Du, Sun, & Zhai, 2017), (Tarus, Niua, & Yousif, 2017), (Birjali, Beni-Hssane, & Erritali, 2018), (Xie, et al., 2017), (Yi, Zhao-xia, Xiao-huan, Ming-ming, & Wen-tian, 2017), (Garrido, Morales, & Serina, 2016), (Gulzara, Leema, & Deepak, 2018), (Zhou, Huang, Hu, Zhu, & Tang, 2018), (Al-Abri, Al-Khanjari, Kraiem, & Jamoussi, 2017), (Bhatia & Prasad, 2015), (Samina, Xu, Iftikhar, Zhu, & Misha, 2018)	43%
Behavioral	Performance	(Gkontzis, Kotsiantis, Tsoni, & Verykios, 2018), (Yi, Zhao-xia, Xiao-huan, Ming-ming, & Wen-tian, 2017), (Gulzara, Leema, & Deepak, 2018), (Herath & Jayaratne, 2017)	13%
Interests	Attention, Usage	(Liu, Du, Sun, & Zhai, 2017), (Tarus, Niua, & Yousif, 2017), (Xie, et al., 2017), (Zhou, Huang, Hu, Zhu, & Tang, 2018), (Halawa, Shehab, & Hamed, 2015), (Kolekar, Pai, & Pai M.M, 2018)	20%
Preferences	Like and Dislike	(Xie, et al., 2017), (B.Saleenaa & S.K.Srivatsa, 2015), (Al-Abri, Al-Khanjari, Kraiem, & Jamoussi, 2017), (Al-Abri, AlKhanjari, Jamoussi, & Kraiem,	20%

		2018), (Samina, Xu, Iftikhar, Zhu, & Misha, 2018), (FeiZhou, QingPan, & Huang, 2017)	

Table 5. General Personalization Components

Table 5 contains summarization of personalization parameters most commonly used to build a personalized e-learning model. Based on retrieved results we can conclude that most influential personalization parameter is learner's background or prior knowledge then learner's profile with components like personal information (name, gender, date of birth), academic information (major, grade, GPA, learning plan). Another component of personalization is learner's learning style and some other metrics used to to determine the learners learning style are the time spent on videos and other files, the number of times the learner accesses a particular file etc. (Kolekar, Pai, & Pai M.M, 2018) Interests like collaboration, learning time, and preferences like opinion and interactivity level, of e-learner takes an important role in personalization e-learning environment (Xie, et al., 2017), (Al-Abri, Al-Khanjari, Kraiem, & Jamoussi, 2017), (Al-Abri, AlKhanjari, Jamoussi, & Kraiem, 2018). Some other personalization components retrieved from reviewed papers are E-Learning Ontology, Learning Resource Ontology as described in (Tarus, Niua, & Yousif, 2017), number of submissions to success as described in (Chow, Yacef, Koprinska, & Curran, 2017), Map Reduce-based GA, e-assessment as described in (Birjali, Beni-Hssane, & Erritali, 2018), etc.

4.2 What are main data mining models and techniques used in the e-learning domain to make it personalized?

5. Data Mining Techniques	Data Mining Models and Algorithms	References	Percentage
Classification	K Nearest Neighbor	(Chow, Yacef, Koprinska, & Curran, 2017), (Shivanagowda, Goudar, & Kulkarni, 2017), (Tarus, Niua, & Yousif, 2017)	27%
	ID3 decision tree	(Herath & Jayaratne, 2017), (FeiZhou, QingPan, & Huang, 2017)	
	C4.5	(Daud, et al., Companion Proceedings of the 26th International Conference on World Wide Web Companion)	
	Classification and Regression Tree (CART)	(Daud, et al., Companion Proceedings of the 26th International Conference on World Wide Web Companion)	
	Bayesian	(Shi, Peng, & Wang, 2017), (Al-Abri, AlKhanjari, Jamoussi, & Kraiem, 2018)	

	Naive Bayesian	(Daud, et al., Companion Proceedings of the 26th International Conference on World Wide Web Companion)	
	Support Vector Machines	(Daud, et al., Companion Proceedings of the 26th International Conference on World Wide Web Companion)	
Clustering	Fuzzy C Means	(Kolekar, Pai, & Pai M.M, 2018)	17%
	Fast Search and Finding of Density Peaks via Heat Diffusion	(Zhou, Huang, Hu, Zhu, & Tang, 2018)	
	k-Means	(Teimzit, Mahnane, & Hafidi, 2018), (Chow, Yacef, Koprinska, & Curran, 2017), (Shi, Peng, & Wang, 2017)	
Pattern Mining	Frequent Pattern Growth (FP-Growth)	(Hu, Zhang, Chu, & Ke, 2016)	7%
	Sequential Pattern Mining	(Shivanagowda, Goudar, & Kulkarni, 2017)	
Web mining	Web content mining	(Shivanagowda, Goudar, & Kulkarni, 2017), (Wang, Sy, Liu, & Piech, 2017), (Herath & Jayaratne, 2017)	13%
	Web structure mining	(Sergio, et al., 2017)	
	Web usage mining	(Herath & Jayaratne, 2017)	

Recurrent Neural Network	Long Short Term Memory (LSTM)	(Liu, Du, Sun, & Zhai, 2017), (Al-Abri, Al-Khanjari, Kraiem, & Jamoussi, 2017)	13%
	Deep Neural Network	(Chanaa & El Faddouli, 2018), (El Fouki, Aknin, & El. Kadiri, 2017)	

Table 6. Main data mining models and techniques

Main data mining techniques used in the e-learning domain to personalize it are Classification Techniques with percentage of 27 from reviewed papers and main data mining algorithms for classification are K Nearest Neighbor, ID3 decision tree, Bayesian and Naive Bayesian. Second most commonly used technique for personalization is Clustering Technique with k-Means algorithm used most. Web Mining with its components of web content mining, web structure mining and web usage mining is also very used. Machine Learning Recurrent Neural Network technique with its main algorithms of Long Short Term Memory (LSTM) Deep Neural Network is the new trend used in personalizing e-learning environment.

4.4 What tools are generally used to process the interaction between the learner and the content of personalized e-learning?

Some of the tools that are generally used to process the interaction between the learner and the content of personalized e-learning are Collaborative Filtering Recommendation Engine (Shivanagowda, Goudar, & Kulkarni, 2017), (Herath & Jayaratne, 2017), Orange Software, a Python datamining library (Gkontzis, Kotsiantis, Tsoni, & Verykios, 2018), GATE text mining tool (Wang, Sy, Liu, & Piech, 2017), and GATE (TwitIE) adapted for Twitter (Al-Abri, AlKhanjari, Jamoussi, & Kraiem, 2018), adaptive User Interface for Moodle (Kolekar, Pai, & Pai M.M, 2018), CRETAL (Compiler of Resources in Engineering & Technology to Aid Learning) (Birjali, Beni-Hssane, & Erritali, 2018), myTutor implemented in Moodle, provides a mixed-initiative architecture that allows teachers and students to work together during the learning cycle (Xie, et al., 2017), on-line course applicability assessment (OCAA)

(Gulzara, Leema, & Deepak, 2018), WordNet (Bhatia & Prasad, 2015), and WordNet or MeSH (B.Saleenaa & S.K.Srivatsa, 2015) Ontology Dictionaries, SALT (Self-Adaptive Learning through Teaching) (Karataev & Zadorozhny, 2017), Reading Battle and Rapid Miner toolkit (Hu, Zhang, Chu, & Ke, 2016), etc.

5. Conclusions

As it is mentioned above one of the most difficult challenges that encounter personalized e-learning models is the unique and at the same time extremely complex human nature. Another problem that arises in personalized e-learning models is the highly variable nature of learner, so a pattern of e-learning that may be suitable for one learner at a time or for a particular content may not be any more suitable to the same learner at a different time or content.

6. Limitation and Future Research

Among the main limitations of this systematic mapping study are the number of digital libraries in which the search is made, the number of selected papers and our subjectivism in the way we understand and select a particular paper.

As a future research we think that finding most important personalization components in Personalized e-learning Model based on experimental studies with broad learner diversity and contents would meet one of the current gaps of Personalized e-learning Model. Also it will be interesting in analyzing the ways and techniques how to integrate personalized e-learning model into the emerging global communication architecture of Internet of Everything

References

[1] A. Pavlovych; O. Ivanova. (2016). *Communicative Approach in Grammar Teaching. 85-89.*

[2] Abuhlfaia, K., & Quincey, E. d. (2018). The Usability of E-learning Platforms in Higher Education: A Systematic Mapping Study. *Proceedings of British HCI.* Belfast.

[3] Al-Abri, A., AlKhanjari, Z., Jamoussi, Y., & Kraiem, N. (2018). Identifying Learning Styles from Chat Conversation using Ontology-Based Dynamic Bayesian Network Model. *8th International Conference on Computer Science and Information Technology (CSIT).* Dubai.

[4] Al-Abri, A., Al-Khanjari, Z., Kraiem, N., & Jamoussi, Y. (2017). A scheme for extracting information from collaborative social interaction tools for personalized educational environments. *International Conference on Computing Networking and Informatics* . Goa.

[5] Al-Abri, A., Jamoussi, Y., Kraiem, N., & Al-Khanjari, Z. (2016). Comprehensive classification of collaboration approaches in E-learning. *Telematics and Informatics*.

[6] Aqel, I. M. (2013). The Effect of Using Grammar-Translation Method On Acquiring English As A Foreign Language. *International Journal of Asian Social Science,*, 2469-2476.

[7] Atetwe, J. A. (2013, September). Analysis of the Influence of Mother Tongue on Students' Performance in English in KCSE. *Analysis of the Influence of Mother Tongue on Students' Performance in English in KCSE*. Nairobi, Kenya.

[8] B.Saleenaa, & S.K.Srivatsa. (2015). Using concept similarity in cross ontology for adaptive e-Learning systems. *Journal of King Saud University - Computer and Information Sciences, 27*(1), 1-12.

[9] Bhatia, L., & Prasad, S. S. (2015). COPAL — Cognitive personalized aid for learning. *International Conference on Cognitive Computing and Information Processing(CCIP).* Noida.

[10] Birjali, M., Beni-Hssane, A., & Erritali, M. (2018). A novel adaptive e-learning model based on Big Data by using competence-based knowledge and social learner activities. *Applied Soft Computing, 68,* 14-32.

[11] Bradley-Johnson, S., & Lesiak, J. (1989). *Problems in Written Expression: Assessment and Remediation.* New York, N.Y: Guilford Press.

[12] Brereton, P., Kitchenham, B. A., Budgen, D., Turner, M., & Khalil, M. (2007). Lessons from applying the systematic literature review process within the software engineering domain. *Journal of Systems and Software, 80*(4), 571-583.

[13] Bronfenbrenner, U. (1979). *The Ecology of Human Development.* London,England: Harvard University Press.

[14] Brown, D. (1994). *Principles of Language Learning and Teaching.* New York: Prentice Hall Regents.

[15] Brown, H. D. (1980). *Priciples of Language Learning and Teaching.* New Jersey: Prentice Hall Inc.

[16] C, R., & S, V. (2007). Educational data mining: A survey from 1995 to 2005. *Expert Systems with Applications, 33*(1), 135-146.

[17] Celce-Murcia, M. (1979). *Teaching english as a second or foreign language.* New York: Newbury House.

[18] Chan, S.-W. (2015). *Routledge encyclopedia of translation technology* (Vol. II). (S.-W. Chan, Ed.) New York: Routledge.

[19] Chanaa, A., & El Faddouli, N.-e. (2018). Deep learning for a smart e-learning system. *Proceedings of the 2nd International Conference on Smart Digital Environment.* Rabat.

[20] Chang, S.-C. (2011). A Contrastive Study of Grammar Translation Method and Communicative Approach in Teaching English Grammar. *English Language Teaching*, 13-24.

[21] Chellapan, K. (1982). Translanguage, Translation and Second Language Acquisition. *Papers on translation: Aspects, Concepts, Implications*, 57-63.

[22] Cherry, K. (2018, 09 28). *Very Well Mind*. Retrieved from https://www.verywellmind.com/what-is-intrinsic-motivation-2795385

[23] Chow, S., Yacef, K., Koprinska, I., & Curran, J. (2017). Automated Data-Driven Hints for Computer Programming Students. *Adjunct Publication of the 25th Conference on User Modeling, Adaptation and Personalization.* Bratislava.

[24] Cook, V. (2001). *Second Language Learning and Language Teaching (3rd ed).* London: Oxford University Press.

[25] Cook, V. (2013). *Second language learning and language teaching.* New York: Routledge.

[26] Corder, S. (1981). *Error Analysis and Interlanguage.* London: Oxford University Press.

[27] Coulmas, F. (2003). *Writing Systems; An Introduction to Their Linguistic Analysis.* Cambridge: Cambridge University Press.

[28] Cumming, A. (2001). Learning to write in a second language: Two decades of research. *International Journal of English Studies*, 1-23.

[29] Damiani, A. (2003). *The Grammar Translation Method of Language Teaching.* London: Longman.

[30] Daud, A., Aljohani, N. R., Abbasi, R. A., Lytras, M. D., Abbas, F., & Alowibdi, J. S. (Companion Proceedings of the 26th International Conference on World Wide Web Companion). Predicting Student Performance using Advanced Learning Analytics. *2017.* Perth.

[31] De Bot, K., Lowie, W., & Verspoor, M. (2005). *Second Language Acquisition: An Advanced Resource Book.* London: Routledge.

[32] Deci, E. L. (1971, 04). Intrinsic Motivation, Extrinsic Reinforcement,. *Journal oj Personality and Social Psychology*, 118-120. Retrieved from APA PsycNET Direc: http://psycnet.apa.org/buy/1971-22190-001

[33] DECI, E. L. (1972). Intrinsic Motivation, Extrinsic Reinforcement,. *Journal oj Personality and Social Psychology*, 113-120.

[34] Doyle, W. (1989). *Classroom Management Techniques.* Washington: Office of Educational Research and Improvement.

[35] Dweik, B. S., & Othman, Z. A. (2017, September). Lexical and Grammatical Interference in the Translation of Written Texts from Arabic into English. *Academic Research International , 8(3)*, 65-70.

[36] Eco, U. (2006). *Të thuash të njëjtën gjë : përvoja përkthimi.* (M. Ymeri, & A. Ylli, Trans.) Tiranë: Dituria.

[37] Eco, U. (2013). *Dire quasi la stessa cosa: esperienze di traduzione.* Milano, Italy: Bompiani.

[38] El Fouki, M., Aknin, N., & El. Kadiri, K. E. (2017). Intelligent Adapted e-Learning System based on Deep Reinforcement Learning. *Proceedings of the 2nd International Conference on Computing and Wireless Communication Systems.* Larache.

[39] Ellis, R. (2002). *The Place of Grammar Instruction in the. Second/Foreign Language Curriculum.*

[40] Ellis, R. (2006). *Current Issues in the Teaching of Grammar: An SLA Perspective.*

[41] Farooq, M. S., Hassan, M. U.-U., & Wahid, S. (2012). Opinion of Second Language Learners About Writing Difficulties in English Language. *A Research Journal of South Asian Studies,* 183-194.

[42] FeiZhou, T., QingPan, Y., & Huang, L. (2017). Research on Personalized E-Learning Based on Decision Tree and RETE Algorithm. *International Conference on Computer Systems, Electronics and Control (ICCSEC).* Dalian.

[43] Forcada, M. L. (2017, January). Making sense of neural machine translation. *Translation Spaces*, *6*(2), 291-309. doi:DOI: https://doi.org/10.1075/ts.6.2.06for

[44] Forcada, M. L. (2020, 6). Building Machine Translation Systems for Minor Languages: challenges and effects. *Revista de Llengua i Dret, Journal of Language and Law*(73), 3-20. doi:DOI: http://dx.doi.org/10.2436/rld.i73.2020.3404

[45] Fotos, S. (2005). *Handbook of research in second language teaching and learning.* London: Lawrence Erlbaum Associates.

[46] Friedlander, A. (1990). *Composing in English: effects of a first language on writing in English as a second language.* Philadelphia: Cambridge University Press.

[47] Garcia, A. F. (n.d.). Do the similarities between L1 and L2 writing processes conceal important differences?

[48] Garrido, A., Morales, L., & Serina, I. (2016). On the use of case-based planning for e-learning personalization . *Expert Systems with Applications, 60*, 1-15.

[49] Gilbert, I. (2002). *Essential Motivation in.* London and New York: RoutledgeFalmer.

[50] Gkontzis, A. F., Kotsiantis, S., Tsoni, R., & Verykios, V. S. (2018). An effective LA approach to predict student achievement. *Proceedings of the 22nd Pan-Hellenic Conference on Informatics.* Athens.

[51] Gorgoglione, M., Panniello, U., & Tuzhilin, A. (2019). Recommendation strategies in personalization applications. *Information & Management*(https://doi.org/10.1016/j.im.2019.01.005).

[52] Gulzara, Z., Leema, A., & Deepak, G. (2018). PCRS Personalized Course Recommender System Based on Hybrid Approach . *Procedia Computer Science, 125*, 518-524.

[53] Halawa, M. S., Shehab, M. E., & Hamed, E. M. (2015). Predicting student personality based on a data-driven model from student behavior on LMS and

social networks. *Fifth International Conference on Digital Information Processing and Communications (ICDIPC).* Sierre.

[54] Harmer, J. (1991). *The Practice of English Language Teaching 3rd edition.* Longman.

[55] Hedge, T. (2000). *Teaching and learning in the language classroom.* Oxford: Oxford Press University.

[56] Herath, D., & Jayaratne, L. (2017). A personalized web content recommendation system for E-learners in E-learning environment. *National Information Technology Conference* . Colombo.

[57] Hinkel, E. (1999). *Culture in Second Language Teaching and Learning.* New York: Cambridge University Press.

[58] Hlioui, F., Alioui, N., & Gargouri, F. (2016). A survey on learner models in adaptive E-learning systems. *13th International Conference of Computer Systems and Applications (AICCSA).* Qatar.

[59] Hofmann, M. (2018). *One Lark, One Horse.* London: Faber & Faber Ltd.

[60] Hu, X., Zhang, Y., Chu, S. K., & Ke, X. (2016). Towards personalizing an e-quiz bank for primary school students: an exploration with association rule mining and clustering. *Proceedings of the Sixth International Conference on Learning Analytics & Knowledge.* Edinburgh.

[61] James, C. (1998). *Errors in Language Learning and Use: Exploring Error Analysis.* London ; New York : Longman: Routledge Publisher.

[62] Jando, E., Hidayanto, A. N., & Harjanto, P. (2017). Personalized E-learning Model: A Systematic Literature Review. *International Conference on Information Management and Technology (ICIMTech).* Yogyakarta.

[63] Judrups, J. (2015). Analysis of Knowledge Management and E-Learning Integration Models. *Procedia Computer Science*, 154-162.

[64] Karagiannis, I., & Satratzemi, M. (2014). Comparing LMS and AEHS Challenges for Improvement with Exploitation of Data Mining. *14th International Conference on Advanced Learning Technologies.* Athens.

[65] Karagiannis, I., & Satratzemi, M. (2014). Comparing LMS and AEHS: Challenges for Improvement with Exploitation of Data Mining. *IEEE 14th International Conference on Advanced Learning Technologies.* Athens.

[66] Karataev, E., & Zadorozhny, V. (2017). Adaptive Social Learning Based on Crowdsourcing. *IEEE Transactions on Learning Technologies, 10*(2), 128 - 139.

[67] Kaweera, C. (2013). Writing Error: A Review of Interlingual and Intralingual Interference in EFL context. *English Language Teaching, 6*, 9-18.

[68] Kellogg, R. (1994). *The Psychology of Writing.* New York: Oxford University Press.

[69] Kellogg, R. T., & Raulerson, B. A. (n.d.). Improving the Writing Skills of College Students.

[70] Khan, A. (2014). Cross-linguistic Issues and Compatible Strategies for Teaching English. *Journal of Foreign Languages, Cultures and Civilizations*.

[71] Kitchenham, B. A., Budgen, D., & Brereton, P. (2015). *Evidence-based software engineering and systematic reviews.* CRC Press.

[72] Kolekar, S. V., Pai, R. M., & Pai M.M, M. (2018). Adaptive User Interface for Moodle based E-learning System using Learning Styles. *Procedia Computer Science, 135*, 606-615.

[73] Konica, F. (1995). *Vepra 1.* Prishtinë: Rilindja.

[74] Krashen, S. (1981). *Second language acquisition and second language learning.* California: Pergamon Press Inc. .

[75] Lepouras, G., Katifori, A., Vassilakis, C., Antoniou, A., & Platis, N. (2014). Towards a learning analytics platform for supporting the educational process. *The 5th International Conference on Information, Intelligence, Systems and Applications.* Chania.

[76] Levine, M. (2002). *A mind at a time.* New York: Simon and Schuster.

[77] Liu, X., Du, Y., Sun, F., & Zhai, L. (2017). Design of adaptive learning system based on big data. *Proceedings of the 6th International Conference on Information Engineering.* Dalian Liaoning.

[78] Long. (1988). *FOCUS ON FORM IN TASK-BASED LANGUAGE TEACHING.*

[79] Longstreth, S., Brady, S., & Kay, A. (2013). Discipline Policies in Early Childhood Care and Education Programs: Building an Infrastructure for Social and Academic Success. *Early Education and Development*, 253-271.

[80] Lu. (2004). *Techniques and Principals in language teaching.* Pekin.

[81] Mah, R. (2007). *Difficult Behaviour in early childhood.* London: Crowin Press.

[82] MCLeod, S. (2007). Skinner -Operant Conditioning. 12.

[83] McLeod, S. (2018). *Simply Psychology*. Retrieved from Simply Psychology: https://www.simplypsychology.org/operant-conditioning.html

[84] Munn, P. (1999). *Promoting Positive disicpline.* Scottish Office.

[85] Myles, J. (2002). Second Language Writing and Research: The Writing Process and Error Analysis in Student Texts. *The Electronic Journal for English as a Second Language*.

[86] Newby, D. (2015). The role of theory in pedagogical grammar: A cognitive and communicative approach. *Euroasian Journal of Applied Linguistics*, 13-34.

[87] Njeru, E. K. (2012). An Investigation Of The Effectiveness Of Rewards And. *External Studies, University of Nairobi*, 1-61.

[88] Norrish, J. (1987). *Language learners and their errors.* London: The Macmillan Press.

[89] Olana, T., Zeleke, T., & Jiregna, K. (2015). Mother Tongue Interference in English Language Writing at Derge Secondary School: The Case of Grade 9 Students. *Science, Technology and Arts Research Journal*.

[90] Phuket, P. R. (2015). Understanding EFL Students' Errors in Writing. *Journal of Education and Practice Vol.6, No.32*, 99-106.

[91] Potts, R. (2001, May 12). The poet at play. *The guardian*. Retrieved 11 14, 2022, from https://www.theguardian.com/books/2001/may/12/poetry.artsandhumanities

[92] Prator, C. (1979). *An outline of language teaching approaches.* New York: Newbury House.

[93] Richards J.; Rodgers T. (1986). *Approaches and methods in language teaching.* Cambridge: Cambridge University Press.

[94] Richards, J. (2006). *Communicative Language Teaching Today.* Cambridge: Cambridge University Press.

[95] Richards, J. C. (1974). *Error Analysis: Perspective on Second Language Acquisition.* London: Longman Group Ltd.

[96] Ridha, N. S. (2012). The Effect of EFL Learners' Mother Tongue on their Writings in English: An Error Analysis Study. *Journal of the College of Arts*, 22-45.

[97] Riediger, H. (2018, 6 12). Tradurre col computer: dalla traduzione automatica al CAT e ritorno. *Laboratorio Weaver*, p. 3.

[98] Rreshpja, F. (1995). *Lirika të zgjedhura.* Tiranë: Evropa.

[99] Samina, K., Xu, H., Iftikhar, H., Zhu, W., & Misha, Z. (2018). Integration of Data Mining Clustering Approach in the Personalized E-Learning System. *IEEE Access, 6,* 72724-72734.

[100] Samson, P. J. (2015). Analyzing student notes and questions to create personalized study guides. *Proceedings of the Fourth International Conference on Learning Analytics And Knowledge.* Indianapolis.

[101] Sandra.M.Way. (2016). School Discipline and Disruptive Classroom Behavior: The Moderating Effects of Student Perceptions. *The Sociological Quarterly,* 346-375.

[102] Sawalmeh, M. H. (2013). Error Analysis of Written English Essays: The case of Students of the. *English for Specific Purposes World*.

[103] Scarcella, R. (1984). How writers orient their readers in expository essays: a comparative study of native and non-native English writers. *TESOL Quarterly18,* 671-689.

[104] Schmitt, N. (2002). *An introduction to applied linguistics.*

[105] Schoonen, R., Gelderen, A. v., De Glopper, K., Hulstijn, J., Simis, A., Snellings, P., & Stevenson, M. (n.d.). First language and second language writing: the role of linguistic knowledge,. Amsterdam.

[106] Scovel, T. (2001). *Learning New Languages: A Guide to Second Language Acquisition.* Boston: Heinle & Heinle.

[107] Sergio, C.-F., Itzamá, L.-Y., Wadee, A., Oscar, C.-N., Villuendas-Rey, Y., Aldape-Pérez, M., & Yáñez-Márquez, C. (2017). Instance-based ontology matching for e-learning material using an associative pattern classifier. *Computers in Human Behavior, 69,* 218-225.

[108] Shalaby, N. A., Yahya, N., & El-Komi, M. (2009, January). Analysis of Lexical Errors in Saudi College Students' Compositions. *Journal of the Saudi Association of Languages and Translation,* 65-91.

[109] Sharma, S. (2015). Mother Tongue Influence On English Language Learning. *Scholarly Research Journal For Humanity Science & English Language,* 2165-2169.

[110] Shi, Y., Peng, Z., & Wang, H. (2017). Modeling Student Learning Styles in MOOCs. *Proceedings of the 2017 ACM on Conference on Information and Knowledge Management.* Singapore.

[111] Shivanagowda, G. M., Goudar, R. H., & Kulkarni, U. P. (2017). CRETAL: A Personalized Learning Environment in Conventional Setup. *Proceedings of the 10th Annual ACM India Compute Conference.* Bhopal.

[112]Silva, N. S. (2008). The Impact of Mother Tongue on Teaching English as a Foreign Language at Beginner Levels. Praia, Cape Verde.

[113]Solnick, J. V. (1977). Some Determinants Of The Reinforcing And. *Journal Of Applied Behavior Analysis*, 415-424.

[114]Tarus, J. K., Niua, Z., & Yousif, A. (2017). A hybrid knowledge-based recommender system for e-learning based on ontology and sequential pattern mining. *Future Generation Computer Systems, 72*, 37-48.

[115]Teimzit, A., Mahnane, L., & Hafidi, M. (2018). A collaborative algorithmic problem-based learning environment using learners' learning styles. *5th Multidisciplinary International Social Networks Conference.* Saint-Etienne.

[116]Villegas-Ch, W., & Luján-Mora, S. (2017). Analysis of data mining techniques applied to LMS for personalized education. *IEEE World Engineering Education Conference (EDUNINE).* Santos, São Paulo.

[117]Villegas-Ch, W., Luján-Mora, S., Buenaño-Fernandez, D., & Román-Cañizares, M. (2017). Analysis of web-based learning systems by data mining. *IEEE Second Ecuador Technical Chapters Meeting (ETCM).*

[118]Wang, J. (2011, January). Culture Differences and English Teaching. *English Language Teaching, 4*, 223-230.

[119]Wang, L., Sy, A., Liu, L., & Piech, C. (2017). Deep Knowledge Tracing On Programming Exercises. *Proceedings of the Fourth (2017) ACM Conference on Learning @ Scale.* Massachusetts.

[120]Wang, Y. (2012, March). Differences in L1 and L2 Academic Writing. Hebei, China: Academy Publisher.

[121]Widdowson, H. (1999). *Aspects of Language Teaching.* Shanghai: Shanghai Foreign Language Education Press.

[122]Williams, C. (2013, October 28). *The Role of Writing in Second Language Acquisition*. Retrieved from https://my.vanderbilt.edu/chelseawilliams/2013/10/the-role-of-writing-in-second-language-acquisition/

[123]Xhemaili, M. (2017). The influence of mother tongue (Albanian) in Learning and Teaching English. Albania.

[124]Xie, H., Zou, D., Wang, F. L., Wong, T.-L., Rao, Y., & Wang, S. H. (2017). Discover learning path for group users - A profile-based approach . *Neurocomputing, 254*, 59-70.

[125]Xie, T., Zheng, Q., & Zhang, W. (2018). Mining temporal characteristics of behaviors from interval events in e-learning. *Information Sciences, 447*, 169-185.

[126]Yi, R., Zhao-xia, D., Xiao-huan, Z., Ming-ming, F., & Wen-tian, G. (2017). Exploring an on-line course applicability assessment to assist learners in course selection and learning effectiveness improving in e-learning. *Learning and Individual Differences, 60*, 56-62

[127]*Your Dictionary*. (2018). Retrieved from Your Dictionary: http://www.yourdictionary.com/punishment

[128]Yuanhua, C., & Xiaoling, L. (2016). Effects of L1 Transfer on English Writing of Chinese EFL Students. *Cross-Cultural Communication*, 50-53.

[129]Zhou, Y., Huang, C., Hu, Q., Zhu, J., & Tang, Y. (2018, May). Personalized learning full-path recommendation model based on LSTM neural networks. *Information Sciences, 444*, 135-152.

Msc.Edra Sota
Research and Projects Office
EPOKA University
esota@epoka.edu.al

ERP SYSTEM IMPLEMENTATION IN MANUFACTURING INDUSTRY: USER AND SOLUTION PROVIDER PERSPECTIVE

Abstract

Market environment has changed noticeably over the years. To remain competitive, companies all over the world must adapt their business operations with the rapid technology advancements. To integrate all business processes into one single platform companies started investing in Enterprise Resource Planning. Facilitation of communication systems and flow of information among departments, made ERP systems to be implemented in both private and public sectors by becoming a crucial element of their organizational practices. The phenomenon of implementing ERP solutions is also growing among Albanian companies and therefore the aim of this dissertation is to get an insight into the ERP implementation process and to explore the experience of some leading enterprises. The value of this research is that it presents a set of challenges as well as the critical success factors applicable in Albania. Using a qualitative research design, this study offers valuable findings for the Albanian ERP market.

Keywords: *Enterprise resource planning, Albanian market, challenges, critical success factors*

1.1 Introduction

Today's management of business processes is far more complex than a decade ago. Process optimization and automation are interdependent with the change and evolution of technology. Involving several departments, enterprises call for up-to-date and accurate information due to the increased market competition (Nissen & Sengupta, 2006). According to (Woo, 2007) the ERP market was considered one of the fastest growing markets since the 2000s due to the immediate embracement from several businesses. Over the years investing in Enterprise Resource Planning (ERP) systems has turned out to be a key solution of integrating all aspects of a business into one single database. An ERP system consists of some key software components, otherwise known as modules, which concentrate on the essential business areas (Gaikwad & Rake, 2021). A critical decision-making identifies the core modules to be implemented derived from their importance. Enterprise resource planning systems offer a competitive edge to enterprises by enhancing their operational efficiency.

The implementation of ERP systems leads to potential benefits such as: improved data sharing process among departmental units, reduced inventory costs, a single source of information and real-time data reporting (Woo, 2007; Gupta & Govindarajan, 2000; Francoise, Bourgault, & Pellerin, 2009). The areas of expertise otherwise known as Critical Success Factors (CSFs) are extensively studied and the available literature offers a comprehensive list (Hasibuan & Dantes, 2012; Woo, 2007; Gargeya & Brady, 2005). A proper understanding and management of such factors can maximize the success rate of the implementation project.

Despite the potential benefits of an ERP system implementation, businesses can face major issues during the process and the rate of partial failure of the project is high (Gargeya & Brady, 2005). User commitment and training, unavailability of required skills and expertise level, legacy systems, and an inadequate plan are explored by previous researchers as the main challenges of ERP users (Bokhari,

Mahmood, & Khan, 2020; Al-Fawa, Eldabi, & Naseer, 2010; Gargeya & Brady, 2005; Hustad & Olsen, 2013).

However, the demand for ERP software is experiencing an increase year after year. As a strategic investment in Information Technology (IT), ERP market size is expected to surpass the value of $49.5 Billion by 2025 (Biel, 2020). Based on the system end user, in 2019 the manufacturing segment contributed the highest revenue (Gaikwad & Rake, 2021). The ERP implementation process can be conducted in-house or can be outsourced to Solution Providers. In-house implementation requires high expertise and great IT knowledge to facilitate the whole procedure. A formal plan should be prepared and followed rigorously by taking into consideration the predefined goals and objectives set by the management in accordance with business processes. The majority of enterprises lack in these directions and that is why they outsource the implementation of ERP systems.

This study proposes to explore the issues and opportunities of the ERP market in Albania by offering a two-sided study perspective both from ERP Solution Providers and system endusers as well as to draw up a list of the Critical Success Factors (CSFs). The proposed approach was highly impacted by the critical gaps in current research in Albania.

1.2 Research problem

Planning and management of the core activities of a business are enabled by ERP systems. Connecting every aspect of an enterprise is a time-consuming process and therefore failing to acknowledge the challenges of such systems leads to a waste of resources and human capital. Critical decision-making needs to be performed where clear goals and objectives are defined.

The challenges faced by Albanian enterprises during the ERP implementation process stand as a common concern not only for the management part but also for the Solution Providers teams. A listing of the Critical Success Factors that contribute to a successful implementation among Albanian enterprises needs to be provided.

1.3 Research Questions

This study raises three research questions that aim to explore the process of ERP implementation from a two-sided perspective. Research questions are the critical starting point of a good research study. The answers to these research questions will provide a valuable contribution to the literature in this topic.

1. What are the main issues of ERP Solution Providers behind the implementation process?
2. What are the main challenges and benefits of Albanian manufacturing companies while implementing ERP systems?
3. What are the Critical Success Factors (CSFs) of a successful ERP project?

1.4 Research Objectives

Research objectives describe what is expected to be achieved by the study. In order to provide some valuable and practical findings the identification of the following objectives is pivotal:

1. Determine the main issues faced by Solution Providers when implementing ERP systems.
2. Determine the main challenges and benefits of Albanian manufacturing companies when implementing ERP systems.
3. Identify the Critical Success Factors of the ERP implementation process in Albania.

2. Study background

2.1 Enterprise Resource Planning (ERP) Overview

ERP is an acronym and it stands for Enterprise Resource Planning. To unpack the true meaning, usage and potential of the ERP system a brief history is essential. The roots begin in the 1960s when a tractors' manufacturer and International Business Machines Corporation (IBM), an Information Technology company formed a partnership and conceived an application software that was named Material Requirements Planning (Jr & Jacobs, 2007). MRP and Manufacturing Resource Planning (MRP II) are the predecessors of ERP that itself was coined in the 1990s by the Gartner Group. MRPs were focused on production processes only while ERPs offered a broader range of business processes integration (Elragal & Haddara, 2012).

As a term, the ERP system can be explained through lenses of different perspectives (Klaus, Rosemann, & Gable, 2000). According to Payne (2002) an ERP system combines the different operational areas of a business into a single database. It can be classified as a business software which is able to collect data from various organizational departments and to integrate it into a clear and coherent database that forms the foundation of a good ERP implementation project. Three ways of interpreting ERP are discussed in an European Delphi study: the business perspective, the technical perspective and the functional perspective (Akkermans, Bogerd, Yecesan, & Wassenhove, 2003).

Faster decision making requires accurate information from all departments and ERP enables a speedy and up-to-date procession of data from different sources. According to Bradford (2015) there are some typical ERP modules that most manufacturing companies implement: Operations and Supply Chain, Financial Accounting, Management Accounting and Human Capital Management.

Operations and Supply Chain		
Plant Maintenance	*Purchasing*	*Quality Management*
Sales and Distribution	*Shop Floor Management*	*Transportation Management*
Manufacturing	*Warehouse Management*	*Advanced Planning*
Financial Accounting		
General Ledger	*Cash Management*	*Accounts Payable*
Accounts Receivable	*Fixed Assets*	*Financing Consolidation*
Management Accounting		
Cost Center Accounting	*Product Costing*	*Budgeting*
Profit Center Accounting	*Activity-Based Costing*	*Profitable Analysis*
Human Capital Management		
Personnel Management	*Payroll*	*Learning Management*
Time and Attendance	*Benefits*	*Recruitment Management*

Table 1: Typical Modules in an ERP System for a Manufacturing Company Source: *Adapted from Bradford, 2015, p.28*

2.2 ERP Life Cycle

ERP phenomenon has resulted in several studies to its complex nature and system lifespan. Regarding ERP life cycle, different phases are identified according to target application. For instance, the ERP life cycle framework proposed by Esteves and Pastor (2001) constitutes to the available literature by recognizing six stages: adoption decision, acquisition, implementation, use and maintenance, evolution and retirement phases (Esteves & Pastor, 2001).

On the other hand, (Law, Chen, & Wu, 2010) in the staged implementation model include four phases respectively: adaptation, acceptance, routinization and infusion. Chang, Yen, Huang, & Hung, (2008) summarized that an ERP system life

cycle should include these phases: Evaluation, Acquisition, Formal Introduction, Operation and maintenance and Expansion. Ijaz & al. (2014) have based their study on the general approach to ERP lifespan: pre-implementation, implementation and post-implementation phases.

2.3 ERP Implementation Benefits

Each organization needs to manage day-to-day activities and ERP systems are designed to boost the core business processes. ERP is considered among the most significant innovations that allows companies to automate (by reducing the time of data entry) and monitor their business performance.

Significant benefits date back to the 1990s after the decision of the city officials of Pasadena, California of implementing the ERP system to assist them in the preparation of financial reports (Beheshti, 2006). Normally it took them up to 10 days to prepare such reports but after the system was implemented it decreased to only 1 day. Therefore, ERPs are not only implemented by private business organizations but also by state owned companies as well as non-profit organizations.

Data redundancy in the majority of the cases leads to data inconsistency which misleads the company in the decision-making process. After implementing the ERP only one version of information is available to all employees and management by eliminating the need of data reconciliation. Another benefit of the ERP system is that after it tracks a problem the correction process needs to be performed only once and then it is automatically reflected in all departments.

Seddon & Shang (2000) have prepared a framework of the following 5 dimensions that can benefit from the implementation of ERP systems in a company: Operational, Managerial, Strategic, IT- Infrastructure and Organizational. These findings were obtained through a selection of 233 success web-cases of different vendors that served as the major source of data for the framework (Shang & Seddon, 2000). However, the study emphasizes that not every organization obtains all the benefits listed.

Another framework of how business benefits are achieved from implementation of ERP systems was prepared in 2004. Techno-change Management, Education, Training and Support, People Resources, Efficient and Effective use of the ERP system, Business Process Improvement and New Projects/Continuation of Projects to Leverage Off the ERP System are the 6 themes identified (Staehr, Shanks, & Seddon, 2004).

A thorough study needs to be performed prior to the decision of the company on implementing an ERP system. The choice of the right system following a proper implementation enlarges the benefits a company can receive by outweighing the cost amount at the same time (Beheshti, 2006).

To respond and fulfill a specific order a workflow is followed. First the picking then packing and delivering. Otherwise called as order processing it offers a holistic view of the logistics processes. If done manually or with old IT supporting systems the presence of error rate is high and the consequences are estimated to be considerable in terms of money value. In such cases, a fully integrated product configuration feature of the ERP is available and its benefits are in terms of time, cost and error minimization.

Different types of benefits can be identified but reporting, efficiency and growth-related benefits have a higher rate of achievement if anticipated (Panorama, 2020). For example, if a business does not keep proper track of their inventory due to manual calculation process when reports are prepared at the end of the period (monthly, quarterly etc.) the information provided would not be accurate. The system on the other side can automatically track the inventory and report the correct amounts. Access to real-time data can be obtained with just a click at any moment. Human error can lead to bad decision making in such cases.

2.4 Challenges on ERP Implementation and Adoption

Extensive research is conducted on the main issues and challenges faced by enterprises on the ERP software implementation (Al-Fawa, Eldabi, & Naseer, 2010; Hustad & Olsen, 2013; Bokhari, Mahmood, & Khan, 2020).

While some emphasize the data quality issue with companies existing systems (Nord, Xu, & Brown, 2002), others have identified that the right selection of the ERP vendor or service provider together with the offered tools to match with the company's level of expertise is a decisive issue that requires particular attention (Jha, Ranjan, & Pal, 2016). This judgment can pose a lot of challenges in the future in case of a wrong selection. Companies have even ended up with a non-suitable system for their business process.

During 2016, ERP selection, change management and knowledge management were summarized as main ERP implementation challenges (Jha, Ranjan, & Pal, 2016). Generally, enterprises in developing countries face issues due to their legacy systems (Frydenlund, 2017). Their employees have been using spreadsheets or even manual recording and calculations for years and years and therefore it is a major challenge to adapt to new systems even though they can be more efficient and can ease their job responsibilities due to data automation. Human nature tends to resist change and the same happens even in the business world.

System avoidance from the system user when facing a problem has been identified as a critical issue (Hustad & Olsen, 2013). If any of the users does not report the necessary information at the required time, subsequent errors can occur in the database. Such situations tend to create frustration among the company's management as it requires a lot of effort to make the necessary adjustments.

Several attributes can be associated with problems faced while implementing the ERP system. According to Markus, Tanis and Fenema (2000) the initial issues start from the data migration process from their old system that leads to an underestimation of data quality problems.

A framework of prioritized factors in order of their importance is prepared in 2004. Lack of top management commitment, ineffective communication and training were the top three factors of the list (Ali & Miller, 2017; Huang, Chang, Li, & Lin, 2004).

2.5 The Identification of ERP Implementation Critical Success Factors

Implementing ERP systems is a complex process with many factors influencing the journey. Throughout the years, several factors that positively affect the implementation process have been identified and further examined (Hasibuan & Dantes, 2012; Nah, Lau, & Kuang, 2001; Woo, 2007).

Investigation of Critical Success Factors started with MRP systems in 1991. Success of the system was strongly connected with the influence of 2 broad categories of factors: Environmental and Methodological (Burns, Walter, & Riggs, 1991). Product technology and the organization's willingness to adapt to change were the two environmental factors associated with the success rate of MRP II. As for the methodological factors a list of 12 factors including: consultant use and involvement and prior record keeping accuracy was prepared.

42 reviewed ERP projects were the main source of information to a list of 10 necessary factors for a successful implementation. According to Parr, Shanks, ande Drake (1999) the management support, the technical skills and capabilities of the project team together with the dedication of all stakeholders to adapt to change in the enterprise were the top 3 factors.

Nah, Lau, and Kuang (2001) based on a review of the available literature identified 11 critical success factors. The top factor identified was the ERP implementor-vendor- consultant relationship. An ERP implementation project can have the three abovementioned. Their coordination and continuous communication through all phases is essential to the success of the system. In addition, the change management program factor also required the need of employees sharing information among departmental units.

2.6 Overview of Albanian ERP Market

In Albania, large enterprises with 50 or more employees occupy only 1.2% of the total enterprises, however their contribution to employment was estimated at 48.5% in 2020, from 47.8% in 2019 (INSTAT, Regjistri i Ndërmarrjeve, 2021). The enterprise register at the end of 2020 showed 166,386 active enterprises, marking an increase of 2.5% compared to the previous year. The processing industry sector is the sector with the greatest impact on the production of goods with the number of active enterprises (7.6%), number of employees (20.6%) and net sales (11.5%). However, only 8% (the lowest value among all sectors) of the employees in this sector were reported to be using computers on their daily work activities.

During 2020, the percentage of enterprises which have specialists in the field of information technology and communication reached 28.2%, from 23.4% that was in 2019. Only 30.8 % of employees in large enterprises use computers at work. Employees who have used computers for work purposes made up 27.2% of total employees of Albanian enterprises, from 26.8% that was in 2019. In 2020, the automatic sharing of information within the enterprise (between different functional areas), which is designed for planning and enterprise resource management, was used by 35.1% of enterprises from 38.5% that resulted in 2019.

In 2020, cloud services which refer to services used on the Internet to access applications computers, storage capacities, etc. were used by 18.2% of enterprises that have internet access from 11.4% that resulted in 2019 (INSTAT, 2021). Customer relationship management (CRM) software application was used by 22.5% enterprises during 2020 from 22.1% that resulted in 2019.

BIS SH.P. K (Business Integration Solutions) currently operates in 15 countries: Europe, Brazil, India, China etc. and nevertheless as a Solution Service Provider it realizes that operating in Albania is decidedly different. In 2015 the company's owner Mr. Giorgio Tagliagambe participated in a business fair in Italy. He already owned a company named Elelco SRL, with headquarters in Milan, which has been operating since 1974. At the fair, was introduced to an Albanian company that

was looking for a software to meet its managerial requirements (the same company is now one of the BIS customers in Albania).

Coming to Albania to implement this first project and conducting meetings with other businesses Mr. Tagliagambe understood the need for solution provider services in this country (the classic ERPs were practically unknown in Albania and even the information systems used were produced locally and were far from the best practices used in Europe). A requirement not only for custom ERP systems, but also for organizational consulting. He realized that the Albanian market lacked custom-built software according to the requirements of businesses, especially in the manufacturing industry.

Being faced with such reality made him consider the setting up of a branch of the Italian company in Albania. Also, the wide knowledge of the Italian language among Albanians served as a mediating variable of establishing something in Albania. This idea took shape on 26 October 2015.

To develop, adapt and maintain IT systems, ERPs, web solutions or cloud services, enterprises can count on their current workforce (if needed hire some specialists) or they can directly depend on external service providers. In Albania, the majority of companies have outsourced the process of ERP implementation to solution providers. By conducting an online search the list of these providers typically included: Infosoft Systems, BIS SH.P.K, Tetra Solutions, Alpha Soft Web Solutions, Communication Progress SH.P.K, OneTech and Intelligent Systems.

Armand Shara, administrator of Infosoft, claims that the pandemic spurred investments on IT systems (Sharra, 2020). After Summer 2020 was the period when Albanian companies generally had higher demands for investments in technology in their business processes. Shara, claims that this is due to three factors: first the pandemic, second the fiscalization process, and third the business maturity. But the weight of each of them in the overall demand remains unclear.

Investments in technological systems mainly belong to Enterprise Resource Planning (ERP), Consumer Relationship Management (CRM) which are after-sales

services or Power Business Intelligence (BI) required by management levels. I think the main leader is Business Intelligence and generally it is the one that offers a focused business overview. Another element that has boosted the IT sector during 2020 has been the boom of E-Commerce in the face of the pandemic. "E-commerce is growing but Mr. Shara emphasizes that the critical factor needed for is the implementation of an appropriate ERP system. If a business does not have a consolidated system that manages its own systems it is difficult to have a stable ecommerce system. Another element that Infosoft Systems has noticed is the increased interest in the systems that manage the company's internal business units and processes.

We are talking about structured data such as the processes related to the approval of a loan, insurance, permits. All these procedures can be automated and the signing or withdrawing process of money is done online without having to be on paper and without having to be present in the office. "There is interest in automating every line of documents or processes" says Sharra.

3. Methodology

Three Albanian manufacturing companies and two ERP solution providers contribute as the empirical base for this study. Table 2 provides an overview of the three manufacturing enterprises chosen for this study in terms of: industry they operate, number of employees, range of products, years of ERP use and type of ERP system . In addition, Table 3 provides a business summary of the ERP Solution Providers.

3.1 Research Design

The purpose of this study was to discover the challenges and opportunities offered by ERP systems from a two-perspective approach as well as to identify the Critical Success Factors of the implementation process. To achieve this goal a qualitative study was conducted as ERP market is an under-researched area in Albania. Although there is a growing interest in the ERP field, there is little literature available

on the experiences of Albanian enterprises. In such cases, exploratory research is conducted to have a better understanding of the phenomenon of interest.

ERP end users of three Albanian manufacturing companies were chosen. The sample is heterogeneous as these enterprises operate in three different sectors: shoe and footwear manufacturing, milk- processing and wheat-processing. Their geographical distribution includes Eastern, Central and Southern Albania.

To ensure the validity of a research perspectives from several participants should be included.

Therefore, project members from two ERP solution providers were integrated in the study.

Manufacturing Company	Industry	Years of operating	Number of employees	ERP use	ERP system type	Final Products
MiTo by Caterina Firenze	Shoe & Footwear Manufacturing	15	400	12	BIS ERP package	100% leather shoes
Company A	Wheat-Processing	9	200	2	Microsoft Dynamics 365 Business Central	Different types of flour and pasta
Company B	Milk-Processing	20	237	15	BIS ERP package	Dairy-based products

Table 2: Overview of the manufacturing enterprises

MiTo by Caterina Firenze, located in the city of Berat, is part of the Footwear Manufacturing Industry. For 15 years this company is a leader in the Albanian and international market. Implementation of ERP systems date back to 2009 in this company. In 2021 they implemented a full ERP package (ELELCO ERP) offered by BIS SH.P.K. The process required 6 months. Working in the field of fashion means organizing processes according to fashion seasons, creating thousands of champions and producing only some of them at the end. It requires to have different variants of

the same model, colors, European and American numbers. The materials have to be ordered firmly enough because every year the fashion trends change, so the challenges are diversified in such industry.

Company A operates in the wheat processing industry. The factory started production on December 12, 2012 after 2 years of continuous investment on the business premises. High technology milling machineries are able to transform wheat into high quality and certified flour. Due to increased demand year after year they have managed to produce more than 20 different types of flour products meeting every customer and market demand.

Investment on the latest technology, guaranteed raw materials of a high quality, production line with European parameters, modern laboratory and qualified staff has set ground for business expansion. To further improve the business performance, Company A has outsourced the implementation of an ERP system to IBS in 2019 that includes all modules. Implementing the system required 9 months.

Company B is a leader in the milk-processing industry in Albania. From the establishment of the company up to 2021 the processing capacity has increased from 400 to 15000 litres per hour. In 2018, the company invested in a new packaging line of liquid products, replacing the previous investment made in 2009. This line was fully automated, from taking bottles from the plastic department to filling the product room with filtered air and finishing by placing a product label and packing the parcel for safer transportation of final products. Expanding their range of products and warehouse locations created the need for an integrated ERP system that can maintain all core business functions. Therefore in 2016 the decision makers choose ELELCO ERP system.

Solution Provider	Establishment date	Number of clients	Services offered
Info Business Solutions (IBS)	14.10.2010	87+ clients	ERP solutions for medium-sized and large companies Software Development, Consultancy Services, Maintenance Microsoft Dynamics partner
			ERP ELELCO- a management system
Business Integration Solutions (BIS)	26.10.2015	50+ clients	which integrates all the processes of a business from A to Z.

Table 3: Overview of ERP Solution Providers in Albania

Elelco Group is composed of Elelco Srl based in Milan, Italy and Business Integration Solutions (BIS SH.P.K) based in Tirana, Albania. Established on 2015, BIS SH.P.K is among the only companies in Albania that creates Taylor-made ERP systems according to specific customer requirements. ELELO (since 1974) together with BIS have chosen not to develop standard software but to be unique in their typology, by creating software compliant with each client requirements. It develops software and provides assistance to their Albanian and Kosovo customers with programmers who are trained in Italy. Systems analysis and design is carried out in Tirana by analysts who travel to Albania for each new project. Currently, BIS SH.P.K. markets a standard "HR BIS" package for the management of employees, starting from the detection of incomes and expenses, up to the calculation of salaries, the production of pay slips and document archiving (document management system It is the only standard application they have created.

Info Business Solutions (IBS), part of Infosoft Group, was established as a company on 14 October 2010. Being a Microsoft Certified Partner, they provide business solutions to Albanian enterprises by using the latest technology. By using the latest version (17th) of Microsoft Dynamics 365 Business Central a comprehensive business management solution is provided. During all these years they have implemented software solutions to more than 80 clients in various industries. This experience enables a faster process of matching the client's needs and requirements with the ERP system. Info Business Solutions have expanded their services in foreign countries such as: Serbia, Italy, France, Kosovo and Macedonia.

3.2 Research Instrument

The researcher used semi-structured interviews as the primary source of data collection and to validate the received information a follow-up process of phone calls, messages as well as email exchanges took place. Open-ended questions were used to capture the complexity of the ERP implementation process. This allowed the researcher to explore and capture the benefits and issues related to each individual project. In-depth discussions with the interviewees on the subject of interest made it easier to acquire information. 12 interviews generated the primary data for this research by serving as a critical instrument on answering the three research questions.

Field notes were taken by the researcher and at the end these notes were reviewed by the interviewees to ensure their accuracy. 2 of the respondents also agreed to be recorded for further analysis. In addition, some field observation (at Caterina Firenze factory located in Berat) and document analysis provided from the chosen companies were carried out.

Firstly, the researcher contacted with the directors of the three manufacturing companies, who agreed on the request of including these companies in the study. The identity of two enterprises will remain unknown and they will be referred to as Company A and B to ensure anonymity. These initial contact points facilitated and supported the process of networking with their colleagues (all were end- users of the

ERP software). All interviewees (7 in total) held experience in the use of ERP systems and were able to provide the necessary information to answer the research questions.

Most of the interviews were conducted in two-round visits. The reason behind such decision was due to the fact that the first interview was a preliminary one where general information and an overview of the current situation were collected. The first round lasted approximately 50 minutes. This initial rapport between both parties was instrumental in the following interviews. The second round of interviews took place after 7-10 days and lasted approximately 90 minutes. 7 people aged 30-55 participated in the part of the study.

On the other side, 5 additional interviews were conducted with project members of Solution Provider companies. 3 of them were face-to-face interviews at the company's premises and the other two were conducted through online means.

Participant/Code	**Job Position**
CA-1	Administrator at Company A
CA-2	HR Specialist at Company A
CA-3	Economist at Company A
CB-1	CEO at Company B
CB-2	HR Manager at Company B
Kriton Prendi	Administrator at Mito by Caterina Firenze
Gentjan Qeraj	Cost and Pricing Manager at Mito by Caterina Firenze
IBS-1	Project Manager at IBS
IBS-2	Team Leader at IBS
IBS-3	Business Consultant at IBS
Giorgio Tagliagambe	Owner and Administrator at BIS SH.P.K
Behije Liko	Commercial Director at BIS SH.P.K

Table 4: Interview Respondents

3.3 Sampling and Sampling Techniques

The chosen sampling technique for this study is purposeful sampling which is widely used in qualitative studies. Individuals were identified and selected due to their experience and knowledge on ERP systems and their implementation. Purposeful sampling method provides cases of rich information to achieve deep understanding of the phenomenon of interest (Palinkas, et al., 2015). The reason behind such decision was due to the difficulty of obtaining official data of the Albanian enterprises that have implemented an ERP system. The research population of interest included 3 manufacturing enterprises and 2 ERP solution providers that best enabled to answer the research questions.

3.4 Questionnaire Design

The interviews elicited data from the respondents through semi-structured questions. The aim of the questions was to collect qualitative information. Since this study will provide a twoperspective approach of the topic, two interview guides were prepared. The first one was directed to the management and ERP users of the selected manufacturing companies while the second one was directed to the ERP staff members from IBS and BIS.

The first Interview Guide consists of 26 questions divided in 8 sections and it is based on the research conducted by Zach, Munkvold, and Olsen (2012) among 4 companies in the Czech Republic. The sections are named as follows: General Information, ERP Implementation project details, Organizational Context, ERP Implementation success, ERP evaluation, Acceptance and usage, Training and Overall Evaluation. The second interview guide consists of 9 questions.

4. Findings

4.1 Identification of Findings from ERP Solution Providers

ERP Solution Providers offer a great perspective of the ERP systems due to their vast experience in the sector of designing and implementing solution software. Assessment of difficulties faced while operating in the ERP industry comprise the main findings of the interviews.

4.1.1 Benefits of ERP System Implementation

1- A holistic representation of all business processes integrated into one system- Accuracy and access of data at any time. Visibility of data is offered complete in all functionalities: each of the users can monitor the performance and the status of the company and can access reports of profitability.

2- An ERP system integrates all company data into a single database therefore it highlights the strengths and weaknesses that help on choosing the right strategies for the future (Strategic Decision Making). This is not only beneficial for high-level strategic choices, but also in the simplest everyday decisions in any company, such as: How much of raw materials, components or products should I buy? By whom? At what price? What have been the consumptions in the last period? What products are we selling the most? With what profit margin? How are sales compared to last year?

3- An ERP system reduces data upload time through automation of processes. Automation lowers the rate of dependence on manual processes. Any accelerations in the production process set ground for a greater prosperity of the company.

4- Improved customer satisfaction due to more accurate and efficient customer service. An ERP system can easily recognize the customer's experience (order placement, products chosen) and can offer a speedy remedy to any dissatisfaction by maintaining a healthy bond between the two parties.

5-

4.1.2 Critical Success Factors of ERP Implementation

1- Correlation of the system with the operating methods of the company by not requiring a discomposure of process managements, to make them compliant with what the ERP itself provides. A detailed analysis of all processes that the company has, especially focusing at the field work cycles.

2- ERP project details and advancement being shared with the operational staff from the initial phase of analysis and design; a management system that descends from above and that comes almost as if it was an imposition certainly has little chance of success, so sharing of information among departmental units should start from the very beginning.

3- Ongoing contact and support between ERP solution provider-client company. During the implementation phase of the program, the software company should make the users part of the analysis process. Assistance that does not only concern the IT aspects should be provided (assuming that the system properly works). Use of consultants (offered by the solution providers) facilitates the whole implementation journey. As expressed by Mr.
Tagliagambe:

"It is essential that users know how to use the system and I am not referring to the mechanical aspects but that understand the logic of the processes, what the imprecision or delay in data entry entails."

4- End- user training is vital to the success of an ERP implementation. As stated by IBS business consultant:

"When implementing ERP system organizations tend to shift the focus towards the business processes and technology by not including people. What the management is not capable of understanding is that without a proper training of the system's end users' benefits cannot be seen."

5- A ready working environment at the first official date of starting using the new system: Before the implementation phase of an ERP system, the software company must assist the client in converting the archives and uploading them to the new system.

The influence of this factor was highlighted by Ms.Liko:

"Ongoing support and assistance prior to the initial system phase is a key element. Before the implementation phase of an ERP system, the software company must assist the client in converting the archives and uploading them to the new system, so that the first day of implementation is in a ready working environment."

4.1.3 Challenges on Implementing ERP systems

1- The development of software according to client requirements. In many cases BIS has faced issues because businesses were not clear about their software choice and identification of their project goals. In such situation, BIS analysts who have over 30 years of experience in this sector and in 15 countries explored the concrete situation and proposed the most suitable business solution.

2- Prior to the implementation of a new project software developers find themselves in trouble because their customers have used different software or have just entered their financial data in Excel and therefore struggle on providing the past records of business activities. These data should be uploaded to the system and for this reason solution providers staff assists their clients in data migration process.

3- There is a huge gap and mismatch between the management's project goals and objectives and their users' competences. Most Albanian enterprises prior to implementing an ERP system have only used basic systems (mainly for accounting) to record and keep track of their business activities.

"When introduced to the whole range of ERP features and options they do not perform well as a greater knowledge and expertise level of users is required". IBS BI Reporting

4- Albanian enterprises are always in a hurry. They require visible benefits as soon as possible. A 6-months period is the minimum of time that is necessary prior to any observable benefit of the ERP system.

5- In terms of manufacturing enterprises, a significant percentage have a poor inventory and warehouse management. Each unit in the warehouse should at least have its individual location number. Other necessary information includes: the type of storage and if any special restrictions are required.

6- The majority of the client companies do not fully utilize the system' features. As stated by IBS-3:

"Forecasting tool is not yet implemented by any of IBS clients."

In theory, ERP enables to its users the preparation of the company's demand forecasts by customers, products or seasons. Such information is extracted from the data already entered in the system in previous periods and therefore the business trends are identified. Knowing what will come up leads to a strategic and profitable decision making by the managers. Supply chain Management module offers a wide range of analysis tools in terms of reorder analysis, precise location of inventory throughout the supply chain or schedule predictability.

7- Another major challenge being addressed with ERP systems is the cooperation information between internal departments. ERP systems become the main bridge of communication and exchange of information by collecting, analyzing and making available the information to the entities that need them.

4.2 Identification of Findings from Manufacturing Companies

Whereas an ERP system should perform the management of all business processes, the number of module/s implemented depends precisely on the size and type of the activity carried out. A manufacturing company will certainly have more needs than a commercial company, a production company that works on behalf of third parties (ex: fasson) will have more complexity than those who only work on their

own. Those companies who produce or trade also deal with distribution. The complex sales processes need to be managed.

Manufacturing enterprises are mainly interested in having a single software to manage all company processes and not specific modules as the stages of work in a business are like a continuous flow: the lack of a certain point can lead to subsequent problems.

4.2.1 ERP Implementation Benefits:

1- Elimination of human error rate. After implementing the ERP system such error was eliminated. As mentioned by Mr.Prendi:

"Prior to the implementation of information systems, a manual human error at the rate of 1% in recording the raw materials (Approximately worth 1'000'000 euro), resulted in a 100'000 euro extra cost for the company".

2- A single source of data that can create and maintain detailed product profiles. The system can also generate custom reports for each business model.

3- Improved management of Inventory and Supply Chain. Being able to reduce the lead time and synchronize order placement with shipment information through the entire supply chain leads to greater transparency. An ERP eliminates the surprises of not accurately calculating costs such as selling more products under cost and almost none of those with a high profit margin. Therefore, the system helps to determine the business sales strategies.

4.2.2 Critical Success Factors of ERP Implementation

1- Clearly defined project scope and objectives: The more accurately the core functions, available budget (limitations if any) and system requirements are recognized, the better business solution can be provided. Improving capacity planning, enhancing customer satisfaction or dropping the inventory ordering and handling costs are among the specific objectives a manufacturing enterprise can identify.

2- Training of employees was identified to be a success factor on the acceptance and adoption of the ERP system. Typically, Solution Provides offer two types of trainings: The initial training (lasting up to 3 months) and Individual Trainings (for each of the users of the system).

"Train users not on the mechanical use of the system but on the logic behind the process management" Owner, Caterina Firenze

3- Solution Provider Support and Maintenance: A lot of challenges can arise during the implementation journey but a proper support especially in the first six months is decisive. A well-established relationship between both parties enables an easier path to fixing bugs that can be found while implementing the ERP.

4- Communication of change management: A two-way communication between all project stakeholders and executives that includes several meetings and workshops should occur. Properly orienting the workforce towards change since the beginning of the process can increase their commitment and acceptance of the new system.

As stated even by Mr. Tagliagambe:

"Even a Ferrari without a good driver doesn't go far and crashes into the first wall."

5- Top Management involvement: Only top management support is not enough especially after the decision of implementing such a complex system as the ERP that should not be considered just as an IT project. By supervising the commitment and performance of all departments, they need to set priorities. Allocating the necessary resources is a critical decision-making due to its effect on process disruptions and unexpected costs.

4.2.3 Challenges on Implementing ERP Systems

1- High software customization due to complex business processes. This issue requires some further explanation in the industry where Caterina Firenze operates. As stated by Mr. Prendi:

"The final product is a pair of shoes meaning: one left and one right side of each pair. If one of these sides results in a defect, the software automatically should decrease the selling price equal to the total cost of the pair. This way, no extra costs would occur".

2- While implementing the ERP system, the companies faced several problems with the segregation of duties and their organizational structure. One person within the business was responsible for more than one business process and therefore access should be permitted to different users in the system even though it was only one person. Several modifications were done to the system and as a consequence extra cost needed to be paid.

3- Change management due to the use of poor leadership strategies. They lack a clear communication of the project scope and of the whole schedule of implementation. Broad action needs to be taken therefore all changes should be addressed.

4- Lack of proper IT knowledge and qualification on the use of the ERP system. The software requires analytical knowledge in order to be able to understand its features and to learn how to use them on achieving company objectives.

5. Conclusion and Discussion

5.1 Discussion

In general, the findings of this research were consistent with the findings of prior research studies on ERP systems. However, some differences can easily be identified. Available literature emphasizes that a critical ERP system benefit is the allowance to the implementer to recognize its growth potential by carefully analyzing

the reports and graphics generated from the software (Hasibuan & Dantes, 2012). Albanian manufactures on the other side face great difficulties on utilizing the system output beyond the legal requirements from the government.

In general, Albanian entrepreneurs are in favor of investments in tangible assets, objects that they are able to touch and that will be used to carry out their business activities, therefore investments in plants, machinery, vehicles, etc. They are less willing to invest in intangible assets, such as ERP management systems: little known, often difficult to understand and above all with a return on investment that is not always easy to understand. The ERP market in foreign countries is already established while in Albania the reality hits different. A major number of enterprises still use obsolete software solutions and only 8% (the lowest value among all sectors) of the employees in the manufacturing sector were reported to be using computers on their daily work activities. Albania is a transition economy and therefore the use and acceptance of information systems has been challenging.

This research identified some differences in the perceptions between the two main parties involved in the ERP implementation project: the user of the system and the ERP solution provider. Due to their experience in the ERP market, solution providers were able to deeper analyze each project and identify the factors that truly impact or hinder the success implementation rate. ERP users mainly identified organizational challenges such as top management involvement. However, ERP providers state that the challenges essentially concern the entire process of installation and management of the system, therefore it stars from the initial analysis, the definition of the project's scope and objectives, its implementation, the start-up and the perennial assistance that follows.

Top management support is an often-mentioned CSF in prior studies (Nah, Lau, & Kuang, 2001; Gargeya & Brady, 2005). However, as indentified by the study participants only their support is not as much beneficial. Management should involve themselves in the implementation process by assisting the end-users in this journey.

A major ERP benefit derived from this study is that it can also help on reducing market informality in Albania due to its integrated nature. In terms of manufacturing companies such systems are able to record and track the route of raw materials in detail. Therefore, manipulating the business figures is less likely to occur.

5.2 Overall Conclusion

This study raised three research questions whose aim was to explore the process of ERP implementation from a two-sided perspective. Following a qualitative research method through the use of semi-structured interviews allowed the researcher to answer the following questions:

1. *What are the main issues faced by ERP Solution Providers in the Albanian manufacturing industry?*

Business Integration Solutions and Info Business Solutions provided the researcher a range of critical issues that hinder the success implementation rate of the ERP system. However, they both agreed that the huge gap and mismatch between the management's project goals and objectives and their users competences complicates the system's efficiency. Data entry processes to this new integrated ERP system is a challenge that requires involvement and support from the management and all departmental units. The majority of manufacturing companies have used Excel spreadsheets for decades now. No logical and strategic interpretation of the results has been provided. Such problem prompts for further problems. Not being able to fully utilize all obtainable features of the ERP system comes as a consequence of users poor capabilities and knowledge of business processes and data automation. The use of previous outdated software or otherwise known as Legacy Systems had prohibited the businesses to embrace latest technology.

An interesting finding from the three Albanian enterprises included in this research is that the management and decision makers are always in a hurry in terms of benefits recognition and enhanced business performance. What they do not understand is that the ERP software requires a period of at least six months prior to any benefits to the company's financial perfomance.

2. *What are the main challenges and benefits of implementing ERP systems in manufacturing enterprises?*

Assessing the ERP experience of three manufacturing enterprises in Albania allowed the researcher to understand the complexity of such process and to provide the reader with some key challenges and benefits of the ERP system.

The main benefit of implementing an ERP system was that it integrated all company data into a single database by facilitating the decision-making process. In terms of manufacturing enterprises an improved management of Inventory and Supply chain is the key mediating variable to an increase in business efficiency and performance. Subsequent mentioned benefits were data accuracy, elimination of human error rate, recognition of growth potential, reduced time of data entry time and preparation of reports.

On the other side, main ERP system implementation challenges consist of the following:

1- Segregation of duties and Organizational Structure

2- A need of high software customization due to complex business processes

3- Management of raw materials due to poor inventory and supply chain practices

4- Change management

5- End-user competences and education

3. *What are the Critical Success Factors (CSFs) of a successful ERP project?*

Critical Success Factors of ERP system implementation are those activities that need primary focus in order to reach the software satisfying results. A comprehensive list of all identified factors during the interview sessions is as follows:

1- Clearly defined project scope and objectives

2- End- user training

3- Communication of change management

4- Top Management involvement

5- A ready working environment at the Launch date

6- Ongoing contact and support between ERP Solution Provider-client company

7- Correlation of the system with the operating methods of the company

8- Ongoing system testing and maintenance

9- Use of business consultants

5.3 Implications of the Study

The identification of main challenges in an ERP implementation process should be useful to all decision makers and management roles. Implementing an ERP system is often seen as a complex process and therefore knowledge on how to anticipate and manage possible obstacles throughout the journey is a key takeaway.

In addition, ERP users can find the study's results beneficial in terms of capturing a general idea on how to make use of the identified critical success factors. The expertise level and knowledge of the study participants can serve as benchmarking practices to other enterprises.

5.4 Limitations of the Study

Choosing a qualitative research method is able to provide an in-depth understanding of the topic under research. However, it limits the generalizability of the findings and their validity.

This study is limited to Albanian manufacturing companies, therefore the results obtained may not be applicable to service industry or to SMEs.

Lack of prior research studies on ERP systems in Albania constitutes another limitation and that is why an exploratory research design was used. This study is the

first in the Albanian environment that addresses the perception of two main parties of the ERP implementation process.

5.5 Recommendations For Future Research

The limitations revealed in this study depict the need for further research on the ERP market in Albania. Including more study participants by increasing the sample size and diversifying their respective industries can make the analysis more complete.

Another recommendation would be to implementing case-study research method in future studies. Participant observation and primary data collection in one or multiple enterprises can provide a detailed framework of the ERP system implementation. Further analysis can be assessed on ERP modules level.

Challenges, benefits and Critical Success Factors of an ERP implementation process can also be identified for each implementation phase of the project by using a case-study research method.

References

[1] Akkermans, H., Bogerd, P., Yecesan, E., & Wassenhove, L. v. (2003). The impact of ERP on supply chain management: Exploratory findings from a European Delphi study. *European Journal of Operational Research, 146*(2), 284-301.

[2] Al-Fawa, K., Eldabi, T., & Naseer, A. (2010). Challenges and Influential factors in ERP adoption and implementation. *European, Mediterranean and Middle Eastern Conference on Information Systems.* Abu Dhabi.

[3] Ali, M., & Miller, L. (2017). ERP System Implementation in Large Enterprises -A Systematic Literature Review. *Journal of Enterprise Information Management, 30*(4), 666-692.

[4] Beheshti, H. (2006, April). What managers should know about ERP/ERP I. *Management Research News, 29*(4), 184-193.

[5] Biel, J. (2020, July 15). *50 Critical ERP Statistics: 2020 Market Trends, Data and Analysis.* Retrieved June 15, 2021, from Oracle NetSuite: https://www.netsuite.com/portal/resource/articles/erp/erp-statistics.shtml

[6] Bokhari, R. H., Mahmood, F., & Khan, A. Z. (2020). ERP issues and challenges: a research synthesis. *The International journal of cybernetics, systems and management sciences, 49*(3), 629-659.

[7] Bradford, M. (2015). *Modern ERP: Select, Implement & Use* . SAS Institute.

[8] Burns, O. M., Walter, D. T., & Riggs, E. (1991). Critical Success Factors in Manufacturing Resource Planning Implementation. *International Journal of Operations & Production Management, 11*(4), 5-19.

[9] Chang, S. I., Yen, D. C., Huang, S. M., & Hung, P. Q. (2008). An ERP System Life Cycle-Wide Management and Support Framework for Small- and Medium-Sized Companies.*Communications of the Association for Information Systems, 22*.

[10] Esteves, J., & Pastor, J. (2001, January). Enterprise Resource Planning Systems Research: An Annotated Bibliography. *Communications of the Association for Information Systems, 7*(8), 152.

[11] Francoise, O., Bourgault, M., & Pellerin, R. (2009). ERP implementation through critical success factors' management. *Business Process Management, 15*(3), 371-394.

[12] Frydenlund, D. (2017). *Addressing the Challenges and Opportunities of ERP in Developing Countries.* Denver: Panorama Consulting Group.

[13] Gaikwad, V., & Rake, R. (2021). *Enterprise Resource Planning Market by Component, Deployment Model, Business Function, End User, and*

Industry Vertical: Global Opportunity Analysis and Industry Forecast, 2021-2028. Allied Market Research.

[14] Gargeya, V. B., & Brady, C. (2005, October). Success and Failure Factors of Adopting SAP in ERP System Installation. *Business Process Management Journal, 11*(5), 501-516.

[15] Gupta, A., & Govindarajan, V. (2000). Knowledge Flows within Multinational Corporations. *Strategic Management Journal, 21*(4), 473-496.

[16] Hasibuan, Z. A., & Dantes, G. R. (2012). Priority of Key Success Factors (KSFS) on Enterprise Resource Planning (ERP) System Implementation Life Cycle. *Journal of Enterprise Resource Planning Studies*.

[17] Huang, S.-M., Chang, I. C., Li, S. H., & Lin, M. T. (2004, October 1). Assessing risk in ERP projects: identify and prioritize the factors. *Industrial Management & Data Systems, 104*(8), 681-688.

[18] Hustad, E., & Olsen, D. H. (2013). Critical Issues across the ERP Life Cycle in Small-andMediumSized Enterprises: Experiences from a Multiple Case Study. *CENTERIS 2013 - Conference on ENTERprise Information Systems* (pp. 179-188). Elsevier.

[19] Ijaz, A., Malik, R. K., Lodhi, R. N., Habiba, U., & Irfan, S. M. (2014). A Qualitative Study of the Critical Success Factors of ERP System - A Case Study Approach. *Proceedings of the 2014 International Conference on Industrial Engineering and Operations Management.* Bali.

[20] INSTAT. (2021). *Përdorimi i Teknologjisë së Informacionit dhe Komunikimit në Ndërmarrje.* Tirane: INSTAT.

[21] INSTAT. (2021). *Regjistri i Ndërmarrjeve.* Tirane: INSTAT.

[22] Jha, V. K., Ranjan, S., & Pal, P. (2016, January). Literature review on ERP implementation challenges. *International Journal of Business Information Systems, 21*(3), 388-401.

[23] Jr, F. ‘., & Jacobs, F. R. (2007, March). Enterprise resource planning (ERP)—A brief history. *Journal of Operations Management, 25*(2), 357-363.

[24] Klaus, H., Rosemann, M., & Gable, G. G. (2000). What is ERP? *Information Systems Frontiers, 2*, 141-162.

[25] Kostoulas, J., & Pang, C. (2020). *Market Share Analysis: ERP Software, Worldwide, 2019.* Gartner.

[26] Law, C. C., Chen, C. C., & Wu, B. J. (2010). Managing The Full Erp Life-Cycle: Considerations Of Maintenance And Support Requirements And It Governance Practice As Integral Elements Of The Formula For Successful Erp Adoption. *Computers in Industry, 61*(3), 297-306.

[27] Markus, M. L., Tanis, C., & Fenema, P. C. (2000, April). Enterprise resource planning: multisite ERP implementations. *Communications of the ACM, 4*, 42-46.

[28] Nah, F. F.-H., Lau, J. L.-S., & Kuang, J. (2001, August). Critical factors for successful implementation of enterprise systems. *Business Process Management Journal, 7*(3), 285-296.

[29] Nissen, M. E., & Sengupta, K. (2006). Incorporating Software Agents into Supply Chains: Experimental Investigation with a Procurement Task. *MIS Quaterly, 30*(1), 145-166.

[30] Nord, J. H., Xu, H., & Brown, N. (2002, February). Data Quality Issues in Implementing an ERP. *Industrial Management & Data Systems, 102*(1), 47-58.

[31] Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research, 42*, 533-544.

[32] Panorama. (2020). *The 2020 ERP Report.* Greenwood Village: Panorama.

[33] Parr, A. N., Shanks, G., & Darke, P. (1999). Identification of Necessary Factors for Successful Implementation of ERP Systems. In O. Ngwenyama, & L. D. Introna, *New Information Technologies in Organizational Processes* (pp. 99-119). International Federation for Information Processing.

[34] Payne, W. (2002). The time for ERP? International Journal of Productivity and Performance Management, 51(2), 91-93.

[35] Shang, S., & Seddon, P. B. (2000). A Comprehensive Framework for Classifying the Benefits of ERP Systems. *AMCIS 2000 Proceedings, 39.*

[36] Sharra, A. (2020, November 14). "Është rritur kërkesa e bizneseve për teknologji". Monitor.

[37] Staehr, L., Shanks, G., & Seddon, P. (2004). Understanding the Business Consequences of ERP Systems . In F. Adam, & D. Sammon, *The Enterprise Resource Planning Decade: Lessons Learned and Issues for the Future* (pp. 72-91).

[38] *The 2020 ERP Project.* (2020). Panorama Consulting Group.

[39] Woo, H. S. (2007). Critical success factors for implementing ERP: the case of a Chinese electronics manufacturer. *Journal of Manufacturing Technology Management, 18*(4), 431-442.

[40] Zach, O., Munkvold, B. E., & Olsen, D. H. (2012). ERP system implementation in SMEs: exploring the influences of the SME context. *Enterprise Information Systems, 8*(2), 309-335.

Assoc.Prof.Dr. Gjergji Shqau
Faculty of Economics
"Aleksander Xhuvani" University, Elbasan

Msc. Erion Ibershimi
Municipality of Elbasan

Part Time lecturer in Business Administration Department
"Aleksander Xhuvani" University, Elbasan

EFFECTIVE MANAGEMENT OF QUEUES[1]

Abstract

Effective management of queues can significantly improve the performance of the organization in general or of the unit where it applies in particular. Effective management of queues is most needed when the service is face to face, so "tangible", visible and that actually happens in a certain unit. The study aims to identify the role of several factors (skills, technology, etc.) in the queuing model. The focus of selective surveillance is focused on all those organizations that have service systems. The service time in the system depends not only on the management of the model but also on some factors which if evaluated (taken into account) can significantly improve the service results. After a detailed review of the literature, we created the possibility of designing the most effective techniques and methods for gathering information, which was then processed with various computer programs. The proposed model as well as the decision tree is the main parts of the study results. The study has managed to achieve its purpose, as well as to give at the end some recommendations for all those service systems where the queue is applied.

Keywords: *system, waiting, queuing, time, service, customer.*

[1] The paper has also been published as a full contribution in CIT(Canadian Institute of Technology)Review Journal November 2020.

1. Purpose, Object and Methodology of the Study

This study aims to reduce queues by proposing the three factors management, as the best study, that according to the literature significantly affect performance.

It is for this reason that in the proposed model, the performance indicator from the point of view of calculating the service time in the system (W) is considered as constant.

The purpose of the study are three additional factors:

f1-skills of persons involved in the system;

f2-technology implemented in the system, and

f3-other factors which include many elements such as values, personality of the persons serving, their experience, motivation, culture, conditions where the service is performed, environment, etc.

As an object of study are taken into account those organizations (companies, businesses, institutions, etc.) public or private which have service systems. To create a clearer vision the object of study includes mainly: supermarkets, various payment counters, banks of the second level, registration counters, reception offices for people with different needs, fast food, confectionery and bakery, etc. The reason that the selective study is done in these settings is because there are often queues which are caused not only by ineffective management of the queuing model, but also by the three factors that are the subject of our study.

Study methodology: information was collected on the basis of field observations, mainly during peak periods (those with service loads). Different measurements of working hours for persons serving in the system, performed on the basis of a series of factors (according to the object of study). Various surveys of persons served in the system, processing of information with various computer programs, etc. At the same time the study is set up on a theoretical basis based on literature and materials at the academic level. The study generates a model which provides opportunities for empirical calculations. The results of the study are included together with the conclusions in the practical part.

2. Theoretical Overview

Waiting in line is part of everyday life. Some estimates say that even in some powerful countries, expectations exceed 37 billion hours a year. The next theory is the most important part of service operations. This theory can be described as a valuable tool for managers of decision-making and operations, especially for those with a service nature. *The service industry* such as retail providers, supermarkets, various service counters (postal, water, energy, etc.), banking, fast-food, etc. are constantly looking for an opportunity to reduce customer dissatisfaction by waiting in long lines and often slow.

For the service industry or operations with a primarily service nature, *speed* is the factor that ensures the efficiency of the service operations of any fast-food chain.[16]. To choose the correct order of a computerized device, most of the customers will refer to certain criteria which include the waiting time and how long the waiting line lasts, etc. [15]. The task of management is to avoid negative perception of the customer while waiting to be served and replace it with a positive experience [13]. They could lose their customers if they don't meet the expectation of providing fast quality service. The customer will often decide to change the ordering system based on the length and amount of time you have to "spend" (waste) to get the service [1].

We wait in line at cinemas, campus dining rooms, registration offices, in the Motor Vehicle Division, etc. The time you wait in line depends on a number of different factors. Your reception is a result of the number of people served before you, the number of computers running and the amount of time it takes to serve each individual customer. [2].

Waiting time is influenced by the design of the queuing system. A waiting line system is defined by two elements: the source of its customer population and the service system. In this context we consider the elements of, the waiting line systems and the appropriate performance measures. Different performance characteristics can be calculated for different waiting line systems. [3].

Every time there is more customer demand for a service than can be provided, a queue occurs. Consumers can be either people or inanimate objects. Examples of items to wait in line include a car waiting to be repaired, a customer ordering to be processed, at a manufacturing plant (or as it is considered in-process inventory), online emails, and ships or trains waiting for download. [4].

In a waiting system, managers have to decide what level of service to offer. A low level of service may be cheap, at least in the short term [10], but may cause high costs of customer dissatisfaction, such as future lost business and actual grievance costs.[13] A higher level of service will cost more to provide and will result in lower cost of dissatisfaction. [11] For this reason, management must consider the optimal level of service provided. [12]

There are some operations where is total production, while in other operations the dominance of production decreases and the dominance of service increases. Queue Analysis (Q.A) considers inputs that may be customers, cars, citizens, other objects waiting to receive service and leave the system. [5] The goal of the decision maker is to minimize the queue, for the smallest possible waiting in the system and to achieve this at minimal cost. The general form of Q.A is schematically presented as follows [6]:

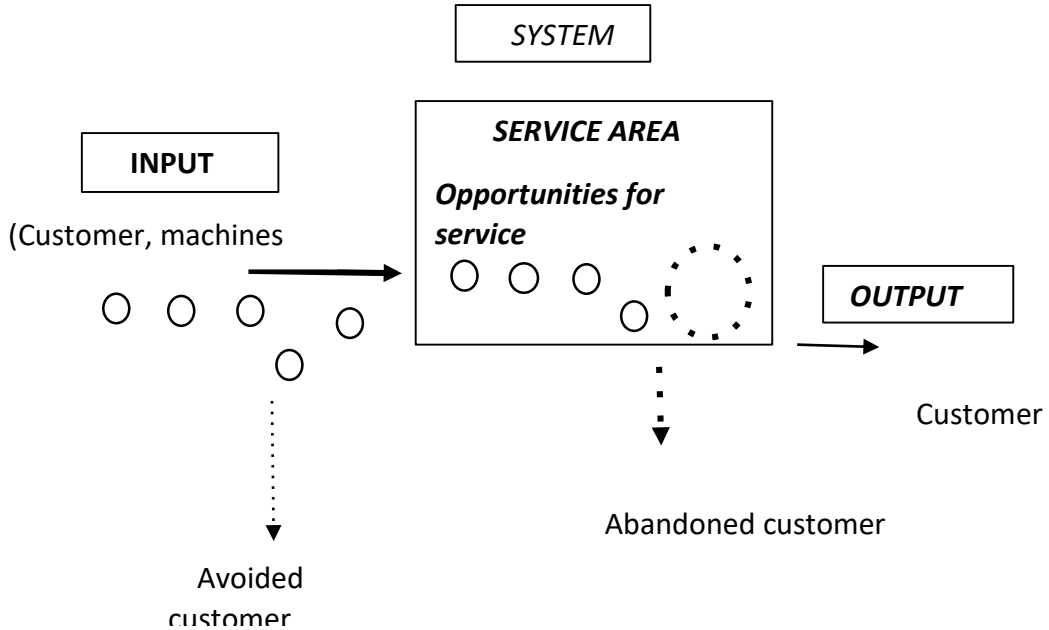


Figure 1. Queuing System

Waiting in line can be presented in different forms such as: in a straight line, two or more parallel lines for a service opportunity, etc. The average number of achievements or achievement distribution rates is determined by the formula: P (X) = λX * e-λ / x! (x = number of inputs achieved per unit of time. λ = average number of inputs achieved per unit of time. e = 2.71. [7] The average service rate is calculated by the indicator (μ). The average time of the input that is processed in the system. The average time that a customer (input) stays in the system (W) is calculated using the formula W = 1 / (μ -λ). These elements (and not only) become part of the calculation of the waiting cost in the system. [8]

The philosophy of queuing suggests that poor management of queuing can cause various psychological problems for people waiting or planning to be served in a particular system. According to that, there are six possibilities to consider the stress to the people who wait in line:

1. The time not covered by work feels longer than the time covered by work.
2. People want to start right away from what they have planned

3. Uncertain expectations are longer than secure expectations

4. Unexplained expectations are longer than explained expectations.

5. Unfair expectations are longer than honest expectations

6. Anxiety makes expectations feel longer.

The skills that people have at work, in all the processes they are involved in, significantly affect the performance and results expected from the planned work. At the same time, high values, personality, motivation, experience, environment, culture, working conditions, etc. significantly affect work performance. [13] [14]

The quality of technology, methods used in operations, scheduling of operations, operations management techniques, etc., significantly affect the performance of the work and the product ranking. [15] [16].

3. Effective management of queues

Effective management of queues can significantly improve the performance of the organization in general or of the unit where it applies in particular. Queue management is usually applied in organizations mainly service manner. Organizations have different natures, totally productive, service and production or totally serviceable. In all cases where services are evident in the life of the organization, the effective management of queues takes on an importance for the organization.

In **the systems with services,** we can include the cases of banks, airports, hospitals, postal services, services for energy, water, telecom, warehouses, supermarkets, etc. There are cases when some people cannot be served all on-line, do not have the opportunity, or do not know how to use the vending machine (service unit) on-line, etc.

Queue expectation models aim to find solutions on the quantitative side, good time management only according to the applications of the most appropriate quantitative, mathematical models, **while effective queue management** *aims* to add other elements to improve time of expectation not only quantitatively (mathematical,

algorithmic, etc.) but also by other indicators that have an impact on **the service system.**

Effective management of queues is most needed when the service is face to face, "tangible", visible and that actually happens in a certain unit. The servant and the served are close to each other and at the same time in this system it is expected to serve other people as well.

A service system *is considered an interaction between people and the means to accomplish a particular service.* If we take **the simplest service system,** it consists of a service person, a service person and a counter where the service operation is performed, the vehicle that processes the service and the people waiting in line within the system to be served. The counter itself or the service unit has the tool that helps and influences the service. Studies show that all service systems have a similar pattern in a form like the following scheme

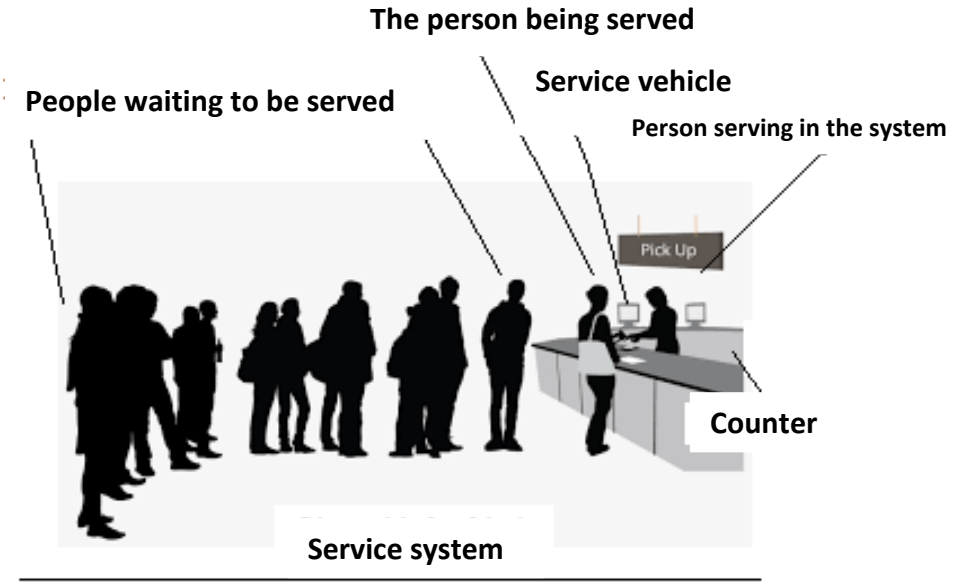


Figure 2. Service System

Studies show that the better the reception queue, the more satisfied the served persons leave the system. Studies show that many people can waste time or are too tired from a slow or poorly planned system. In such cases the organization may have

various losses from the deviations of the clients served in the system, or it may create an unfavorable image to the customers and consumers, etc.

Figure 3. Queuing Images

The basic factors that affect the service system is not only the accurate calculation of the number of counters available on the basis of the average time of arrival in the system and the average time of service, but also some other indicators that must be taken into account.

The study aims to identify other indicators that can turn the system into a more effective management of queues. This is also in line with **the objective or purpose** *of the study: Identification of "invisible" factors and their better management in order to improve the waiting time.*

The study shows that the main factors that affect the improvement of the system service time and at the same time the number of people waiting to be served, the time they spend waiting in line are:

a) Quantitative mathematical model used to manage queue expectations
b) Skills of the person serving in the system
c) Quality of system tools and equipment (technology in service)

d) Other factors that can help the system

The study aims to mainly identify the importance of factors b, c and d and to influence their improvement. At the same time, the study may propose a quantitative model that may be more effective for better management on the counter side.

These factors can have a relative impact on the waiting time in the queue depending on the nature of the organization, type of service, conditions where the service is provided, etc.

In general, ***the basic factor (a)*** is dominant and according to the study occupy weight in% of the first level (pr1) in managing expectations in turn while ***the skills of the person (b)*** serving in the system according to the study occupy weight in% of second level (pr2), ***the quality of the tool and equipment (c)*** that perform the service occupying an important weight in% of the third level (pr3), ***(technology in support of the service)***, while the other factors according to the study occupy a weight in % of the fourth level (pr4). ***Other factors (d)*** according to the study affect the values that the person has, experience, motivation, personality, conditions, environment, culture in which the service is performed, etc.

These ***factors, although in a small percentage*** in the result of service and to customers, have an impact on service time. If the serving person is guided by *positive values* such as perseverance, tolerance, integrity, etc. and not by negative ones such as indifference, indifference, etc., then it is implied that values have an impact on the result. Favorable conditions with lighting, suitable temperatures, etc, or favorable culture such as that of support, managerial collaborative environment, etc. have a positive impact according to the study on customer service time.

At the same time if in each factor taken in the study (which we have considered as a qualitative indicator) we categorize it into quantitative indicators of the system with points (from minimum min (l) = 5 points to max (k) = 10 maximum points) and knowing the weight of the importance of each of them we can model the most effective way of waiting in line. Schematically the factors that affect the effective management of queues can be presented as follows:

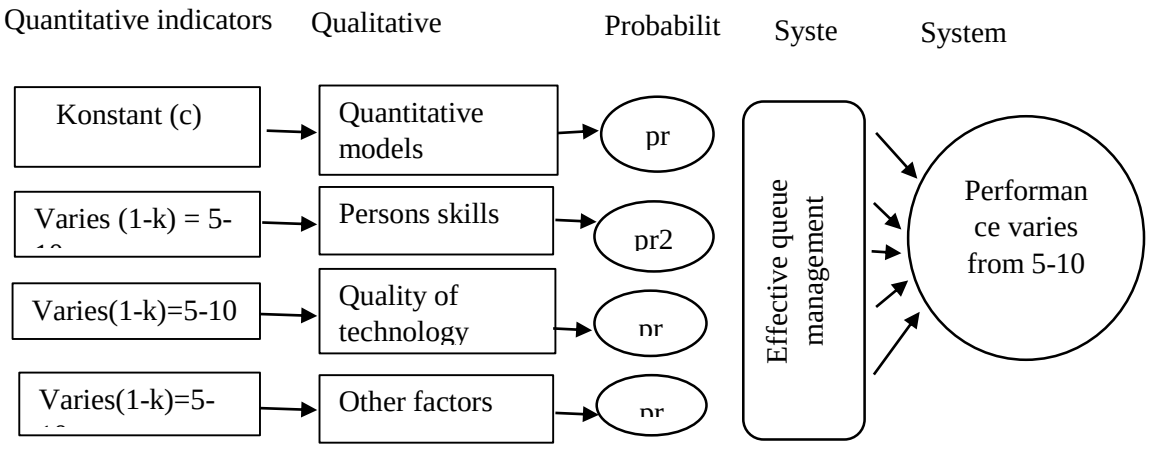


Figure 4.The model of effective management of queues

The model shows *that the higher the skills of the person serving in the system* (from 5-10 points) the more he will have a positive impact on the faster completion of the service or on minimizing the waiting time in queues and in the system. At the same time, in the same logic, the better the equipment that performs the service (from 5-10 points), the faster the service will be performed and the customers will be satisfied. As for the other factors, they are implied by the explanation of each of them, but also on the basis of the logic used for factors (b) and (c). Factor (a) is not the object of the study and is considered constant, but if the study will improve the quantitative model, this factor will significantly increase the time of service or reduce the waiting time.

Results of Model Operation on the Basis of Simulation

Let us consider the basic and main factor constant with a proximity of 7.5 points. While the factor b = 7.5 points, the factor c = 7.5 points and the factor d = 7.5 points. By simulation we determine the weights of the importance of each factor, where it turns out that the performance of the service or the result of the system will be 7.5 points.

According to the simulation of the service system that is considered part of the study, ***the basic factor (a)*** is considered to occupy a weight of 60% importance in the management of queues, while ***the skills of the person (b)*** serving in the system

according to the study are assumed to be about 20%, ***the quality of the tool and equipment (c)*** that perform the service, ***(technology to assist the service)*** are assumed about 15% while other factors according to the study are estimated to be about 5%.

System result = Performance = 7.5(0.6)+7.5(0.2)+7.5(0.15)+7.5(0.05)=7.5 points

If the indicators are at minimum values, and the base factor is constant, then the result of the system will be:

System score=Performance=7.5(0.6)+5(0.2)+5(0.15)+5(0.05)=7.5(0.6)+5(0.4)=9.5 points

If the indicators are at maximum values, and the base factor is constant, then the system result will be: 7.5(0.6)+10(0.2)+10(0.15)+10(0.05)=7.5(0.6)+10(0.4)=11.5 points. In the latter case the real value of each factor is taken and substituted in the model equation:

$$\textbf{Rsis=Perf=} = \sum_{n=1}^{4}(F^n * pr^n) = \sum_{n=1}^{4}(F^n * pr^n)$$

Where: F^nF^n - is the factor taken into account by the four selected pr^npr^n -is the weight of the importance of each factor. At least 3 scenarios are formed on the basis of calculations:

Minimal scenario (pessimistic)

7.5(0.6)+5(0.2)+5(0.15)+5(0.05)=7.5(0.6)+5(0.4)=6.5 points

Normal scenarios

7.5(0.6)+7.5(0.2)+7.5(0.15)+7.55(0.05)=7.5(0.6)+7.55(0.4)=7.5

Maximum scenario(optimist)

7.5(0.6)+10(0.2)+10(0.15)+10(0.05)=7.5(0.6)+10(0.4)=11.
5 points

Figure 5. Possible scenarios according to stimulation

4. Conclusions and Recommendations

The study reaches some important conclusions for good management of queuing systems which do not depend only on the basic models and measurements applied in certain cases. There are a number of factors "invisible" or "unappreciated" by management which can significantly improve the services and time available to all those waiting to be served.

The skills of the people who serve in the various systems where services are provided, can significantly affect the performance, efficiency, quality and speed of service. All these elements for the person who is expected to be served in the system are considered as gained time, or less time lost. Reducing boredom, dissatisfaction is an important indicator of the image and success of the organization or business that provides the services.

The technology that provides the service significantly affects the amount and quality of time that the service "consumes" in the system.

The personality of the persons serving in the system from the study is considered a factor in the time spent in the system by reducing the expectation, in order to terminate as soon as possible without compromising the quality of service.

At the same time, values, motivation, experience, conditions, culture, business environment, etc., are defined as other additional factors, although with less impact than the above factors.

Conclusions regarding the management of queues are valid for all units that have service systems, regardless of the private or public sector.On the basis of the study in general and its specifics, the possibility of *recommendations* in the interest of better management of service systems is created, which not only continuously apply models as effective as possible measurement of service times and those of achievements, (which then determine the optimal number of people serving in the system), but also the minimum cost of the system. At the same time, it is recommended that the skills be detailed based on the type of service that the system provides, taking

into account the skill set that is most needed for the type of service. The skills of not being distracted are some specific skills of mental abilities.

Service systems are required to *continuously improve their technologies* and all parameters that serve the technology. This is considered another important factor for services.

Job personalities should be well studied with different tests or methods for a better match with the personality required by the job. It is difficult to identify the values of persons, but if with some observations, interviews, tests, etc. it is possible to understand, persistence, flexibility, integrity, etc. positive values, these persons are considered favorable for service systems.

At the same time, the continuous improvement of the conditions where the service is provided in all possible possibilities, the favorable managerial environment, the continuous improvement of the culture, people with experience and motivation, is considered another recommendation for increasing the effectiveness of the service system.

References

Book Resources

[1] Jackson, J. (2011). "Kinds of Food Service in a Restaurant". http://www.ehow.com/info_8570902_kinds-food-servicerestaurant. html (accessed May 4, 2013)

[2] Walker, J. R. (2011). "The Restaurant: from Concept to Operation", 6th ed. New Jersey. John Wiley and Sons, Inc.

[3] Zhao, X., Lau, R.S.M, and Lam, K. (2002). "Optimizing the service configuration with the least total cost approach." International Journal of Service Industry Management, Vol. 13 No. 4, pp. 348-361.

[4] Kumar, R & Sharma (2012) Queueing Model with Retention of Reneged Customers and Balking, American Journal of Operational Research; 2(1)

[5] *Albright, S. Christian, and Wayne Winston*. "Essentials of Practical Management Science". Mason, OH: Cengage, 2005.

[6] *Hall, Randolph W*. "Queuing Methods for Services and Manufacturing". Englewood Cliffs, N.J.: Prentice-Hall, 1991.

[7] *Moore, P.M. Queues*, "Inventories and Maintenance". New York: Wiley, 1958.

[8] *Ragsdale, Cliff T*. "Spreadsheet Modeling & Decision Analysis". Fifth Edition. Stamford, Conn.: Thomson, 2008.

[13] Stephen P Robins "Organizational behavior". PEARSON 17th edition (2016)

[14] Gregory Moorhead & Ricky W. Griffin "Organizational behavior" (USA 1999).

[15] Anderson, Sweeney, Williams" Quantities methods for business" (2010)

[16] Bennett, David. "Technology and Operations Management" (Volume 4). (2006)

Web Resources

[9] *Real Queuing Examples*: http://www2.uwindsor.ca/hlynka/qreal.html This site contains excerpts from news articles that deal with aspects of waiting lines.

[10] *ClearQ*: http://clearq.com/ This company produces "take-a-number" systems for service facilities (e.g., delis), but also provides performance information about the waiting line.

[11] *Qmatic*: http://us.q-matic.com/index.html This company produces informational displays and other products to keep customers informed about waiting times.

[12] "Queuing Presentation**"** *by Richard Larson, given at the Institute for Operations Research and the Management Sciences*: http://caes.mit.edu/people/larson/MontrealINFOR MS1/sld001.htm

PhD(c) Laura Agolli
Ankara Hacı Bayram Veli University
Faculty of Economics and Administrative Sciences
Department of Healthcare Administration
Ankara, TURKEY
agolli.laura@hbv.edu.tr
ORCID ID: 0000-0002-7429-9610

Msc. Rriollza Agolli
University "Fan S. Noli"
Faculty of Education and Philology
Department of Education
Korçë, ALBANIA
ragolli@unkorce.edu.al
ORCID ID: 0000-0001-9152-0412

ARTIFICIAL INTELLIGENCE IN THE HEALTHCARE INDUSTRY. ADDRESSING CHALLENGES IN THE IMPLEMENTATION PROCESS OF ROBOTIC SURGERY AS A POTENTIAL ALTERNATIVE TO TRADITIONAL SURGERY.

Abstract

The rapid rise of robotic surgery has allowed artificial intelligence (AI) to reach where natural intelligence could not reach. Nowadays, Artificial Intelligence (AI) is the biggest assistant of every healthcare provider with various algorithms, machine learning systems and skilled robots. AI can provide higher accuracy estimates than surgeons for certain situations by designing a 3D model of the bone and providing millimetric and perfect cuts. Obviously, this will improve patient outcomes. A report by Markets and Markets forecasts that the global digital transformation market will grow from $469.8 billion in 2020 to $1,009.8 billion by 2025, at a CAGR of 16.5% during the forecast period. However, the implementation of Artificial Intelligence in healthcare can be more complicated in the real world in terms of dealing with issues that go beyond designing an AI model in theory. Digital transformation remains a concern and needs attention in terms of addressing the challenges in the proper way. This study tries to address the current gaps in supervision/oversight of AI challenges and robotic surgery practices in order to leverage the use of AI and robotic surgery and increase the accuracy of patients' outcomes. The two main challenges in terms of AI and robotic surgery implementation are the high costs and lack of training for surgeons. This study tries to address the current gaps in supervision/oversight of AI challenges and robotic surgery practices to leverage the use of AI and robotic surgery and increase the accuracy of patients' outcomes.

Keywords: *Artificial Intelligence (AI), robot-assisted surgery, healthcare, supervision team, cost, training*

1. Introduction

With digital technologies reshaping every industry, it is safe to say that digital transformation has become a marketplace itself, generating billions in value. In fact, a report by Markets and Markets forecasts that the global digital transformation market will grow from $469.8 billion in 2020 to $1,009.8 billion by 2025, at a CAGR of 16.5% during the forecast period. The end-users for such solutions vary, and healthcare is not exempt. Amid the COVID-19 pandemic, organizations started relying largely on digital technologies to keep up with their daily operations in a changing setting. Even more so, healthcare industry players were pushed to accelerate the adoption of new technologies within their environment to keep up with the growing number of patients. Every kind of transformation in the workplace is hard, which is especially the case with digital transformation. The healthcare industry, in the process of digital transformation, has been facing changes in improving patients' journeys and outcomes, structuring employee workflow, storing and sharing patient records, and ensuring compliance with changing regulations, among others.

Nowadays, Artificial Intelligence (AI) is the biggest assistant of every healthcare provider with various algorithms, machine learning systems and skilled robots. AI can provide higher accuracy estimates than surgeons for certain situations by designing a 3D model of the bone and providing millimetric and perfect cuts. This will improve patient outcomes. In addition, AI promises to revolutionize the healthcare industry and reduce healthcare costs. Computers can work 24 hours a day, 7 days a week, without getting bored, distracted, and tired. In addition, AI systems think faster than humans and perform multiple tasks simultaneously to achieve the best results. AI can process millions of data and map a pattern between them. AI-based algorithms can provide higher accuracy in their analysis.

The main uses of AI applications in healthcare can be grouped into four categories. The first is Digital Consulting. AI consultants provide remote consultations to patients. Furthermore, patients can learn what to do after the treatment, get

information about how to use their medications, and find logical answers to their questions.

The second area of use is Smart Disease Diagnosis. Artificial intelligence receives the patient's data, evaluates the data, and presents the doctor with a list of possible outcomes. Smart Disease Diagnosis can predict diseases at a very early stage so that they can be prevented.

The third area of use is the Virtual Tracking System. Chatbots can monitor the patient's recovery process and send the data to the doctor. Moreover, notifications such as medication reminders, and exercise reminders, facilitate the recovery process.

Fourth, robot-assisted surgery (robotic surgery) is the most important use of AI in healthcare. The rapid rise of robotic surgery has allowed artificial intelligence to reach where natural intelligence could not reach.

AI applications can make independent decisions based on the algorithms which memorize the input data and then draw conclusions based on the received information. Smart Disease Diagnosis and Virtual Tracking Systems collect data from the patients, observe and draw conclusions through different algorithms. However, this is not the case with a robot-assisted surgery. “A surgical robot is a self-powered, computer-controlled manipulator that can be programmed to aid in positioning and manipulating surgical instruments. The robotic manipulator acts as a remote arm extension governed by the surgeon's movement” (BenMessaoud, Ch., et al., 2011). Robots that assist the surgeons in the operating room are controlled and directed by well-trained surgeons. Therefore, we cannot think of robot-assisted surgery as a method that can perform independent tasks.

The implementation of Artificial Intelligence in healthcare can be more complicated in the real world in terms of dealing with issues that go beyond designing an AI model in theory.

This paper tries to address the current gaps in supervision/oversight of AI and robotic surgery practices to leverage the use of AI and robotic surgery and increase

the accuracy of patients' outcomes. The two main challenges in terms of AI and robotic surgery implementation are the high costs and lack of training for surgeons.

2. Literature Review

John McCarthy was the first to use the term artificial intelligence (AI) in 1956. AI is used to evaluate the technical skills of healthcare practitioners. "AI can be incorporated into surgical training and education to provide an objective method for assessment of surgical skills of a trainee, through its application in robotic surgery, virtual reality-based surgical training and post-op analysis of surgical videos" (Azhar, H., Waseem, T., & Ashraf, H., pp.58, 2021).

AI plays a crucial role in preoperative planning, intraoperative guidance and robotics. Traditional surgical methods seem not to be preferred anymore. AI is expected to play a greater role in the diagnostics of several diseases. The authors argue that AI is still in its primitive stages, but the education and training of medical professionals are essential to address the gap in terms of AI implementation (Azhar, H., Waseem, T., & Ashraf, H., 2021).

Robotic surgery was first used in 1985 in neurosurgery. Da Vinci surgical system was first launched in 1999 and in 2000 the FDA approved the use of this robotic system in laparoscopic surgery. Uses of robotic surgery have increased. Robotic surgery is considered to be successful in terms of shortening recovery time and reducing pain compared to traditional open surgery. Based on the model used, Da Vinci robots require an investment of about $0.5 to $2.5 million. Also, service contracts and other annual costs are added to this investment. Regarding the system of surgical robots, it can be stated that the more cases there are the better. Perez & Schwaitzberg (2019) in their study consider the characteristics and costs of other robotic systems in surgery. Perez & Schwaitzberg (2019) claim that the costs of robotic- assisted surgery are higher compared to traditional laparoscopy.

In light of their research, Perez & Schwaitzberg (2019) argue that the increase in the volume of robotic - assisted surgery cases would make robotic - assisted surgery cost-effective. Market competition is another key element in terms of lowering the

costs of robotic - assisted surgery. Robotic - assisted surgery is considered to be a system in development and it may take a while to prove its value and increase the volume of robotic surgery and competition in order to lower the costs of Da Vinci robots (Perez, R. & Schwaitzberg, S., 2019**).**

Furthermore, AI has the ability to process the diagnosis quickly and in an effective way. In the long term, AI will help healthcare providers to address the challenges and will contribute to a deeper relationship between patients and healthcare providers. It is important to develop a medical school curriculum together with the medical staff of hospitals and other healthcare providers. A highly - trained professional team can provide learning opportunities and can contribute to the consumer - oriented healthcare market. The application of AI in healthcare requires the cooperation of different specialists in the healthcare area. So, it is important to provide a collaborative environment with the participation of professionals in the development and implementation stage of AI in healthcare (Lee, D., & Yoon, S. N., 2021).

Robotic surgery has become the most preferred alternative and has gradually replaced laparoscopic surgery methods in the US. By 2015, robotic surgery was widely used in hospitals. Hospitals try to provide the most advanced technology to their patients in order to improve the quality of service. Although robotic surgery has become a strong competitor to traditional surgery, it seems to have some implications such as cost. Robotic surgery procedures resulted in being associated with longer operating times and higher costs. Surgeons should perform 100 to 150 cases annually to meet the costs of purchasing the robotic system in Radical Nephrectomy. The cost of robotic surgery results in increasing the hospital costs by 15% compared to laparoscopic procedures. Furthermore, robotic surgery is associated with increasing the cost of the operating room as a result of longer operating time (Jeong, I. G., Khandwala, Y. S. Kim, J. H., Han, D. H., Li, S., Wang, Y., ... & Chung, B. I., 2017).

In the US, Da Vinci robots are priced from $1.5 to $2.5 million, accessories cost $700 to $3,200 per case and the robots' annual contract costs $100,000 to

$170,000. At this point, increasing the volume of robot - assisted surgeries can decrease the cost of robotic surgical systems. Although hospitals purchase robot - assisted surgery procedures they keep case volumes low, leading to several drawbacks. It becomes challenging for hospitals and administrators to attract patients to utilize the new technology. Furthermore, some hospitals face challenges in terms of training surgeons to gain the necessary skills within a certain frame of time. Untrained surgeons would lead to insecurity, thus lower-case volumes (Shih, Y. C. T., Shen, C., & Hu, J. C., 2017).

AI and robotic - assisted surgical procedures are used worldwide and compared to non - robotic practices such as colorectal surgery the robotic - assisted surgery results in being more expensive. In a 28-month study conducted in Australia, the authors concluded that the cost of implementing RAS was $4,433,186 including the purchase of the robot, sterilization and theater refurbishment. The overall median episode cost was estimated to be $19, 269. The average consumable cost of robotic - assisted surgery was considered to be $1848 per case and the average specific cost of this technology was considered to be $8828 per case. In light of their research, McBride et al. argue that the overall cost of the implementation of robotic - assisted surgery depends on the volume and specialty of surgery. Furthermore, it is important that administrators consider the costs of this new technology before the implementation and incorporation of robotic - assisted surgical procedures (McBride, K., Steffens, D., Stanislaus, C., Solomon, M., Anderson, T., Thanigasalam, R., ... & Bannon, P. G., 2021).

AI and robotic surgery procedures are widely used in several fields of healthcare such as urologic operations (e.g., prostatectomy and cystectomy). Da Vinci's system is considered to have significant advantages compared to traditional surgical methods. The technical limitations and operational difficulties of conventional laparoscopy in surgeries have been significantly resolved with robotic - assisted surgery procedures. While considering the advantages of these procedures, it is important to analyze the high cost, which remains the most important disadvantage of this procedure. In current studies, it has been observed that robotic surgery has

much higher costs than both laparoscopy and traditional open surgical procedures for many operations (Erbin, A., Özgör, F., & Binbay, M., 2016).

Robotic - assisted laparoscopic prostatectomy is $1726 greater as compared to open retropubic prostatectomy due to instrument costs and long operating time. High fixed costs should be analyzed in order to reduce fixed high costs of robotic surgery procedures in urology. Therefore, it is important that hospitals reduce disposable costs and higher-cost equipment. Healthcare practitioners need to find new reasons to justify robotic-assisted surgery. (Dobbs, R. W., Magnan, B. P., Abhyankar, N., Hemal, A. K., Challacombe, B., Hu, J., ... & Crivellaro, S., 2016)

The cost of robotic-assisted surgery can be reduced by 40% by using cheaper materials such as a hem-o-lok clip applicator instead of expensive equipment such as LigaSure technology. The role of healthcare professionals is crucial. Considering the fact that robotic surgery is a new technology, it causes an increase in expenses such as equipment and training of surgeons (Arslan, D.T., Esatoğlu, A.E. & Süer, E.,2020). With the spread of new-generation models, the costs of first-generation models will decrease. If hospitals manage to eliminate the cost problem in the future, then robotic surgery will be the gold standard in pyeloplasty, radical prostatectomy and radical cystectomy (Erbin, A., Özgör, F., & Binbay, M. (2016).

Moreover, despite the increasing costs of robotic surgery, the number of studies evaluating alternative surgical methods in terms of cost is few. At this point, economic evaluation studies examining new technologies such as robotic radical prostatectomy are needed in order to utilize these resources efficiently.

By supporting R&D studies, these medical technologies can be developed and produced domestically. Thus, the costs of surgical methods can be reduced in the long run. Also, hospitals should monitor their service quality on a regular basis. Also, hospitals should observe the preoperative and postoperative quality of life systematically. Therefore, the economic evaluation of new technologies can be carried out without missing data, and it can be argued that hospitals can regularly monitor

their own service quality in different areas (Arslan, D.T., Esatoğlu, A.E. & Süer, E., 2020).

Furthermore, AI robotic-assisted surgery is also used in sleeve gastrectomy. The advantages of robotic - assisted surgery are obvious compared to traditional surgery, but the costs of this technology were twice as high and the total hospital costs were higher when robots were used. Robotic - surgery methods resulted in increased length of operation, longer hospital stays and an increase in terms of overall costs. Adair et al. (2019) analyzed the results of minimally invasive sleeve gastrectomy and four studies out of five studies conducted for hospitals, which resulted in higher costs for robotic-surgery procedures. It is important for surgeons to be trained before undertaking complex operations such as robotic roux-en-y gastric bypass. As experience increases, a decrease in the development time of robotic operations is noticed (Adair, M. J., Alharthi, S., Ortiz, J., Qu, W., Baldawi, M., Nazzal, M., & Baskara, A., 2019).

Most of the surgeons complete their specialization training without receiving robotic surgery training during this process. This is a big challenge for surgeons who perform robotic surgery in their field of specialization. For instance, in most US hospitals obstetrician specialists who do not have the necessary robotic surgery experience, are required to complete the manufacturer's robotic surgery authorization training before using the robotic surgical system. It is the responsibility of hospitals to determine their own structured training program for surgeons and the minimum criteria that must be completed according to each surgical procedure. Surgeons go through a learning curve while learning new technologies. In the meantime, the lack of education and experience will generate several problems. Special attention should be given to the supervision of surgeons in order to work in a way that they feel safe. (Usluoğulları, F. H., Tıplamaz, S., & Yaycı, N., 2017).

Nurses also play a very important role in the use of AI and robotic assisted surgery in hospitals, as the main support of surgeons and they have direct contact with patients. There are not enough training programs for nurses in terms of robotic surgery.

Robotic surgery nurses experience limitations regarding current information, training programs and learning opportunities. By meeting educational needs, nurses can contribute to improving patient safety and quality of care. The role of hospital administrators is to develop training programs on robotic surgery for nurses as well as provide evidence-based information and equal opportunities. In order to provide quality care and ensure patient safety, nurses should be encouraged to understand the system used and be informed about its applications (Alcan, A. O., Soyer, Ö., Giersbergen, M. Y. V., Solak, M., & Yoltay, H. E., 2019).

Lee & Yoon (2021) argue that except cost and training there are also some administrative challenges that should be taken into account while implementing AI in the healthcare industry. AI causes loss of managerial control since the traditional bureaucratic governance systems do not function anymore in modern healthcare. AI applications are being integrated in different aspects of life. As AI continues to develop, healthcare providers will have the tendency to rely on the knowledge and skills of AI experts. Administrators may lose some kind of managerial control over professional staff (Lee, D., & Yoon, S. N., 2021).

This argument is supported by Spatharou et al. (2020), arguing that as the need for new experts emerges, the organizational culture may change and be replaced by decentralization. The top management of the HSOs will have to delegate the decision - making responsibilities to teams specialized in medical and technical knowledge in adopting and implementing AI in healthcare. Spatharou et al. state that:

"The biggest leap of all will be the need to embed digital and AI skills within healthcare organizations – not only for doctors to change the nature of consultations but for all staff to integrate AI into their workflow. This is a significant change in organizational culture and capabilities. The final effect on the workforce will be the introduction of new professionals. Multiple roles will emerge at the intersection of medical and data-science expertise" (Spatharou, A., et.al., 2020).

In addition, there are also accountability issues, privacy and security issues that may hang in the balance if the implementation of AI techniques is not controlled,

as well as ethical issues (Lee, D., & Yoon, S. N., 2021). Eriksson and Djoweini (2020) support this argument by stating that ethical dilemmas that AI raises should be considered. The authors wonder whether AI will be able to consider all the stakeholders involved in the process equally or not. In addition, they emphasize the decision - making challenge within organizations. This happens because organizations have values, and an organizational culture and decisions cannot be made only on the basis of raw data. Also, the training data should not be generalized, instead they should be specified according to the organization's culture and values. At the moment of speaking, these can be considered as challenges in the implementation of AI (Eriksson, M., & Djoweini, C., 2020).

3. A SWOT Analysis of Robotic Surgery

Strengths

Since the first-day robotic surgery had been widely used. Robotic surgery has more advantages than traditional surgery, and this makes it an important competitor in the market. Moreover, robotic surgery promises a less painful procedure, with less blood loss and taking into account the fact that the robot arms can often be sterilized during surgery. Also, robotic surgery shortens the healing time of the patient due to the minimally invasive methods used and as a result, shortens the time period of hospital stay. All of these contribute to better outcomes for patients.

Weaknesses

In addition to the advantages, robotic surgery also brings some disadvantages, which should be considered before implementing this technology. In terms of weaknesses of AI and more specifically robotic surgery, cost constitutes a major problem. In fact, in literature cost is considered to be the most important challenge in the widespread use of robotic surgery. The purchase of the Da Vinci device, the installation cost of the system, the annual maintenance cost and the costs of the extra tools of the robots make the use of robots very difficult. The cost of the Da Vinci robot is about 2.5 - 3 million dollars. Moreover, the robot's instruments cost between $700 to $3,200 per surgery. The annual maintenance cost varies between $100,000 to $170,000. In addition, it takes a long time to set up and remove the robot before and after surgery.

Training is one of the main weaknesses of robotic surgery and the reason why surgeons refuse to use this new technology. Robotic surgery should always be performed by an experienced surgeon. Surgeons who will use this technology should receive long-term training. The success of robotic surgery is proportional to the skill of the surgeon. Moreover, surgeons who participate in training programs abroad have to cover the expenses themselves. Lack of training and experience also has a great impact in terms of increasing the risk rate.

Opportunities

An important opportunity of robotic surgery is the possibility for the scope of expansion if the administrative team of the hospital manages to successfully manage all the challenges and weaknesses. Moreover, in the future, with the spread of new-generation models, the costs of first-generation models may decrease.

Threats

Extensive training of surgeons can result in a loss of interest in what they are learning. Moreover, extensive training emphasizes theory more than practice. Many surgeons are more successful with hands-on experience. Furthermore, the malfunction

of the device poses a threat considering the challenges of robotic surgery. In addition, taking into consideration the fact that robotic surgery is a new practice the lack of a development plan poses a challenge in terms of high costs and low case volumes.

3.1.Discussion

This qualitative study seeks to convey why AI and robotic surgery are not widely used and how can the supervision team and the administrators of the hospitals address the challenges in the implementation process of robotic surgery as a potential alternative to traditional surgery.

Taking into consideration the fact that this new technology seems to be very promising for the future, we can argue that there is some extent of enthusiasm. Obviously, robot-assisted surgery, when used properly, improves patient outcomes. Minimally invasive interventions are more beneficial for the patient because they cause less pain, less blood loss, and accelerate the overall recovery after surgery.

Robot-assisted surgery methods can be considered as halfway or add-on technologies and have a great impact in improving the physician's ability to diagnose and treat several diseases. This technology does not aim to replace the traditional surgery methods, but to improve the existing ones and as a result improve the accuracy of patients' outcomes.

The Da Vinci robotic system has proven to be successful in many fields and achieved to get where human intelligence could not. However, it deserves special attention to overcome the potential challenges. Purchasing and introducing a new technology is a considerable investment for a healthcare provider and the return on investment (ROI) should be easily earned in different ways.

Cost is a matter of debate for AI in robotic surgery. This new emerging technology brings the cost burden. In addition, the healthcare provider should consider the costs to train employees e.g., surgeons. Insufficiently trained employees can result in mistakes. What if an AI-related accident occurs in the operating room? Who would be held accountable for this error? The hospital who made the decision for the

technology purchase or surgeons who were not experienced in using it. These kinds of mistakes can bear major consequences for the institution. Insufficient training and skilling of end-users may cause bias, and malfunctions, have negative impacts on patients' outcomes, and even generate discrimination between different levels in the hospital.

Mistakes can lead to not only a loss in productivity but major hiccups in providing services. Thus, resulting in not only major losses in unrestricted revenue but the overall return on investment from the technology. Well-trained surgeons can master new skills, increase overall production efficiency, and cut costs. Well-trained surgeons have the tendency to be more productive at work by performing at higher levels. Maintaining a well-trained workforce may bear cost upfront, including reduced productivity, but result in a better return on investment and a valuable team.

Most of the time staff feels resistant to the change and this leads to more abrasive behavior. To alleviate this problem, the healthcare provider should always be available to train clinicians. In fact, if this problem can be eliminated, the healthcare provider will get rid of the disadvantages of robotic surgery.

It is crucial to adopt a credentialing system together with the establishment of a supervision team. The credentialing process will identify the necessary qualifications, experience, and professional attributes of the surgeons who have the competence to provide safe use of robot-assisted surgery. Therefore, before performing robotic surgery, the surgeons should be able to attend an accredited training program and show a certificate of completion of a training program. The training program should be focused on demonstrating the necessary information and skills to use the Da Vinci robotic system. Moreover, upon successful completion of the required courses, surgeons should be involved in a direct practical program and interactive experience in terms of using the robot. The surgeon should demonstrate a certification of practical experience to the responsible team in the hospital. Also, surgeons should be monitored by more specialized surgeons for a certain period and after the completion of the training program. It is the responsibility of the supervisory

team to assign working groups between senior surgeons and inexperienced ones. Also, an annual quota that would determine the number of cases that should be performed by the surgeons should be set.

In addition, training is crucial in terms of determining access to this new technology. Will AI be able to involve the stakeholders in the implementation process? Does access of patients to AI applications depend on the doctor? The answer to this would be it depends on the training that the doctor received and on the advantages the doctor benefited from.

While some doctors can embrace technology easily, some others are reluctant to do so because of a lack of training they will not adapt to change. At this point, training is crucial. If doctors are all trained in AI and know all the ins and outs of it, they will definitely see that AI will be more beneficial in different aspects and will be able to pass it to the patients in the right way. It is important that doctors benefit first from the advantages of AI to be able to let their patients know.

It is important that the hospital covers the cost of this training program. Also, the supervisory team is responsible for continuous monitoring and reporting to the administrators of the hospital on a regular basis. In relevance with the literature review, it is important that in the long term, courses related to technology in healthcare and mainly AI-related courses should be accepted as fully a part of the medical school curriculum in undergraduate studies, just like laparoscopic courses that have become part of the undergraduate curriculum in universities. As robot-assisted surgery becomes widespread and surgeons' experience with technology increases, the volume of cases will also increase. Moreover, the import of medical devices and materials used in robot-assisted surgeries generally increases the cost of this technology. Therefore, by supporting R&D activities, these medical technologies can be innovated and developed domestically. Thus, the cost of robot-assisted surgery can be reduced in the long run.

Supervision teams or as well-known as robotic teams would play an important role in addressing potential challenges, paving the way for solving them as well as

increasing the engagement, confidence, and effectiveness of AI implementation. "Administrative systems need to be established in order to monitor the AI systems before and after implementation to determine whether the performance of the AI in the real world meets the expectations" (Silcox C., 2020). The supervision team will play an important role in the process of problem-solving, and decision-making and will also consider the quality assessment of pre-and post-operative reports in terms of AI. While deciding upon the implementation of robotic surgery, the supervision team (robotic team) should reflect the values of the organization and establish a moral framework in line with the mission, vision, and culture of the hospital.

4. Conclusion

In the rapidly globalizing world, telesurgery will be part of the agenda much more in the coming years. While considering the advantages of AI and especially robotic surgery, it is important to emphasize the potential challenges that set the implementation of these technologies back.

As this technology continues to grow, it is important to deploy AI around the world in an ethical, comprehensive and transparent way in order to ensure efficiency. Administrators need to evaluate the strengths, emphasize the weaknesses and obtain the maximum benefit. In addition, they need to develop the necessary strategies to adopt AI applications and the right plans in order to facilitate the process of implementation in order to benefit from this new technology. If the administrators could overcome the potential challenges during the implementation process of robotic surgery, it can definitely be considered as a potential alternative to traditional surgery.

References

[1] Adair, M. J., Alharthi, S., Ortiz, J., Qu, W., Baldawi, M., Nazzal, M., & Baskara, A. (2019). Robotic surgery is more expensive with similar outcomes in sleeve gastrectomy: analysis of the NIS database. *The American Surgeon*, *85*(1), 39-45.

[2] Alcan, A. O., Soyer, Ö., Van Giersbergen, M. Y., Solak, M., & Yoltay, H. E. Hemşirelerin Robotik Cerrahi Konusundaki Görüşlerinin İncelenmesi. *Kocaeli Üniversitesi Sağlık Bilimleri Dergisi*, *5*(1), 5-9.

[3] Arslan, D.T., Esatoğlu, A.E. & Süer, E. (2020). Robotik ve açık radikal prostatektomi yöntemlerinin maliyet etkililik analizi. *Hacettepe Sağlık İdaresi Dergisi*, 23(4), 699-724.

[4] Azhar, H., Waseem, T., & Ashraf, H. (2021). Artificial Intelligence in Surgical Education and Training: a Systematic Literature Review. *Archives of Surgical Research,* 2(1)

[5] BenMessaoud, C., Kharrazi, H., & MacDorman, K. F. (2011). Facilitators and barriers to adopting robotic-assisted surgery: contextualizing the unified theory of acceptance and use of technology. *PloS one*, 6(1), e16395.

[6] Dobbs, R. W., Magnan, B. P., Abhyankar, N., Hemal, A. K., Challacombe, B., Hu, J., ... & Crivellaro, S. (2016). Cost effectiveness and robot-assisted urologic surgery: does it make dollars and sense?. Minerva urologica e nefrologica= *The Italian journal of urology and nephrology*, 69(4), 313-323.

[7] Erbin, A., Özgör, F., & Binbay, M. (2016). Robotik Cerrahi: Teknolojik Gelişmeler ve Ürolojik Cerrahideki Yeri. *Medical Bulletin of Haseki/Haseki Tip Bulteni, 54(3).*

[8] Eriksson, M., & Djoweini, C. (2020). *Artificial Intelligence's Impact on Management*: A literature review covering artificial intelligence's influence on leadership skills and managerial decision-making processes.

[9] Jeong, I. G., Khandwala, Y. S., Kim, J. H., Han, D. H., Li, S., Wang, Y., ... & Chung, B. I. (2017). Association of robotic-assisted vs laparoscopic radical nephrectomy with perioperative outcomes and health care costs, 2003 to 2015. *Jama*, *318*(16), 1561-1568.

[10] Lee, D., & Yoon, S. N. (2021). Application of Artificial Intelligence-Based Technologies in the Healthcare Industry: Opportunities and Challenges. *International Journal of Environmental Research and Public Health*, *18*(1), 271.

[11] Longest Jr, B. B., & Darr, K. J. (2014). *Managing health services organizations and systems,(MHSOS)*. Health Professions Press, Inc..

[12] McBride, K., Steffens, D., Stanislaus, C., Solomon, M., Anderson, T., Thanigasalam, R., ... & Bannon, P. G. (2021). Detailed cost of robotic-assisted surgery in the Australian public health sector: from implementation to a multi-specialty caseload. *BMC Health Services Research*, *21*(1), 1-8.

[13] Perez, R. E., & Schwaitzberg, S. D. (2019). Robotic surgery: finding value in 2019 and beyond. *Ann Laparosc Endosc Surg*, *4*, 51.

[14] Shih, Y. C. T., Shen, C., & Hu, J. C. (2017). Do robotic surgical systems improve profit margins? A cross-sectional analysis of California Hospitals. *Value in Health*, *20*(8), 1221-1225.

[15] Silcox, C., Dentzer, S., & Bates, D. W. (2020). AI-Enabled Clinical Decision Support Software: A "Trust and Value Checklist" for Clinicians. *NEJM Catalyst Innovations in Care Delivery*, *1*(6).

[16] Spatharou, A., Hieronimus, S., & Jenkins, J. (2020). Transforming healthcare with AI: The impact on the workforce and organizations. *McKinsey & Company*, *10*.

[17] Usluoğulları, F. H., Tıplamaz, S., & Yaycı, N. (2017). Robotic surgery and malpractice. *Turkish Journal of Urology*, *43*(4), 425

[18] Valvo, J. R., Madeb, R., Gilbert, R., Nicholson, C., Oleyourryk, G., Perrapato, S., ... & Eichel, L. (2007). *Policy Guidelines Suggested For Robot-Assisted Prostatectomy.*

Xhensil Ferhati
Computer Science Department
Beder University Tirana, Albania
xhferhati@beder.edu.al

PhD.Artur Koci
Computer Science Department
Beder University Tirana, Albania
akoci@beder.edu.al

USAGE OF THE ENCRYPTION ALGORITHM FOR PROTECTING MULTIMEDIA FILES

Abstract

With the current technology developments, data security remains one of the major problems that most of the system developers face with. In order to ensure the security of the data during end-to-end communication and storage data files we introduce in this paper a new technique by using Advance encryption standard (AES) as a solution to maintain the integrity of the multimedia files. AES is a symmetric block cipher intended to replace DES for commercial applications that has found implementations in many aspects of the communication applications, increasing the level of the security to another extend. In this paper we introduce a new approach on implementing the AES algorithm. In this new approach we use a multimedia file as an input to AES encryption algorithm and we get in return as an output an encrypted multimedia file. In order to retain the original file, we use the decryption phase of the algorithm which performs the decryption of the encrypted file to the original one. We use PY charm software for synthesize and simulate the new proposed algorithm for multimedia file encryption and decryption.

Keywords: *encryption, algorithm, multimedia file, decryption*

1. Introduction

In the today's world the uses of technological devices such as computer, mobile and many more other devices for communication as well as for data storage and transmission has been drastically increased. As a result, there is increase in number of unauthorized user's that try to access a data by unfair means. This arises the problem of data security. In order to solve this problem in the recent years many solutions for storing and transmitting data in an encrypted format in such a way that only the legitimate receiver is able to access such information. Cryptography (*William Stallings, "Advance Encryption Standard," in Cryptography 2016*) is a science of information security which secures the data while the data is being transmitted and stored.

Every encryption and decryption process has two aspects. The first aspect is related to the algorithm and the key used for encrypting the data and the second aspect is the process of decrypting the original data. Algorithms used for encryption and decryption are well known algorithms and what make the difference is the key used during the process of encryption and decryption that makes the process of cryptography secure. There are two types of cryptographic mechanisms, symmetric key cryptography in which the same key is use for encryption and decryption and asymmetric key cryptography in which are used two different keys for encryption and decryption (*William Stallings, "Advance Encryption Standard," in Cryptography 2016)*. Both methods find usage and have their advantages and disadvantages. However, symmetric encryption algorithm is much faster and easier to implement and required less processing power as compared to asymmetric encryption algorithm.

2. AES Algorithm Specification

As per the security level provided, AES algorithm is of three levels of security: AES-128, AES-192 and AES-256. This classification is done on the bases of the key used in the algorithm for encryption and decryption process. Numbers 128, 192, and 256 represent the key length in bits. This key length determines the security level. As long as the key length it is as more secure the encryption it is. The AES algorithm uses a round function that is composed of four different byte-oriented transformations (Amina Msolli, Abdelhamid Helali, Hassen Maaref, ―Image encryption with the AES algorithm in wireless sensor network‖. In the Proceedings of the 2016 IEEE International). For encryption purpose four rounds consist of: Substitute byte, Shift row, Mix columns, Add round key. While the decryption process is the reverse process of the encryption which consists of: • Inverse shift row • Inverse substitute byte • Add round key • Inverse mix columns. There is a number of round present of key and block in the algorithm. The number of rounds depends on the length of key use for Encryption and Decryption

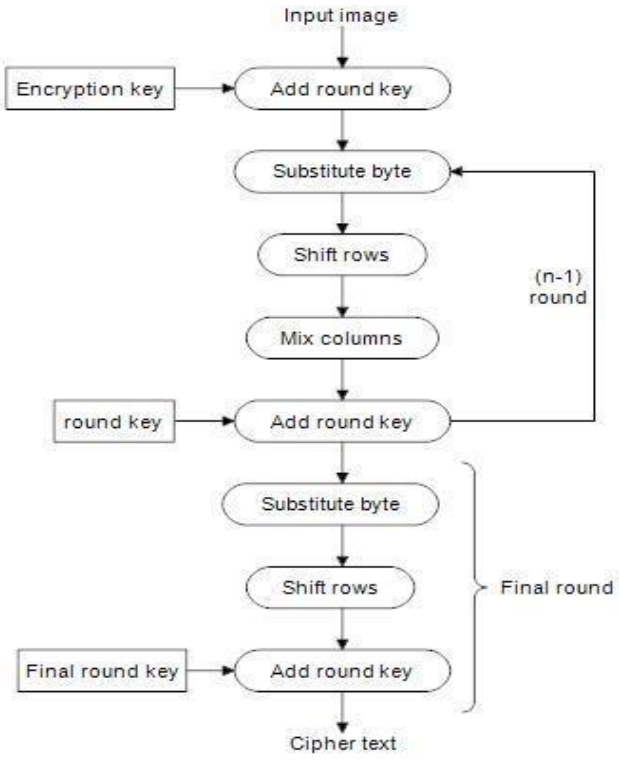


Figure 1 Encryption process (William Stallings, ―Cryptographyrk and netwo Security:principles and practice‖; Pearson Publication, london, pp. 148-183, 2011)

The Substitute bytes transformation is a non-linear byte substitution that operates independently on each byte of the State using a substitution table S-box. In the Shift Rows transformation, the bytes in the last three rows of the State are cyclically shifted over different numbers of bytes. The Mix Columns transformation operates on the State column-by-column, treating each column as a four-term polynomial. In the Add Round Key transformation, a Round Key is added to the State by a simple bitwise XOR operation. The Round Key is derived from the Cipher key (*Amina Msolli, Abdelhamid Helali, Hassen Maaref, ―Image encryption with the AES algorithm in wireless sensor network‖, In the Proceedings of the 2016 IEEE International*) by means of key schedule process. The State and Round Key are of the same size and to obtain the next State an XOR operation is done per element:

3. Decryption Algorithm

The AES decryption process is the revers process that of the encryption process. The figure 2 shows flow of the AES decryption algorithm. Which consist of cipher text as the input, the key is same for decryption process which for encryption. In case of decryption the inverse substitute byte, inverse shift rows and the inverse mix columns are to be implemented. While the add round key remains the same for Image Encryption and Decryption. The original images can also be completely reconstructed without any distortion. It has shown that the algorithms have extremely large security key space and can tolerate most common attacks such as the brute force attack cipher attacks and plaintext attacks (*William Stallings, ―Cryptographyrk and network Security: principles and practice‖; Pearson Publication, London, pp. 148-183, 2011*)

Inverse Substitute Bytes is the inverse of the byte substitution transformation, in which the inverse S-box is applied to each byte of the State. It is reverse process of Substitute byte transform. Inverse Mix Columns is the inverse of the Mix Columns transformation. Inverse Mix Columns operates on the State column-by-column, treating each column as a four-term polynomial.

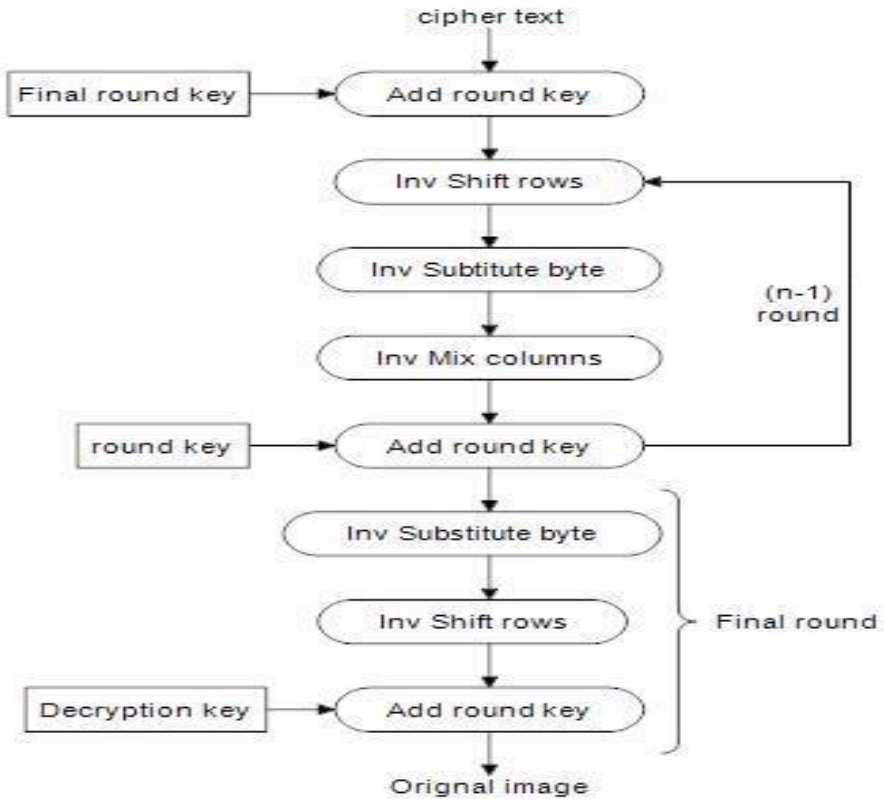


Figure 2 Decryption process (William Stallings, ―Cryptographyrk and netwo Security:principles and practice‖; Pearson Publication, london, pp. 148-183, 2011)

4. Implementation

The implementation of our algorithm is based on the AES-128 encryption and decryption algorithm with the help of MATLAB software as in the Figure (1). As per specification of our model we input an image and the key in hexadecimal format, and we get the output in the same location but in an encrypted format. As per definition the algorithm assures that the quality of the image remains same and unchanged as per the input image before and after decryption. For encryption process first we divide the image in matrix, making it 4*4 byte state which means that the bit length of the encryption key will be 44bit. We apply the four rounds as per AES specifications, which are substitute byte, shift rows, mix columns and add round key.

4.1. Introduction to the algorithm

Pycrypto is a python module that provides cryptographic services. Pycrypto is in a way similar to **JCE (Java Cryptography Extension)** for Java.In this case we will use pycrypto because the environment where both the encryption and the decryption processes are executed is the physical system of the device and not a virtual execution environment. . Pycrypto is a pretty good module covering many aspects of cryptography. Once the System is ready, we will need to use all the python modules offeredor encryption and decryption Some of them are Cryptography, Hashlib, AES cipher and Import os

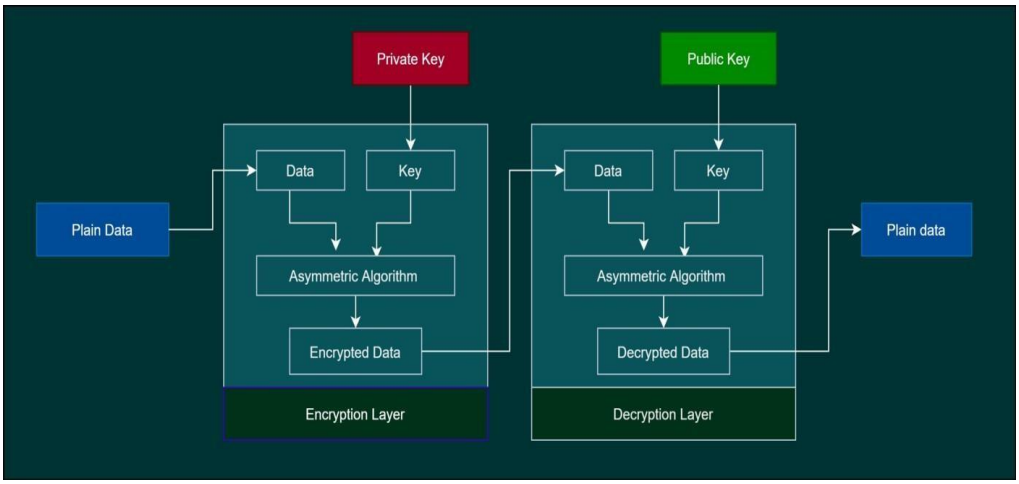


Figure 3-Cryptography Algorithm

4.2 Cryptography Package

Cryptography package is a package which provides cryptographic techniques and primitives to Python developers. It supports Python 3.9+ and PyPy3 3.10. Cryptography includes both high level techniques and low level interfaces to common cryptographic algorithms such as symmetric ciphers , the difference between a high level interface and a low level interface lies in the fact that in the high level interface we use both keys, the public one and the private one and the algorithm in this case is the asymmetric while in the case of the low level interface we use only one public key

and the algorithm in this case is the symmetric ciphers **.** ***Hashing-*** It is a one-way process where the message is only encrypted and there is no way to decrypt it. Here the encrypted message is called as message digest.

4.3 Simple Crypt

Simple Crypt uses standard, well-known algorithms The PyCrypto library provides the algorithm

implementation, where AES256 cipher is used.	It tries to make things as secure as possible when poor
quality passwords are used (PBKDF2 with SHA256, a 256 bit random salt (increased from 128 bits in	

release 3.0.0), and 100,000 rounds (increased from 10,000 in release 4.0.0)) also simple crypt offers a

solution to avoid bugs in the implementation of security aspects in a python code.

4.4 Hashlib

This module implements a common interface for many different secure hash algorithms and message digest. Included are the hash FIPS SHA1, SHA224, SHA256, SHA384 and SHA512 (defined in FIPS 180-2) as well as the RSA MD5 algorithm (defined in RFC 1321 of internet). **SHA 256 Python code** we can perform AES, RSA, MD5, SHA256, Digital signature Algorithms using Python.

```
1 import hashlib
2 plain_text="this is confidential message"
3 hashlib.sha256(plain_text.encode("utf8")).digest()
```

```
b'\r\r\'"\xb5\x86g\xf9B\x19J\x15\x1e\xd0P\x99-\x8b\x00\rk\x8f\xac\xd4\xc9\xc5[$Y\xde\xe7\x8f'
```

4.5 AES Cypher

It is a simple module to encrypt / decrypt using AES256-CBC. Makes it possible to encrypt / decrypt files and data (string or byte).

Import os

This module provides a portable way to use operating system dependent functions. If you just want to read or write a file, see open () if you want to manipulate paths, see the os.path module and if you want to read all the rows in all the files. Installation is performed on cmd or pycharm. Code application process

4.6 Generating a Key

The key format must be a combination of alphabet and number because the password key most include number or words. After we create three type of key predictions a,b,c , all three predicates a b or c serve to identify if the code set by the user during the decryption process is the same as the initial code in this case predicates a b and c are the 3 standard rains needed as a minimum to perform the encryption process As explained in the pseudocode following below:

```
Enter key
B=abcdefghijklmnopqrst
uvwxy012345 c.append
C=[ ]
For  i in range(len(a))
if a[i] not in c
c.append (a[i])
If a[i] not in b
c.append (b[i])
if c[i] not in a
  c.append (b[i])
for in range (1-256):
d,append
```

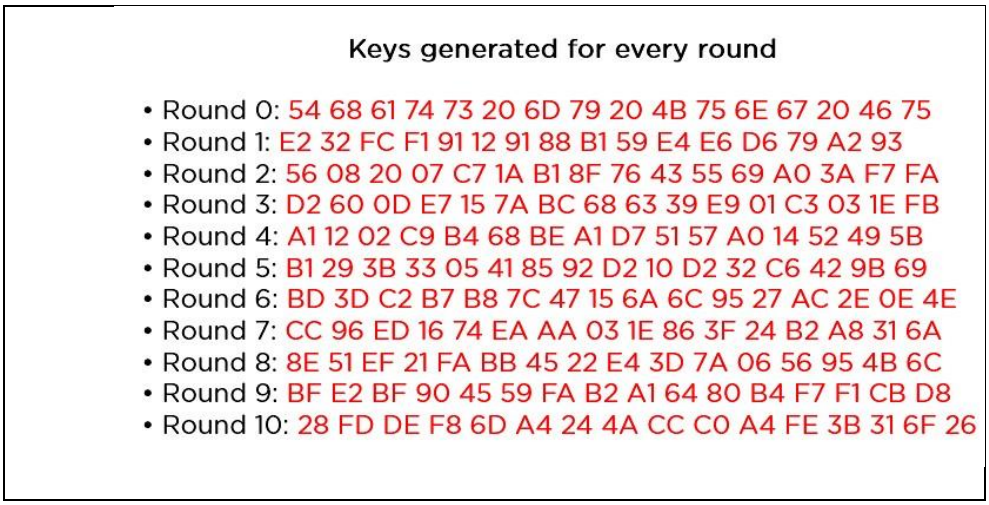


Figure 4 -Generation key

5. Encrypting with AES

After create the AES cipher and use it for encrypting a string (or a set of bytes; the data need not be text only).The AES cipher is created with *CBC Mode* (***Identification of Block Ciphers under CBC Mode, 8th International Congress of Information and Communication Technology (ICICT- 2018***)) wherein each block is "chained" to the previous block Also, for AES encryption using pycrypto, to ensure that the data is a multiple of 16-bytes in length.

```
aes = AES.new(key,
AES.MODE_CBC, iv) data = 'hello world
1234' # <- 16 bytes encd = aes.encrypt(data)
```

Figure 4-AES implementation

6. Decrypting with AES

For the decryption process we need to know the key used to encrypt the original image. As per this requirement, it is necessary to implement a way for sharing the key with the receiver in a secure way. However, this is not part of this implementation, and it is not explained in detail here and as noted in the section above, we perform the tests in the same local computer. This can be communicated as plain text, no need for encryption .

```
cipher = PKCS1_OAEP.new(private_key)
decrypted_text =cipher.decrypt(encrypted_text).decode("utf8")
decrypted_text
```

```
'this is the message'
```

7. File Encryption with AES

First step is to create the encryption cipher. The Start section make the program initialization. After execution of the Start phase the program enters in the print section who asks the user to define the path of the input files. Print enter key for encryption asks the user to insert the password that can be used for encryption process. For value path image, images=value*key its code fragment where images encrypted by using password which can be number or text. Print image is encrypted it is final message that shows to the user that the file is now encrypted and that the original images or video cannot open any longer without decrypting it.

Start
Print(‘enter the path file)
Imput file path
Print (enter key for encryption)
Imput file encryption
Image=fin.read
For value path image ,iamges=value*key
Fin write in image path
Print image is encruypted

```
Python 3.10.1 (tags/v3.10.1:2cd268a, Dec  6 2021, 19:10:37) [MSC v.1929 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

==== RESTART: C:/Users/Xhensil/AppData/Local/Programs/Python/Python310/01.py ===
5

=== RESTART: C:\Users\Xhensil\AppData\Local\Programs\Python\Python310\ENC.py ===
Enter path of Image : C:/Users/Xhensil/Downloads/e.jpg
Enter Key for encryption of Image : 545
The path of file :  C:/Users/Xhensil/Downloads/e.jpg
Key for encryption :  545
Error caught :  Exception
```

Figure 5 Encryptedprocess

8. Decrypting File Using AES

The fist steep is Start the program initialization followed by print (the path file file) that as per the encryption phase asks the user where to take the file the encrypted path file. The path must be the same with the path that it has been used in the encrypted process. Input key for decryption must check if key decryption is the same as the encryption key and once the program checks that keys match, the file return in it own original form and only after this moment the user can have access in it Start

Print(‘the path file)

Print(‘key for for decription)

Input key for decryption

Fin open path

If key decryption is the same as key encryption

Fin wirte image

Print(‘print decryption done’)

```
=== RESTART: C:\Users\Xhensil\AppData\Local\Programs\Python\Python310\ENC.py ===
Enter path of Image : C:/Users/Xhensil/Downloads/e.jpg
Enter Key for encryption of Image : 545
The path of file :  C:/Users/Xhensil/Downloads/e.jpg
Key for encryption :  545
Error caught :  Exception
```

Figure 6-Decryption process

9. Results

By using python, we can make encryption and decryption process with the help of AES algorithm. In encryption process the file we use is encrypted with a short password key and now the file can't open but the size of file it didn't change, in decryption process we make the different process after file is encrypted, we return it to the initial state using the password key used in the previous process.

Figure 7-Encryption process of an image and process result

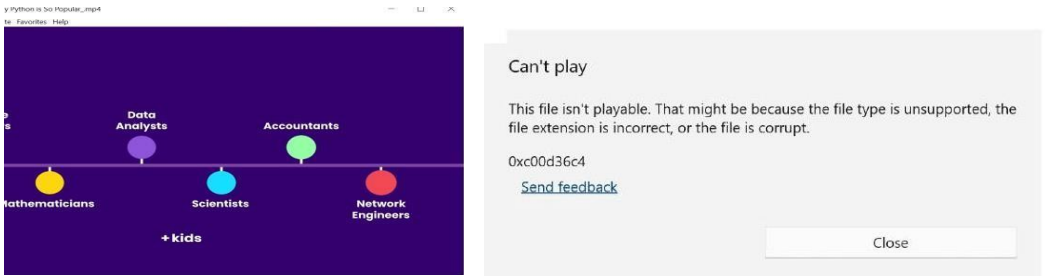


Figure 8-Encryption process of an image and process result

10. Conclusion

In this paper, Image Encryption and Decryption using AES algorithm is implemented to secure the multimedia files from unauthorized access. A Successful implementation of symmetric key AES algorithm is one of the best encryption and decryption standard and that is all there is to encrypting and decrypting a file using AES in python. We need to generate or obtain a key, create the initialization vector and write the original file size followed by the IV into the output file. This is followed by the encrypted data. Finally, decryption does the same process in reverse. Once we have implemented the modules, we implement the code split into two files in which the first file which we named encryption and decryption which are many similar but differ in result, first the encryption is executed where it is placed the address where the image is located and then enter the code which will serve to make the process of decryption. The important thing is that both codes are executed in the same place as well as the image in both processes to be stored in the same place. It is also worth noting that in addition created image code manages to encrypt word documents, pdf etc. containing images. Image, which is decrypted, and which can be sent to other devices is under cipher until the decryption process is implemented

References

[1] *Hands-On Cryptography with Python:* Leverage the Power of Python to Encrypt and Decrypt Data(2017)

[2] Lakshmi, C.; Thenmozhi, K.; Rayappan, J.B.B.; Amirtharajan, R. Hopfield attractor-trusted neural network: An attack-resistant image encryption. Neural Comput. Appl. 2019, 32, 11477–11489.

[3] *Cracking Codes with Python: An Introduction to Building and Breaking Ciphers 2018*[CrossRef] https://iopscience.iop.org/article/10.1088/1742-6596/1196/1/012049/pdf

[4] *Cryptography for Developers* 2016 second edition

[5] Msolli. A., Abdelhamid Helali, Hassen Maaref, ―Image encryption with the AES algorithm in wireless sensor network‖ In *the Proceedings of the 2016 IEEE International*

[6] *Proceedings 8th International Congress of Information and Communication Technology* (ICICT- 2018)

[7] Serious Cryptography: A Practical Introduction to Modern Encryption 2017 London, pp. 148-183

[8] Stallings, W. "Advance Encryption Standard," in *Cryptography 2016*

[9] Stallings, W. ―*Cryptography and network Security:Principles and Practices;* Pearson Publication, London, pp. 148-183, 2011

MSc.Eduina Maksuti
Assistant lecturer
Department of Economics and Business
Bedër University, Tirana, Albania.
emaksuti@beder.edu.al

AN EVALUATION OF CUSTOMER LOYALTY PROGRAMS

Abstract

Loyalty programs became a global trend in the last 30 years, time when, the economic growth, technology and expansion of the companies were booming. Due to this reason, it became object of studying and analysis and was considered as a key element in establishing the future of company with regards to its brand, incomes and reputation. Loyalty programs have an indispensable role in customer relationship management programs, but not all programs are successful. Companies should realize not only what is beneficiary for the customers in a LP, but also how they want to be treated as a loyal member. The purpose of this article is to evaluate some of the successful LP pertinent to the current situation for both companies and customers.

Keywords: *loyalty program; customer loyalty; evaluation of loyalty programs*

1. Introduction

The main principle that governs the application of loyalty programs (LPs) is manly based on the grounds that it is less expensive to keep an existing customer than to gain new ones. This is one of the main reasons why companies are competing to implement different schemes of LPs. Evidentially, LP's applications have been extended in all kinds of businesses including service, retailing, production even to mid and small size enterprises.

Generally, there is not a general definition for the loyalty programs. A loyalty program can be defined as a marketing process that generates rewards for customers on the basis of their repeat purchases (Reinartz, 2006). Different authors have given other definitions for the LPs based on the main purpose that a LP has in connection with the target that a certain company aims to achieve. In plain language a LP is nothing more than a rewarding program which aims to increase the benefits of the company by keeping the current customers and simultaneously using them to attract others. This is the reason that the LPs have become a strategic tool used by companies to identify, reward and retain their customers.

Despite the fact that LPs are not a new entry in marketing strategy, their importance is strengthening day by day and have become part of the competition between companies and at the same time a tool of cooperation between companies of different nature. In this sense, it is very common for a telecommunications company to reward its customers by extra points, gifts but also to offer touristic trips by cooperating with a travel company. To continue with the same example, other service companies may offer gift cards or discounts applied in a supermarket, and so on. As a consequence, LPs have become a global trend in a globalized market, fuelled by the use and speed of technology.

Due to this reason, the LPs management have set up "their own market", sometimes outside the very business which applied and implements them. The loyalty management market has expanded, evolved and created new strategies of implementation of the LPs. According to Markets and Markets, the global loyalty

management market size will grow from USD 8.6 billion in 2021 to USD 18.2 billion by 2026. In this survey, conducted by the prestigious portal in its 245-page report, the data collected and processed in North America, Europe, APAC, Latin America and MEA, shows that the LPs now are an integral part of almost all segments of business such as; software, consulting, support and maintenance, web mobile, aviation, automotive, media and entertainment, retail and consumer goods, hospitality etc.

As we are living in a new era of technology and specialised LPs management companies, the main question that businesses should answer and take into consideration would be; the evaluation of customer loyalty programs and if their LPs meet the new required standards.

2. Considering the Application of Loyalty Programs.

Demand and supply, forms of businesses and market strategies are not rigid and are prone to adopt according to changes introduced by various factors such as; new forms of production, services, technology and so on. The latter one, namely technology, has made accessing of goods and services more reachable. In this particular point, the implementation of LPs is becoming indispensable in order to help companies to establish strong relationships with the existing customers and create new ones in order to increase the incomes.

Nowadays the use of technology, especially social networks, communication platforms and mobile phone applications have almost replaced the old marketing adverts and even traditional loyalty programs. The former actors are changing roles and currently are the customers who are adverting the company, the product and the service. Over 70% of consumers are more likely to recommend a brand if it has a good loyalty program (Bondbrandloyalty.com, 2018).

Certainly, this is connected with the LPs itself which has a crucial role in offering to the customer a satisfying reward. One of the biggest credit card companies in the world, American Express has concluded that satisfied customers are more likely to share their positive experiences with others, resulting in a referral rate of approximately 11 people (American Express, 2017).

People tend to share their experiences within the closed circle such as family and friends. A satisfying, easy accessed LP, can significantly increase the number of customers simply by suggesting, sharing the product/service or by chatting about the quality of the product and the benefits of the loyalty program. 81% of customers trust recommendations from family and friends over those from companies (Redbord, 2018). It seems that one of the best strategies in using the LPs is also to engage the customer and making her/him part of the process without forgetting to give the due share.

3. Using Loyalty Programs to Boost the Customer Engagement

What the customer wants and needs from the company is the quality of the product, affordable price, rewards and motivation thus making them respectable and appreciated by the company. By offering these, a company can connect the customer to the product thus creating a brand that customers like and trust and most probably to recommend it to the others.

Customers engaged in a brand's loyalty program will spend 12-18% more each year (Shepherd, 2019). A crucial element which must not be neglected by the companies in implementing the LPs is the emotional connection between the company and the customer. Setting up a group of fans or "fanatics" of the brand or product is considered the best advertisement a company can have. When companies transform the ordinary into the extraordinary, those experiences deepen the client relationship, and that translates to sales, with 53% of customers saying that they feel an emotional connection to the brands they buy most often (Pouw, 2021).

It is understandable that this emotional connection requires strong dedication by the company to interact and answer the demands of the customers almost in real time. The use of technology has its negative sides with regard to challenge the rapid response of the company. Salesforce's recent "State of the Connected Customer" report found that 70% of consumers now report that technology has made it easier than ever to take their business elsewhere — switching from brand to brand to find an experience that matches their expectations (Afshar, 2022). That is why 64% of

consumers said they expect companies to respond and interact with them in real-time (Johnson, 2017). Considering that the use of technology is extremely fast, the response by the company should have almost the same intensity and if the business is not doing enough to keep the customer connected and engaged, the company has a 54% chance to lose customer to another competitor (Shepherd, 2019). The risk of losing the customer has been amplified even by the expansion of the marketing services company which hold a vast information of personal data and can put under disposition of the companies that subscribe for marketing and LP services. The key element of a modern LP seems to be the customer satisfaction experience.

4. The New Trend of Loyalty Programs

The new inquiries show that by offering customers personalized content which are related to them, a business can considerably improve customer satisfaction and experience. If you know what a customer likes the chances that she/he will spend more are higher. This particular element of the LP requires that companies must treat the customer not like a number but like e human.

Seventy-two percent of consumers and 89% of business buyers say they expect companies to understand their unique needs and expectations, while 66% of consumers say they're likely to switch brands if they feel treated like a number, not an individual (Johnson, 2017). The companies that are able to create and use more human feeling LPs, the rewards are higher. Personalised experience certainly influences the loyalty of the customers and keeps them connected to the company.

This is an indicator that the customers are eager "to sacrifice" even some of the personal data in order to receive a satisfying LP which meets their needs. The inquires show that the customers are spending more on brands that they are loyal, despite the fact that they could find better quality alternatives because of trust. In USA, a country that has pioneered the LPs and has further developed them, 87% of Americans will gladly give up some form of privacy in exchange for an excellent customer experience or reward (Bulao, 2022). On the other hand, it also true that a customer will abandon a company that does not share their beliefs or "betrays" them

in one way or the other. This kind of betrayal mostly occurs when the company does not respect the terms and conditions offered in the LP which mostly is accompanied with poor quality and poor rewards.

On the contrary, a good LP, well implemented and customised to the needs of the customers, adds value to the business. In order to meet those criteria, a contemporary LP, according to KPMG annual report 2019, should consider four key elements;

1. The LP should be easier to use. In this context many customers find difficulties in long registrations procedures, complex mobile phone applications and difficult ways to claim their reward.
2. Keeping the customer updated. Many customers, forget they are part of a LP or even if they do, sometimes they forget about the accumulated points or events when those rewards are going to be distributed.
3. In this case, customers may not believe in LP so the company should raise awareness about the seriousness of the rewards that they offer to the loyal customers by promoting and advertising the reward as much as possible.
4. Update and upgrade. Nowadays an appreciated LP is defined not only by its value but even by the feeling of empathy and emotionality that it creates. It seems a good strategy to update an LP for example from a simple personal reward to a donation for charity or an exclusive experience.

In this context it is worthy to mention that one of the most successful LPs is implemented by Sephora company. Sephora has relied less on transactional loyalty and started leaning into emotional perks. Think personalized birthday picks and even a Brow House Call with Jared Bailey—the brand's resident brow pro—plus a Francis Ford Coppola Winery tour with a special collection of Sephora products. Today, 17 million members subscribe to Sephora's loyalty program, and this group is responsible for 80 percent of the company's sales. (Definition6, 2022).

5. The Final Aim of LPs is to Increase the Incomes.

The purpose of a business is to create a customer (Drucker, 1954) and also to keep that customer and add more. There is no need to explain that LPs have been established to increase the company's revenue but still there is a clash of opinions between "old and new school" of marketing consisting of the idea of not investing much in a LP or considering them seriously.

As a matter of fact, a well implemented LP will significantly increase the revenues of the company. According to Reicheld (2001), 80% of the company's future revenue will come from just 20% of the existing customers. Also, an increase in customer retention relates with a good increase in profit for the company. The research shows that loyalty leaders—companies at the top of their industries in Net Promoter Scores or satisfaction rankings for three or more years—grow revenues roughly 2.5 times as fast as their industry peers and deliver two to five times the shareholder returns over the next 10 years (Markey, 2020).

Leveraging data from 322 publicly-traded firms that introduced an LP between 2000 and 2015, the authors demonstrate that introducing an LP can increase sales and gross profits in the short-term (within the first year) and these positive effects are sustained long-term (for at least three years) (Chaudhuri et al., 2019).

In modern times of technology, the usage of LPs, its implementation, number of customers, revenues and other analytical data can be easily gathered and processed. Recent analysis has shown that after implementing a loyalty program, the average order quantity of a business can rise by 319% (Kreitner, 2019).

In particular, the implementation of technologically advanced LPs has transformed even the commerce itself leading to the so called "E-commerce". Nowadays not only multinational companies but even small size enterprises tend to involve the customers in their mobile applications thus including all information in one "piece of icon", which is easy to be used and controlled at the same time.

In this way, online trade not only lowered their serving costs but it implemented better the LPs which resulted in a better customer experience, enabling the company to more quickly and efficiently process orders and increase revenue.

In fact, contrary to what sceptical opinions, it seems that online customers are *more* loyal, since they rely totally on trust. Since a customer trusts a webpage or application of a business to insert personal data and receives the goods of the quality it is expecting and receives the rewards included in the LPs, the bond between the customer and the company becomes more solid.

6. Conclusions

LPs are widely used to retain the existing customers and making new ones thus becoming one of the main marketing tools of the business. They are marketing investments designed to encourage behavioural loyalty among a company's best customers and consequently increase company's performance and incomes.

Creating a brand name is the ultimate goal of every business, in this respect the implementation of LPs is crucial in establishing a pool of loyal customers who will serve as the best "marketing agents" of the company within the public. In this regard the customer's engagement is decisive for a successful loyalty program.

As forms of business evolve, keeping pace with rapid developments in trade and technology, the same should be done in designation, application and implementation of the LPs. Modern forms of LPs require that they should be personalised and customized according to the customers' needs and certainly introducing new rewarding methods and prizes.

Studies and researches have demonstrated that introducing an LP can increase sales and gross profits in the short and long term significantly. This article demonstrates that introducing strategically designed LPs can significantly increase firm performance and revenue.

References

[1] Afshar, V. (2022) "How Do You Create a Better Customer Experience?" *Salesforce*.https://www.salesforce.com/blog/customer-experience/

[2] American Express Global (2017). *Customer Service Barometer 2017*.

[3] Bond (2018). The loyalty report 2018: The game has changed. https://info.bondbrandloyalty.com/loyalty-report-2018

[4] Bulao, J. (2022). "35 Eye-Opening Customer Loyalty Statistics for 2022". https://techjury.net/blog/customer-loyalty-statistics/

[5] Chaudhuri, M., Voorhees, C. M., & Beck, J. M. (2019). The effects of loyalty program introduction and design on short- and long-termsales and gross profits. *Journal of the Academy of MarketingScience*, 47(4), 640–658.

[6] Drucker, P. (1954) The Practice of Management. Harper and Row, London-Heinemann.

[7] Haberman, M. (2022, June 7). Top 5 customer loyalty programs Definition6. https://www.scribbr.com/apa-examples/website/

[8] Johnson, N. (2017) "State of the Connected Customer" report : How your customers' expectations have changed in the age of the customer? Salesforce. https://www.salesforce.com/form/pdf/state-of-the-connected-customer/?d=7010M000000NkvP&nc=7010M000000NlIY

[9] KPMG International Cooperative (2019). 2019 Customer Report: The truth about customer loyalty. https://assets.kpmg/content/dam/kpmg/ar/pdf/The%20Truth%20about%20customer%20Loyalty.pdf

[10] Kreitner, L. (2019). Case Study Breakdowns: Using e-commerce incentives to get B2B customers to shop online. Incentive Solutions.

[11] Markets and Markets (2022). Loyalty Management Market. https://www.marketsandmarkets.com/Market-Reports/loyalty-management-market-172873907.html

[12] Pouw, S. (2022). "5 Essential Behaviours Needed to Create Exceptional Customer Experiences in Belgium", Salesforce. https://www.salesforce.com/eu/blog/2021/03/create-exceptional-customer-experiences.html

[13] Redbord, M. (2018) "The Hard Truth About Acquisition Costs (and How Your Customers Can Save You)", Hubspot.

[14] Reichled, F. (2001) *Prescription for cutting costs*. Harvard Business School Publishing.

[15] Reinartz, W. (2006). Understanding customer loyalty programs. In M. Krafft; M. K. Mantrala (Eds.), *Retailing the 21st century* (pp. 361–379). Heidelberg: Springer.

[16] Shepherd, M. (2019). "Keep Your Customers Coming Back: *13 Brand Loyalty Statistics You*

PhD. Sofokli Garo
Bedër University College
Tiranë, Albania
sgaro@beder.edu.al

THE MATHEMATICAL PERFORMANCE OF 15-YEAR-OLD ALBANIAN STUDENTS ON PISA COMPETITION[2]

Abstrakt

This is a study about the mathematical performance of 15 year-old Albanian students, who participated in PISA 2009, PISA 2912, and PISA 2015 competitions. The information and results from OECD publishing was used to compare the mathematics main scores and proficiency levels of Albanian students with those from other Balkan countries. Despite their consistent progress made in these competitions, Albanian students continue to remain on the bottom of the list of Balkan countries. In addition, the study deals with the effect of educational resources at students' homes to mathematical performance. While for the 10 analyzed Balkan countries this variable contributes in the amount of nearly 5-15% to mathematical performance, for Albanian students' performance this figure stands in almost top percentage of this scale. Despite the significance of this contribution, other educational variables with greater potential for contribution must be considered from further studies.

Keywords: *PISA competitions, mathematics performance, educational resources, Albanian 15-year-old students*

[2] The paper has already been published in an edition of BJES Journal, Beder Journal of Educational Sciences

1. Introduction

During the last decade the Albanian education system has been reformed in all its levels. Secondary mathematics content, methods and teaching has been important part of this reform. According to Nathanaili (2016), 2013-2014 was the first academic year when secondary schools were ranked nationally, based on students' performance in this discipline, including PISA results. This performance has been seriously analyzed from educational institutions with the final goal of raising the concern for a sustainable improvement of mathematics attainment

"PISA", which stands for "The Program for International Student Assessment", is an international large survey and competition that is held every three years to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students" (OECD, 2017). The last organization, in which participated more than 80 countries worldwide, took place in 2018. PISA focuses on the assessment of student performance in reading, mathematics and science because they are foundational to a student's ongoing education. PISA also collects valuable information on students' attitudes, motivations as well their family backgrounds and learning settings.

Although it was the PISA 2000 competition where Albania participated for the first time, there were PISA 2009, PISA 2012, and PISA 2015 competitions where this country was consistently engaged. The aim of this article is to analyze the mathematical results of Albanian students who participated in competitions of 2009, 2012, and 2015, compare these results with those of other Balkan countries and emphasize some family characteristics or learning environment features that may have effected students' scores in the field of mathematics.

2. A Comparison of Albanian students' mathematics scores

According to Kilpatrick & Swafford (2002) student understanding of secondary mathematics follows a five-scale range: (1) fact understanding, (2) arithmetic fluency, (3) concept understanding, (4) logical reasoning, and (5) mathematical usefulness. A similar six-scale assessment, called "proficiency levels"

was used to evaluate PISA participants in the discipline of mathematics. More specifically, "students' scores in mathematics were grouped in 6 proficiency levels starting from level 1, with a lower cutpoint score of 358 up to level 6, with a lower cutpoint score of 669 points". (Katsberg et al., 2016). According to PISA task descriptions, at level 1 students can answer questions involving familiar contexts where all relevant information is present and questions are clearly defined. They are able to identify information and to carry out routine procedures according to direct instructions in explicit situations.

	Proficiency levels in PISA 2009			Proficiency levels in PISA 2012			Proficiency levels in PISA 2015		
	Mean score in PISA 2009	Below Level 2 (less than 420.07 score points)	Level 5 or above (above 606.99 score points)	Mean score in PISA 2012	Below Level 2 (less than 420.07 score points)	Below Level 5 or above (above 606.99 score points)	Mean score in PISA 2015	Below Level 2 (less than 420.07 score points)	Below Level 5 or above (above 606.99 score points)
Greece	466	30.3	5.7	453	5.7	.9	54	5.8	3.9
Slovenia	501	20.3	14.2	501	0.1	3.7	10	6.1	13.5
Turkey	445	42.1	5.6	448	2.0	.9	20	1.4	1.1
Albania	**377**	**67.7**	**0.4**	**394**	**0.7**		**13**	**3.3**	**1.1**
Bulgaria	428	47.1	3.8	439	3.8	1	41	2.1	4.4
Croatia	460	33.2	4.9	471	9.9	.0	64	2.0	5.6
North Macedonia	m	m		m			71	0.2	0.8

Kosovo	m			m			62	7.7	.0
Montenegro	403	8.4	1.0	410	6.6	.0	18	1.9	.5
Romania	427	7.0	1.3	445	0.8	.2	44	9.9	.3
OECD average	**495**	**2.0**	**12.5**	**494**	**3.0**	**2.5**	**90**	**3.4**	**0.6**

Table 1. Mean scores and extreme proficiency level percentages of Balkan countries in PISA 2009, PISA 2012, and PISA 2015

Source: (OECD, 2017)

Table 1 shows mathematics top performers and low achievers along with mean scores of Balkan countries, who participated in PISA 2009, 2012, and 2015. In PISA 2015 the Balkan countries students were grouped in 3 bottom levels, with Albania, Kosovo, North Macedonia, and Montenegro, whose students belonged to level 1 (358-420 points) and Slovenia, whose students belonged to level 3 (482-545 points), which is the international average.

The constant improvement of performance of the Albanian students is the first fact that comes from the table. More specifically, from PISA 2009 to PISA 2015 competition the Albanian mean score has an increasing tendency (377, 394, 413), percentage of its low achievers has a decreasing tendency (68, 61, 53) and percentage of top performers has also an increasing tendency (0.4, 0.8, 1.1). These facts are consistent with one of the conclusions of PISA 2015, according to which "Improvements among the lowest performing students do not have to be realized at the expense of the highest performing students. In none of the countries where the lowest performing students improved did the highest performing students show a decline in their performance" (OECD, 2011a).

Consistent participation of Albania in the three last PISA activities is to be pointed out. (See Figure 1). It shows that "Albanian educational authorities are showing a greater concern towards mathematical performance of secondary schools during the last ten years" (Nathanaili, 2016).

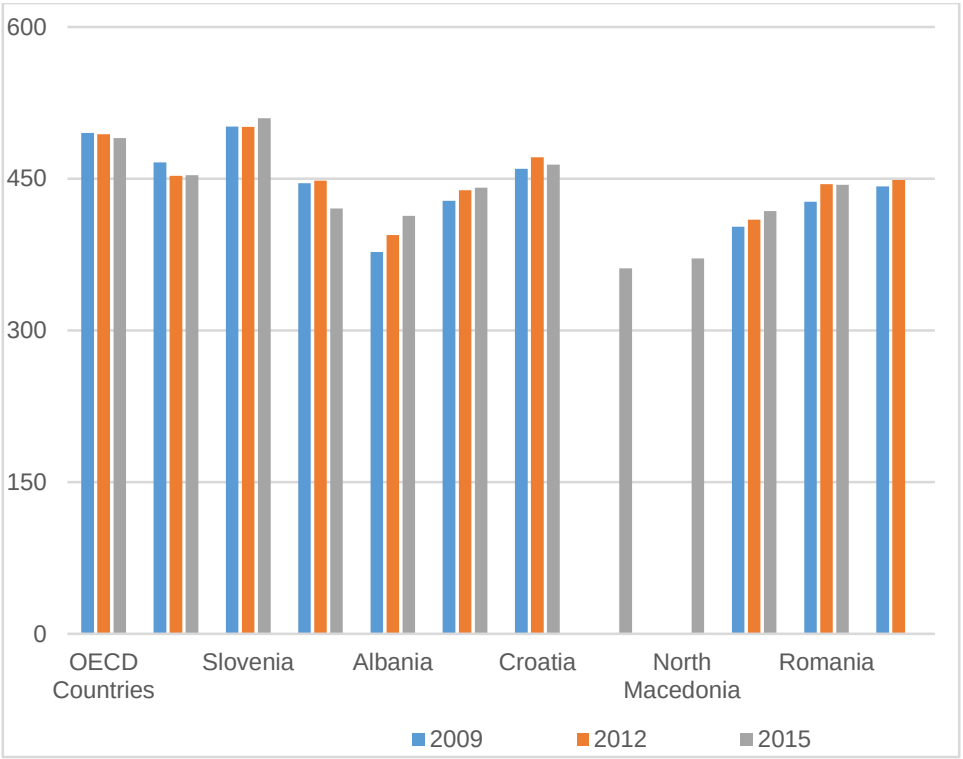


Figure 1. The mean scores of Balkan countries in PISA 2009, PISA 2012, and PISA 2015

However, compared with the most countries in the region Albanian schools continue to underperform. Besides North Macedonia and Kosovo, which missed PISA 2009 and PISA 2012, all other Balkan countries outperformed Albania in the three last competitions. PISA 2009 results show that "percentage of students with low achievements is too high, with 40.5% of students falling below Level 1, while 30% of students are in Level 2, Level 3 or Level 4". (Harizaj, 2011).

3. The Relationship Between Social-Economic Status and Mathematics Learning

Mathematics learning of students is demonstrated by a number of quantitative indices, but the main one is the mean score in that subject. As OECD (2011c) points out there are many many behavioral, economic, educational, and social variables that influence the mean score. Such variables are: the number of hours students spend studying, students' attitude toward learning, learning environment, the quality of teaching at school, students' economic, social and cultural status, etc.

Since this study aims at comparing Balkan countries, it'd be interesting to take into account the variables that make difference when considering the economical status of the countries and its effect on students' learning. This study used "educational resources at students' homes" to represent "the economic, social and cultural status" of a particular country. As "educational resources at home" PISA 2015 considered the following 7 items: a desk a quite place to study, a computer that students can use for schoolwork, educational software, books to help with students' schoolwork, technical reference books , and dictionaries (OECD, 2017).

For analyzing the "index of economic, social and cultural status (ESCS), PISA International Data Explorer (IDE) was used. This program is a web-based application for accessing and exploring data from PISA, supported by the U.S. National Center for Education Statistics. This application helps creating tables, charts, and graphs following these steps: (1) Select criteria, (2) Select variables, (3) edit reports, and (4) Build reports. In our case, criteria step included: PISA 2015, overall mathematics and 10 Balkan countries; variable step included all 7 items mentioned in the previous paragraph. The output came in multiple formats but we decided to chose the summary in the form of ESCS index.

Table 2 shows ESCS index, where positive values indicate a higher ESCS and negative values indicate a lower ESCS. Albania, with index -0.77, is ranked the 9th in the list of 10 countries, leaving behind only Turkey. In the three first place for social-economic status of students are is Slovenia, which has a positive index, and followed by Greece and Bulgaria. It's interesting to notice that Kosovo not only outperforms Albania in this variable, but it is also ranked above Turkey, Croatia, North Macedonia, Montenegro, and Romania.

2015	ESCS index	
	All students	
	Mean index	S.E.
Greece	-0.08	(0.03)
Slovenia	0.03	(0.01)
Turkey	-1.43	(0.05)
Albania	-0.77	(0.03)
Bulgaria	-0.08	(0.03)
Croatia	-0.24	(0.02)
North Macedonia	-0.23	(0.01)
Kosovo	-0.14	(0.02)
Montenegro	-0.18	(0.01)
Romania	-0.58	(0.04)

Table 2. PISA 2015 index of economic, social, and cultural status

Source: (NCES, 2017)

What is the extent to which the educational resources at students' homes effect mathematics performance of students in a particular country from the Balkan region? Related to this issues OECD (2011c) suggests that there are many variables that effect students' learning of mathematics. Some of them are related to tradition, culture, family and students' attitudes.

To answer the above question the IDE application was used. Table 3 depicts the variance in student performance in mathematics explained by ESCS. This table indicates that mathematics' performance of students from Romania and Bulgaria are mostly effected by ESCS (respectively 15.2% and 15.3%) . Learning of students from Montenegro and Kosovo are slightly effected (respectively 5% and 5.9%). For Albanian students the variance is 13.4 %, which is moderately high in this percentage distribution.

2015	Unadjusted mathematics score		Mathematics score adjusted by ESCS[1]		Percentage of variance in student performance in mathematics explained by ESCS (strength of the socio-economic gradient)	
	Mean score	S.E.	Mean score	S.E.	%	S.E.
Greece	454	(3.8)	456	(3.2)	10.6	(1.3)
Slovenia	510	(1.3)	509	(1.3)	10.7	(1.1)
Turkey	420	(4.1)	450	(5.3)	8.7	(1.9)
Albania	413	(3.4)	415	(3.2)	13.4	(1.1)
Bulgaria	441	(4.0)	446	(3.3)	15.3	(1.5)
Croatia	464	(2.8)	473	(2.7)	12.7	(1.5)
North Macedonia	371	(1.3)	379	(1.4)	8.6	(1.0)
Kosovo	362	(1.6)	365	(1.6)	5.9	(1.0)
Montenegro	418	(1.5)	423	(1.4)	5.0	(0.8)
Romania	444	(3.8)	467	(3.6)	15.2	(2.0)

Table 3. Educational resources at students' homes and mathematics performance.

Source: (NCES, 2017)

The other peace of information that stems from the table is the fact that educational resources at students' homes contribute approximately 6 to 15 % to students' mathematics learning. Apparently, other behavioral and educational variables, such as the quality of teaching, students' attitudes toward learning and others may more largely contribute to students' learning of mathematics. As OECD (2011c) points out “when it comes to learning, it’s the quality of teaching at school and students’ attitudes towards learning that count most, not the number of hours students spend studying” (OECD, 2011c). The effect of these variables remains an object of further studies.

4. Conclusions

It is very important for a civilized society to study and analyze the effectiveness of educational measures undertaken to improve the quality of education. Students' mathematics learning is one of the most important component of this enterprise. The first stage of this process would be recognition and evaluation of the actual educational situation. It is a great achievement that Albania has constantly participated in the last three PISA competitions for 15 year old students. Despite the continual progress noticed in mathematics performance, Albanian students continue to remain on the bottom part of the list of Balkan countries. This situation calls for further action to be taken from Albanian educational institutions.

During the last years many initiatives of the Albanian government has been taken towards textbooks and technology furnishings for Albanian students. These steps are accompanied from a growing concern of Albanian families to provide their children with all necessary school materials and proper places to study. Despite these effort for enhancement of students' learning, the study shows that educational resources at students' homes have a modest contribution to students' learning of mathematics. Further studies are needed to identify those educational, attitudinal and behavioral variables that make a greater contribution to 9th grade students' achievement of mathematics.

References

[1] Harizaj, A. (2011). A Case Study of Albania's Participation in PISA 2009. CEPS Journal.Vol.1, Nr. 3, Year 2011, Pp. 97-118.

[2] Katsberg, D., Chan, J. Y., and Murray, G. (2016). Performance of U.S. 15-year-old Students in Science, Reading, and Mathematics Literacy in an International Context: First Look at PISA 2015. Retrieved January 11, 2017 from https://nces.ed.gov/pubs2017/2017048.pdf

[3] Kilpatrick, J. & Swafford, J. (2002). *Helping children learn mathematics*. Washington, Maryland: NationalAcademy Press.

[4] Nathanaili, V. (2016). Teacher's Influence Scale from Their Colleagues and Principals: Its Relation with School Performance in Public Schools of the Albanian Education System. The IAFOR Journal of Education.Vol. 4, Issue 1, Spring 2016. Pp. 106-121.

[5] NCES (2017). U.S. Department of Education, National Center for Education Statistics. Available at https://nces.ed.gov/ide/

[6] OECD (2010c). PISA 2009 Results: Learning to Learn (Volume III). OECD Publishing.

[7] OECD (2011a). All countries can improve their students' reading performance. PISA in Focus, (2, March).

[8] OECD (2017). PISA. Retrieved from http://www.oecd.org/pisa/aboutpisa/

MSc. Vjollca Vladi
"At Zef Pllumi" school Tirana, Albania
lolavladi@hotmail.it

DEVELOPMENT OF TECHNOLOGY IN 21ST CENTURY SCHOOLS. CODING IN THE SERVICE OF TEACHING AND LEARNING.

Abstract

Technology has transformed the way we teach and learn but by transforming the process, it is also transforming the outcome. The purpose of this paper is to present a five-year period of observation and implementation in the field of education and the importance of using technology in coding, part of thinking classes.

Technology is more than just another way of presenting information; it is the system through which information is presented. Technology, as part of the constructivist theory of teaching, is the framework of the teaching / learning methodology which provides the ability to support all the major forms of this theory.

Keywords: *Collaboration, communication, coding, digital skills, creativity, problem solving.*

1. Introduction

Society has moved from the industrial age to the information age. Workplace dynamics are changing at an ever-faster pace than ever before since the 4th Industrial Revolution. All this as a result of the advancement of technology, artificial intelligence, robotics and the inclusion of technology in every work process. Many skills that only a decade ago would have been considered extraordinary, are now well-established, for example computer use, until a few years ago knowing how to work on a computer was an added value, today it is a norm. Equally after a decade, skills that are now considered extraordinary will be considered normal. Equipping students and teachers with creativity, integrity, altruism, empathy and even more so with digital skills, remains for years a challenge across the globe and even more so in Albanian education. The analysis of works and achievements in coding clubs is seen nowadays as a challenge to increase the quality of teaching / learning. Who would have thought that managing social networks would be a profession, when social networks did not exist. In the 21st century we must teach children to use creativity to solve a problem, imagination, collaboration, communication, information analysis, evaluation and use of technology to see the latter as a tool they can use and not use from it, not to impose solutions on them and to evaluate their ability to go out of power.

The 21st century student and teacher must be endowed with creativity, integrity, altruism, empathy and even more so with digital skills. Using technology in the constructivist approach makes it easier for teachers to involve students in learning activities. They can create activities for different levels and styles of learning as well as expand the range of information available to the learner. In this article, we explore creativity alongside educational technology, for 21st century education. Creativity has seen heightened discussion in fields such as psychology and education (Stemberg, 2000: Sweller, 2009), and in popular interest in broader culture as well. Lewis (2008) noted that creativity is a coveted quality of thinking often an important aspect of innovation and change. There has also been increasing educational research to support

the importance of creativity in fields of thinking and leaming (Henriksen & Mishra, 2015: Robinson, 2011; Williams, 2002)

Much of the research on creativity has focused on individual creativity, or psychological, psychometric or personality approaches. There has been comparatively little research on creativity in classrooms (DeSouza Fleith, 2000). The field of education must consider the applications and rationale of creative educational practice and policy, especially for 21st century, technology rich contexts. New technologies have altered teaching and learning rapidly, with innovations and affordances for creating and sharing ideas and content. We must consider the development and impact of learning technology not in isolation, but rather alongside opportunities for creative education.

We begin by considering the global context for an emphasis on creativity then describe the foundations for creativity in society and in education alongside educational technology. Has emphasis on creativity and its curricular, integration requires forethought and planning for drawing on a stems model for creativity in broader culture, we suggest that there are three threads of importance for creative auction with technology: teacher education. assessment, and educational policy in this three-pronged approach, we describe how each has a role in building appropriate educational contexts to meet the needs of students, learners and teachers

2. Method

Population sampling, data collection tools, data reliability and validity, analysis techniques. The primary and secondary school of compulsory education were selected to be used in the study.

3. Findings

The Ministry of Education, Youth and Sports has conducted an online questionnaire with about 320 thousand parents, students and teachers about the progress of teaching in this form, whose answers are mostly positive, in terms of efficiency.

Image 1. Online platform

4. Results, Conclusions, and Recommendations

4.1. Conclusions

"Today being a teacher is a profession, but being a teacher who uses interactive methods in teaching, is and remains the correct fulfillment of the mission and preparation of the new generation."

The 21st century student and teacher must be endowed with creativity, integrity, altruism, empathy and even more so with digital skills. Using technology in the constructivist approach makes it easier for teachers to involve students in learning activities.

They can create activities for different levels and styles of learning as well as expand the range of information available to the learner. Technology is more than just another way of presenting information, it is the system through which information is presented. Technology, as part of the constructivist theory of teaching, is the framework of the teaching / learning methodology which provides the ability to support all the major forms of this theory.

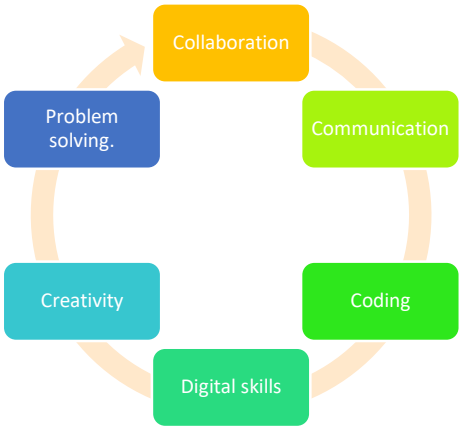


Image 2. Coding with Micro: bit.

21st Century Schools is an ambitious 10 million pounds three-year education program, designed and implemented by the British Council and funded by the UK Government. Run in partnership with relevant educational institutions in each country, the program aims to equip one million students aged 10-15 years across the Western Balkans with the critical thinking and problem solving skills.

As well as learning critical thinking and problem solving skills, children will learn practical programming skills and have the opportunity to practice their skills through physical computing.

\

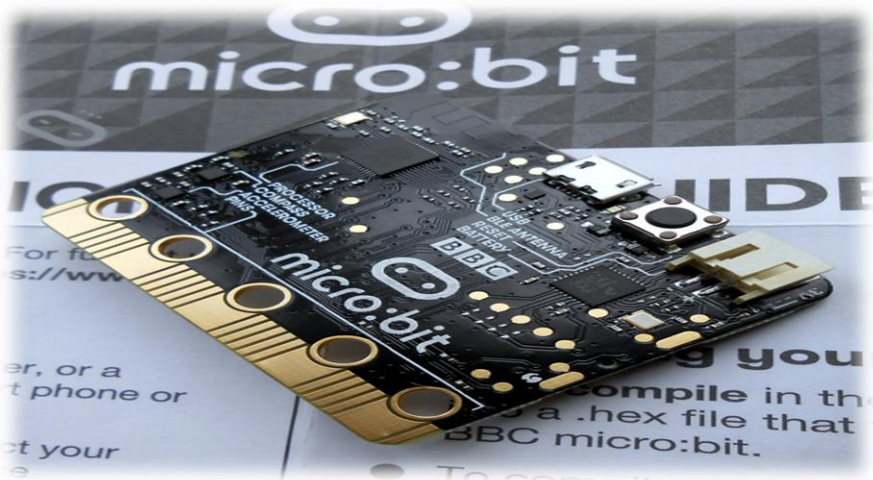


Image 3. The Most Popular Digital Education Tools for Teachers And Learners

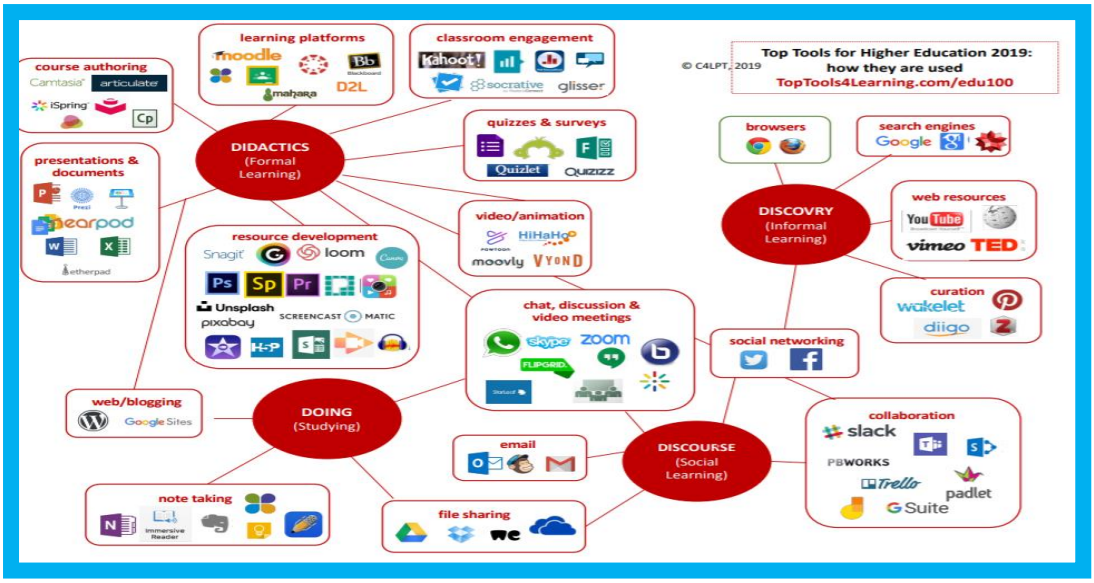


Image 4. The method of online learning and student assessment

According to the findings of the study, throughout the period of the COVID-19 pandemic, teachers have used various alternatives to implement distance or online learning, including virtual learning (Google Meet, Zoom), compiling assignments and placing materials in Google Classroom. Teachers have stated that they use Viber and WhatsApp to communicate with students and parents. In fact, this form is used in particular for the delivery and assessment of students' learning tasks. While in relation to evaluation methods, different alternatives have been presented, which have been used by teachers. According to the statements from the teachers, the most frequent evaluation of the students' performance was done through the assessment of homework. However, within the planning for the ongoing evaluations, the teachers emphasize that they have planned combined evaluation methods (see table 1.4)

Codes	Subcodes
The method of realizing distance/online learning by teachers.	Compilation of assignments from the curriculum in combination with virtual learning (Zoom, Google Meet). Google Classroom platform Gives assignments to students every working day Prepared class groups (on Viber) Communication about assignments is done through parents (Viber, WhatsApp)
How to evaluate students during distance/online learning.	Currently Assessment of assignments (submission on Viber) Assessment - through homework Assessment of assignments for each hour, (via email) Assessment of assignments with stickers (class 1) Assessment with grade based on % of assignments given Scheduled The evaluation will be done through communication, online test tasks (presentation, tasks, online tests) creation of online tests Evaluation of students - through a file where they will summarize their work during this period Individual evaluation during the realization of lessons on the online platform (Zoom)

Table 1.4. The method of online learning and student assessment

4.2.Recommendations

Referring to the main findings from the analysis of teachers' opinions about distance learning/e-learning, two levels of recommendations were identified: recommendations that should be taken into consideration by organizers and teachers engaged in the further preparation of video materials for distance learning and recommendations that must be taken

into consideration at the policy level. Based on the need for improvement and advancement preparation of video materials for distance learning, recommendations were identified the following:

Distance teaching, namely the preparation of video materials and the script forteaching unit, should be accompanied by instructions for teachers. Before broadcasting lessons, to watch the footage and eliminate possible mistakes, especially, scientific errors.

During teaching through e-learning, the appropriateness, coherence, of the contents etc teaching approach with the main principles and requirements of the curriculum based on competence to be visible and practical in the video materials that are transmitted;

The homework given by the different teachers of a class should be harmonized,in order not to overload the students in these learning circumstances. They should be well oriented, towards the achievement of a certain learning goal, towards the achievement of the learning outcomes of the subject/teaching topic, for more they must be functional achievement of competences. To avoid tasks that mainly involve reproduction of knowledge e contents given in the textbook of the relevant subject, because they do not encourage students to learn at a distance.

Teachers should pay special attention to aspects related to skills communication skills, the correctness of expressions, the preparation of the scenario for the teaching unit, the use of standard language, the connection of learning with the daily life of children. For you issue guiding recommendations at policy level, what should be done in the future, after the pandemic is over, what needs to be changed and where needs should be focused and political and professional demand for change and the advancement of teaching quality, answers to questions such as: Was teaching through e-learning a reflection of ordinary school teaching? How much was the elaboration of

the teaching units in function of implementation of the competency-based curriculum? How many were in function of fulfilling the requirements for achieving basic competencies? Should the preparation policy change as a priority? of teachers, taking into account developments in technology and contentteaching? What lessons should be drawn from this experience of organizing e-learning for answered preliminary questions?

We believe that the teachers whose teaching was the subject of this analysis, since they have read and processed, will reflect on all the issues mentioned here. If each the teacher, after reading this analysis, will make a self-reflection about the lessons in e-learning, and not only, not only would it avoid many things evidenced here, but it would also greatly help personal professional-pedagogical development. This was also the main purpose of this analysis, the assessment and judgment of their work.

References

[1] British Council program for 21st Century https://www.britishcouncil.al/en/programmes/education/21st-century-schools/programme-news/call

[2] Draft-Strategjia-per-Arsimin-2021-2026, retrieved https://arsimi.gov.al/wp-content/uploads/2021/05/Draft-Strategjia-per-Arsimin-2021-2026.pdf

[3] Interactive presentations retrieved from

https://slidetodoc.com/h-5-p-interaktive-prsentationen-michael-khle-fb/

https://www.minecraft.net/it-it

https://kahoot.com/what-is-kahoot

MSc. Mariola Muçi
Assistant Lecturer, Epoka University
mmuci@epoka.edu.al
ORCID ID: 0000-0001-5670-6713

CUSTOMER LOYALTY PROGRAMS IN ACHIEVING CUSTOMER RETENTION: CASE STUDY OF NEPTUN ALBANIA

Abstract

Customer loyalty programs are being considered as a key feature and very innovative marketing tools in order for achieving consumer retention. Through evolution in time numerous loyalty programs were created and used by companies but there are few evidences which prove that loyalty of customers is generated only through these marketing tools. This paper is conducted through an in-depth analysis of how this innovative business tool affect the customer retention process and the relationship that exists between satisfaction and loyalty, by taking in consideration the national Albanian market. In order to measure and give appropriate conclusions regarding the effect of loyalty schemes in consumer retention and satisfaction this paper will examine a case study of Neptun Company as one of the first brands in Albania which has implemented such loyalty program practices on its e-business model.

Keywords: *Customer loyalty programs, customer retention, e-business*

1.Introduction

1.1 Background of the Study

Loyalty programs are referred as very important marketing tools that were used by people in the past to retain the customers satisfied in order for them to come back and purchase again. The core concept of these loyalty programs hasn't changed much now days, but the tools yes, they have changed and have improved by the passing of the time. Companies aim is to build life time consumers because when consumers have a long relationship with a particular brand or company they are focused only in that company and often forget to see what other competitors are offering. It is true that acquiring new customers is more costly for companies than retaining them because loyal consumers serve as a reliable and repeat source of money and revenue as well. Loyalty programs that are frequently used nowadays on the retail industry include free coupons, points systems, vouchers etc.

Retail shopping has evolved at a very high rate over the last 20 years and undeniable is the trend and interest of the customers in using loyalty cards. These loyalty cards represent a key marketing activity to the organization's because it allows marketers to have a direct interaction to the customers who will benefit from the rewards given. Still, several studies suggest that the loyalty card programs are at a crossroad and do not work properly because customers attitudes have changed during the years and they choose to pay a lower price for their groceries rather than earn points in their card from their purchases.

It's a fact that worldwide retailers see opportunities behind loyalty programs, in this paper will be eventually analyzed the significance of these programs in retaining consumers and improving consumer-brand relationship.

1.2 The Scope of the Study

Literature review of this study is focused mainly in secondary data in order to provide a full understanding of the theories and concepts that are under investigation and how these theories are developed and explained by other authors. The findings of literature review give the right direction for the creation of the primary research tools, in this case the construction of the online questionnaire.

Primary data and research are crucial in order for the objectives that dissertation sets out to achieve, to be completed. Next, in the methodology part the conditions into how primary research was conducted will be explained and in the closing stages of this dissertation will be made a statistical analysis of the gathered data from the questionnaire. Afterwards conclusions will be delivered and recommendations will be made.

1.3 Research Purpose

Marketers refer to loyalty programs as very important marketing tools in order to inspire consumer loyalty, create long term consumer relationships and boost sales by moving from single period purchase decision into multiple period purchase. The purpose of this study is to develop an exploratory analysis on how consumer loyalty programs that are created and used by organizations affect the consumer retention, referring also to the historical background of these loyalty consumer programs, by examining their evolution in time. Furthermore, it is going to be taken in consideration a case study from Neptun, which is one of the first companies in Albania that implemented loyalty program practices.

This study will investigate the overall impact of customer loyalty programs on consumer retention process. Consumer retention is designed as a dependent variable in this study meanwhile independent variables are selected some of the most frequently used loyalty programs such as: Loyalty Cards, Gift cards or Vouchers etc.

1.4 Research Objectives

To describe the effect that customer loyalty programs have on customer retention process.

Establish the significance and value of the Happy Card reward program to Neptun. To discover the attitude of Neptun customers towards the Happy Card program by analyzing its importance and effect in brand loyalty.

To examine the relation between loyalty and satisfaction of customers toward the brand.

1.5 Research Questions

The research questions designed for this study are as below:

RQ1: In which aspects do consumer loyalty programs affect the customer retention process? **RQ2:** How does the Loyalty Card affect the customer retention process?

RQ3: How instrumental the Neptun reward program is in building the success of Neptun as a brand?

RQ4: Which are the external factors that mostly affect the customer loyalty?

2. Literature Review

2.1 Defining Customer Loyalty

The concept of customer loyalty has received a considerable amount of attention in customer research studies during the past decades. Different conceptualizations are provided by scholars regarding this concept. Consumer loyalty is defined as a very significant and valuable intangible asset for most of the companies.

It is worth to mention the definition of Casidy & Walter (2016) who conceptualized customer loyalty as "people's feelings of attachment to the loyalty object, rather than repeated commercial transactions". Loyalty is also considered as a very important dimension of brand equity. Jennifer Aaker defines brand loyalty as a very strong connection that a customer has to a brand (Aaker, 1997). On the other hand, consumer loyalty is widely defined as a customer's decision to remain committed to specific brands or service providers in the marketplace by repeating their purchasing experiences all over again (Thakur, 2016). All these definitions are highly related with the fact that customer loyalty is crucial for every company of any size and nature.

Recent developments in information technology are giving the right the tools to businesses in order to generate new CRM tactics. One such scheme that hundreds of firms have accepted to use now days is the customer loyalty program. Chinese retailing, UK airlines, US banks, European grocery stores, German car companies, Japanese telecommunication companies, Italian fashion stores, American universities and many other industries are the perfect example of these loyalty schemes.

As Stephan A. Butscher has cited on his book (Butscher, 2002) the only way to build long term loyalty is to establish real relationships based on emotions and trust, by offering uniqueness and high perceived value in your loyalty program. Recently, many retail companies have introduced loyalty programs to enhance customer loyalty (Kumar & Reinartz, 2005).

One of the most useful insights into loyalty topic was provided by (Dick & Basu, 1994) who quoted loyalty as "the strength between repeat patronage and relative attitude". Key in understanding this citation is by understanding the correlation between attitude and behavior.

There are hundreds of researching agencies in the marketplace that are required from different companies to monitor consumers in the marketplace by tracking their attitudes, buying behaviors, choices, wants and needs. Here we can mention research companies such as: Clearworks, RRC or CMNTY. The consumer behavior monitoring is done on behalf of the competitive advantage that consumer loyalty represents as a source of incomes and success for the companies. In the past decade's worldwide markets are becoming highly competitive and consumer loyalty is regarded always as a delicate and challenging issue for the corporations (Nyadzayo & Khajehzadeh, 2016)

Repeat purchases often are results of repeated satisfaction that somehow measure the "loyalty to the brand" but on the other hand the consumer buys the same brand products or services all over again and that not because of a deep loyalty but because it is not worth the time and stress to explore for other alternatives in the market" (Dowling & Uncles, 1997)

Two are the purposes that stand out for consumer loyalty programs. The first is the usage of these programs in order to boost sales revenues for the companies and the second one is to build a closer relationship of the brand with the current customer. Creating life time customers is important because for companies winning over new consumers is way more expensive than keeping the old ones. In most of the cases customers decide to be part of the loyalty programs because it helps them in their random decision making during the buying process and also makes them achieve a greater cognitive consistency in decisions (Singh & Khan, 2012).

Taking into consideration all the elements that consumer loyalty relies on the goal of course must be the development of such a system through which the

customers are frequently informed and motivated to earn rewards of loyalty programs they are part of.

2.2 Historical Background of Loyalty Programs

There are theories that consumer brand loyalty can be present only if three conditions are fulfilled by the consumers, such as: Affection, Belief and Intention (Jacoby & Chestnut, 1978). That's why consumers must believe that the brand they have chosen is superior to the other competitive brands in the market and must be highly affected to the brand by having also the intention to continuously buy the brand in the upcoming times.

The very early beginnings of loyalty programs date in the 18-th century in America. Retailers at this time were giving the customers who purchased something from them copper tokens that could be later reused for the second or third purchase in order to keep the consumer satisfied. Later on, around 1891's coins that retailers used to give to the consumers as a loyalty reward were replaced with stamps because they noticed that giving coins to every consumer who purchased something was costly and unaffordable to promote loyalty. In the early 1900's "box tops" were an original way to reward consumers and to engage them. This was an innovative idea by Betty Crocker who created the box tops as printed materials that were placed onto packages of products and that could be later used for rewards. Frequent fliers were the most well-known loyalty schemes developed in late 1981 by American Airlines that revolutionized the whole loyalty program and affected more than 50 million customers. In 1990's retailers developed the in-store loyalty which is implemented by client cards and functions by rewarding points that later on turn into presents to the customer for each receipt he makes.

Loyalty programs have evolved time by time and with the rise of e-commerce and digital purchases people are eager into using massively online shopping and they are rewarded by online stores not only for their purchases but for many other desired actions they make.

That's how step by step the consumer journey is created.

2.3 The Relationship Between Loyalty and Satisfaction

Customer satisfaction is a topic that has been given so much importance by scholars. Kotler (2000) gave a definition about satisfaction as "a person's feelings of disappointment or pleasure which result from comparing a perceived outcome in relation to his or her expectations".

In addition, customer satisfaction as an element leads to loyalty and retention. Söderlund (1998) accepts that there is a strong relation between satisfaction and loyalty, but on the other hand he observed that "increasing satisfaction doesn't produce an equal increase in loyalty for customers". Dissatisfaction does not always result in defection as satisfaction does not always produce customer retention because there is no scientific evidence to prove that customer satisfaction toward a brand is a substantial factor in gaining loyalty. Though, it's a fact that satisfied customers behaviors in majority of cases result in repeated purchases, positive word of mouth marketing and brand loyalty as well (Hoyer & Macinnis, 2001). Taking in consideration studies form different scholars they all give approximately the same conclusion that a satisfied customer is way more likely to share his likable experience with six or seven people meanwhile a dissatisfied customer spread word of mouth about his unhappiness with the brand to another ten people.

Customer satisfaction is treated as a necessity for businesses but it is not a sufficient condition to drive brand loyalty. It is worth to mention that there exists customer satisfaction without loyalty, but it is very difficult to have loyalty without having satisfaction". This is highly related to industries that operate in highly competitive markets such as grocery stores, banks or retail shops because in these industries customers can switch rapidly from one brand to another if they are not satisfied. Furthermore, it has been discovered that customer loyalty was highly influenced by several factors such as level of service, value for money, reward programs etc. In the chapter four of this dissertation is considered this area of study.

2.4 Types of Loyalty Programs and Strategy Behind Them

In order for companies to embrace successful loyalty programs they need to develop firstly a strong work plan and to set some criteria for it because according to studies most of the rewards that loyalty programs generate in today's marketplace reveal a limited understanding of customer needs and desires. Author Stephan Butscher explains on his book (Butscher, 2002) the steps of a research plan and how to launch a successful loyalty program whose goal is to build long-term relationships between the company and consumer. It is crucial for the companies to determine whether the program they are implementing aligns with company capabilities and if the customers value the program as well. By applying consumer loyalty programs companies get to know better their clients and give them some extra motivation to visit their stores and purchase again.

In this paragraph are listed some of the most frequently used consumer loyalty programs in the retail industry all around the world.

Two are the core and key elements for loyalty programs, the saving features and discounts, which give value to the programs and distinguish them from one another (Yi & Jeon, 2003). Discount loyalty programs offer discounts on the price of certain products or services usually only for members of loyalty programs. Through this scheme, this discount feature gives loyalty program members an immediate reward for their purchases (Yi & Jeon, 2003). The discount feature usually is applied in preselected categories or products that are in promotion with the aim to stimulate the buyers to purchase them.

Saving programs represent another type of loyalty scheme whose members are given saving points, amount of which depends on the amount they spent for products or services. Customers can freely use the gained points after it is reached the saving threshold or limit, for a reward such as free products from the company (Dreze & Hoch, 1998)

Point program is the most common and most straightforward program used in retail industry. Its logic is very simple, the more money consumers spend, the

more points they earn. The points earned are calculated and translated into store credit, discount or cash back. A relevant example is a program offered by Neptun Albania. Every Lek that consumers spend earns them a point that can later be converted for discounts.

Tier systems are offering rewards to consumers which are part of the loyalty program to encourage them to continue their purchases because the value of reward increases in the meantime. Tiered programs are advised to be used for high commitment industries like airlines the case of Alba wings Corp or insurance companies.

With the spread of technology in the last decade's game program loyalty scheme has become truly effective in getting consumers to shop more and more in order to get their rewards. Such applications in Mobile devices makes them play online and compete with friends. An example of this type of program is the Youth application by Vodafone who gives the ability to the consumers to play in order to get Vcoins which later can use them to get discounts or gifts in different stores that Vodafone has partnership with.

Loyalty card program is widely used by retail industry companies such as supermarkets, gas stations or boutiques. This card allows businesses to gather data about their customers and allows customers to benefit from different rewards. One of the goals of this loyalty card program is to form repeat business by offering participating customers some extra rewards such as discounts, gifts or free transportation that it's not available to non-participating customers.

Gifts Card or Vouchers are also used by businesses as a mean to attract and retain consumers. Retailers often set a specific amount of money on the voucher and sell them to consumers. This gift card is purchased by buyers as a present for a relative or friend. Then the person who gets this tricky present goes to the retailer who has issued the gift card and spend the amount by buying articles that are offered in the store. If the purchase experience is likable the gifted customers become regular one.

Rewarding programs generate empirical data which are extremely important for companies in order to analyze consumer's preferences. Through the data generated, companies identify not only the consumer's preferences but also character of each and every consumer, starting from those who seek for premium, luxury goods till the ones who always look for the things that are on the SALE section.

Based on a study from Deloitte (LLP, 2017) it was found that loyalty programs have a strong impact on consumer retention process. Firstly, by keeping the best consumers and then by winning back the lost ones. The emotional connection is the fundamental driver of brand loyalty and based on statistics, emotionally connected customers recommend brand in a higher rate by also having a 306% higher lifetime value (LLP, 2017). In the Deloitte study is show that 44% of customers make recommendations about a brand based mainly on their emotional connection and feelings that they have toward the brand while only 3% of customers will recommend a brand based on their principles or values, they share. To give back an incentive to customers just to thank them for their loyalty toward brand represents a brilliant way to build and increase customer loyalty.

In 1987 the psychologist Nobert Schwarz made a study to test the impact of a positive act in overall satisfaction. What he did is that he put a coin intentionally on a photocopier machine so the next user can find it. People who found that coin resulted to be more satisfied, happier than those who didn't find a coin. People get happier not for the monetary value of what they find but just for the fact that something positive happened to them. Rewards stimulate a win-win situation, for example: companies aren't required to give every customer a brand-new house or car to get their loyalty, contrary, they just need to undertake positive rewarding actions by offering customers something in return.

2.6 The Case of Neptun Happy Card

Neptun originally started operating in February, 1993 as a small shop in the main square of Tirana. Now almost 28 years later, Neptun is the leader company in the electronic hardware and technology for the Albanian market with 28 stores. Since

1998 Neptun stores can be found in Macedonia, to continue in 2007 with Kosovo, both part of Neptun International. Neptun has created partnerships with the best brands recognized internationally, such as: SAMSUNG, BEKO, LG, SONY, APPLE, BOSCH and BRAUN and is part of Balfin Group which is the biggest investment group in Albania. It cites that "Being successful in within the country and beyond to the company means: Focus to the customer, solid value, combination, a wide variety of products and services."

Figure 1*:* Neptun Data Cycle (Neptun, 2020)

"Customers don't want to be treated equally. They want to be treated individually" (Newell 2003). Happy Loyalty Program by Neptun was created in 2016 with the aim to reward the loyal customers based on their purchases and to guarantee special offers for members. Neptun was the first company in Albania that presented this type of loyalty program and resulted very successful practice that later on was followed by many other companies that operate in retail industry.

The inspiration of the card was to gain an insight into shopping habits of customers and give something back to them. It functions as a point-based program with two cards, HAPPY and HAPPY+.

Collecting points, it's as easy as buying. Happy Card rewards members for every purchase the make. Clients have just one duty, to remember to use their

Happy card in every purchase they make. For every 100 ALL spent at Neptun client earns 2.5 points on the Happy Card while clients may be informed regarding the point balance by visiting the Happy Program website or just by calling the customer care. The points earned in the card expire after a calendar year from the last purchase the client has made. By participating in the program, clients receive relevant offers and benefits created according to their buying habits and needs.

But how clients benefit from the earned points? There are two types of levels in Happy card, that reward you with Happy vouchers. You can choose if you want to be part of the first level or continue collecting points in order to reach the second level of vouchers. Once you collect 5000 Happy points, you get 6 Happy vouchers. If you want to save your points for the next level, you need to collect 10000 points in order to get 5 Happy + voucher

Figure 2*:* Happy Card Vouchers (Albania Happy Card , 2020)

Starting from the moment of card activations in one of the Neptun stores or online activation, every client gets a BONUS of 50 points for plastic card holders and a BONUS of 80 points for digital cardmembers. This loyalty program tracks some personal information of every card holder such as gender, telephone number or birthday. An interesting fact is that for every client's birthday this program rewards them with 50 BONUS points.

As the Albanian largest retailer and given the considerable customer base, the Happy Card accumulates and records information for every card holder. It is estimated that on five of every ten purchasers in Neptun use a Happy Card. While there are more than 30 thousand active Happy Card in Albania.

With every usage of a loyalty card at a Neptun point of sale, the retailer is recording the entire transaction in detail: from the name of the shopper, the time they shop, the shop they visited and the entire products list. The Happy Card enables Neptun to keep a record of each holder's name, age, telephone number and birthday. So practically Neptun keeps track of exactly everything a Happy cardholder has ever bought. All these data are very important for retailers because they closely monitor their clients buying behaviors.

2.7 Loyalty Relation to Profitability

Bowen & Chen (2001) have stated that "It is widely known that there exists a positive relationship between customer loyalty and profitability". Marketers now days are trying to find out techniques and strategies in how to build the proper customer loyalty programs. Businesses usually face very high costs regarding the execution of customer loyalty programs because they require major investments in technology means and in most of the cases hundreds of dollars are being spent on hardware, software, and personnel. Even though there are created millions of loyalty programs, very few of them deliver real loyalty. Reichheld & Sasser (1990) stated that when the relationship between the customer and company extends the profit eventually rise.

Profit is eventually generated form such factors as increase in sales, reduced operational costs and reduced marketing costs as well and what is most important customers who are loyal to the brand cost less to serve. That's because they know the products and require less information and require less time to decide whether to buy or not furthermore loyal customers also serve as an information point and source for other customers by spreading the word of mouth.

The relation between profitability and loyalty is apparent and in most of the cases appear to be simplistic as well. The increase of internet users now days drive customers to search more about products, prices and different deals offered so this encourages rational shopping practices rather than emotional shopping. Consumers are informed for every movement in price, product range, location or discounts in the market but not all marketers perceive it, and consequently

customers are using manipulation techniques to suppliers in order to fulfill their own needs. Egan (2001) claims that customers are taking real quick advantage over suppliers and jumping from one brand to another to get the best price they can. “There exist a wide mix of margins that determine profitability and for sure that loyalty is one of them (Dowling & Uncles, 1997).

3. Methodology

From the literature review section, numerous issues were discovered which require additional investigation and research.

In the literature it is often cited from numerous authors that there is no relation between satisfaction and loyalty and that a satisfied customer is not always loyal, but according to (Reichheld, 1996) it is cited that “customer satisfaction is the key to drive customer loyalty and customer retention as well”.

Some of the objectives of this research paper are described as below:

- Investigate customer opinions and perception over the Neptun Happy Card by analyzing and understanding their mind- set.
- Identify and recognize the main users of the Neptun Happy Card.
- Determine if the customer loyalty toward Neptun as a brand is created by its loyalty program. • Determine if loyalty programs used by brands affect the consumer retention process.

3.1 Research Methods

In this exploratory research will be followed by quantitative as well as qualitative research methods. This research approach is a formal, objective and systematic process by using numerical data findings as well as qualitative data because it is based on a case study form Albanian Market. According to Malhotra & Peterson (2006), quantitative research method quantifies and applies statistical analysis to the data gathered in order to achieve the results. Questionnaire is the medium that is going to be used in this study in order to gather the data from the participants and then to achieve objectives based on their responses.

Primary data are generated by building the Online survey to targeted sample. A cross- sectional type of survey will be done in behalf of understanding how people of different economic and social status from one geographic segment, in our case Albania respond to loyalty program applied by Neptun Company in the retail sector. Non probability sampling method is applied in this research paper. For selection of the sample convenience sampling method has been used.

3.2 Merit of Case Study as Part of Methodology

In this dissertation is taken in consideration a real case study form Albanian market regarding Neptun Albania, which, as mentioned in the section 2.6 is one of the first Albanian retailers that implemented loyalty programs on its business model.

Implementing a real case study on the dissertation reflects several advantages such as: providing rich qualitative information, helping in generating new ideas based on real facts and situations as well as serve as illustrating theories for the topic on hand. Neptun case study helped a lot in giving shape to the whole research and pointing out the important topics and elements that should be taken in consideration for further research.

3.3 Questionnaire Design

The questionnaire represents the most vital part of the survey process. It is very important the usage of the correct terminology and it should be designed carefully in order to extract the exact required information from the participants.

Respondents were informed about scope of the study and issues of privacy and anonymity.

The questionnaire is separated in three parts. The first one is about demographical elements such as gender, age and incomes since it is necessary to create a profile of the Happy Card holders. Second part is about discovering if the participant has joined to loyalty programs and lastly third part is going to be about the attitude of the participant regarding the Neptun as a brand and the loyalty

created towards this brand. The amount of data that is going to be collected from the survey will be analyzed statistically in order to draw the research conclusions.

3.4 Coding

Assigning a code or a number to each response of the survey means coding. This whole process includes the way the gathered data is tabulated, statistically analyzed and interpreted.

Consequently, the questionnaire of this research is firstly pre- coded with a classification number that is found beside every question and answer which makes possible the translation into numerical form for counting. SPSS is the software that is used for statistical analysis of the responses.

3.5 Sample Selection Procedure and Sample Characteristics

It was forecasted that approximately 100 respondents to be drawn from the population. Convenience sampling is the type of sampling method that is used in this research which means that the sampling selection process is in continuation until the required sample size is reached. Probability sampling resulted as the most suitable method, consequently there was no other criteria for respondents other than the fact that they should be Neptun customers. Usage of this method eliminates any subjectivity and guarantee a really fair method of acquiring respondents.

3.6 Strengths

Questionnaire method permits responses to be collected in a more standardized way and allows participants to express their opinion freely, which results in the scale of objectivity of the data. In addition, the information which is gathered may be easily presented in graphical and numerical form. Questionnaire is spread via internet among respondents' sample in google forms document which allowed a faster spreading of information and a large group of people to participate due to easily access provided.

4.Introduction

In this chapter will be presented the results gathered from the primary research method conducted via the questionnaire and their interpretation. This quantitative research has generated numerous results that have been investigated and correlated. In this segment of the study are provided some essential information and data in order to meet the objectives of the dissertation

Several areas need to be established that's why the data analysis is separated into different sections in order for each objective to be achieved. Cross tabulation and frequency tables are the techniques used for the presentation and interpretation of findings.

A Likert Scale measurement which represents a psychometric scale is used in some of the questions. Participants need to make their specific choices by 'agreeing' or 'disagreeing' on survey questions. Likert Scale was invented by psychologist Rensis Likert who aimed to calculate the level of agreement or disagreement based on symmetric agree-disagree scale. Participants of the survey should answer the questions based on the 1-4 scale.

In total about 100 questionnaires were distributed randomly to Albanian customers who enter in some Neptun stores in Tirana, Korca and in the franchise store of Neptun in Bilisht city. The customers are going to be asked if they can access and fill the google form link from their device.

4.1 Data analysis

An effective starting point of the data analysis is to establish a user profile of the selected sample. Table 1 shows the rate of participants based on their gender and results that from a total of 73 respondents, 24 are males and 49 are female. The data exemplify that woman are more probable to be cardholders. Based on the results 24 males own their Happy Card which means that they are also active customers that want to profit from discounts or rewards as well, in addition this means that Neptun as a brand has obtained this market segment successfully.

Frequency			Percent	Valid Percent	Cumulative Percent
Valid	Male	24	32.9	32.9	32.9
	Female	49	67.1	67.1	100.0
	Total	73	100.0	100.0	

Table 1: Gender Frequency

In the Table 2 is shown data regarding the age group of respondents linked and compared to their gender. The table demonstrates clearly the mass application of the Happy Card across all age demographics and from the data is found that females in the age of 30-39 are the age group with the highest usage of Happy Card while males with the highest usage rate aged 22- 29 years old.

	Age Under 21		22-29	30-39	Over 40	Total
Gender	Male	1	12	8	3	24
	Female	5	13	19	12	49
Total		6	25	27	15	73

Table 2 Gender- Age Crosstabulation

Table 3 represents the participants age in comparison with their trust level for Neptun image and products. The above data indicates that the age groups most likely to be loyal to Neptun due to the notion they trust Neptun products and its image are the 30- 39 age groups. Contrariwise, it is also shown the 22- 29 age group claims that they do not trust Neptun. In total out of the 73 respondents, 28% did not trust Neptun while 72% did trust Neptun. The data show that Neptun has been effective in establishing the right position in the marketplace. Even though there is no clear indication to get in conclusion that this trust is formed by Happy Card scheme. The results also show that the Happy Card is handed to every age group from under 21 to over 40 and this demonstrates that Neptun as a brand is successfully managing its relationship with customers of different life stages in

order for attaining competitive advantage toward competitors and adding value to the Happy Card Scheme as well.

		Strongly Disagree	Trust Disagree	Neptun Agree	Strongly Agree	Total
Age	Under 21	0	2	1	3	6
	22-29	4	8	8	5	25
	30-39	0	3	15	9	27
	Over 40	0	3	7	5	15
Total		4	16	31	22	73

Table 3 Age - Trust Crosstabulation

In the Table 4 is revealed that a total of 65.7 % of the respondents who took part in the survey used their Happy Card always or frequently during their shopping experience in Neptun. This relatively high value indicates that Albanian customers value the Happy Card scheme and have integrated it into their normal shopping routine. Still, despite this the results also illustrate that there is a remaining 34.2% of customers who little or never use their card. It is essential that this data analysis margin is not ignored because it demonstrates that a considerable number of Neptun consumers do not buy into the loyalty scheme and are not inspired or driven by the rewards on offer, additionally it also shows that the Neptun Happy Card is not sufficient enough to keep specific customers loyal to it.

Frequency			Percent	Valid Percent	Cumulative Percent
Valid	Always	23	31.5	31.5	31.5
	Frequently	25	34.2	34.2	65.8
	Little	20	27.4	27.4	93.2
	Never	5	6.8	6.8	100.0
Total		73	100.0	100.0	

Table 4 Happy Card Usage Frequency

Table 5 shows the variable of age paralleled with the notion that if would they still continue to shop in Neptun if it doesn't have the Happy Card customer reward program. The results show that almost 67 % of respondents in all age demographics would still continue to shop there. This indicates that perhaps Albanian customers view the Happy Card as being with little or no significance at all when they do their shopping at Neptun. Significantly what the results in figure 5 show is that loyalty rather than attitudinal is more behavioral because Neptun is doing and offering so much more than just a simple loyalty card that simplifies and drives repeat purchases to its clients.

	Shopping Yes		Without Happy No	Card Don't Know	Total
Age	Under 21	4	2	0	6
	22-29	19	1	5	25
	30-39	20	5	2	27
	Over 40	6	8	1	14
Total		49	16	8	73

Table 5 Age- Shopping without Happy Card Crosstabulation

In the Table 6 data show that 79.4 % of the respondents strongly agree or agree that they want to get frequently or every day the rewards from Happy Card as their shopping routine. Though, despite this fact a considerable number of respondents approximately 60 out of 73 or 82% of them would continue to buy at Neptun even if they were not part of Happy Card scheme. This evaluates that loyalty that Neptun as a brand has generated in Albania and the fact that the majority of customers will shop there regardless of a customer reward program.

		Rewards Strongly Disagree	In shopping Disagree	Experience Agree	Strongly Agree	Total
Shopping without Happy Card	Yes	4	9	20	27	60
	No	1	1	3	4	9
	Don't Know	0	0	2	2	4
Total		5	10	25	33	73

Table 6. Shopping without card - Rewards in shopping Crosstabulation

In the Table 7 is illustrated that 49 out of 73 or 67 % of respondents got rewarded from Neptun during the last year. What results show is that customers of the retail industry are very connected ad attracted to the discounts or rewards and seek to get them every time they shop. Furthermore, respondents rank reward schemes importance between 1- 4 scale (1 = not important at all, 4 = very important) where 53% of them respond to raking as important and very important. Meanwhile 37 % of respondents did not give loyalty programs a primarily importance (ranked 1- 2). This means that customers are not primarily focused in rewarding schemes despite a considerable number of respondents that accept to want and use them. Customers who accepted not to be connected to the rewards, give importance to several other factors that are going to be discussed in the analysis below.

Rewards in the last 12 months		Yes	No	Total
Happy Card importance Not important at all		2	7	9
	Somehow Important	8	6	14
	Important	26	10	36
	Very Important	13	1	14
Total		49	24	73

Table 7 Happy Card importance - Rewards in the last 12 months Crosstabulation

		Satisfied consumer		
		Yes	No	Total
Loyal consumer	Yes	35	15	60
	No	20	3	13
Total		55	18	73

Table 8 Loyalty- Satisfaction Crosstabulation

In the Table 8 is shown that 55 out of 73 or 68% of the respondents assumed themselves as satisfied customers of Neptun. However, the cross tabulation with the loyalty variable shows that 27% of them are satisfied consumers but not loyal.

Important finding from this issue is that satisfied customers of a brand are not necessarily loyal to it. Accordingly, 20 % of respondents approved that they were not satisfied Neptun customers but were loyal. This is called "functionally loyalty" when customers are remaining loyal only for objective reasons such as location or opening times. The cross tabulation indicates also that 47 % of the respondents remain loyal and satisfied with Neptun.

The association between satisfaction and loyalty is not easily achievable only through a single method but it is dependent on consumers' own variables (needs and desires). Increasing satisfaction of customers does not give an equivalent increase in loyalty. In conclusion Happy Card scheme does add value to the consumer retention process in collaboration with some other loyalty tools that Neptun utilize such as customer service, digital marketing or competitive pricing.

From the total group of respondents surveyed as it is shown in the table 9, 81% of them accepted that they own and use up to 2 or more other loyalty cards except to their Neptun Clubcard, while 17% own only Happy Card. This fact can be justified because today the generation of consumers possess diverse tastes, needs and attitudes therefore loyalty is much harder to be achieve only by one brand in the market and customers need to see and try every opportunity in the market as well.

Going in some more details regarding the point systems that retail companies use for loyalty cards one of the questions of the survey was whether they knew the converting of money spend in store with points in their card. As it is shown in the Table 9 more than half of the respondents didn't knew the value. Only 32% of them knew how much points they gain for every 100 ALL they would spend in Neptun stores. Retail companies in this case Neptun has not given sufficient information to its customers about the policies they shall follow when customers become part of loyalty programs.

		Card points for 100ALL		
		Yes	No	Total
Age	Under 21	3	3	6
	22-29	5	20	25
	30-39	10	17	27
	Over 40	6	9	15
Total		24	49	73

Table 9 Age- Point System Information Crosstabulation

The data gathered from the online survey has provided a useful insight into finding the external factors that influence customer loyalty. In Table 10 is provided this information. What respondents ranked the highest and the lowest factor that affect their loyalty is demonstrated as below:

1) Value for money.

2) Loyalty card scheme

3) Money off coupons /vouchers

4) Product range

5) Location of store

6). In- store promotional magazine

The findings demonstrate that value for money and loyalty card scheme are considered to be the most influential factors in reaching customer loyalty. The ranking also illustrates that loyalty card schemes and coupons and vouchers are placed in the middle of important factors list. Meanwhile Location of store or in-store promotional materials are placed at the end of the list. Neptun may be better off investing money into other areas such as increasing value of Happy Card scheme or organizing discounts rather than investing on in-store promotional materials.

	Responses			Percent
		N	Percent	of Cases
Loyaty factors	Location	21	15.9%	28.8%
	Loyalty scheme	26	19.7%	35.6%
	Product range	22	16.7%	30.1%
	Value for money	27	20.5%	37.0%
	In store promotion	11	8.3%	15.1%
	Vouchers	25	18.9%	34.2%
Total		132	100.0%	180.8%

Table 10 Loyalty Factors

5. Results

From this study and the data analysis process numerous important findings have been revealed and objectives have been accomplished through the analysis of the primary research. The results evaluated the value of the Neptun Happy Card as a loyalty marketing instrument by categorizing the answers into numerous essential areas.

The answers from the questionnaire show that loyalty as a concept does exist amongst Neptun Happy Card holders. Most of the respondents accepted that they frequently use the card, this fact indicates that they have accepted the loyalty

program and in addition they are willing to integrate it into their normal, everyday shopping experience at Neptun. On the other hand, results clearly demonstrate that customer loyalty is not created only by loyalty program practices because there have been no truthful evidences to support the assumption that the Happy Card alone has created loyalty. Furthermore, according to the results from the questionnaire it is shown that in order to prevent the customers switching to other competitors in the market particular attention should be paid by Neptun to some other business areas.

Consumers also give importance to such factors as: value for money and product range and accepted that they need for the rewards to be part of their normal shopping experience the value for money and product range must be considered by the company to be improved.

The 21-st century customers possess more diverse attitudes, tastes and perceptions and this is reflected on the results of the questionnaire designed for this research paper. The buying power customers hold is getting higher and consequently they are effectually manipulating industries to meet their own particular wants and needs.

Taking these facts into consideration it's fair to say that the Neputn Happy Card is one of the factors that drive consumer retention but not the most important one because as it is represented in the Figure 6, 82% of the respondents would continue to shop in Neptun despite the fact that they own a loyalty card or not. Neptun Happy card needs to transform, evolve and advance in order to increase its value as a loyalty marketing tool.

6. Conclusion

Literature review pointed out that loyalty programs deliver a significant value in the consumer retention process and in customer satisfaction as well. These programs offer a wide range of advantages to the organizations and to the customers. Organizations use loyalty programs in order to retain the existing customers and to attract the new ones, through different types of loyalty programs

are created. Companies through these programs manage to gather data from their customers in order to understand and track their buying behaviors and preferences meanwhile customers accept to be part of these marketing programs because rewards, discounts and other benefits are promised.

This study examined the case of Neptun Albania, as one of the first organizations in Albania who adopted the loyalty program practices. Neptun has chosen the Loyalty Card type of program and has developed the Happy Card as its mean in achieving loyalty. It is unquestionable that loyalty exists among Neptun customers because it is operating since 1993 in the Albanian market but the findings of study have revealed very little evidences that support the concept that due to Neptun Happy Card the loyalty among customers is achieved.

Based on the primary research that was done on behalf of this study it was found out that between male and female grouping, females are most interested in having and using the loyalty programs that are offered in the market though they respond more positively than men to these programs. Meanwhile from the total number of the respondents more than half of them admitted that would shop at Neptun even if they wouldn't own a Happy Card and this is a very strong indicator that shows that loyalty is achieved even through other means rather than only from loyalty programs because respondents perceive the Happy Card as an additional secondary bonus to their shopping experience.

Another significant finding of this study is the relation between loyalty and satisfaction. This study shows that a satisfied customer is not necessarily loyal because based on the primary research majority of respondents marked themselves as satisfied customers but the cross tabulation shows that 27% of the satisfied customers did not marked themselves as loyal to the brand. Increasing satisfaction of customers does not give an equivalent increase in loyalty

Customer's give different value to the factors that influence their loyalty. A list with approximately five factors was given to the participants of the survey and they should mark them from the most important to the least important one.

Value for money was the top factor that customers valued the most for Neptun because their aim is to find products and services that are worth the money spent on them. The second factor that is considered as one of the most influential is the loyalty card scheme, so in this case is emphasized the importance of loyalty programs in customer retention because people choose loyalty cards before product range or location of store. Customers are now attracted to the long- term collection of points in order to receive rewards afterwards. This fact is a positive indicator that loyalty programs worth the time and money the organizations spent on them.

7. Recommendations

Happy Card reward program has been a successful practice used by Neptun in achieving loyalty and increasing sales, yet despite this success the study has discovered that some changes need to be made in order for the company to maximize the customer retention process. Based on the conclusions of the research paper the value of Happy Card as a loyalty tool is weakening due to several factors thus the following recommendations are suggested:

- Company must take in consideration and investigate the areas that are important for customers and the ones that guarantee happiness, comfort and repeat purchases for them. Neptun should fund the necessary activities that help to meet the demands of new customers such as loyalty marketing programs, discount campaigns etc. These practices influence in the creation of a loyal customer base.

- Company must give extra information to the customers regarding the loyalty programs that are being developed. Giving loyalty cards to random customers is not enough. Neptun must develop an operation plan in how to spread information regarding the correct usage of the card, calculation of points gathered after each buying process and the benefits a customer might have when using this card. Informing customers in the key to having a wide spread of Happy Card usage and the key to retain loyal customers.

- Transformation of the Happy Card to adapt to the demands, desires and tastes of the everyday changing generation of consumers. The image of the Happy Card needs to be renewed and a unique marketing campaign for presenting the new image of the card with a full list of benefits it offers would be a great way to boost the attention of the customers by motivating them to get their card.

References

[1] Aaker, J. (1997). Dimensions of Brand Personality. *Journal of Marketing Research*, 347- 356.

[2] Butscher, S. (2002). Customer Loyalty Programmes and Clubs. In S. Butscher, *Customer Loyalty Programmes and Clubs* (p. 206). England: Gower Publishing Limited.

[3] Casidy, R., & Walter, W. (2016). "A risk worth taking: Perceived risk as moderator of satisfaction, loyalty, and willingness-to-pay premium price. *Journal of Retailing and Consumer Services*, 189-197.

[4] Dick, A., & Basu, K. (1994). Toward an integrated conceptual framework. *Journal of the Academy of Marketing Science volume*, 99-113.

[5] Dowling, G., & Uncles, M. (1997). Do Customer Loyalty Programs Really Work. *Sloan Management Review*, 71-83.

[6] Dreze, X., & Hoch, S. (1998). *Exploiting the Installed Base Using Cross-Merchandising and Category Destination Programs.* International Journal of Research in Marketing.

[7] Gordon, I. (1998). *Relationship Marketing.* Toronto: John Wiley and Sons Ltd.

[8] Hoyer, W., & Macinnis, D. (2001). *Consumer Behaviour 2-nd edition.* Boston: Houghton.

[9] Jacoby, J., & Chestnut, R. W. (1978). Brand Loyalty, Measurement and Management. *Journal of Advertising*, 120.

[10] LLP, D. (2017). *Customer loyalty: A relationship,not just a scheme.* London: The Creative Studio at Deloitte,.

[11] Malhotra, N. K., & Peterson, M. (2006). *Basic Marketing Research: A Decision-making Approach.* Pearson/Prentice Hall.

[12] Newell, F. (2003). *Why CRM Doesn't Work: How to Win By Letting Customers Manage the Relationship.* Bloomberg Press.

[13] Nyadzayo, M., & Khajehzadeh, S. (2016). v=The antecedents of customer loyalty : a moderated mediation model of customer relationship management quality and brand image. *Journal of retailing and consumer services*, 262-270.

[14] Reichheld, F. F. (1996). *The Loyalty Effect.* Massachusetts: Harvard Business School Press.

[15] Singh, R., & Khan, I. A. (2012). An Approach to Increase Customer Retention and. *International Journal of Scientific and Research Publications*.

[16] Thakur, R. (2016). Understanding Customer Engagement and Loyalty: A Case of Mobile Devices for Shopping. *Journal of Retailing and Consumer Services* , 151-163.

[17] Yi, Y., & Jeon, H. (2003). Effects of Loyalty Programs on Value Perception, Program Loyalty, and Brand Loyalty. *Journal of The Academy of Marketing Science*.

Dr. Arti Omeri
University College Beder
Tirana, ALBANIA

Inelda Dervishi

INFORMATION AND COMMUNICATION TECHNOLOGIES IN EDUCATION

Abstract

Technology will not replace great teachers, but technology in the hands of great teachers can be transformational ". The purpose of this study is to demonstrate the positive effects of information and communication technologies in education. Technology is affecting our lives more and more every day. A new day cannot be numbered if we do not use technology equipment and of course internet. We use internet all day long, we can get information whenever we want to, but despite that fact technology is influencing a lot in education. Information and communication technologies effected a lot in education during the pandemic period and not only in Albania, but all over the world. Maybe we learnt a little bit late that technology has a huge impact in education and it can be really helpful for teachers and students too. During the pandemic period in 2020 here in Albania we started to realize the lesson through ZOOM and different types of platforms. We can say that was the first time that we realize lessons ONLINE. Fortunately, it worked pretty well, despite the fact that was a little bit difficult at first. We were all closed at our homes, we cannot join our schools, universities, colleges, etc., but we started to use technology, to realize what we cannot do face to face.

We used internet, technology equipment, several platforms to gather together. So, since that period technology was the KING of the planet. Now we use technology more than before, not only in education, but even for business. When we surf on the internet we enter into a big garden full of options and we have the possibility to pick up whatever flower we need. Going back to our study, in the end of it we are going to find out how teachers used internet to complete the lesson, how did they used to use technologies platforms during the pandemic period, how difficult was to have students online and manage them, etc. Also, we are going to find out how do students adapt with online lesson, did they had any difficulty with internet or technology equipment and if they use technology even today during the lesson. The focus will be at students of 10th and 12th graders of "Zihni Magani "high school in Peqin. Part of my study have been all teachers in that high school, not only English teachers or other teachers of foreign languages at school, to understand better the impact of information and communication technologies in education.

Keywords: communication technologies in education, technology equipments, platforms

1. Introduction

Technology is replacing and cutting short teachers work. The only problem in here is that technology is replacing teachers who prefer to work physically at school or other institutions, not only the technology, but the conditions or environmental problems and different illnesses. As the technology advance , much worse is for schools which do not have the conditions to offer online schooling . They have lack of materials, equipment, internet connection and also there are teachers, who do not have enough knowledge to realize lessons online, because they are not trained or do not have the right qualification. This problem happened to some teachers of "Zihni Magani "high school. Also, not mentioning only the teachers and schools is the other part of this chain, "students ", who are as important as the other parts of the chain too. For some students there is no problem to do home-schooling, because they have all conditions. But there are others who do not have any condition at home, such as: internet connection, computers, etc. So, in my opinion every school, public or private have to have a plan B for realizing lessons online, for example to offer computers to some families who do not have any possibility to buy or to the families who have more than one child, to train teacher realizing online lessons, etc.

Also, technology has a big impact in education and it can be really helpful for teachers and students. It can be really helpful for them, because realizing school online can help them not to fail or lose the school year. We understand that point during the pandemic period, when everything was realized online, teachers did not lose their job, and both teachers and students did not lose a year at school, even it was very difficult at first. Every school, college, university started to do the lessons through ZOOM and different types of platforms. Through those platforms teachers can have all their students together, can explain the lesson, can ask students, student can attach their home-works or projects and all of their works can be marked by teachers, so the same as we did before at school, physically. (Allison Academy, "What technology is used in education today? ")

The aim of this work is to know how helpful is technology in communication and education and the ways of getting the right information for our home-works or projects. As I mentioned in the previous paragraphs, COVID-19 made us understand how important and helpful the technology is in our lives. Because of the evolution of technology, we realized a whole year online, we communicated with everyone without meeting them face to face, we realized our project and works with all kind of information we needed. So, we can say that having the possibility to have internet at home and the right equipment, our lives are saved and we are pure and a garden full of options is a click far away from us. And the importance of this study is to be aware of how important is technology in education and how do people and students adopt during the pandemic period in Albania.

Two hypothesis of this study are:

1. How did teachers used to use technology platforms during the pandemic period?
2. How difficult was to have students online and manage them?

It is important to know how do teachers used technology platforms during the pandemic period, because in "Zihni Magani "teachers did not use a lot technology or technology equipment at school before COVID-19. Also, I want to realize the difficulties that students and teachers faced during that period, how they managed it and how difficult was to adapt in the beginning.

Knowing those two questions we will be able to know the evolution or the steps that teachers followed until they adapted and realized the lessons online without difficulties. The same thing is for students too.

2. Research Problems

While working on this topic, I faced a lot problems that both teachers and students faced during the pandemic period in online schooling. In my opinion the main problem between the communication and information technologies is to know how technology is affecting in education. And some sub-problems I choose to pay more attention are:

If technology is affecting positively in education or not,

If it was difficult for students and teachers to realize online lessons,

If all the students had the possibility to use internet at their home during the lockdown and after lockdown at schools,

How do teachers used internet and all the information in it in their field,

How COVID-19 affected the learning process?

3. Methodology

I used mixed methods in this study case: Observation, Study Case and Focus Groups. The study group included 10^{th} and 12^{th} classes of "Zihni Magani "high school, in Peqin. I included two questionnaires. One questionnaire was for students of 10^{th} and 12^{th} grades and the other one was for all teachers at the school, not only English teachers. In this research I used quantitative and qualitative data. Quantitative because it requires to calculate the percentage of the answers related to the topic. And qualitative because it has questions in the questionnaires that requires to express personal opinion.

4. Findings

Going back to our research questions, I realized that Online-Schooling has been very difficult for teacher, students and their families too. They said that it has been very difficult, because it was the first time in Albania that everything went online, especially schools. Teachers did not have the right qualification to use different platforms that the government offered. Also, for students was very difficult too,

because they did not know how to use these platforms, same as teachers, but another problem was that lot of families do not have internet at home or do not have a smartphone or a laptop. Another big problem was for students and teachers who live in villages and the connection was not good enough to deal with onlIe was not any problem with studying online, because they were used to realize lessons, private courses and trainings online. So, they easily adapted with "online reality", and had no difficulties. (Gleick James, 1 March 2011, "The Information: A History, a Theory, a Flood ").

According to a journal, written by Benjamin Boivin:

> For larger groups, include video messages on social media, embedded in email campaigns, and placed on the university's home page. For smaller populations of students, make the videos even more personalized. You can use college deans, seniors from the same major, recent graduates, and successful alumni to tell their story and to communicate vital information. College students want to feel relevant and expect full transparency during these challenging times. As a result, many institutions have developed a COVID-19-specific landing page on their websites, student portals, or social media groups. Although not every update or statistic contains positive news, keeping students informed is the key. It is okay to not always have the answers, but clear communication is vital. (Boivin Benjamin, 11 August 2021, "How to Communicate Changes Due to COVID).

So, as we seen in this passage written by Benjamin Boivin, students were priority, different from here. Things were much more evolved as much as institutions developed a special page, social media groups, etc, and all with positive news and always keeping students updated.

According to the State of Students Recruitment 2021 Report, 66% of students are looking for fully in-person learning, 37% want a flexible online-campus hybrid model, and 21% plan to earn a degree fully online. Allow students to join the decision-making process through online surveys. Like the global workforce, not every student will want to return to the classroom full-time. There may be certain classes where Zoom is not only sufficient but preferred. Find out which clubs and organizations

should continue meeting in person and which ones should move to a hybrid model. Discover how your institution can improve the technological infrastructure and continue utilizing digital tools in the classroom, whether in person, or online. It is unlikely every student on campus will submit a survey response, but by giving students the power to influence future decisions, they will feel more connected to the college and the community. (Sarthak Srivastava, Anshul Verma, and Pradeepika Verma, "Fundamentals of Internet Things ", July 2021).

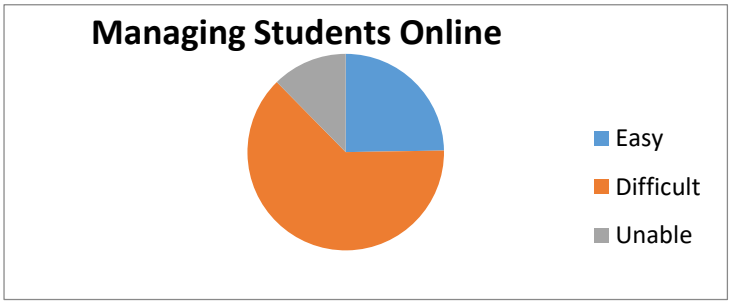


Figure 1. Level of Difficulty in Managing Students in Online Teaching

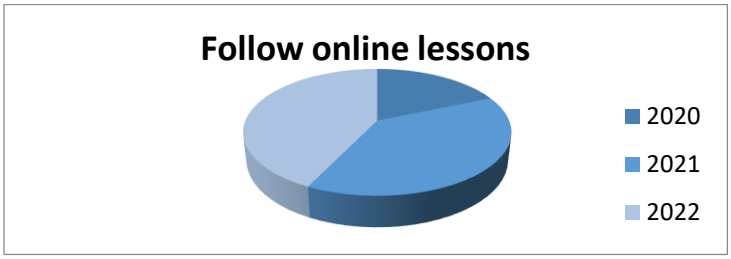


Figure 2. How technology has been affecting education over the years

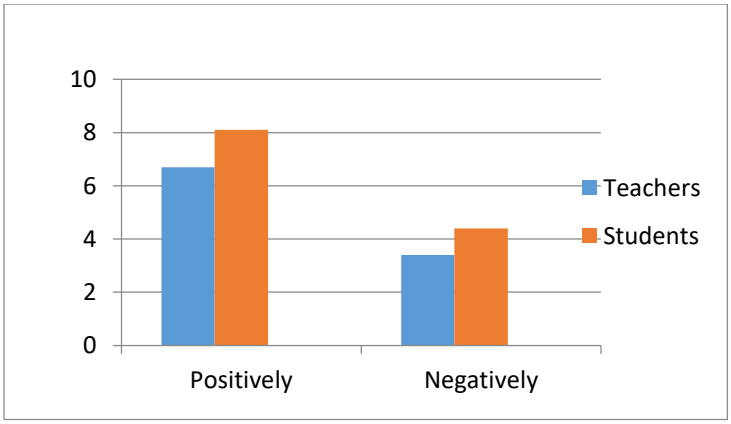


Figure 3. Impact of effective communication on teachers and students (Davies Leah)

References

[1] Allaya Cooks-Campbell "Communication is key in the workplace. Here's how to improve" https://www.betterup.com/blog/why-communication-is-key-to-workplace-and-how-to-improve-skills

[2] Allison Academy, “What technology is used in education today? “

[3] Boivin Benjamin(August 2021), “How to Communicate Changes Due to COVID

[4] Davies Leah, “Effective Communication “

[5] Gleick James, 1 March 2011, “The Information: A History, a Theory, a Flood“

[6] "How has technology changed education "https://online.purdue.edu/blog/education/how-has-technology-changed-education

[7] Hunt Frances, “Communication in Education, Centre for International Education,University of Sussex, https://files.eric.ed.gov/fulltext/ED501789.pdf

[8] Importance of Information and Communications Technology (ICT) In Our Daily Lifehttps://intelligizedigital.com/importance-of-information-and-communications-technology-ict-in-our-daily-lif

[9] Pradeep Kendre, Sarthak Srivastava, Anshul Verma, and Pradeepika Verma, “Fundamentals of Internet Things “, July 2022

[10] Selwyn Neil ,8 August 2012, “Education in a digital world “

[11] Silvia Sánchez Calderon, 24 May 2020, “Learning English though ITC tools “https://www.casadellibro.com.co/ebook-learning-english-through-itc-tools-ebook/9788418262371/11620603

[12] Study Abroad Experiences for Students during Covidhttps://www.keg.com/news/study-abroad-student-experiences-covid

[13] What technology is used in education today retrieved https://www.allisonacademy.com/students/education/technology-in-education/technology-used-in-education-tod

Drp. Veranda Syla
veranda.syla@umsh.edu.al
Mediterranean University of Albania

Drp. Malvina Xhabafti
malvina.xhabafti@umsh.edu.al
Mediterranean University of Albania

URBAN TRAFFIC ASSESSMENT: A CASE STUDY IN TIRANA USING THE VISSIM SIMULATOR

Abstract

Nowadays urban traffic is one of the problems we face every day in daily life. Based on this key problem, how we can solve it, the idea of this paper was born. This paper aims to study and analyze urban traffic in Tirana for a specific area of the city. The theoretical part deals with the methods of estimating and forecasting urban traffic. The number of intersections controlled by traffic signals has increased in Tirana, but efforts to study the traffic performance of the strategies used are still lacking. This part of the paper aims to give a general idea about:

- Urban Traffic Signal Control Strategies;

- Methods for measuring the impact of Urban Traffic Signal Control strategies.

For the realization of the practical part, the area at the Lana bridge was chosen, which includes two consecutive intersections. This whole area will be examined as a single node which is simulated with the traffic simulator called PTV VISSIM. This simulator will serve to realize several different scenarios and to evaluate urban traffic in different situations, such as. at different peak hours where the flow of cars is variable and for different traffic cycle programming cycle times. The method for the operation of traffic lights is fixed time and their programming was done by means of logistics. Detectors, delay meters, queue counters and total travel time meters were installed for each line.

According to the simulation results it was noticed that when the traffic cycle time of the traffic lights would be reduced, the cars do not wait long in line, but the chances of accidents occurring are very high. Also, according to the simulations made in the peak hours, both in the morning and in the afternoon, there was a significant increase in traffic and high chances for accidents, due to the high number of vehicles, despite the fact that the traffic cycle time was chosen longer.

Keywords: *Urban traffic, Traffic light, VISSIM*

1. Introduction

For the realization of this scientific paper, we encountered many problems. One of the main problems concerns traffic data, as most urban traffic data is privately owned and many researchers obtain very little traffic data. Data produces heterogeneity, which makes the complexity of data processing very high. The time interval between data collection is 5-10 min. The shorter the data update time, the more accurate the forecast can be. As more data collection points are concentrated on the highway, this leads to more research on highway traffic conditions. Practically, the collection of data or their availability for internal areas, such as the case we have considered, is very difficult. The difficulty deepens further for the study area that we have taken in the city of Tirana since there are no detectors or data collection sensors.

2. Methodology

2.1 Map of the Case Study Area

The area under study starts from the end of Elbasani street, continues to the Lana bridge and ends up to the ninth floor, in the city of Tirana, which includes two intersections in a row as shown in figure 1. One of the hottest areas of urban traffic in Tirana, which includes 'Bajram Curri' and 'Zhan D'Ark' boulevards, 'Elbasanit' street and 'George W. Bush' street.

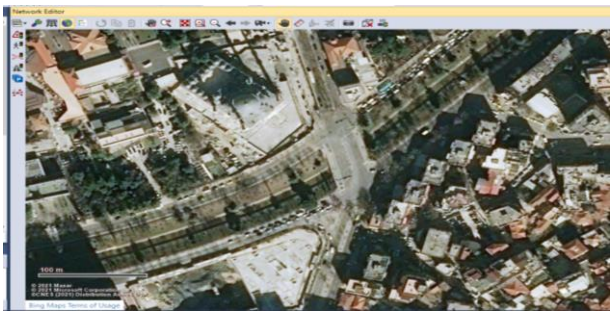


Fig. 1. Map of the study area in Tirana

The provision of the map is made possible by the Vissim simulator which provides easy use of the entire world map. The type of map used for simulations is Bing Maps (Aerial View). The reason why this specific area was chosen to analyze

and evaluate in detail by means of the simulator is the high flow of vehicles at peak hours and the heavy traffic. Figure 2 shows the construction of two intersections in Vissim using the obtained map as a research tool.

Fig. 2. Construction of two intersections in VISSIM

2.3 Scenarios

Fig.3.

3. Introduction

For the realization of this scientific paper, we encountered many problems. One of the main problems concerns traffic data, as most urban traffic data is privately owned and many researchers obtain very little traffic data. Data produces heterogeneity, which makes the complexity of data processing very high. The time interval between data collection is 5-10 min. The shorter the data update time, the more accurate the forecast can be. As more data collection points are concentrated on the highway, this leads to more research on highway traffic conditions. Practically, the collection of data or their availability for internal areas, such as the case we have considered, is very difficult. The difficulty deepens further for the study area that we have taken in the city of Tirana since there are no detectors or data collection sensors.

4. Methodology

4.1 Map of the case study area

The area under study starts from the end of Elbasani street, continues to the Lana bridge and ends up to the ninth floor, in the city of Tirana, which includes two intersections in a row as shown in figure 4. One of the hottest areas of urban traffic in Tirana, which includes 'Bajram Curri' and 'Zhan D'Ark' boulevards, 'Elbasanit' street and 'George W. Bush' street.

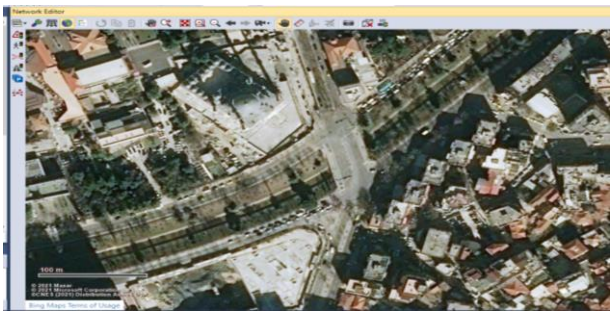


Fig. 4. Map of the study area in Tirana

The provision of the map is made possible by the Vissim simulator which provides easy use of the entire world map. The type of map used for simulations is Bing Maps (Aerial View). The reason why this specific area was chosen to analyze and evaluate in detail by means of the simulator is the high flow of vehicles at peak hours and the heavy traffic. Figure 5 shows the construction of two intersections in Vissim using the obtained map as a research tool.

Fig. 5. Construction of two intersections in VISSIM

2.3 Scenarios

Fig. 6. Basic simulation scheme

2.3.1 Scenario 1

Basic simulation scenario

The goal is as long as possible the duration of the green light so as not to block traffic. Traffic lights are placed in such a way that vehicles do not collide with each other and vehicles do not collide with pedestrians. Traffic light cycle time is 160 seconds. We have a single program signal for all types of traffic lights. Traffic lights for vehicles are: signal group 1, 2, 4, 5, 6, 7, 8, 9 and 10. While for pedestrians they are K1, K2, K3, K4, K5, K6, K7, K8 and K9. The flow of cars in the incoming links is 1500. This value is set based on the data received from the relevant directorate of the municipality of Tirana. The semaphore for pedestrians was selected with two colors red and green, while red, green and orange were chosen for vehicles. Their duration was decided on the basis of logistics such that there is no collision between the two intersections for a traffic that is as heavy as possible.

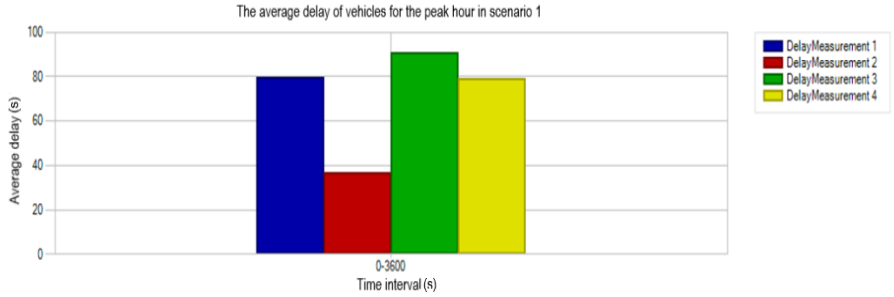
2.3.2 Scenario 2

In the second scenario, the cycle time of traffic lights was changed. Cycle time of traffic lights was reduced from 160 seconds, 120 seconds were set. The flow of cars on the incoming links is 1500, the same as in the first scenario. This value is set on the basis of data obtained from the relevant directorate of the municipality of Tirana. A

cycle time of 120 seconds is insufficient for the operation of eighteen traffic lights (pedestrians' vehicles). Traffic lights for pedestrians K1, K3, K5, K6, K7 and K8 have been left green for a very long time. Thus, pedestrians are given more priority and cars will wait longer. This causes a huge queue for vehicles.

2.3.3 Scenario 3

In the third scenario, the traffic light operation cycle time is the same as in the first scenario, i.e. 160 seconds. All traffic lights for pedestrians and vehicles are programmed with the same program signal. The difference with the first scenario is only in the set flow of vehicles for the entrance lanes. So the value of the number of vehicle entries has changed. The difference from the second scenario is exactly the programming cycle time of the lights and the input values for the vehicles. In this scenario, the number of cars entering the entrance lanes has increased. The flow has doubled compared to the first and second scenario. From the value of 1500 vehicles in the peak hour for each entrance lane, 3000 vehicles/peak hour has been set.



3. Results of Simulations

Fig. 7. The average delay of vehicles for the peak hour in scenario 1

From the graphs, it appears that Elbasanit street, Bajram Curri boulevard and Jean d'Arc boulevard have the highest average travel time of around 100 seconds. While George W. Bush Street has the lowest average vehicle travel time at about 50 seconds. Time interval is selected 1 hour [3600s].

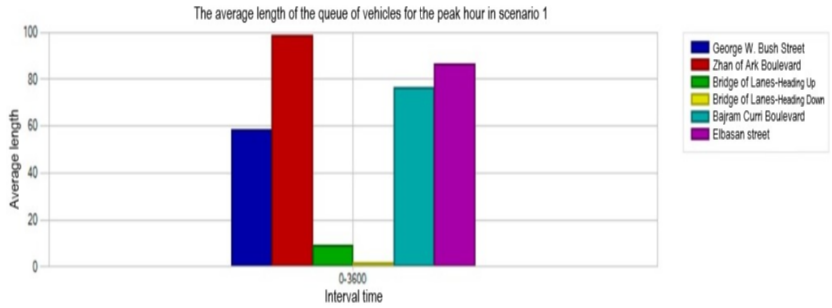


Fig. 8. The average length of the queue of vehicles for the peak hour in scenario 1

In scenario 1 the cycle time of 160 seconds is sufficient for all traffic lights placed. It was observed that during the simulations there was no collision between vehicles and vehicle-pedestrian. Sufficient time to clear the queue of vehicles and pedestrians performs better than the other two scenarios. In the first scenario, 20 simulations were carried out for the peak hour which was chosen at 4 pm to 5 pm.

Figure 8 shows the average length of the vehicle queue for this peak hour. As it seems from the graphs, Jean d'Arc boulevard has the longest traffic queue of about 100 m, after it comes Elbasani street, which has about 90 m. Bajram Curri Boulevard has the average length of about 70 m. The length of the Lana bridge is the lowest in both directions.

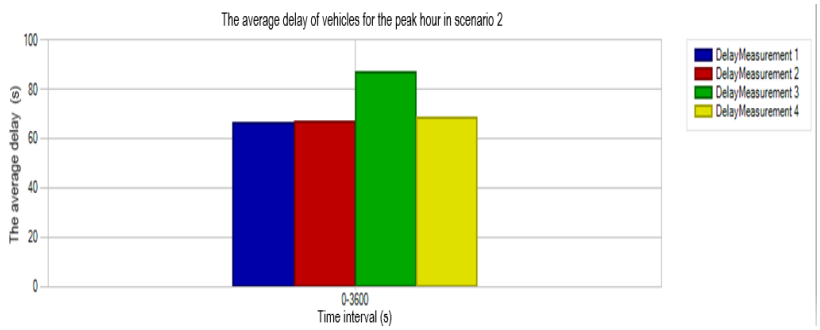


Fig. 9. The average delay of vehicles for the peak hour in scenario 2

The longest average delay for the Elbasan road is 90 seconds. This is because the average queuing time was also higher for this route. Followed by Bajram Curri and Jean d'Arc boulevards, George W. Bush street has an average vehicle delay of about 70 seconds. These values were expected to be so since the traffic was less heavy.

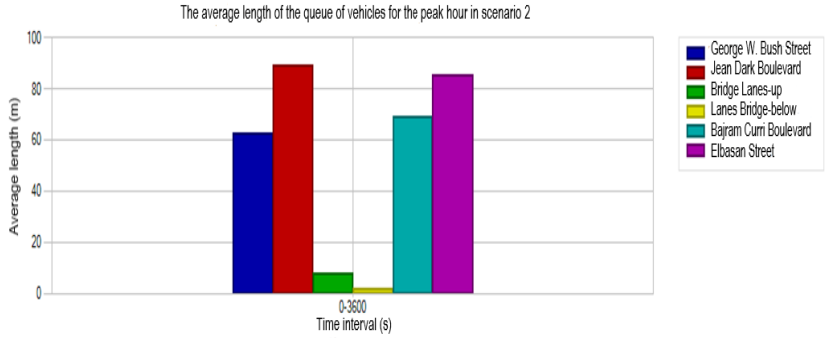


Fig.10. The average length of the queue of vehicles for the peak hour in scenario 2

For scenario 2 a traffic light programming cycle time of 120 seconds is insufficient to clear the queue. It was noticed that during the simulations there were vehicle-pedestrian collisions. When the network is considered as a single node we have a total delay of vehicles at the network level greater than scenario 1 has lower performance.

Figure 10 shows the average maximum vehicle queue length for rush hour in the second scenario. The maximum values are obtained on both Bajram Curri and Jean d'Arc boulevards, about 180 m and 170 m. While the lowest maximum value that is obtained is on the bridge of Lana, the direction is down for 25 seconds. The maximum value of the Elbasan road is about 125 m.

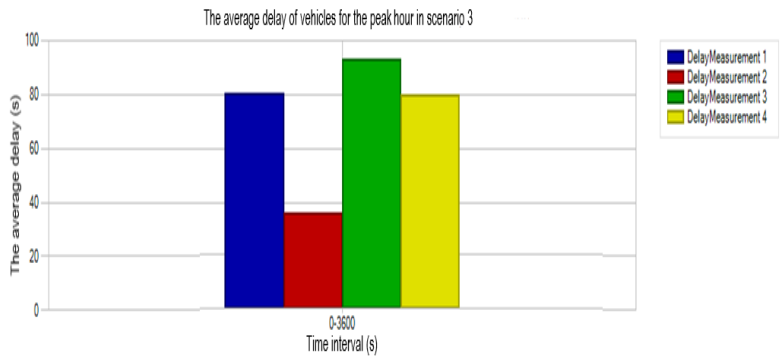


Fig. 11. The average delay of vehicles for the peak hour in scenario 3

Figure 11 shows that Elbasanit street, Bajram Curri boulevard and Jean d'Arc boulevard have the highest average travel time of around 110 seconds. While George W. Bush Street has the lowest average vehicle travel time at about 50 seconds.

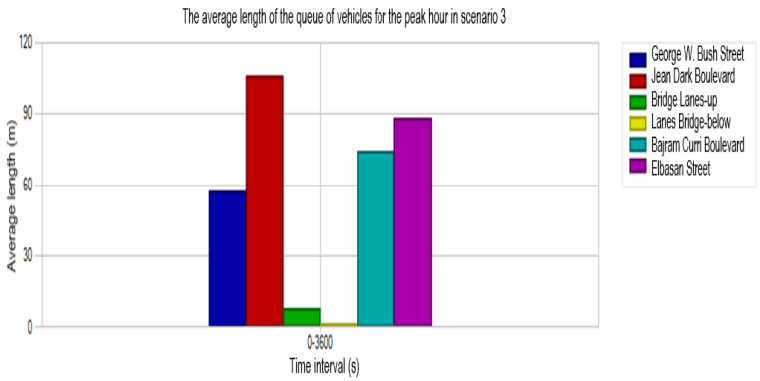


Fig. 12. The average length of the queue of vehicles for the peak hour in scenario 3

For scenario 3 a traffic light programming cycle time of 160 seconds is insufficient for such a high flow of vehicles. It was noticed that during the simulations there were collisions between vehicles. Insufficient time leads to long queues of vehicles. This scenario has lower performance than the other two scenarios.

Figure 12 shows the average length of the vehicle queue for this peak hour. As it seems from the graphs, Jean d'Arc boulevard has the longest traffic queue of about 110 m, followed by Elbasani street, which has about 90 m. Bajram Curri Boulevard has the average length of about 80 m. The length of the Lana bridge is the lowest in both directions.

4.Conclusions and Recommendations

Scenario 1

In this scenario, the cycle time of traffic lights, which was chosen to be 160 seconds, was sufficient for the 18 traffic lights installed (pedestrian and vehicular). It was observed that there were no vehicle-vehicle and vehicle-pedestrian collisions during the simulations. The next highest average queue length was for Jean d'Arc Boulevard at 100 seconds. The highest average travel time was 110 seconds for the Elbasan road.

The longest average delay was 110 seconds for the Elbasan road. At the network level, the average total latency was 99 seconds. While the total delay of the

entire network was 300,000 seconds on average and 650,000 seconds as a maximum. The number of vehicles that are in the network when the simulation ends is 250, while the number of vehicles that have left the network is 2300. The difference between these values shows the capacity of the intersection network, which has a value of 2050 cars.

Scenario 2

In the second scenario the cycle time was reduced by 40 seconds. A traffic light programming cycle time of 120 seconds is insufficient to clear the queue of vehicles and pedestrians. Regardless of the average length of the vehicle queue for the peak hour, the graphs show that Jean d'Arc boulevard has the longest traffic queue of about 90 m, i.e. less than in scenario 1 by about 10 seconds.

Average travel time to the top around 90-110 seconds. This does not mean that it performs better than scenario 2. Based on the analysis performed, this is because the operating cycle time is lower and the vehicles do not have to wait long in the queue and the simulator generates charts based on this action. But during the simulation it was noticed that there are collisions between vehicles and pedestrians. So we conclude that a low and insufficient cycle time for a given network is a source of accidents even though vehicle delays may be lower than in the first scenario.

At the network level, the average total delay is 800,000 seconds, i.e. higher than in the first scenario. Both junctions are considered as a single node and when the total average network delay is obtained it is higher for the second scenario. So when we compare scenario 1 and 2, this second one has lower performance at the network level since it also takes into account the accidents that occur.

Scenario 3

In the third scenario, the traffic light programming cycle time is the same as the first scenario, 160 seconds. The change was made in the number of vehicle inputs, which was doubled. Jean d'Arc boulevard has the longest traffic queue, about 90 m, followed by Elbasani street, which is about 90 m long. While the average time of the highest journey is around 110 seconds. The longest average delay is for the Elbasan

road, about 95 seconds. So, based on the graphs that were generated, the third scenario is better than the first.

This conclusion is rejected for two reasons: the first because during the simulation there were long queues for pedestrians and accidents between vehicles; the second because the total average delay of vehicles at the network level is 8000000 seconds, more than in the first scenario. The number of vehicles that are in the network is 250, while the number of vehicles that have left the network is 4000. The difference between these values shows the capacity of the intersection network of 3750 vehicles.

At the network level, the average total delay of the entire network has an average value of 800,000 seconds. We conclude that the third scenario has the lowest performance than the other two scenarios, the value above shows this best.

For the future, it is important to study the method chosen for the operation of traffic lights. Nowadays in Tirana the traffic lights work with fixed time, which means that the time of the traffic lights is predetermined regardless of the traffic flow. For the future, it would be ideal to operate traffic lights with an adaptive method that adapts to traffic changes in real time. This thing has a great cost for Tirana, but it is the ideal that is used in the most developed countries of the world.

Noticing every day more and more heavy traffic in the capital, this cost is worth spending to improve the traffic in the country. The adaptive method for operating traffic lights causes their lights to change depending on real-time traffic flow and environmental conditions such as humidity. It adapts in real time to the traffic bringing an immediate relief to it and also avoiding accidents that may occur.For the future, it is essential to increase traffic experts in Tirana.

5. Reference

[1] Akcelik, R. (1980). Time-Dependent Expressions for Delay, Stop Rate and Queue Length At Traffic Signals. Australian Road Research Board (ARRB), Internal Report, AIR 3671.

[2] Akcelik, R. (1988). The Highway Capacity Manual Delay Formula for Signalized Intersections. ITE Journal 58 (3), pp 23-27.

[3] Akcelik, R. & Rouphail, N. (1994). Overflow Queues and Delays with Random and Platoon Arrival at Signalized Intersections. Journal of Advanced Transportation, Volume 28 (3), pp 227-251.

[4] Akcelik, R. (1996). Signalised & unsignalised Intersection Design & Research Aid (SIDRA). Transport Research Ltd, ARRB, Australia.

[5] Al-Mudhaffar, A. (2002). Improving Incident Reduction Function Used in The LHOVRA Technique. 9th World Congress on ITS, Chicago, USA.

[6] Barth, M., & Boriboonsomsin, K. (2008). Real-World Carbon Dioxide Impacts of Traffic Congestion. Transportation Research Record.

[7] Basak, D., Pal, S., & Patranabis, D.C. (2007). Support Vector Regression. Neural Information Processing, 11(10).

[8] Bang, K-L. (1976). Optimal Control of Isolated Traffic Signals. Transportation Research Record No. 597, TRB, Washington DC, USA.

[9] Bonneson, J. A. Pratt, M.P., & Vandehey, M.A (2010). Predicting Arrival Flow Profiles and Platoon Dispersion for Urban Street Segments. Transportation Research Record 30-37.

[10] CT4821, C. n. (2006). ET4-024 Traffic Guidance Systems. TU Delft.

[11] Chu, L., Liu, H.X., Oh J.S., & Recker, W. (2004). A Calibration procedure for Microscopic Traffic Simulation, Published in Proceedings of TRB 2004 Annual meeting, USA.

[12] Fellendorf, M. & Vortisch, P. (2001). Validation of the Microscopic Traffic Flow Model VISSIM in Different Real-World Situations. Presented at 79th Annual Meeting of Transportation Research Board, U.K

[13] Ghosh, B., Basu, B., & O'Mahony, M. (2004). *Time Series Modeling for Forecasting Vehicular Traffic Flow*.

[14] Head, K. L, & Mirchandani, P. B. (1994). *Hierarchical Control Architecture for Real-Time* Traffic Management. Automatic Control-World Congres 1993, Vol 3, 145-148.

[15] Hunt, P.B. et al (1981). SCOOT - A traffic responsive method of coordinating signals.

[16] Holt, C. C. (2004). Forecasting seasonals and trends by exponentially weighted moving averages. International Journal of Forecasting, 20(1), 5-10.

[17] Kosonen, I. & Kokkinen, M. (1992). A new simulation system for traffic signal control evaluation. Proc. ITE 62nd annual meeting, Washington, USA.

[18] Kronborg, P. (1992). MOVA and LHOVRA, Traffic Signal Control for Isolated Intersections. TFK report 1992:4E.

[19] Liu, H.X., Wu, X. K., Ma, W. T., & Hu, H. (2009). Real-time queue length estimation for congested signalized intersection. Transportation Research Part C-Emerging Technologies, 17(4), 412-427.

[20] Miller, A.J. (1963). A Computer-Controlled System for Traffic Networks. Proc. Int. Symposium on the Theory of Road Traffic Flow, London, UK.

[21] Miller, A.J. (1963 a). Settings for Fixed-Cycle Traffic Signals. Opl Res. Q. 14 (4) 376-86.

[22] PTV (2001). User Manual VISSIM V 3.60. Planung Transport Verkehr AG (PTV), Karlsruhe, Germany.

[23] Qiao, F. X., Yang, H., & Lam, W. H. K. (2001). Intelligent simulation and prediction of traffic flow dispersion. Transportation Research Part B-Methodological, 35(9), 843-890.

[24] Robertson, D. I. (1969). TRANSYT- A Traffic Network Study Tool. RRL Report, LR 253.

[25] TRB (2000). *Highway Capacity Manual* (HCM). Transportation Research Board, USA

Miranda Pila, PhD Candidate
University of Elbasan "A. Xhuvani"
mirapila@yahoo.com

TRANSLATION, TRANSLATORS AND THE INFORMATION TECHNOLOGY. A LITERATURE REVIEW

Abstract

Academic Globalization, in all its fields, cannot be conceived without the translation of Academic Information and Translators. Translation is a craft because there are craftsmen, who are translators, who are an important and vital part of the Philosophy of Education and International Relations. When we talk about the Art of Translation, the first question that comes to mind is what is the translator and the importance of his work and what is Translation, the translator's relationship with the author, as well as the problems posed by translating a work that belongs to a different Age and Civilization as well as the role of translators in bringing people closer and communicating.

Keywords: *Translation, Translators, Academic Globalization, Information Technology*

1. What is Translation?

In the simplest words it can be said that translation is the carrying of words loaded with thought, meaning, feeling, from a Foreign Language to the Mother Tongue and vice versa, or from a Foreign Language to another Foreign Language. The only objective criterion to be followed in the field of translation is its comparison with the original.

The Translator is first Literary Translator, second Writer and third Lexicographer. Not everyone can become a translator. It is not enough to know the Foreign Language and your Mother Tongue well; you must also be inspired, to feel the call, the vocation of the art of translation, because Translation is Art.

Translation Studies is an Academic Interdiscipline dealing with the systemic study of the theory, description and application of translation, interpreting, and localization. As an interdiscipline, translation studies borrow much from the various fields of study that support translation. These include comparative literature, computer science, history, linguistics, philology, philosophy, semiotics and terminology.

Translators, including early translators of the sacred texts, have helped shape the languages in which they have translated. Due to the tediousness of the translation process, efforts have been made since the 1940s, with varying degrees of success, to automate the translation or to mechanically assist the human translator. Recently, the rise of the Internet has spurred a global market for translation services and facilitated "language localization".

2. Technologies Used in the Field of Translation are:

Computer-aided translation (CAT), also referred to as machine-assisted translation (MAT) or machine-aided human translation (MAHT)

Machine Translation

Mobile Translation

A Translation Management System

Dubbing

Subtitles

Pre-Editing

Post-Editing

Multimedia Translation

3. Aim of Study

The aim of this study is to what Translation is, its importance in the different fields of life and especially in the Academic Field and of course the importance of Translators as an important and vital part of the Philosophy of Education.

Also, another aim of this study was to consider the connection of translation and translators with the Information Technology, what dramatic changes in this century have been done in this specific important field.

The main Literature that I considered for this publication is the Book of Professor Vedat Kokona: "On Translation, with the Translatior", Kokona Publication, Tiranë, 2003.

ISBN: 99927-929-2-2 ("Mbi Përkthimin, me Përkthyesin" Botimet Kokona, Tiranë, 2003

e-mail: shbkokona@yahoo.com

It was an honor and pleasure to read this book, one of the best Albanian books written on translation and translator. Profesor Kokona is an expert on this field. He is:

- Doctor "Honoris Causa" in the Unversity of Tirana
- Knight of the Order of Arts and Literature
- Officer of Academic Palms

Other Literary Source used in this publication is Internet Material retrieved from Wikipedia regarding Information Technology.

3.1.About Professor Vedat Kokona

Vedat Kokona's reflections on translation, first published in issue 3 of Merh Licht Magazine in May 1997, constitute a real treatise, perhaps the only one to date, on the art of translation. Retrieved today in a separate publication, they continue to maintain their value and relevance in such a difficult and always problematic field of literary translation.

Vedat Kokona raises a number of issues related to translation, presents them from different perspectives, weighs and weighs them before modestly expressing his complex nuanced opinion.

4. What is Translation?

In the simplest and poorest words it can be said that translation is the carrying of words loaded with thought, meaning, feeling, climate, world of a source-language (or language-starting) into a sign-language (or language -acquisition), or, more simply, from a foreign language to the mother tongue and vice versa, or from a foreign language to another language.(Kokona 2003, 8)

To define translation is like wanting to define words such as life, love, poetry, beauty and saying: what is Life ?, Love? Poetry, Beauty? (Kokona 2003, 9)

Not everyone can become a translator. It is not enough to know well the foreign language and your mother tongue, you have to be inspired, to feel the call, the vocation of the art of translation because translation is art and point. Kokona 2003, 5)

The only objective criterion to be followed in evaluating a translation is its comparison with the original.

Another important issue is the translator's relationship with the author, the problems posed by the translation of a work belonging to a different era and civilization, the role of the translator in bringing people closer to communication. (Kokona 2003, 6)

4.1.On Translation

For thousands of years, man has wanted to give to another what he liked, when he sang the Bible in Hebrew and enjoyed all the beauties that unfold there, he suddenly felt the desire for that joy and pleasure that he felt , passed to one who did not know Hebrew.

This is how the first translations of the Bible began. Even so from Hebrew, in many, many languages of the world. The translations of the Holy Scriptures, as well as the great works of Greco-Roman antiquity, gained new momentum especially in the morning rays of the Renaissance, and thousands of writers took up this work.

Martin Luther translated the Bible into German, while our Albanian translators like the four B's (Buzuku, Budi, Bardhi and Bogdani) to Gjon (John) Shllaku, who recently passed away, translated some of the scriptures. (Kokona 2003, 6)

These translators not only strengthened the foundations of the Albanian language, but with their work informed and formed whole generations, not only readers, but also writers. Many of the world's masterpieces were translated. So much work was done that all the writers of the 50s, 60s, 70s and 80s were fed up with the works of foreign classics. (Kokona 2003, 4).

4.2.What is Artistic Translation?

The translator has to subordinate his personality to the personality of the author he is translating, but this is impossible, especially when dealing with a very talented translator. The task of the translator is to enter into the world of the author's feelings, in his way, in his stylistic character and to convey, as best as possible, this world with foreign feelings, this way and this style with the means of the mother tongue, always preserving the personality of the author.

In the field of poetry the translator must translate poets that belong to his nature. (Kokona 2003, 17)

4.3.What are the Translation Conditions?

1. The first condition of translation is:

Good knowledge of the language of departure and that of the language of arrival, i.e. of the language you are going to translate, into the language you are going to translate.

2. The second condition is:

For the translator to give life, to resurrect metaphors, to discover in originality its essence, its historical conditioning, its popular roots, and then to communicate these to the reader in a lively style. The translator must take care in every way for the stylistic color of the original.

The reader expects the book to interest him, to attract him, to touch him, to speak to him about the truth that the work has within it. (Kokona 2003, 18)

4.4.What should be translated?

Translation makes people get to know each other. Translation makes one people understand the language of another people. But how is such a thing possible? How to understand the language you don't know? Here through the translator.

There are two principles of translation:

One wants the foreign author to move to our country so that we can look at him as one of our compatriots.

The other principle, on the contrary, requires that we ourselves go to this foreigner and adapt to the living conditions of the author's country, the nature of his language, his peculiarities. The good translator must be able to study the "living conditions", "nature of the language" and the "features" of the author, at the same time, to "move" him to the place of the language in which he is translating. (Kokona 2003, 22)

4.5.Translation Studies

Translation Studies is and Academic Interdisipline dealing with the Systemic Study of the Theory, Descritption and Application of Translation and Interpreting. As and Interdisipline, Translation Studies borrows from the various fields of study that support Translation. These include:

- Comparative Literature
- Computer Science
- History Linguistic
- Philology
- Philosophy
- Terminology

Translators, including early translators of the sacred text, have helped shape the language in which they have translated. Due to the tediousness of the translation process, efforts have been made since the 1940's with varying degrees of success, to automate the translation of to mechanically assist the Human Translator. Recently, the rise of the Internet has spurred a global market for the translation services.(retrieved from https://en.wikipedia.org/wiki/Translation _Studies

5. Technologies Used in the Field of Translation

Some of the technologies used in the field of translation include; Computer-aided Translation Machine Translation, Mobile Translation, Translation Management System (TMS), Dubbing, Subtitles, Pre-Editing, Post –Editing and Multimedia Translation.(retrieved from https://en.wikipedia.org/wiki/Computer _assisted_translation

5.1.Computer-Aided Translation

Computer-Aided Translation (CAT) also referred to as Machine-Assisted Translation (MAT) or Machine-Supported Human Translation (MAHT) is the utilization of programming to help a human interpreter in the interpretation cycle. The interpretation is made by a human, and certain parts of the interaction are worked with by programming. This is conversely, with Machine Interpretation (MT) in which the interpretation is made by a PC, alternatively with some human mediation.

5.2.Machine Translation (MT)

Sometimes alluded to by the shortened form MT (in no way related to PC Helped Translation, machine-supported human interpretation or intuitive interpretation, is a sub-field of computational semantics that explores the utilization of programming to decipher texts of discourse starting with one language then onto the next.

On an essential level, MT performs mechanical replacement of words in a single language for words in another, however, that by itself seldom creates a decent interpretation since acknowledgment of entire expressions and their nearest partners in the objective language is required. Not all words in a single language have identical words in another dialect, and many words have more than one significance.

Further developed yield quality can likewise be accomplished by Human Mediation.The advancement and capability of Machine Interpretation (MT) have been abundantly bantered through its set of experiences. Since the 1950's, various researchers have scrutinized the chance of accomplishing completely programmed machine interpretation of top standard.(retrieved from https://en.wikipedia.org/wiki/Machine _Translation)

5.3.Mobile Translation

Mobile Translation is any electronic gadget or programming application that gives sound translation. The idea incorporates any handheld electronic gadget that is explicitly intended for sound interpretation. It likewise incorporates any machine interpretation administration of programming application for hand-held gadgets, including cell phones, Pocket computers and so on. Portable interpretation furnishes hand-held gadget clients with the upside of prompt and non-interceded interpretation starting with one human then onto the next, generally against a help expense that is, in any case, fundamentally more modest than a human interpreter charges.

It depends on PC programming in the circle of computational etymology and the gadget's correspondence implies (Web association of SMS) to work.

5.4. A Translation Management System

A Translation Management System (TMS), originally known as a Globalization Management System (GMS), is a type of software used to streamline the productivity of translators by automating numerous steps in the human language translation process. The goal of a translation management system is to automate any repetitive and unnecessary tasks that can be completed by software or processes, leaving only the creative translation and review tasks to be completed by people. A translation management system typically consists of at least two different types of technology: linguistic technology to support the translator and process management technology to automate the flow of work.

Today, the most popular method of managing different areas of the translation industry is through translation management systems.(Retrieved from https://en.wikipedia.org/wiki/Mobile_translation).

5.5.Dubbing

In post-production techniques known as dubbing, mixing, or re-recording, extra or supplemental recordings are lip-synchronized and "mixed" with the original production to create the finished soundtrack for movies and videos.Outside of the film industry, the process of replacing an actor's voice with another performer's voice who speaks a different language is known as "dubbing," which is known as "revoicing" in the industry.Only when replacing a previous voice, typically in another language, is the phrase "dubbing" employed. (retrieved from https://en.wikipedia.org/wiki/Dubbing_filmmaking).

5.6.Subtitles

Subtitles are texts that are always displayed at the bottom of the screen, or at the top if there is already text there, derived from a transcript or screenplay of the dialogue or commentary in movies, television shows, video games, and other media. They can either be a written rendering of a dialogue in the same language or a written

translation of a dialogue in a foreign language, with or without additional information to make it easier for viewers who are hard of hearing, deaf, or who have difficulty understanding spoken language or accent recognition to follow the dialogue.

Subtitles may occasionally be shown on a separate display below the screen, usually during film festivals, saving the filmmaker the trouble of making a subtitled copy for potentially just one viewing. Closed captioning is another name for television subtitling for the deaf and hard of hearing.

Operas like Verdi's Aida, which feature sung lyrics in Italian that are subtitled in English or another language outside the stage area on bright screens for the audience to follow the plot, are examples of more exceptional uses. These screens are often attached to the backs of the chairs in front of the audience.

The prefix sub- (which means "below") is followed by the term subtitle. The dialogue is sometimes shown above the stage in performances of live opera, for example.(Retrieved from https://en.wikipedia.org/wiki/subtitles)

5.7.Pre-Editing

Pre-Editing is the interaction by which a human reads a report prior to applying machine translation. The principal objective of pre-altering is to decrease the post-altering responsibility by adjusting the source record to work on the crude result of the machine interpretation. Pre-altering could be additionally important for human interpretation projects since it can expand the use of the interpretation memory.

As a rule, pre-altering is worth to apply when there are in excess of three objective dialects. For this situation, pre-altering ought to work with the course of machine interpretation by spell and syntax checking, keeping away from mind boggling or uncertain syntactic design, and confirming term consistency. Semantic pre-altering is a higher priority than the pre-altering of the organization since mistakes can influence interpretation quality.(Retrieved from https://en.wikipedia.org/wiki/Pre-editing).

5.8.Post-Editing

Post-Editing (or postediting) is the interaction by which people correct machine-created traqnslation to accomplish an OK eventual outcome. An individual who post-alters is known as a post-manager. The idea of post-altering is connected to that of pre-altering. During the time spent deciphering a text by means of machine interpretation, best outcomes might be acquired by pre-altering the source text-and afterward post-altering the machine yield. It is unmistakable from altering which alludes to the most common way of working on human created text (a cycle which is frequently known as modification in the field of interpretation). Post-altered text may a short time later be modified to guarantee the nature of the language decisions and are edited to address straightforward missteps.

Post-altering includes the rectification of machine interpretation result to guarantee that it meets a degree of value haggled ahead of time between the client and the post-proofreader. Light post-altering targets making the result essentially reasonable; full post-altering at making it likewise elaborately fitting. With propels in machine interpretation full post-altering is turning into an option in contrast to manual interpretation. Essentially all PC helped interpretation devices presently support pos-altering of machine deciphered yield.(Retrieved from
https://en.wikipedia.org/wiki/Post-editing).

5.9.Multimedia Translation

Multimedia Translation, also sometimes referred to as Audiovisual translation is a particular part of interpretation which manages the exchange of multimodal and multimedial texts into another dialect or potentially culture and which suggests the utilization of a sight and sound electronic framework in the interpretation or in the transmission cycle.(Retrieved from
https://en.wikipedia.org/wiki/Multimedia_translation).

6. Importance of Study and Conclusion

Academic Globalization, in all its fields cannot be conceived without the Translation of Academic Information and Translators. The most important part of this study is the fact that Translation is a Craft, because there are Craftsman, who are Translators, who are an important and vital part of the Philosophy of Education and International Relations. Translation, nowadays is also an important part in the Cinematographic Business Industry. So translators are not employed only in the Academic Field. God has not only given languages but also has given Translation as a Craft and Translators as Craftsmen.

The Translatior is: First Literary Translator, Second Writer and Third Lexicographer.

The task of the translator is to give to the translated work the content and form of the original; in short — body and soul. Accuracy requires that the purity and beauty of the language from which it is translated correspond to the purity and beauty of the language in which it is translated.

References

[1] Kokona. Vedat. Mbi Përkthimin, me Përkthyesin. Botimet Kokona, Tiranë 2003, ISBN 99927-929-2-2

[2] Wikipedia Translation Studies retrieved https://en.wikipedia.org/wiki/Translation _Studies (March 2022)

[3] Wikipedia assisted_translation https://en.wikipedia.org/wiki/Computer _assisted_translation (March 2022)

[4] Wikipedia Machine Translation https://en.wikipedia.org/wiki/Machine_translation (March 2022)

[5] Wikipedia Translation management System https://en.wikipedia.org/wiki/Mobile_translation (March 2022)

[6] Wikipedia Dubbing ,Filmmaking https://en.wikipedia.org/wiki/Dubbing_filmmaking (March 2022)

[7] Wikipedia Subtitles.Pre- Editing, Post Editing , Multimedia Translation https://en.wikipedia.org/wiki/subtitles (March 2022), https://en.wikipedia.org/wiki/Pre-editing (March 2022) https://en.wikipedia.org/wiki/Post-editing (March 2022) https://en.wikipedia.org/wiki/Multimedia_translation (March 2022)

Viola Mania
University of Elbasan Faculty of Educational Sciences
Department of Teaching Methodology

INTEGRATING INFANTS INTO PRESCHOOL EDUCATION

Abstract

For many years in our kindergartens classical teacher-centered teaching has been applied. In this article we will try to study and shed light on: Was it the best method? Has this method helped the child's independence, self-realization or self-development? What about the psycho-emotional realms?

It has been observed in many years of work in the preschool system, that classical methods have not properly helped the child's self-development and his achievements.

The Montessori method has been applied around the world for years,

"Help me do it myself" .... At its core lies the child's freedom in carrying out any activity from clothing - unclothing to scientific research. The teacher is the observer and the child chooses to perform a game or other activity based on his or her preferences or emotional state.

It has been seen that the Montessori method has had a very positive impact on the development of the child. Individual work and interest are made possible thanks to educational tools created in a group that is heterogeneous in age and experience. Psychologically it is important that in a different age group there is no reason to compare.

By applying Maria Montessori's method in life, adults need to understand what interests the baby, create the conditions for fuller development, and explain how the little one can learn more. But it remains to be seen how much can be achieved, how many teachers with years and years of experience can come out of their frameworks, and in addition, kindergarten education should not be limited to its walls, but requires continuing at home and a close parent-teacher collaboration.

Keywords: baby, integration, montessori, competencies, methods, game, educator, parent.

1. Introduction

The period of childhood is considered as one of the most important stages of a person. What happens to the child at this age is essential for the development and flow of life. Preschool education is designed to develop the emotional, physical, psychological, linguistic and social condition of the child. A scientific research conducted by the United Nations International Children's Emancipation Found (2010) on the condition of children in the world, states that intelligence potentials develop from the age of 4 years and early childhood interventions can have a major impact on sustainability of intellectual abilities. Knowing the importance of this period, in many parts of the world, special attention has been paid to preschool education, methods, curricula, training of teaching staff, techniques and materials that will be applied.

In our country the system of preschool education (kindergarten) was opened for the first time in 1921 in Tirana, but the system in the true sense was consolidated in the years 1944-1990, providing a system of kindergarten and kindergarten with and without food (SKAZHIFH, 2006). Structure that still exists and even in recent years has received a lot of priority. In state and private kindergartens in Albania, in addition to the classical methodology, other methods have been used, such as: Step by step, Reggio Emilia, Maria Montessori and Standards.

Each of the new methods has advantages and disadvantages, but one of the methods that I will analyze and do a study is the Montessori. Although it has been created years ago, it remains one of the best and most effective methods for child development in every aspect.

This study will talk about this method, what it contains, how it is applied and the principles it has. It will also contain the results of the questionnaire I applied in a kindergarten.

2. Methodology

This paper comes as a result of several research methods such as: observational, qualitative, analytical and interpretive. I have treated various study materials that have been written about the Montessori method as well as the analysis of the questionnaire that I applied to the private kindergarten "Montessori Tirana"

This instrument is built on the theoretical basis and purpose of this study which is: "The Montessori method affects the self-development of the child's skills"

The hypotheses of the study are:

- "Montessori method promotes the autonomy of the child"

- "Heterogeneous classes affect their socialization and self-realization"

The subjects of the study are the children of this kindergarten and the teachers who work in it. The age group divisions are: 6-15 months, 16-3 years and 3-6 years.

3. Literature Review

3.1. Maria Montessori's Theory on the Education of Preschool Children.

In 1907, Maria Montessori founded the first children's home (Casa dei bambini) in Rome. She started her career with children with mental retardation, a job that began to take her away from medicine. The moment she begins to realize that her method can be used even in "normal" children without mental problems, she begins to fully dedicate herself to this idea in all aspects, thus creating her own education system for preschool children. Many of her ideas nowadays are so similar to the way we think about educating children in early childhood that they seem very basic to us. But in 1907, when Dr. Montessori opened her first school with furniture and tools that fit the size of the children and with the idea of independent children were considered very radical. Her research on young children and what they need to learn has influenced educators' basic ways of thinking about early childhood education. Early childhood education programs are being offered all over the world, which call

themselves "Montessori" programs. Montessori's education system is based on the theory of free education (Rousseau, etc.) and the education of children themselves (self-action and self-development). According to Montessori, this can be achieved through education itself, based on the principles of freedom and the innate predispositions of the child. According to Montessori, education is learning by yourself. In this regard, she wrote: “Any useless aid is an obstacle to development.

The child must be autonomous in activities and find interest in his / her uninterrupted work. "The teacher only has the task of creating suitable conditions for the free development of the child, to observe the children and to advise them." Montessori acknowledged that the special emphasis on regulating the environment is one of the basic characteristics through which others identified its method. Maria Montesori believed that this "environment" consists not only of tools and equipment in the room, but also children and other adults, who share the day with them. She believed that children could learn language and other important skills without any conscious action, from the environment around them. For this reason, she thought that the environment should be beautiful and tidy in order for the child to learn order from it. She also believed that children learn best through the use of the senses. He stressed that teachers should provide children with beautiful equipment, materials, sounds and different aromas. According to her, children should work with real tools such as scissors, knives, as well as other wooden tools.

All materials should be in a convenient place, where the child can take them whenever he needs them, without anyone's help, as well as the environment should be beautiful and tidy. Teachers were asked not to interfere with children's learning style and pace. They need to prepare the environment with the right materials and then leave and give the children time to explore and experiment with them. Another very important issue in the education of children of preschool age that Montessori talks about is giving responsibility. Only by giving children certain responsibilities will they become responsible. Children should be allowed to do whatever work they are able to do. Montessori's observations lead him to think that, children are able to concentrate

long on the things they are interested in doing and also, if they are given time for it. Montessori teachers are trained to "teach less and observe more" (Mooney, 2000, p. 31). Teachers normally need to plan activities and have materials to support the interests of children. If a child does not learn, then, adults have not observed and listened closely enough to him.

Teachers and parents should tailor activities for children based on their interests and needs and not exclusively on the curriculum. Based on observations, we learn if children need activity that requires the use of large or small muscles. If children are very active and running around the classroom, they need to go outside and expend some energy. If the kids are teasing each other with words, then we need some time in the circle, to show how they spent the weekend or yesterday. If the children do not have interesting materials in the classroom, then we should add materials, or replace them with more interesting ones. Thus the observation of children and the environment by teachers will help in the management of the classroom and we can say that observation is a legacy, precisely from Montessori.

Basic principles of the Montessori method:

- The principle of conditions for learning and child development
- The principle of concentration
- The principle of a specially prepared learning environment
- The principle of sensitivity
- The principle of limitation and order
- Group etiquette
- The principle of a special place for the teacher in the education system

3.2. Characteristics of the Division of the Educational Space according to Montessori

The main element of the author's pedagogy is the developing environment: all equipment and furniture must strictly correspond to the height, age and size of the child. Children must independently cope with the need to rearrange objects in the room, making it as quiet as possible, so as not to disturb others. Such actions, according to Montessori, perfectly develop motor skills. Students are given the freedom to choose where they will study. The room should have a lot of free space, access to fresh air, be well lit. Panoramic glazing is welcome to maximize the area with daylight. At the same time, the interior should be elegant and beautiful, with a calm color palette without distracting the children's attention. Mandatory use of fragile items in the environment so that children learn how to use them and understand their value.

It is necessary to ensure the possibility for students to use water, for this purpose sinks are placed at a height accessible to children. Tutorials placed at eye level to be used by students without the help of adults. At the same time, all materials offered to children should be one-to-one - this teaches children how to behave in society, to take into account the needs of other people. The basic rule for using materials is first-come-first-served. They should be able to negotiate, exchange with each other. The developing environment is divided into several areas, for each of which certain materials for classes are provided. They are toys and objects from natural materials. The author's system distinguishes the following main areas:

- practical

- sensory

- linguistic

- mathematical

- space

3.3 Real Life Area

This field of study is also called practical. The main function of the materials here is to teach children about household chores, to form hygienic habits. Classrooms in the real life area help children learn:

- take care of yourself (change clothes, cook, etc.);

- communicate with other students, the teacher;

- take care of things (water the flowers, clean the room, feed the animals);

- move in different ways (walk along the line, silently, etc.).

Common toys in the practice area are not welcome, and all study materials must be original. Children are offered:

- container for water transfusion; indoor flowers in pots;

- body board or "smart board"; scissors;

- cut flowers;

- watering cans;

- tablecloths;

- spoons with a broom;

- tape that is attached to the floor (boys walk on them, holding various items).

3.4 Sensory Development Area

This part uses materials for the development of sensory perception with which the baby also trains fine motor skills. Using these things prepares children to learn about different subjects that are taught in school. In the area of sensory development are used:

- bells, jingle cylinders;

- cylinder liner block sets, brown ladders, pink towers, etc.;

- colored plates;

- tiles with different weights (they learn to distinguish the mass of objects);

- aromatic box;

- warm jugs;

- rough plates, keyboards, different types of fabrics, touch board; sorter, sensory bag, biological dresser, constructor;

- flavored jars.

3.5 Math Zone

This part of the room is connected to the sensor: the baby compares, arranges, and measures objects. Materials such as rods, pink towers, cylinders are perfectly prepared for the assimilation of mathematical knowledge. In this area, interaction with specific material is expected, which facilitates the assimilation of mathematics. For this purpose, use:

- constructive triangles, geometric commodes;

- bead chains (help to study linear numbers);

- numbers, rough paper number sticks, fingers (necessary for little ones who are not yet familiar with numbers from 0 to 10);

- a tower of multi-colored beads (they introduce the child to the numbers from 11 to 99);

- numerical and golden material from beads (when combining them, children are taught the decimal system);

- tables of mathematical operations, stamps.

3.6 Linguistic Area

The materials used in terms of sensory development contribute to the baby's speech, so these 2 areas are also closely related. Teachers who work in kindergartens and development centers according to the Montessori Method every day provide children with games and exercises for the development of speech, monitor the pronunciation and correct use of words. At the same time, various role-playing games and creative games are used, where children learn to make up stories, describe actions and objects, etc. To develop reading and speaking skills, they use:

- books;

- hatching frame;

- rough paper letters;

- box with figurines for intuitive reading; movable alphabet; signatures for articles;

- cards with the image of various objects;

- metal figurines.

3.7 Space Zone

This is part of the class where boys receive environmental knowledge. The teacher here must keep in mind that the construction of the lesson is done in an abstract way. Children are often offered a good example with some phenomena, thanks to which he independently reaches certain conclusions. In the spatial area they work with:

- literature containing information on a certain topic;

- calendars, timelines;

- layout solar system, continents, landscapes;

- classification of animals and plants;

- materials for experiments.

4. The Difference Between the Classical Method and Montessori Method in Albanian Kindergartens.

Early education institutions are considered to have a vital role in the development of children and their skills. The main factor, I would even say essential, that affects the child's development and his achievements is the method and quality of education programs. The main actor in the level of quality of education programs and the cognitive, linguistic, physical, social and emotional development of children is the educator. He is often, as the parents say, "the second parent" for them. From this we understand the importance and impact that the educator has on the education and development of the child in early childhood. The level of knowledge about children's education and development and their skills for work affect the quality of education programs and consequently children's knowledge, their skills and the values with which they will grow.

In our early education institutions, until a few years ago, the classical method of education was followed. The focus has been on child care and education according to "outdated" ways. In recent years, priority has been given to education, the development of the child in every field, and this is based on a specific education program for the age group from 0-3 years. The child is left free to act and learn through play. The educator does not have a central role, but helps the child develop and is educated by guiding him.

In my years as an educator, but also from the experience of well-known people or the literature I have browsed, below I am writing about the differences between the two methods, the classical method and the Maria Montessori method.

Classical method

The child has a passive role

The educator is the one who organizes the lesson and the day according to the method. His ideas and frameworks

Communication only from the teacher and very little from the child

The rules are set by the educator

Educator-child communication, social and psycho-emotional development are not stimulated much

Children learn guided by the educator, there is no freedom in exploring and developing their skills

Classrooms are single rooms that have a certain organization and that is where the child's day in the nursery is organized

There is no creativity and each child must do the tasks according to the rules of the educator

Children's classes are homogeneous for the most part (of the same age group)

The Maria Montessori method

The child has an active role and is free in actions

The educator learns from the children and vice versa.

There is mutual and free communication between the educator and the child

The rules are set together with the children

Creativity, communication, social, psycho-emotional, physical development are stimulated.

The child chooses his own way of learning, explores and learns through play

Classrooms are a considerable space where several areas are located according to a certain purpose (e.g.: reading corner, game corner, cooking corner, drawing corner, etc.)

Classes are heterogeneous (with different age groups)

5. Involvement of Parents

It is often discussed how parents should be involved in daycare. Based on an internal regulation, established by the staff themselves, it has been decided that parents should not be too involved in the nursery and kindergarten environments during the teaching process. They are "required" only in specific cases (when the child presents any health, psycho-emotional, behavioral problem, or when meetings with parents are organized). According to the classic method, parents are given general information about the child's progress and development.

But the situation is quite different in the Montessori method. Parents have access to be in the classroom, and the information they are given is more detailed about their child's development. Educators have a file where everything the child does is written down. This file is shown to the parents, and they are even asked to continue this line of development at home. Unlike the classical method, where the learning process stops in the nursery school and starts again in these environments

Based on these approaches, I want to list some of the "deficiencies" that are noticed in the application of the Maria Montessori method in our early education institutions in Albania. They are as follows:

1. Parent-Educator Communication

2. Parent's culture and educator's culture

3. Educational level of the educator and the parent

4. Creating a correct and reliable parent-educator relationship

Therefore, if the four points above are respected, I believe we will have a higher effectiveness of the application of the Montessori method. For the child to develop and become capable at optimal levels, the triangle must function best. The family and the educational institution should be in one line and most importantly in a positive, warm and cooperative climate

5.1. Survey

1. How much do you think the Montessori Method affects the child in the freedom of choice in a game or activity?

- not at all - a little - enough - a lot

2. How much does the freedom of action you are given affect your communication with your friends and teachers?

not at all - a little - enough - a lot

3. How much does the selection of activity by the child affect the increase of concentration and mental self-development?

not at all - a little - enough - a lot

4. How much does the environment in the classroom or outside influence the learning of new things?

not at all - a little - enough - a lot

5. How much does the constant non-intervention of the teacher affect the assimilation of new things?

not at all - a little - enough - a lot

6. How much do the Montessori method manuals influence the development of speech, sensory development, social development?

not at all - a little - enough - a lot

7. How much does the heterogeneous class influence the reduction of bullying in different age groups?

not at all - a little - enough - a lot

8. How much does the heterogeneous class affect the self-realization, dexterity and acquisition of new skills by children?

not at all - a little - enough - a lot

5.2. Analysis and Conclusions

From the observations of classrooms, outdoor and indoor environments, I have seen a completely different approach from public or private nurseries and kindergartens. Another change has been the way classes and specific spaces are organized for each day activity that the child develops. From staying one day in heterogeneous classes I noticed a completely different kind of teaching. The teacher intervened a little, only at the request of the child or when he saw fit. In addition to the observation method, I applied the questionnaire with 8 questions to the teaching staff of this kindergarten. Below I will analyze some of the questions with the most interesting results

1. How much does the freedom of action you are given affect your communication with your friends and teachers?

About 70% have chosen the "very" alternative, 25% have chosen ‘enough’ and a small part chose ‘a little’. The 30% part is argued by the fact that they were raised by different families and the communication varies based on what has been previously brought up by parents or other family members. (This in the age group 3-6 years)

2. How much does the selection of activity by the child affect the increase of concentration and mental self-development?

About 90% of them answered this question with the "many" alternative. This fact is argued by what the children have observed day after day. There were children who in their beginnings in this kindergarten performed during the day, for short minutes, many activities. But over time they began to focus only on what they wanted and stayed longer in that activity.

3. How much does not the constant intervention of the teacher affect the assimilation of new things?

Most teachers (82%) answered that it affects it a lot, as the child by exploring himself and asking us in some cases manages to assimilate new things better. The fact

that we leave them free to "do what they want", as one teacher of the age group (16 months - 3 years old) says, they have learned new things faster. Such as colors, playing with cubes, throwing the ball in different directions. They learned fruits - vegetables, etc. faster

4. How much does the heterogeneous class affect the reduction of bullying in different age groups?

78% answered "very much". They argue their answer with the fact that they have noticed a decrease in the comparisons of the children themselves (age group 3-6 years). Children of this age group, according to the teachers of the respective classes, by not comparing themselves to the other children, they no longer say “I did better than you”.

The rest of the teachers say that many children are brought up that way, and no matter how much we follow the principle of non-comparing with other children, they still compete with children and say words that upset them. It's something that is not easily avoided. Maybe with the passing of the years there might be something positive in this regard.

Based on my observations, the analysis of the whole questionnaire, and the answers of the teachers who work in the kindergarten "Montessori Tirana" I can say that the Montessori method really has a very positive effect on the self-development of the child's skills and autonomy. The way of learning things according to the manuals of this method and especially based on the main principle, the "principle of freedom", children are trained and skilled in the things they do. They have a more positive communication and respect the rules of etiquette and civic education.

As is the expression "Help me do it myself" written in the abstract, the Maria Montessori method promotes in children autonomy of action and responsibility, which affect both the developmental and psycho-social field.

5.3. Recommendations

Based on the literature and from what I observed in the kindergarten "Montessori Tirana" I can say that the Maria Montessori method is very efficient and positive that should be applied in the entire system of nurseries and state kindergartens. But it remains to be seen how possible its application will be. In the current preschool system there are teachers who have been working for years and are frustrated with old teaching techniques and find it very difficult to get out of the frameworks. Much work needs to be done with the training that staff needs to master this method.

The Montessori method is best implemented in classes where the group of children is around 15, which for Albania becomes a big limit. Many different age groups, with different desires, are very difficult to follow as a method. Another limit is what Montessori advocacy children find in school. The transition from first grade from Montessori to standard school is shocking. In the Scandinavian countries there are not only Montessori kindergartens but also schools based on this method so that the child has continuity in the method.

Another problem is the parents themselves. How willing they are to accept and cooperate closely with teachers about everything. How will the communication part be chosen, taking into account that the community has families with different social, cultural and economic levels. Because the Montessori method requires that the work started in the preschool institution be completed at home, or that the values and skills acquired by the child himself are not "dismantled" by the parents.

References

[1] Edukimi Montessori për fëmijë. Metoda Maria Montessori retrieved https://minikar.ru/sq/health-and-beauty/obuchenie-detei-po-sisteme-montessori-metodika-mariya/

[2] Edwards,C. (2006). Montessori education and its scientific basis Angeline Stoll Lillard, Montessori : The science behind the genius, *Oxford University Press, Oxford*, 183-187

[3] Kopshtet Montessori: çfarë dhe si. Kopshtet Maria Montessori Kopshti i fëmijëve Maria Montessori retrieved https://lenwork.ru/sq/news/detskie-sady-montessori-chto-i-kak-detskie-sady-marii/

[4] Lillard S. A.(2012) Preschool children's development in classis Montessori, supplemented Montessori, and convencional programs, *Jornual of School Psychology*, 379-401

[5] Montessori, një kopsht në Tiranë që s`ngjan me asnjë tjetër retrieved https://tiranapost.al/sociale/montessori-nje-kopsht-ne-tirane-qe-sngjan-me-asnje-tjeter-201

[6] Steenberg, U. (2019) Pedagogjia e Montessori nw kopshtin e fëmijëve. *Pedagogjia e Montessori në kopshtin e fëmijëve.*

[7] www.montessoritirana.al

Dr. Brikena Smajli
University College, Bedër
Department of Communication Sciences
bsmajli@beder.edu.al
https://orcid.org/0000-0001-8180-4155

GOOGLE TRANSLATION, THE CASE OF ALBANIAN

Abstract:

Artificial intelligence has radically influenced translation, shortened the time, and transformed the translation process itself, even that of learning a language. In the meantime, Google, Microsoft, Facebook, and Amazon are becoming the top investors helping the results we benefit from today. But is the translation process helped in this regard and how?

The translator uses every means to make the translation process as lively and challenging as possible (to escape the routine) but at the same time to respond to the translation as quickly as possible. If we talk about translation with google, since 28th of April 2006, when presented and designed by Franz Josef Och as the main architect, it translates multiple forms of texts and media such as words, phrases, and webpages, but this in peripheral languages like Albanian has not found genuine application possibilities, even partial ones. We recall here the translation experiences offered by Umberto Eco in his well-known book "Dire Cuasi la Stessa Cosa".

However, we will come to 2016, when translation has progressed qualitatively by being conceived as a neural machine translation engine - Google Neural Machine Translation (GNMT), for this reason in this paper we concretely follow the progress of Albanian translation, from English and vice versa via google translation study on the progress of translation and the construction of semantic units, or equivalent in Albanian translation.

Keywords: *equivalence, semantic units, expression, target language, semantic sentence*

1. Introduction

If until a few years ago the results produced by various automatic translation systems were often questionable and even made translators smile, with the advent of neural systems in 2016, the situation has changed a lot. In fact, these systems are an application of artificial intelligence (AI) based on neural networks made up of thousands of artificial units that resemble - as the name indicates to our neurons (Forcada, 2017, p. 292).Their strength lies in the fact that they are able to successfully deal with completely new situations, based on what they have previously "learned". The most recent evolution of AT is the so-called Neural Machine Translation (NMT) introduced in 2016 by Google, Systran, Microsoft and Facebook, followed by Amazon and more recently by the promising DeepL. (Riediger, 2018, p. 3) Whenever a user requests a translation into one of the aforementioned languages, these systems appeal to neural networks, following a dynamic logical path that varies according to the context of the sentence and the meaning that is given to it. (Forcada, 2020, p. 4).

1.1 Aim

In this paper we concretely follow the progress of Albanian version in translation, from English and *vice versa* via google translation on the progress of translation and the construction of semantic units, or equivalent in Albanian translation.

1.2 Importance of the Study

While translation from structurally related languages or with great daily use is increasingly perfected thanks to the use and specialization of various software, translation from a peripheral language, or *minor languages* (See: Forcada, 2020, p. 3) such as Albanian and with a small number of its users compared to English or Spanish and with considerable grammatical and expressive complexity is always a challenge and consequently in this regard to study how effective GNMT is for Albanian, is also important for testing this level of machine translation.

1.3 Problem Statements & Hypotheses

The use of google translation is possible and realized in texts of a medium complexity and always needs to be taken as first-hand version after which always comes a complete post-editing process.

Following the progress and development and improvement of machine translation from the beginning until 2016, when the google translation system was programmed according to the neural system, in this paper we have focused not only on the data provided by Umberto Eco's book: *Dire quasi la stessa cosa*, although he problematises and analyses automatic translation, from a period of its beginnings, the year 2003 with the work done with *google translate* by Franz Josef Och and the group he led. (Chan, 2015, p. 385)This is to be clear about the nature of the translation offered by the computer program in Altavista. (Eco, Të thuash të njëjtën gjë : përvoja përkthimi, 2006); (Eco, Dire quasi la stessa cosa: esperienze di traduzione, 2013, p. 21), to bring attention to the issue of computer translation, at the beginning of this process.

In this context, the comparison with the examples brought to attention by google translation, during these days, with those versions offered by Eco in this book and the results of the translation in real time, while they continue to show relevant problems related to the syntax or the very nature of the translation and the variant offered from the morpho structural point of view, however, present improvements in relation to the quality of the translation, especially in the well spread languages as English, French, Spanish, German and Italian.

In the case of google translate for the Albanian language, there is no data on its operation of 2003, nor a database of computer translation variants of this year, to correlate and be compared with that of given languages in Umberto Eco’s book.

The only reliable material in machine translation is what we can develop ourselves right now in real time. To follow and distinguish the changes or improvements in the translation, we would have to develop this work at two different times, with a stretch of 4-5 years between them. Therefore, to illustrate this translation in its beginnings, we have taken references from the translation data of Umberto Eco, in his book, *Dire*

quasi la stessa cosa. In his study Eco documents the translation quality of Altavista, for the main European languages, including Italian.

Examples brought by Eco:

1. The Works of Shakespeare = Gli impianti di Shakespeare = The systems of Shakespeare

2. Harcourt Brace (nome di una casa editrice americana) = Sostegno di Harcourt = Support of

Harcourt

3. Speaker of the chamber of deputies = Altoparlante dell'alloggiamento dei delegati = Loudspeaker of the lodging of the delegates

4. Studies in the logic of Charles Sanders Peirce = Studi nella logica delle sabbiatrici Peirce del Charles = Studien in der Logik der Charless and papier schleifmaschinen Peirce = Studies in the logic of the Charles of sanders paper grinding machines Peirce. (Eco, Dire quasi la stessa cosa: esperienze di traduzione, 2013, p. 23)

Eco's analysis for machine translation with Altavista continues to address not only the problems arising from the translation to find the equivalent of the words, groups of words, in languages (English, German, Spanish, Italian, French), but also goes further into the more specific elements of the linguistic system of equivalence (translation) from the original language to the target language(s).

In this analysis, the process of human translation (Eco's translation analysis) confronts the automatic one, focusing on the cultural approach, the problems of translating expressions, the narrative aspects of the translated text, and facing not only a structurally different language, but also with a different worldview. Of course, the machine translation, which in its programming has a database of direct equivalents with a limited number of meaning nuances, does not respond to a correct translation, or more precisely, the process of transition / construction of meaning and linguistic construction from the source language to the target language fails.

The example given above by Eco (Eco, Dire quasi la stessa cosa: esperienze di traduzione, 2013, f. 23) is one of the simplest.

Eco 2003, the 2003 Babel Fish translation from English to Italian is a grammatically programmed translation with a database of dictionaries of all languages. But compared to the human translation, the selection of the word "Implant" as the equivalent of the English word "works" shows that the program selects an equivalent word, even though the English word marks or names a completely different concept in the cultural context of the source language.

In the second case, the program has chosen to translate a proper name of the Hartcourt Brace publishing house, finding the corresponding English word in Italian: Brace = sostento. While it is clear from the examples given by Eco, for the translation from English to Italian for the year 2003, that the translation process even in a language with many speakers and users such as Italian, we can also guess the unmatched quality of the translation from English in the Albanian language and vice versa, either in the quality of syntactically simple texts or the most complicated ones.

We are trying today to look at the translation of the same English phrases once considered by Eco, into Italian and Spanish, adding the Albanian variant to them. The following text was generated by google translate at 11:23 PM on 9/6/2022

English	Google translate Albanian	Italian	Spanish
The works of Shakespeare	Veprat e Shekspirit	Le opere di Shakespeare	Las obras de Shakespeare
Hartcourt Brace	Hartcourt Brace	Tutore Hartcourt	Tirante de Hartcourt
Speaker of chamber of deputies	Kryetar i dhomës së deputetëve	Presidente della Camera dei Deputati	Presidente de la cámera de diputatos
Studies in the logic of Charles Sanders Pierce	Studime në logjikën e Charles Sanders Pierce	Studi sulla Logica di Charles Sanders Pierce	Estudios en la lógica de Charles Sanders Pierce

and for comparison we have also brought that of the revision of the paper, before the publication of 10.09.2022 8:22:28 M.D.

English	Google translation, Albanian	Italian	Spanish
The Works of Shakespeare	Veprat e Shekspirit	le opere di Shakespeare	Las obras de Shakespeare
Hartcourt Brace	Harcourt Brace	Tutore Harcourt	Brazalete de Harcourt

Speaker of the Chamber of Deputies	Kryetar i Dhomës së Deputetëve	Presidente della Camera dei Deputati	Presidenta de la cámara de diputados (feminine) Presidente de la cámara de diputados (masculine)
Studies in the logic of Charles Sanders Peirce	Studime në logjikën e Charles Sanders Peirce	Studi sulla logica di Charles Sanders Peirce	Estudios en la lógica de Charles Sanders Peirce

While in the example of Eco, 2003, it is noted that translations from English as a source language into Italian and Spanish present problems in the reconstruction of the meaning in the respective languages, Albanian, at this level, does not present problems, because, unlike the translation into Italian and in Spanish it was not generated by google translator in 2003, but nowadays, when the computer translation program has processed in time a series of variants and algorithms that generate an accurate translation of the proposed structures.

3. Comparative Analysis of Translations

At this point, to evaluate the quality and reliability of the translation with google translation a comparative analysis of translations occurred by comparing previous translations with today's ones and assessing the quality of construction of meaning in the target language—Google translation of different texts by style and genre (prose and poetry).

3.1 Two Authors of Literature for Each Language, Albanian and English

Paul Muldoon (prose), Michael Hofmann (poetry)

Faik Konica (prose), Frederik Rreshpja (poetry)

3.2 Methods for Evaluating Machine Translation or Google Translation

Different metrics (criteria) are used for the evaluation of the TA: evaluations carried out subjectively by human evaluators, evaluation of whether the message passes, evaluations of the size post-editing required to optimize the text, automatic evaluation metrics.

Among the various other models, the most functional (usable) by users is that of Arnold (1994). Considering only intelligibility, this proposes a four-point scale, that is, a sentence can be completely understandable (1), for the most part understandable (2), only after a thorough analysis (3), or completely incomprehensible.

Thus, the criteria of intelligibility = acceptability are as follows:

3 - perfectly acceptable translation. It does not require revision.

2 - understandable translation but requires stylistic revision.

1 - understandable translation, but with grammatical, linguistic errors, and stylistic

0 - incomprehensible translation. Requires rewriting.

English version: Paul Muldoon (1951 -)	**Albanian with Google translation**
It's a beautiful part of the world. It's still the place that's 'burned into the retina', and although I haven't been back there since I left for university 30 years ago, it's the place I consider to be my home. We were a fairly non-political household; my parents were nationalists, of course, but it was not something, as I recall, that was a major area of discussion. But there were patrols; an army presence; movements of troops; a sectarian divide. And that particular area was a nationalist enclave, while next door was the parish where the Orange Order was founded; we'd hear the drums on summer evenings. But I think my mother, in particular, may have tried to shelter us from it all. Besides, we didn't really socialize a great deal. We were 'blow-ins' – arrivistes – new to the area and didn't have a lot of connections. (Potts, 2001) (The Guardian Profile The poet at play, 12 May 2001. Retrieved 27 February 2010.)	Është një pjesë e bukur e botës. Është ende vendi që 'është djegur në retinë' dhe megjithëse nuk jam kthyer më që kur u largova për në universitet 30 vjet më parë, është vendi që unë e konsideroj si shtëpinë time. Ne ishim një familje mjaft jopolitike; prindërit e mi ishin nacionalistë, sigurisht, por nuk ishte diçka, siç më kujtohet, që ishte një fushë kryesore e diskutimit. Por kishte patrulla; prania e ushtrisë; lëvizjet e trupave; një ndarje sektare. Dhe ajo zonë e veçantë ishte një enklavë nacionaliste, ndërsa ngjitur ishte famullia ku u themelua Urdhri i Portokallisë; do të dëgjonim daullet në mbrëmjet e verës. Por unë mendoj se nëna ime, në veçanti, mund të jetë përpjekur të na strehojë nga e gjithë kjo. Për më tepër, ne nuk u socializuam shumë. Ne ishim 'goditës' - të ardhur - të rinj në zonë dhe nuk kishim shumë lidhje.[6] *Translation generated by google: 09.06.2022, 10.17 PM*

The text is taken from an interview of Seamus Heaney, where the poet through an emotional and personal narrative returns to the time of his childhood. What is noticed in the text generated in Albanian as a translation, is the absence or dimming of this personal rhythm of the narrator which breathes in English through the

corresponding phrases: *to be my home, fairly non-political household, as I recall, a nationalist enclave, to shelter us from it all, 'blow-ins', to the area and didn't have a lot of connections...* that gives way to the flow of thinking and meaning built-in language and, precisely in these words, the computer translation encounters difficulties in building meaning, and of course in building the rhythm of the narration by the author in the original language. From the point of view of the general meaning, we have an understandable text, but with small grammatical and linguistic errors, which of course put a lot in the style of the text that is generated in Albanian, which needs to be revised. Therefore, our assessment according to the criterion of meaningfulness and acceptability is: 2 - understandable translation but requires stylistic revision.

However, it does not appear as completely like this in the version generated as a translation by google translation, of the most complex poetic text by the author Michael Hofmann, where intertextuality and suggestive language and poetic syntax give to computer translation an almost impossible task.

Michael Hofmann (1957)	**Google translation**
Ostsee – The water deepens to iodine from brown. What is there to wait for? The gulls to get bored of their bouncy slick offshore. The sun to break through the qwerty clouds. The entire coast to make more hagstones, amber, jellyfish. The sand martins to file themselves away in their cliffside tenements. Or the cropped blonde to come back along the beach with her mystery rucksack and impenetrable wraparounds, her superbly articulated deltoids under the black wife-beater. – to iodine from brown (Hofmann, 2018, f. 56)	Ostsee – Uji thellohet në jod nga kafe. Çfarë ka për të pritur? Pulëbardhat për t'u mërzitur nga kërcitja e tyre shkëlqejnë në det të hapur. Dielli për të thyer retë qwerty. I gjithë bregdeti për të bërë më shumë gurë hagstone, qelibar, kandil deti. Martinat e rërës nisen për t'u grumbulluar në banesat e tyre buzë shkëmbinjve. Ose biondja e prerë që të kthehet përgjatë plazhit me çantën e saj misterioze dhe mbështjellësin e padepërtueshëm, deltoidet e saj të artikuluara në mënyrë të shkëlqyer nën rrahësin e zi të gruas. – në jod nga kafe *Generated: 10. 31PM, 09.06.2022*

The above translation is problematic from the point of view of constructing a poetic syntax: by focusing on the translation of a meaningful unit such as a sentence, it fails to construct the same meaningful unit (sentence) in the translated text. The untranslatability is conditioned by the suggestive language full of second and third meanings of the poem in the original. In addition, the text also presents difficulties at the lexical level. Words: *qwerty, hagstones, deltoids,* the google translation has not found their semantic equivalent, therefore we also have what is called zero translation in translation terminology. However, the computer has not transformed the sentence in general, but has determined a function of the unknown word in the sentence and has continued to construct the meaning in the corresponding sentence. The meaning in general lines is built in the computer translation, however, grammatically, and stylistically, corrective work is needed with the text. Consequently, our assessment according to the criterion of meaningfulness and acceptability is: 1 - understandable translation, but with grammatical, linguistic errors, and stylistic, it required an accurate stylistic review.

Faik Konica Malli i atdheut	
MALLI I ATDHEUT Kur vete njeriu, i lirë e i vetëm, larg atdheut – viset e reja, ndryshimi i zakoneve, ëmbëlsia e udhëtimit e një mijë gjëra që vihen re ndër popuj të huaj, të gjitha këto ta përgëzojnë zemrën e të bëjnë jo të harrosh Shqipërinë, po të mos të vejë tek ajo aq dendur mendja. Më tutje, si ngopen sytë së pari ndryshime, gazi shuhet pak nga pak. S`di ç`të mungon, s`di se ç`të duhet. ... Ah, malli i Shqipërisë, malli i atdheut të dashur, i shenjtë mall e dashuri e shenjtë, kush është ai shqiptar që s`e ka pasur në dhe të huaj! Duhet të jeshë jashtë Shqipërisë, e të jesh larg, për të kuptuar se ç`forcë e ç`bukuri të ëmbël ka për veshët kjo fjalë: Shqipëri! Ajo më e zbrazura letër, ajo fjala më e vogël, na sjell, kur vjen nga Shqipëria, një gaz të parrëfyeshëm, se na sjell si një copë të atdheut… (Konica, 1995, f. 38)	MALI I ATDHEUT When the man himself, free and alone, far from the homeland - new places, change of habits, sweetness of travel and a thousand things that are noticed among foreign peoples, all these congratulate the heart and make you not forget Albania, yes not to come to her so densely minded. Further, as the eyes first saturate changes, the gas is gradually extinguished. I do not know what is missing, I do not know what is needed. ... Ah, the longing of Albania, the longing of the beloved homeland, the holy longing, and the holy love, who is the Albanian who has not had it in foreign lands! You have to be outside Albania, and be far away, to understand what strength and what sweet beauty this word has for the ears: Albania! The most empty letter, that smallest word, brings us, when it comes from Albania, an indescribable gas, that it brings us like a piece of the homeland… *Generated: 10. 40 PM, 09.06.2022*

The problem of computer translation from Albanian to English is presented in the same way, with selected texts in prose and poetry. While there is also a problem regarding finding the lexical equivalent of the words: *vete* (in the sense I go) and *gaz* (in the sense of joy) which are mistranslated due to homonymy: *vete* (v. f. go) with *vete* (pron, *vetë*/ *self*) and, *gaz* (n. *joy*) with gas (*gas*, a substance or matter in a state in which it will expand freely to fill the whole of a container, having no fixed shape (unlike a solid) and no fixed volume (unlike a liquid), the generated text is generally dry in terms of the second and third meanings and stylistically does not offer the expressiveness of the text in the Albanian language. Rrjedhimisht, vlerësimi ynë sipas kriterit të kuptimshmërisë dhe pranueshmërisë është: 2 - understandable translation but requires stylistic revision.

Frederik Rreshpja (1940-2006)	**Google translation English**
Ul Kokën i Lodhur Më thërret një mjegull ulur diku Mbi korijen e fjetur që premton mars Dhe pikëllimi i dëborës me gjunj te burimi. Mbrëmja rend drejt qiellit' Hëna rend drejt një shtëpie reshë. O akuarel i lëvizshëm! Ti mua më thërret Por me erdhi tepër vonë thirrja jote. Koka ime e pabindur tek një alarm gjethesh Që hedh përsipër dy grushta nate! (Rreshpja, 1995)	Lower the Tired Head A fog is calling to me sitting somewhere Over the dormant grove that promises March And the grief of snow with knees at the fountain. The evening rushes to the sky ' The moon runs towards a cloudy house. O portable watercolor! You call me. But your call came too late. My disobedient head to a leaf alarm Throwing over two night punches! *Generated: 11. 20. PM, 09.06.2022*

The poetic text generated from Rreshpje's poetry is presented in a complicated way. In addition to the "faithful" tendency of the text to translate each unit of meaning, which to some extent has built the corresponding poetic rhythm of the poem in the original, the style, the meanings, the angle of the poet's gaze do not come completely in their form in English. Therefore, if a translator, in translating Rreshpja's poem into English, sought the help of Google's computer-generated translation, he would need to review each line at the level of poetic expression. Consequently, our assessment

according to the criterion of meaningfulness and acceptability is: 2 - understandable translation but requires stylistic revision.

4. Conclusions

Due to the analysis of the translations, generated by google translation in the considered texts of prose and poetry, from Albanian to English and vice versa, for texts of considerable complexity, we come to the conclusion that even for the google translation between the Albanian language and Englishat the level of construction of meaning, and its grammatical accuracy, improvements have been observed. In general, the total construction of the semantic equivalence of the text, in syntax and expression, is done correctly. However, small errors are noted in finding lexical equivalence due to homonymy - the case of Faik Konica's poetic prose text from Albanian to English. According to the translation evaluation scheme, the criteria of intelligibility = acceptability, we evaluated the translation of the texts with mainly two points, but there are cases when the text generated as a translation had grammatical inaccuracies and language errors, therefore we evaluated it with 1 point. So, the texts generated by google translation are:

2 - understandable translation but requires stylistic revision.

1 - understandable translation, but with grammatical, linguistic errors, and stylistic revision.

What the texts generated by google translation lack is the style and an organization of the translated text, therefore the texts require a careful stylistic revision or human postediting process.

References:

[1] Chan, S.-W. (2015). *Routledge encyclopedia of translation technology* (Vol. II). (S.-W. Chan, Ed.) New York: Routledge.

[2] Eco, U. (2006). *Të thuash të njëjtën gjë : përvoja përkthimi.* (M. Ymeri, & A. Ylli, Trans.) Tiranë: Dituria

[3] Eco, U. (2013). *Dire quasi la stessa cosa: esperienze di traduzione.* Milano, Italy: Bompiani.

[4] Forcada, M. L. (2017, January). Making sense of neural machine translation. *Translation Spaces, 6*(2), 291-309. doi:DOI: https://doi.org/10.1075/ts.6.2.06for

[5] Forcada, M. L. (2020, 6). Building Machine Translation Systems for Minor Languages: challenges and effects. *Revista de Llengua i Dret, Journal of Language and Law*(73), 3-20. doi:DOI: http://dx.doi.org/10.2436/rld.i73.2020.3404

[6] Hofmann, M. (2018). *One Lark, One Horse.* London: Faber & Faber Ltd.

[7] Konica, F. (1995). *Vepra 1.* Prishtinë: Rilindja.

[8] O'Hagan, M. (2020). *The Routledge Handbook of Translation and Technology.* New York: Routledge.

[9] Potts, R. (2001, May 12). The poet at play. *The guardian*. Retrieved 11 14, 2022, from https://www.theguardian.com/books/2001/may/12/poetry.artsandhumanities

[10] Riediger, H. (2018, 6 12). Tradurre col computer: dalla traduzione automatica al CAT e ritorno. *Laboratorio Weaver*, p. 3.

[11] Rreshpja, F. (1995). *Lirika të zgjedhura.* Tiranë: Evropa.

Dr. Bledar Abdurrahmani
Lecturer, Departament of Law
"Aleksander Moisiu", University

Prof.Asoc.Dr.Tidita Abdurrahmani
Dean, Bedër University College

CYBER SECURITY IN EU AND ALBANIAN LAW. IDENTIFYING CHALLENGES OF IMPLEMENTATION IN ALBANIA

Abstract

The transition to a new era of digitization of public services, in addition to private ones in Albania, has directed attention and stimulated the debate, not only towards improving and increasing citizen's access to the use of information technology, but has also brought with it the need for cyber security. Technological developments in the field of computers and the Internet, in addition to the positive impact, also carry the risk of misuse of communication networks and information systems, turning into a serious threat to the freedoms and rights of citizens, businesses and governments. In fact, the security of communication networks and information systems until a few years ago was seen as a matter of technical and organizational nature of public institutions or private entities. Under the effects of the technological revolution, the concept of legal protection in the field of cyber security has undergone a speedy revolution. Now, the legal regime of cyber protection is focused, more than just on aspects such as what is cybercrime, what are the figures of cybercrime, how international cooperation should be addressed, and the harmonization of criminal and criminal procedural legislation to fight these legal phenomena. However, the legal regime of cyber protection already includes all the legal, organizational, technical and educational tools that aim to protect the functionality and operation of communication systems and information networks.

This paper aims to examine the legal model of cyber security in community and domestic law. The paper analyzes the concepts, instruments and technical and organizational measures in the legal documents of the European law and in the positions of the EU institutions. The paper also examines the Albanian legal framework in the field of cyber security and the measures that have been taken regarding the protection of communication systems and information networks. The main purpose of this paper is to see the level of harmonization of this legislation and to highlight the differences and problems in this field. The paper supports the hypothesis that, despite the legal framework and protection mechanisms set up to guarantee the security of networks and information systems, Albania still does not have the necessary technical, operational and financial capacities and resources to face cyber threats. The recent cyberattacks by Iranian hackers against the communication systems and information networks in Albania showed the weakness and lack of effectiveness of the mechanisms set up by law. The paper concludes that Albania should improve cyber security instruments and measures according to the requirements of the NIS 2 Directive(Network and Information Security 2 Directive ("NIS 2"), for a more efficient response to cyber threats. The paper recommends that cyber security should become a priority, giving it the necessary support in terms of special specialized centers that have the human, technical and financial resources for the support and proper functioning of networks and information systems.

Keywords: *cybersecurity, directives, legislation, communication systems and information networks.*

1. The Concept of Cyber Security Between Doctrine and Law

Rapid technological developments in the field of electronic communications have made cyber security a very dynamic and constantly evolving notion. This is reflected in the different definitions given by different dictionaries on the notion of cybersecurity, as well as in a large number of standings and attitudes held by researchers and experts in this field. (CEN/CENELEC CSCG, 2016, p.12) Also, this fact is confirmed by the need for frequent changes in the legal framework on cyber security on a European level, where the need for amendments has arisen in the span of 5 years. The rapid pace of digitization in various sectors has made it necessary to modernize the existing legal framework through a new Directive to efficiently respond to cyber security threats. (Directive (EU) 2022/2555, December 2022)

If we refer to different dictionaries we will see that Merriam-Webster defines "cybersecurity" as *"measures taken to protect a computer or computer system against unauthorized access or attack"* (Merriam-Webster Dictionary, 2022). The Cambridge Dictionary considers it as "*things that are done to protect a person, organization, or country and their computer information against crime or attacks carried out using the internet" (Cambridge Dictionary, 2022, while that of Oxford as "the state of being protected against the criminal or unauthorized use of electronic data, or the measures taken to achieve this". (Dictionary.com Oxford University Press, 2022). Wikipedia considers the terms "cybersecurity", "computer security" and "information technology security" as synonyms and defines them as "the protection of computer systems from the theft of or damage to their hardware, software, or electronic data, as well as from the disruption or misdirection of the services they provide"*. (Wikipedia, December 2022).

Conceptual differences on the notion of cyber security are also observed in the attitudes of different authors and experts in this field. According to Schatz etc. cybersecurity is defined as *"the approach and actions associated with security risk management processes followed by organizations and states to protect confidentiality,*

integrity and availability of data and assets used in cyber space. The concept includes guidelines, policies and collections of safeguards, technologies, tools and training to provide the best protection for the state of the cyber environment and its users.". (Schatz D, Bashroush R, Wall J, p.66) As for Fuster and Jasmontaite "the term "cybersecurity", from an EU perspective, entails a combination of cyber resilience, cybercrime, cyber defense, (strictly) cybersecurity and global cyberspace issues. (Fuster G, 2022) Whereas, the group of experts established for the drafting of the strategy in the field of cyber security at the European level (CSCG) states that *"European Commission should not limit its clarification to definition of cyber security…"*. (CEN/CENELEC CSCG, "Recommendation nr.2).

Despite the fact that cyber security represents a term in continuous evolution, European law has given a formal definition to this concept in the European act on cyber security. (EU Regulation No 881/2019) This is due to the fact that without a clear definition of cybersecurity and its key terms, it is difficult for the EU to establish a comprehensive vision. (Odermatt J, 2018) According to EU Cybersecurity Act: "*cybersecurity means the activities necessary to protect a) network and information systems, b) the users of such systems, and c) other persons affected by cyber threats*". (EU Regulation No 881/2019, art. 2.1). According to this provision, cyber protection extends to 3 categories. The first category of protection includes "security of network and information systems" and means *"the ability of network and information systems to resist, at a given level of confidence, any event that may compromise the availability, authenticity, integrity or confidentiality of stored, transmitted or processed data or of the services offered by, or accessible via, those network and information systems.*". (Directive (EU) 2022/2555, December 2022, Art.6/2) Whereas, the other two categories have the quality of a natural or legal person, and are specifically included as users of networks and information systems, as well as the category of persons affected by cyber threats.

Meanwhile, Albanian law defines the concept of cyber security, "*as a set of legal, organizational, technical and educational tools that are necessary to be created and implemented in order to protect the users of the wide cyberspace.*". (Law No. 2/2017, art 3/13) According to the law, cyberspace represents the digital environment capable of creating, processing and exchanging information created by systems, services of the information society, as well as electronic communication networks. As noted, the Albanian law provides a different definition than the one found in the European cyber security act, which defines cyber security as: "*the activities necessary to protect a) network and information systems, b) the users of such systems, and c) other persons affected by cyber threats*". (Art. 2.1) If we make a comparison between these definitions, we will notice that the Albanian law has broken down the notion of "necessary activity" used by the directive, articulating these activities in a more concrete way as "the totality of measures of a legal, organizational, technical and educational nature that must be created and be implemented" in order to protect cyberspace users. So, as it results in the defining approach, the legislator has made a concretization of the nature of protective activities, but has not specifically given the object of protection divided into three categories, as it results in the European act.

1.1 The Object of Cyber Protection

If the definition provided by the European Act on cybersecurity helps us to clearly identify the subjects of cyber protection, the same cannot be said for the object or fields of cyber protection. Their identification is a difficult and dynamic process. However, ENISA(European Network and Information Security Agency), as the European institution specialized in the field of cyber protection, has identified 5 main areas that may be subject to cyber threats. According to her, the security of networks and information systems (cyber security) includes the fields of communication, operations, information, physical and public or national security. (ENISA, Definition of Cybersecurity, 2015, p.11) *Communication security* means protection against a threat to the technical infrastructure of a cyber system which may lead to an alteration of its characteristics in order to carry out activities which were not intended by its

owners, designers or users. Meanwhile, *operation security* means protection against the intended corruption of procedures or workflows which will have results that were unintended by its owners, designers or users.

Information security is another scope of cyber protection seen as protection against the threat of theft, deletion or alteration of stored or transmitted data within a cyber system. (ENISA, Definition of Cybersecurity, 2015, p.10) *Physical Security* is considered as protection against physical threats that can influence or affect the well-being of a cyber system. Examples could be physical access to servers, insertion of malicious hardware into a network, or coercion of users or their families, while *Public/National Security* is protection against a threat whose origin is from within cyberspace, but may threaten either physical or cyber assets in a way which will have a political, military or strategic gain for the attacker. Examples could be 'Stuxnet' or wide-scale DOS attacks on utilities, communications financial system or other critical public or industrial infrastructures. (ENISA, Definition of Cybersecurity, 2015, p.11).

Despite the significant influence of views of authors and experts on cyber security, the main contribution in this direction at the European level is played by community law. The European Law states that cyber incidents "can impede the pursuit of economic activities in the internal market, generate financial loss, undermine user confidence and cause major damage to the Union's economy and society.". (DIRECTIVE (EU) 2022/2555, December 2022, p.3) EU considers "cybersecurity preparedness and effectiveness now more essential than ever to the proper functioning of the internal market. Moreover, cybersecurity is a key enabler for many critical sectors to successfully embrace the digital transformation and to fully grasp the economic, social and sustainable benefits of digitalization.".

2. The Legal Regime of Cybersecurity in Community Law

Technology, communication networks and information systems represent an important instrument of economic and social interaction and contribute to the realization of rights and freedoms on a European level. The role of communication

networks and information systems in the rights of the European citizens and in the proper functioning of the common market has caused them to be a frequent object of the activity of the EU institutions through a large number of legal acts that have addressed various issues. The increasing reliance on communication networks and information systems has brought with it the possibility and risk of their misuse, causing them to become a serious risk for the rights of citizens and businesses and the functioning of the European market. European law, as in any field, has played the role of a main driving agent of development for member states also in the field of security of communication networks and information systems through a significant number of acts. (Directive 2011/93/EU, Directive 2013/40/EU, Directive 2018/1972/EU, Regulation (EU) 2019/881, Directive (EU) 2015/1535 Regulation (EU) No 910/2014, Directive 2005/29 /EC, Regulation (EU) 2019/1150, Directive 829/2020/EU) etc.)

The legal basis for these acts is Article 114 of the Treaty on the Functioning of the European Union (TFEU), the objective of which is the establishment and functioning of the internal market by enhancing measures for the approximation of national rules. (Treaty of Lisbon, 2009, art.114) For the EU, the improvement of cyber security is a matter of primary importance because it directly implies guarantee of fundamental rights and freedoms, specifically the rights to privacy and protection of personal data, as well as freedom of expression and information. (European Commission and the High Representative of the Union for Foreign Affairs and Security Policy Citation 2020, p.4)

European law put the legal regulation of cybersecurity at its center, addressing legal concepts, instruments and measures in this field such as: cyber security, cyber threat and its types, as well as enforcing the establishment of a series of institutional, technical and operational mechanisms on a European, national level and for any public or private entity. This right has sanctioned their rights and duties, the way of their cooperation and reporting and the concrete measures that must be taken to ensure cyber protection or to respond effectively to various attacks.

Community law in the field of cyber security during these last 15 years has evolved rapidly from a law that addressed technical and organizational measures to a more comprehensive horizontal regulatory approach (Papakonstantinou, V, 2022, p.8). Undoubtedly, the main function of community law is to address within the framework of the common market the issue of the security of electronic communications in general, and the security of networks and information systems, in particular. This is due to the fact that the heterogeneous implementation of cyber security instruments can reduce efficiency and create obstacles for the internal market. Therefore, the main goal of community law in this area is to achieve a common high level of cyber security in all member states in order to respond to threats arising from digitization and cyberattacks (Directive (EU) 2022/ 2555, p.1).

In the legal framework of the EU of cyber security, there are several regulatory legal instruments, specifically the European Act on Cyber Security (Regulation EU No 881/2019), Directive 2008/114/EC, "On critical infrastructure networks and measures for their protection", Directive 2013/40/EU, "On attacks against information systems and communication networks", as well as the NIS 1 Directive (Directive (EU) 2016/1148), now replaced by the NIS 2 Directive newly adopted in December 2022 (Directive (EU) 2022/2555, 2022).

2.1 EU Regulation No 881/2019

EU Regulation No 881/2019 represents the main EU Act of cybersecurity. Through this act, the notion of cybersecurity is defined for the first time in EU law, as *"the activities necessary to protect a) network and information systems, b) the users of such systems, and c) other persons affected by cyber threats*". This conception is completely different from the one held by EU before, in 2013 in the Cyber Security Strategy. In this document, cyber security was seen through a narrow perspective, addressing it only within the framework of the guarantee of the three main principles, confidentiality, integrity and availability of networks and information systems (CIA triangle, EUCSS, 2013). The perspective of this act left out of the scope of coverage the persons and their basic rights that may be affected by cyberattacks. This act along

with the directive NIS 2 enhance relying on information systems and networks in order to benefit from innovation, interoperability in networks and automation, by at the same time guaranteeing a higher level of cyber security. (European Commission and the High Representative of the Union for Foreign Affairs and Security Policy, 2020).

The Cyber Security Act consists of two main parts. The provisions that make up the first part strengthen the competences of ENISA, giving it a permanent mandate, more financial resources and human capital, holding it responsible for the protection of the digital environment in the EU. These provisions sanction the active role of ENISA as a point of reference for advice and expertise on cyber security for institutions, bodies, offices and agencies of the Union, as well as for interested parties. (EU Regulation No 881/2019, art.3-45) The second part defines the European legal framework of cyber security certification. The main purpose of these provisions is to increase confidence in ICT products, services and processes that are certified under European cybersecurity certification schemes and, avoiding conflicts in cybersecurity certification schemes, thereby reducing costs for enterprises operating in the digital market. (EU Regulation No 881/2019, art.46-65) According to this act, the certification mechanism represents a tool to increase consumer confidence through a conformity test in accordance with the "basic", "substantial" or "high" levels" of cyber security, (Mantelero et al, 2021) The Cyber Security Act provides a legal basis for the approximation and harmonization of the mandatory requirements in EU cyber security legislation.

2.2 NIS Directives, Directive (EU) 2016/114 and Directive (EU) 2022/2555.

In addition to the European Cyber Security Act, the issue of cybersecurity is addressed more specifically through the NIS Directives, which include Directive (EU) 2016/1148 and Directive (EU) 2022/2555. The NIS-1 Directive of 2016 represents a technical regulatory instrument aiming at protecting the functioning of network and information systems in order to improve internal market conditions within Europe. (Directive (EU) 2016/1148, p.5) The directive defines measures with the aim of achieving a high common level of security of networks and information systems. The

Directive, for cyber security purposes, classifies operators of network and information systems into two categories, operators of essential services (OES) and digital service providers (DSP). They operate across vital sectors for the European economy and society, such as energy, transport, water, banking, financial market infrastructures, health care. According to this act, member states have the obligation to identify which entities, public or private, are included in the definition of OES. (Directive (EU) 2016/1148, art.5/2)

Also, the Directive subclassifies digital service providers (DSP) into three types: online marketplaces, online search engines and cloud computer services. (Directive (EU) 2016/1148, Annex III) According to this act, every subject that belongs to these subcategories is included here, and the member states do not play any role in their determination. The directive defines the security and notification requirements for OES (Directive (EU) 2016/1148, art 14) and DSP. (Directive (EU) 2016/1148, art. 16) The Directive does not give any further indication on the type, adequacy and proportionality of the technical and organizational measures that operators OES will take. The directive recognizes the right of operators to assess the measures they need to take following an approach based on the level of the cyber threat. As can be deduced, the European legislator chose a model based on a framework of principles and rules allowing discretion to operators, instead of applying mandatory rules uniformly applied to all operators. Also, this Directive establishes the obligation for the member states to create a national strategy for the security of the network and information systems, for the establishment of new mechanisms to develop trust and confidentiality (the NIS Cooperation Group and the CSIRTs network). In this Directive are sanctioned obligations both for Essential Service Operators and for Digital Service Providers, as well as obligations for Member States to assign national competent authorities, having single points of contact and CSIRTs defined.

Directive NIS-2/2022, which replaces the above-mentioned directive, was issued as a necessity to respond to technological developments and the potential threats they carry with them. It came as an urgent need for a more harmonized,

expanded and improved framework in the field of cyber security and critical infrastructure protection. The NIS 2 directive seeks to improve the response and interaction capabilities to cyber security incidents that may come to public and private entities, and to responsible relevant authorities in Europe. Inclusion in the cyber defense framework of new sectors such as critical infrastructure operators (energy; transport; banking; financial markets infrastructure; health; drinking water and wastewater; digital infrastructure; public administration; space) as well as those of important infrastructure represent one of its main goals(postal and courier services; waste management; the manufacture, production and distribution of chemicals; food production, processing and distribution; manufacturing; digital providers (such as providers of online marketplaces, online search engines and social networking services platforms). (Directive (EU) 2022/2555, art.3).

This Directive removes the distinction made between operators of essential services (OES) and digital service providers (DSP), and makes a more appropriate categorization of the latter, dividing them into three categories: online marketplaces, search engines and cloud service providers. (Directive (EU) 2022/2555, art.6, p.28,29,30).

This Directive imposes obligations on governing bodies regarding the implementation and supervision of compliance with the legislation of cyber security measures and standards in their organization, leading to fines and temporary suspensions from performing managerial functions, including at the C-Suite level. The directive sanctions the obligation for IT specialists of different institutions to attend specific trainings, on a regular basis, to acquire sufficient knowledge and skills to capture and assess cyber security risks and for governing bodies to adopt management practices and measure their impact on the entity's operations. The directive also gives the competent authorities broad supervisory access and auditing powers for entities falling under the scope of the Directive. According to it, entities have the obligation to implement cyber risk management measures that are appropriate and proportionate, they should adopt technical and organizational measures to manage the risks that come to the security of the network and information systems.

The directive provides a catalog of measures to be taken by entities, such as security policies, incident handling, business continuity and crisis management, supply chain security, policies and procedures to test the effectiveness of risk management procedures, cyber risk and the use of cryptography and encryption. It imposes the obligation to report cyber incidents in stages, including an initial notification within 24 hours of becoming aware of any incident that has a significant impact on the provision of company services or any significant cyber threat that these entities identify that may result in a significant incident followed by "interim" and "final" reporting obligations. The previous directive sanctioned incident reporting only without "undue delays," leaving unclear response and reporting times for the cyber incident.

The directive also sanctions the necessity of the continuous review of the national strategies of the member states in the field of cyber security, beside requiring all medium and large entities (in the sectors covered by the NIS2 framework) to automatically comply with the cyber security rules, removing the possibility for member states to adapt the requirements in certain cases. Other significant changes include: addressing ICT supply chain cyber security for the first time; the creation of a special mechanism called the EU-Cyber Crisis Liaison Organization Network (EU-CyCLONE) to support the coordinated management of EU-wide cyber security incidents and crises at the operational level, as well as increasing responsibilities of ENISA within its mandate. This directive stipulates that member states have the obligation to transpose into domestic legislation and enter into force the measures sanctioned in this directive by October 17, 2024.

As a conclusion, it must be said that community law, through the instruments it creates and the technical and organizational measures it requires to be taken, constitutes the backbone in the field of cyber protection on a European level. It represents the basis for the stability of the European common market and the protection of the fundamental rights of European citizens. It represents an important tool to build cyber security in the EU, to mitigate threats to network and information systems used in essential services in key sectors and to ensure the continuity of such

services in the face of incidents, thus contributing to the security of the Union and the effective functioning of the European economy and society.

3. The Legal Regime of Cybersecurity in Domestic Law

In Albanian law, the issue of cyber security, in addition to the provisions that sanction criminal legal protection in the Criminal Code of the Republic of Albania (Law no. 7895, 1995), has been the subject of a number of other legal acts, such as for electronic communications (Law no. 9918, 2008), for the protection of personal data (Law no. 9887, 2008), for classified information (Law 8457, dated 1999), for electronic signature (Law 9880, 2008), for electronic identification and trusted services (Law no. 107, 2015)" and recently, the one for cyber security (Law no. 2, 2017). Initially, aspects of cyber security requirements were addressed in the Law no. 9918, dated 19. 05. 2008 "On Electronic Communications in the Republic of Albania", which assigned to AKEP as the responsible institution in this field ,the role of drafting, coordinating and supervising the implementation of measures for the provision of electronic communications, networks and services, associated facilities and other services. (Law no. 9918, 2008, art. 7, p. 3) A special provision in this law is dedicated to protective measures to be adopted in the field of cyber security for entrepreneurs of networks and services of public electronic communications. (Law no. 9918, 2008, art. 122). The regulatory role of AKEP as an institution in charge of drafting cyber security policies and measures was manifested with the approval of Regulation no. 37/2015 "On technical and organizational measures on security in networks and information systems". This act represents the first step into providing and elaborating a detailed framework of technical and organizational measures that must be implemented by information systems operators. This act regulates concepts such as: infrastructure assets, compromised information systems, security incidents, denial of service, malicious software, electronic data manipulation, as well as the obligation of operators to guarantee network security and incident reporting. (AKEP Regulation, 2015, art 4-15).

For the first time, the issue of cyber security instruments and measures was raised on a legal level in Albania in 2017 with the approval of Law No. 2/2017, "On

Cybersecurity". The law, just like the NIS Directive, categorizes communication networks and information systems and consequently the entities that use them into two categories: critical infrastructure, which includes the entirety of networks and information systems, the violation or destruction of which would have an impact serious to the health, safety and/or economic well-being of citizens and/or the effective functioning of the economy of Albania, and important infrastructure, which includes the totality of networks and information systems owned by a public authority, which is not part of the critical information infrastructure, but which may endanger or limit the work of the public administration in the event of a breach of information security. (Law No. 2/2017, art 3/5,6) According to the law, the list of critical information infrastructures and important information infrastructures is approved by decision of the Council of Ministers and updated at least once every two years. (Law No. 2/2017, art.6) According to this decision, the critical infrastructure includes sectors such as energy (electricity, gas, oil), some health, financial services (banks, microfinance, taxes), transport, public government services (defense, etc.), as well as a part of the digital infrastructure (AKEP). While the important infrastructure network includes some health, financial, transport services, some government and digital services. (VKM no. 553/2020, p. 2-10)

The law sanctions the establishment of entities responsible for cyber security, which include the role of a state authority, alongside operators of critical and important information infrastructure. The law stipulates that in every critical infrastructure operator it is mandatory to set up computer security incident response teams (CSIRT), while for operators of important information infrastructures they must have at least one person responsible for computer security incidents. (Law No. 2/2017, art.7) The law relegates to the state authority in the field of cyber security the responsibility to act as a central point of contact at the national level for all operators, to define cyber security measures, to administer incident reports and their storage and registration, as well as to provide methodical help and support to responsible operators in the field of cyber security. It has the obligation to act in the capacity of the national CSIRT and to carry out analyzes of identified weaknesses in the field of Internet security and

awareness and education activities in the field of cyber security. (Law No. 2/2017, art.5).

The law sanctions cyber security measures, dividing them into organizational and technical ones, and recognizes the right of the state authority in this field to determine in more detail the content and manner of their documentation. (Law No. 2/2017, art.9) Authority through the Order no. 22/2018 has approved what exactly the security measures should contain and how they should be documented by the respective operators. (AKCESK, no.22/2018) The law defines what is considered a cyber security incident, what are their forms, how they are reported, the measures to be taken in the event of an incident, the state of the cyber crisis, as well as administrative offenses in the field of cyber security and relevant sanctions. In fact, the law on cyber security is a great achievement in terms of addressing: a) standards and capacities of security technical and organizational measures to be taken by private and public operators that provide essential or important services, b) monitoring mechanisms and setting specific sanctions, c) potential risks and incidents and measures to be taken.

Albania, in accordance with the NIS Directive, has drawn up the National Strategy for Cyber Security and the corresponding action plan. (VKM no. 1034/2020) This act makes a general analysis of the cyber security framework in the country and identifies policies, sectors, infrastructures, tools and necessary measures to be adopted in certain sectors to guarantee cyber security. The Act requires the establishment and operation of institutional cooperative mechanisms: legal and technical instruments, as a critical element of protection in cyberspace, for digital infrastructures, transactions and electronic communications. The act emphasizes the necessity of raising professional capacities, increasing nationwide awareness and strengthening national and international cooperation for a safe digital environment. (VKM no. 1034/2020, p. 3/1)

3.1 Discussion

Despite the great importance of the existence of a complete legal framework, in societies with a low level of rule of law such as the Albanian one, the main concern remains its implementation in practice. The lack of implementation of cyber security measures in specific operators, makes the law to be seen more as a vision than as set targets to be achieved. Despite the creation of mechanisms and measures to protect against cyber threats in accordance with the Directive, the recent cyberattacks by Iranian hackers against networks and information systems in Albania showed the weakness and lack of professionalism and effectiveness of the mechanisms set up in Albania to deal with them. This case put the Albanian cyber defense system to the test, bringing it to its knees and having a very serious impact on national security and the basic rights of citizens. However, the attack showed that the legal framework is insufficient if it is not implemented with the necessary seriousness. The attack highlighted the necessity to support the state agency in the field of cyber security and the operators of the field with financial, technical, operational means and ongoing trainings and instructions.

The Albanian law regarding the establishment of the state agency in the field of cyber security follows the European model, concentrating the competence in this field on AKCESK(National Agency for Eletronic Certification and Cyber Security), which actually has a wide range of responsibilities. The question that arises is whether this agency has the technical, financial and qualified human resources to face the challenges of cyber security, in addition to the other tasks it performs? The establishment of a special center for cyber security, in the form of a coordination, treatment, support mechanism, will serve as a more efficient instrument for the prevention, management and solution of cyber threat issues.

Most important challenges to address are: the extent to which these operators of critical and important infrastructure have managed to implement the requirements and cyber security measures, through specific technological and organizational tools, human resources in this area and through the allocation of operating costs. Thus, for

example, the law requires critical infrastructure operators to set up teams for cyber incidents, whereas important infrastructure operators must have at least one dedicated person on their staff. So, these measures increase costs for these operators. The issue of the technical, operational and human resource potentials of public agencies to assess new potential risks and to design safeguards remains the biggest cyber security concern. Bypassing cyber security measures, untimely updating network security technology and information systems by operators, making them vulnerable to potential risks, improper and responsible non-auditing of security measures by public authorities are a serious concern especially for countries with lower standards of rule of law. Therefore, public and private operators, subjects of law need to improve their procedures, develop strategic plans for cyber protection against cyberattacks or cyber-crime, elaborate risk management plans in cases where these attacks occur. The importance of implementing these measures should be part not only of managing the activity of these operators, but should become part of the organizational and individual culture. Improving the regulatory framework for cyber security harmonized with sectorial laws, to accurately address issues and resolve them, including, but not limited to: Cloud computing, IoT, 5G technology and Artificial Intelligence.

Lastly, but not least, Albanian law has a new obligation: the improvement of cyber security instruments and measures according to the requirements of the NIS 2 Directive, for a more efficient response to cyber threats.

4. Conclusions

The purpose of cyber law, above all, is to protect the rights of users of networks and information systems. On the one hand, this is achieved by preventing the misuse of networks and information systems, considering such a category of actions as illegal activities and imposing criminal legal sanctions on them. On the other hand, another duty of law is to build a system of norms that address the totality of organizational, technical and educational tools that aim to protect the functionality and services of information systems and communication networks.

European law, through the instruments it creates and the technical and organizational measures it requires to be taken, constitutes the backbone and a major drive of development in the field of cyber defense on a European level. It represents the basis for the stability of the European common market and the protection of the fundamental rights of European citizens.

Albania has actually addressed cyber security instruments and measures by law immediately after the release of the main European acts. In Albania, as it happens in other areas, the main problem is not the existence or non-existence of norms, but the rigorous culture of law enforcement. Albania still does not have the necessary technical, operational and financial capacities and resources to face cyber threats. Cyber security requires professionally capable human resources to suggest technical and organizational measures to prevent cyberattacks. It requires serious investments in technology and equipment to maintain communication networks and information systems in all infrastructures. Cyber security requires the strengthening of control measures, reporting and training to every critical and important infrastructure operator.

The paper concludes that Albania should improve cyber security instruments and measures according to the requirements of the NIS 2 Directive for a more efficient response to cyber threats. The paper recommends that cyber security should be a priority, in terms of a setting up a specialized center that has the human, technical and financial resources necessary for the support and proper functioning of networks and information systems.

References

[1] Antonov K., (2019), Towards Conceptualizing EU Cybersecurity Law, ZEI, 2019;

[2] Craigen D, Diakun-Thibault N, Purse, (2014), "Defining Cybersecurity", Technology Innovation Management Review, October 2014, p.17).

[3] Christen M et al. (eds.), (2020), The Ethics of Cybersecurity, The International Library of Ethics, Law and Technology, Springer, 2020.

[4] Cambridge Dictionary, accessed in 2022, (https:// dictionary.cambridge.org/dictionary/english/cybersecurity)

[5] Cambridge Dictionary, accessed in 2022, (https:// dictionary.cambridge.org/dictionary/english/cybersecurity)

[6] CEN/CENELEC CSCG, "Recommendation #2: Definition of cybersecurity", v01.08

[7] Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union (the "NIS Directive").

[8] Directive (EU) 2022/2555, of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148

[9] Directive 2013/40/EU of the European Parliament and of the Council of 12 August 2013 on attacks against information systems and replacing Council Framework Decision 2005/222/JHA

[10] Directive 2008/114/EC of 8 December 2008 on the identification and designation of European critical infrastructures and the assessment of the need to improve their protection (OJ L 345, 23.12.2008, p. 75–82).

[11] Dictionary.com and Oxford University Press, accessed in 2022 (https://www.dictionary.com/browse/cybersecurity?s=t)

[12] ENISA, (2015), Definition of Cybersecurity – Gaps and overlaps in standardization, v1.0, December 2015, http://Cybersecurity_Definition_Gaps_v1_0%20(1).pdf

[13] Fuster G G, Jasmontaite L, (2020) "Cybersecurity Regulation in the European Union: The Digital, the Critical and Fundamental Rights", 2020.

[14] Ligji nr. 7895, datë 27.1.1995, "Kodi Penal i Republikës së Shqipërisë", i ndryshuar

[15] Ligji nr. 2/2017, "Për sigurinë kibernetike";

[16] Ligji nr. 9918, datë 19.5.2008, "Për komunikimet elektronike në Republikën e Shqipërisë", i ndryshuar;

[17] Ligji nr. 9887, datë 10.3.2008, "Për mbrojtjen e të dhënave personale", i ndryshuar;

[18] Ligji nr. 8457, datë 11.2.1999, "Për informacionin e klasifikuar", i ndryshuar;

[19] Ligji nr. 9880, datë 25.2.2008, "Për nënshkrimin elektronik", i ndryshuar; -

[20] Ligji nr. 107, datë 15.10.2015, "Për identifikimin elektronik dhe shërbimet e besuara", i ndryshuar.

[21] Marton V, (2020), "5G Networks, (Cyber)Security Harmonisation and the Internal Market: The Limits of Article 114 TFEU", European Law Review, 2020.

[22] Merriam-Webster Dictionary, accessed in 2022, (https://www.merriam-webster.com/dictionary/cybersecurity)

[23] Odermatt J, (2018), "The European Union as a Cybersecurity Actor", in Blockmans S, Koutrakos P (eds.), Research Handbook on EU Common Foreign and Security Policy, Edward Elgar Publishing, 2018.

[24] Papakonstantinou, V., (2022), Cybersecurity as praxis and as a state: The EU law path towards acknowledgement of a new right to cybersecurity?, Computer Law & Security Review, Volume 44, April 2022, 105653.

[25] Regulation (EU) 2019/881 of the European Parliament and of the Council of 17 April 2019 on ENISA (the European Union Agency for Cybersecurity) and on information and communications technology cybersecurity

certification and repealing Regulation (EU) No 526/2013 (Cybersecurity Act).

[26] Regulation EU No 526/2013, of the European Parliament and of the Council of 21 May 2013 concerning the European Union Agency for Network and Information Security (ENISA) and repealing Regulation (EC) No 460/2004

[27] Report on Cybersecurity Maturity Level in Albania, (2018), Global Cyber Security Capacity Centre (GCSCC) and World Bank https://cesk.gov.al/publicAnglisht_html/Publikime/2019/AlbaniaCMMReport.pdf

[28] Urdhri nr.22, datë 26.04.2018 i AKCESK për "Miratimin e Rregullores mbi përmbajtjen dhe mënyrën e dokumentimit të masave të sigurisë", të ndryshuar

[29] VKM nr.553, datë 15.07.2020 "Për miratimin e listës së infrastrukturave kritike të informacionit dhe listës infrastrukturave të rëndësishme të informacionit".

[30] VKM nr.1034, datë 24.12.2020 "Për miratimin e strategjisë kombëtare për sigurinë kibernetike dhe planin e veprimit 2020-2025".

[31] Wessel, R. A. (2021). European Law and Cyberspace. In R. Buchan, & N. Tsagourias (Eds.), *Research Handbook on International Law and Cyberspace* (2 ed., pp. 490-507).

[32] Wikipedia Computer Security December 2022 (https://en.wikipedia.org/wiki/Computer_security)

Address:
“Jordan Misja” St. Tirana - Albania
e-Mail : icibt@beder.edu.al