

FOURTH INTERNATIONAL SCIENTIFIC CONFERENCE

KNOWLEDGE BASED SUSTAINABLE ECONOMIC  
DEVELOPMENT

# ERAZ 2018





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## CONTENTS

<b>AFRICAN UNION AND EUROPEAN SUSTAINABLE DEVELOPMENT PROJECTS: CROSS-CULTURAL TRAPS IN MULTICULTURAL TEAMS .....</b>	<b>2</b>
Mary Ellen Toffle	
<b>PROBLEMS IN THE BUSINESS OF SMALL AND MEDIUM-SIZED ENTERPRISES AND ENTREPRENEURSHIP IN SERBIA .....</b>	<b>16</b>
Marina Gajic Glamoclija	
<b>INEQUALITY PROBLEMS IN CENTRAL AND EASTERN EUROPE .....</b>	<b>22</b>
Gyorgy Andor	
<b>FOREIGN DIRECT INVESTMENT AND REGIONAL DEVELOPMENT IN BULGARIA: A PANEL DATA ANALYSIS FOR THE PERIOD 2008-2016 .....</b>	<b>35</b>
Iva Raycheva	
<b>FOREIGN DIRECT INVESTMENT IN MACEDONIA – IS THERE DICRIMINATION IN PRACTICE? .....</b>	<b>40</b>
Biljana Petrevska	
<b>MITIGATION OF REGIONAL DISPARITIES THROUGH CLUSTERS .....</b>	<b>47</b>
Katarína Kráľová	
Jana Sochuláková	
Dagmar Petrušová	
<b>INFLUENCE OF FOREIGN TRADE WITH CEFTA AND EU ON GDP OF B&amp;H.....</b>	<b>55</b>
Dijana Grahovac	
Senad Softić	
<b>CROSS-BORDER REGIONS AS SUPPORTING STRUCTURES FOR RAISING COMPETITIVENESS IN EUROPE .....</b>	<b>65</b>
Dagmar Škodová Parmová	
Zuzana Dvořáková Líšková	
Rostislav Kain	
<b>THE INFLUENCE OF MUNICIPALITY SIZE ON ITS EXPENDITURE- CASE STUDY FROM SLOVAKIA .....</b>	<b>79</b>
Monika Vámošová	
<b>DYNAMICS OF LOANS AND DEPOSITS IN BULGARIA AND THE EURO AREA IN THE PERIOD 2007–2017 .....</b>	<b>86</b>
Aglíka Kaneva	
<b>CHALLENGE FOR A NON-FINANCIAL DEFINED CONTRIBUTION SCHEME IN THE ALBANIAN RETIREMENT SYSTEM .....</b>	<b>97</b>

Landi Gushi	
<b>INCOME RELATED ELASTICITY OF HEALTH EXPENDITURE: SOME EMPIRICAL EVIDENCE FOR BULGARIA .....</b>	<b>106</b>
Nikolay Atanasov	
<b>RETIREMENT PROGRAMS FOR EMPLOYEES AS AN ELEMENT OF CORPORATE SOCIAL RESPONSIBILITY .....</b>	<b>115</b>
Iwona Olejnik	
Magdalena Stefańska	
<b>MICROFINANCE AND ECONOMIC GROWTH IN ALBANIA: AN ARDL APPROACH .....</b>	<b>125</b>
Forcim Kola	
Teuta Cerpja	
<b>FINDING THE EFFECTIVE FRONTIER FOR A PORTFOLIO OF RISK LOANS (ALBANIAN CASE) .....</b>	<b>137</b>
Glediana Zeneli	
Arsen Benga	
<b>BANKS IN THE SYSTEM OF FINANCING ECONOMY AND FINANCIAL MANAGEMENT IN BOSNIA AND HERZEGOVINA.....</b>	<b>147</b>
Željana Vručinić	
<b>THE PROFITABILITY OF BANKING SECTOR IN KOSOVO .....</b>	<b>160</b>
Flamur Keqa	
<b>MOTIVES AND DETERMINANTS OF THE PROCESSES OF MERGERS AND ACQUISITIONS OF BANKS IN THE USA, EU, AND TRANSITIONAL ECONOMIES OF CENTRAL AND EASTERN EUROPE.....</b>	<b>169</b>
Irena Lekoska	
<b>ECB LEGAL MEASURES ACCORDING TO THE FINANCIAL CRISES .....</b>	<b>176</b>
Shkendije Nahi	
Flamur Mrasori	
<b>DEVELOPING E-BANKING PLATFORM IN CONTEMPORARY WORLD.....</b>	<b>185</b>
Zarko Radjenovic	
Tatjana Boshkov	
<b>WILL THE INTERNATIONAL ACCOUNTING STANDARDS BOARD’S DECISION TO INTRODUCE ‘THE EXPECTED LOSS MODEL’ UNDER IFRS 9 CONTRIBUTE TO GREATER TRANSPARENCY OF FINANCIAL STATEMENTS INFORMATION? IS IT TRUE OR IS IT TOO EARLY TO ADDRESS THE QUESTION?.....</b>	<b>195</b>
Hristina Oreshkova	

<b>ANALYTICAL SUPPORT FOR MANAGEMENT OF VENTURE FINANCING OF INNOVATIVE ENTERPRISES .....</b>	<b>211</b>
Mykola Gorodysky	
Hanna Khomenko	
Olena Syvak	
<b>MULTIPLE REVENUE STREAMS MODEL OF WINERIES.....</b>	<b>222</b>
Katarína Remeňová	
Nadežda Jankelová	
<b>INVESTMENTS IN REPAIR OF OUTDATED METAL FORMING MACHINES AND EVALUATION OF THIS INVESTMENTS.....</b>	<b>230</b>
Burim Fejzaj	
Milan Vukcević	
Mileta Janjić	
<b>IMPACT OF FINANCIAL STRUCTURE ON ECONOMIC RETURN (ROA - RETURN ON ASSET); CASE STUDY: WHOLESALE OF MOTOR VEHICLE PARTS AND ACCESSORIES (NACE: 4531).....</b>	<b>237</b>
Rodica Baciu (Boanta)	
Petre BREZEANU	
<b>COMPARATIVE RISK ANALYSIS OF HUNGARIAN AND ROMANIAN TRADE AND SERVICE COMPANIES .....</b>	<b>252</b>
Tibor Tarnóczy	
Edina Kulcsár	
<b>CONTEMPORARY APPROACH TO THE ANALYSIS OF THE PURCHASING FUNCTION IN THE PRODUCTION COMPANY .....</b>	<b>266</b>
Miroslav Cavlin	
Radivoj Prodanovic	
Pavle Pocuc	
<b>THE ROLE OF FIXED ASSETS IN THE DEVELOPMENT OF BUSINESS ACTIVITIES OF THE ORGANIZATION .....</b>	<b>273</b>
Vuk Bevanda	
Aleksandra Živaljević	
Sara Stanić Jovanović	
<b>COMPARISON OF THE USE OF METHODS FOR INCREASING THE QUALITY AND PERFORMANCE OF PROCESSES IN THE SLOVAK ECONOMY.....</b>	<b>282</b>
Pavol Gejdoš	
Ľubica Simanová	

<b>THE PROSPECTS FOR IMPLEMENTATION OF BLOCKCHAIN TECHNOLOGY IN THE HOUSING SECTOR OF THE RUSSIAN FEDERATION .....</b>	<b>292</b>
Stanislav Viktorovich Pridvishkin	
Ulyana Petrovna Degtyareva	
<b>CONSUMER PERCEPTIONS TOWARDS CRYPTO CURRENCIES .....</b>	<b>299</b>
Ismail Metin	
Enis Yakut	
<b>VARIETY OF THE BENEFICIAL OWNERSHIP CONCEPT .....</b>	<b>310</b>
Sonja Cindori	
Toni Janković	
<b>STRATEGIC COHERENCE AS AN ORGANIZATIONAL ADJUSTMENT PROCESS - CONCEPT AND MEASUREMENT OF THE PHENOMENON.....</b>	<b>316</b>
Paweł Mielcarek	
<b>INTERDISCIPLINARY UNDERSTANDING OF A CRISIS: TOWARDS AN INTERNATIONAL CRISIS CLASSIFICATION MATRIX .....</b>	<b>323</b>
Albena Björck	
<b>AN EMPIRICAL INVESTIGATION OF SCHOOL TO WORK TRANSITION USING THE GOMPERTZ MODEL .....</b>	<b>330</b>
Ana Gorenca	
<b>DEVELOPING A PROJECT MANAGEMENT CULTURE IN INSTITUTIONS OF HIGHER LEARNING .....</b>	<b>340</b>
Daniel Seelhofer	
Christian Olivier Graf	
Selina Guhl	
<b>EDUCATION FOR SUSTAINABLE DEVELOPMENT IN SERBIA AT THE ONSET OF THE FOURTH INDUSTRIAL REVOLUTION .....</b>	<b>354</b>
Biljana Jovanović Gavrilović	
Biljana Radivojević	
<b>COMPARATIVE PECULIARITIES OF THE LABOUR MARKET OF YOUNG SPECIALISTS IN RUSSIAN AND CHINA IN THE LAST DECADE.....</b>	<b>361</b>
Evgeniya Yazovskikh	
Zhao Qiogyu	
<b>THE SUCCESS OF PEER REVIEW EVALUATION IN UNIVERSITY RESEARCH FUNDING – THE CASE STUDY FROM SLOVAKIA .....</b>	<b>372</b>
Alexandra Lešková	
<b>THE LEVEL AND POSITION OF STRATEGIC BUSINESS MANAGEMENT IN THE CZECH REPUBLIC, RUSSIA AND CHINA AND THEIR MUTUAL COMPARISON .....</b>	<b>383</b>

Jarmila Straková	
<b>PREDICTION OF THE DEVELOPMENT OF THE CORPORATE ENVIRONMENT IN THE CZECH REPUBLIC FROM THE PERSPECTIVE OF TOP MANAGERS .</b>	<b>392</b>
Jan Váchal	
<b>THE ROLE OF MANAGEMENT IN MANAGEMENT OF COMPANIES.....</b>	<b>401</b>
Nevenka Nićin	
Anka Bulatović	
Vojislava Grbić	
<b>MANAGEMENT PROFESSIONALIZATION AS CONDITION FOR MODERNIZATION OF COMPANIES' MANAGEMENT DUE TO APPLICATION OF A PARTICIPATIVE DEMOCRATIC DECISION MAKING MODEL .....</b>	<b>409</b>
Valentina Vukosavljevic Pavlovic	
<b>TALENT MANAGEMENT IMPLEMENTATION IN ACTIVITIES OF HUMAN RESOURCE MANAGEMENT .....</b>	<b>415</b>
Julija Avakumovic	
<b>HUMAN RESOURCES AND THEIR PREPARATION IN THE SPHERE OF ENVIRONMENTALLY ORIENTED CRISIS MANAGEMENT IN THE CONTEXT OF A CIRCULAR ECONOMY.....</b>	<b>424</b>
Jaroslav Bednárik	
<b>CHALLENGES IN FORMULATING AND IMPLEMENTING OF STRATEGIC HUMAN RESOURCE MANAGEMENT .....</b>	<b>430</b>
Denada Olli	
<b>A STUDY TOWARDS THE VERIFICATION OF FACTOR ANALYSIS WITH MULTIDIMENSIONAL SCALING: MEYER AND ALLEN'S ORGANIZATIONAL COMMITMENT SCALE.....</b>	<b>438</b>
Aslı Beyhan Acar	
Nil Selenay Erden	
<b>COMPARISON BETWEEN MNCS AND DOMESTIC COMPANIES ON TRAINING AND DEVELOPING EMPLOYEES IN SERBIAN CONTEXT .....</b>	<b>447</b>
Marko Slavkovic	
Marijana Simic	
<b>MANAGER, MANAGERIAL STRESS AND SPORTS RECREATION .....</b>	<b>453</b>
Ivica Nikolić	
Jova Miloradić	
<b>THE INTERNSHIP, A CHANCE FOR COMPANIES, BUT ESPECIALLY FOR STUDENTS.....</b>	<b>460</b>
Marius Calin BENEÁ	

<b>SALES PROMOTION IN THE FUNCTION OF CREATING CONSUMER SATISFACTION AND INFLUENCING CONSUMER ATTITUDES .....</b>	<b>466</b>
Marina Guzovski	
Mirko Smoljić	
Marina Stanić	
<b>BEHAVIOURAL FACTORS TO ANALYZE THE READINESS FOR INDIVIDUAL CONSUMPTION .....</b>	<b>474</b>
Maya Tsoklinova	
Konstantin Kolev	
<b>ANALYSIS OF THE CONNECTION BETWEEN TELEVISION COMMERCIALS FOR BEER AND FOOTBALL.....</b>	<b>482</b>
Nikola Vukčević	
Luka Rakojević	
<b>APPLICATION OF SOCIAL NETWORKS IN EVERYDAY LIFE IN BOSNIA AND HERZEGOVINA .....</b>	<b>489</b>
Zvezdan Stojanović	
Fuad Hasanović	
<b>THE ROLE OF THE SOCIAL MEDIA IN THE TRADITIONAL MEDIA DEVELOPMENT IN ALBANIA.....</b>	<b>497</b>
Holta Heba	
<b>POSSIBILITIES OF USING EDULARP IN EDUCATION IN SLOVAK REPUBLIC .....</b>	<b>506</b>
Adriana Grenčíková	
Dagmar Petrušová	
Karol Krajčo	
<b>THE ROLE OF WOMEN IN THE CREATION OF KNOWLEDGE FOR THE FOURTH INDUSTRIAL REVOLUTION .....</b>	<b>513</b>
Marijana Vidas-Bubanja	
Snežana Popovčić-Avrić	
Iva Bubanja	
<b>DEPENDENCE OF QUANTITATIVE MODELS OF MANAGEMENT ON IOT AND DIGITAL TRANSFORMATION.....</b>	<b>521</b>
Milos Loncar	
Marina Jovanovic Milenkovic	
Milos Trkulja	
<b>STUDY ON THE DIGITIZATION LEVEL OF ROMANIAN ENTERPRISES .....</b>	<b>534</b>
Catalin Gheorghe	

<b>SUSTAINABLE MARKETING STRATEGY - THE WAY TO GAIN PROFITS ON INTERNATIONAL MARKETS .....</b>	<b>542</b>
Saša Virijević Jovanović	
Vesna Pijevac	
Vesna Filipović	
<b>THE USE OF TWITTER AS A MARKETING TOOL BY TOUR OPERATORS IN ANTALYA .....</b>	<b>551</b>
Nur Undey Kalpaklioglu	
Egemen Gunes Tukenmez	
<b>OECD MEMBERSHIP CHALLENGES FOR CROATIAN TOURISM; SUSTAINABLE PERSPECTIVES .....</b>	<b>560</b>
Jasmina Gržinić	
<b>ANALYSIS AND FORECAST OF TOURIST NIGHTS IN CROATIA BY 2022 .....</b>	<b>567</b>
Justin Pupavac	
Antonio Badurina	
<b>EXPLORING CONNECTIONS BETWEEN CULTURAL HERITAGE, TOURISM AND SUSTAINABLE DEVELOPMENT: THE CASE OF ROMANIA.....</b>	<b>575</b>
Călin Vegheş	
<b>MANAGING DIVERSITY IN THE HOSPITALITY INDUSTRY OF SLOVENIA....</b>	<b>582</b>
Marija Rok	
<b>HUMAN RESOURCE MANAGEMENT IN HOSPITALITY, RESTAURANTS AND TRAVEL AGENCIES .....</b>	<b>592</b>
Goran Pavlović	
Nevena Vrcelj	
<b>NETWORK AND KNOWLEDGE SYSTEMS IN INDUSTRIAL AND TOURISM CLUSTERS.....</b>	<b>599</b>
Tülay GÜZEL	
Tarık YALÇINKAYA	
<b>EXAMPLES OF EUROPEAN TOURISM DESTINATIONS AND IMPORTANCE OF AGRICULTURAL LANDSCAPES .....</b>	<b>606</b>
Anita Silvana Ilak Peršurić	
<b>HISTORICAL DESTINATIONS IN NORTH INDIA AND THEIR IMPACTS: AN ANALYTICAL STUDY (SPECIAL FOCUS ON DELHI) .....</b>	<b>616</b>
Zeba Zarin Ansari	
Ajay Kumar	
Anton Vorina	

<b>SUSTAINABLE TOURISM IN THE PROTECTED AREAS OF BOSNIA AND HERZEGOVINA ON THE EXAMPLE OF THE NATURE MONUMENT "VRELO BOSNE" .....</b>	<b>637</b>
Emir Temimović	
<b>DISTRIBUTION CHANNELS IN TOURISM IN THE MODERN APPROACH.....</b>	<b>644</b>
Cuneyt MENGÜ	
<b>TO BE MACHO OR NOT TO BE THAT'S THE MATTER: BANKING AND TOURISM SECTORS .....</b>	<b>657</b>
Ekrem Tufan	
Sezer Deniz	
İrem Ceylan Karagöz	
Erhan Eren	
Duygu Nedret Tüter	
<b>MASS MIGRATION - THE FASTEST GROWING CHALLENGE OF THE EUROPEAN UNION WITH SPECIAL REFERENCE TO CROATIA .....</b>	<b>665</b>
Sanja Knežević	
Anita Kulaš Miroslavljević	
Lena Duspara	
<b>HOW THE LIFESTYLE AND STYLE OF THINKING OF THE ROMANIANS HAS CHANGED 100 YEARS AFTER THE GREAT UNION .....</b>	<b>673</b>
Marius Calin BENEÄ	
<b>YOU ARE WHAT YOU PERCEIVE AND EAT .....</b>	<b>679</b>
Ekrem Tufan	
Atila Yüksel	
Funda Eriş	
Aydan Taştan	
<b>ONE SOLUTION OF INTERACTION WEB APPLICATION FOR USERS INTERCONNECTION.....</b>	<b>685</b>
Nenad Kojić	
Mustafa Levent	
Natalija Vugdelija	
<b>THE NECESSITY OF APPLYING THE ECONOMY OF HARM AND BENEFIT OF EXPLOITATION OF ELECTRIC VEHICLES.....</b>	<b>692</b>
Nada Kosanovic	
Danijela Rakic	

**BIOLOGICAL TREATMENT AND BEST MANAGEMENT PRACTICES ON FOOD INDUSTRY WASTEWATER IN ALBANIA..... 701**

Anisa Myrtaj (Rexhepi)

Ilirjan Malollari

Luljeta Pinguli

**MONITORING OF ENVIRONMENTAL CONDITIONS IN THE REPUBLIC OF SERBIA AND APPLICATION OF THE POLLUTER PAYS PRINCIPLE..... 708**

Milan Počuča

Jelena Matijašević-Obradović

**EFFICIENT USE OF ENERGY AN IMPORTANT APPROACH IN MINIMIZING ENVIRONMENT AND OPERATIONAL COSTS IN ALBANIAN BREWERIES ..... 715**

Luljeta Pinguli

Ilirjan Malollari

Lorina Lici

Jonilda Llupa

**DEVELOPMENT AND APPLICATION OF POTENTIAL ALTERNATIVE ENERGY SOURCES ..... 724**

Goca D. Jovanović

Slavko Božilović

**THE RAPESEED CULTURE EVOLUTION IN ROMANIA IN THE CONTEXT OF CLIMATE CHANGE ..... 728**

Camelia Slave

Diana Vască Zamfir

**THE COMPARISON OF REQUIREMENTS FOR A DISCLOSURE OF NON-FINANCIAL INFORMATION ACCORDING TO LEGAL REGULATIONS IN SLOVAKIA AND EU DIRECTIVES ..... 736**

Renáta Pakšiová

**CRIMINAL OFFENSES AGAINST SECURITY OF COMPUTER DATA IN THE REPUBLIC OF SRPSKA ACCORDING TO THE CRIMINAL LAW OF 2017 ..... 746**

Miodrag N. Simović

Dragan Jovašević

Vladimir M. Simović

**LEGAL FRAMEWORK FOR RESISTANCE OF SPORTS FAN VIOLENCE (FOOTBALL) - EVENTS IN MONTENEGRO ..... 752**

Željko Spalević

Ljubiša Konatar

Žaklina Spalević

<b>MEDIA TRIAL VS. FAIR TRIAL: ARE THE NEW MEDIA RESHAPING ADMINISTRATION OF JUSTICE? .....</b>	<b>764</b>
Tulishree Pradhan	
Shuvro Prosun Sarker	
<b>BUSINESS COMPANIES IN KOSOVO .....</b>	<b>772</b>
Majlinda Belegu	
<b>EQUALITY AND CHALLENGES IN EMPLOYMENT RELATIONSHIP BASED ON KOSOVO LEGAL RESOURCES .....</b>	<b>781</b>
Bashkim Rrahmani	
<b>FOUNDATIONS AND PROCEDURE OF CHALLENGE OF ARBITRATORS IN INTERNATIONAL ARBITRATION .....</b>	<b>789</b>
Mohammed Zaheeruddin	
<b>HUMAN TRAFFICKING FOR LABOUR EXPLOITATION AND THE ROLE OF WORK INSPECTION .....</b>	<b>802</b>
Aleksandra Jovanović	
Irena Šljivar Milijić	
<b>TRAFFICKING WITH HUMAN BEINGS, IDENTIFICATION AND THE PRINCIPLES OF NON PUNISHMENT FOR VICTIMS OF TRAFFICKING .....</b>	<b>808</b>
Veton Vula	
<b>YEKATERINBURG AGGLOMERATION: ANALYSIS OF THE CITY-PLANNING AND REAL ESTATE MARKET SITUATION IN THE SEGMENT OF APARTMENT BUILDINGS IN VERKHNYAYA PYSHMA.....</b>	<b>817</b>
Anna Loginova	
Stanislav Pridvizhkin	
<b>ANALYSIS OF THE RISKS GENERATED BY CONCEALED WORKS IN THE FIELD OF CONSTRUCTION .....</b>	<b>824</b>
Lidia NICULIȚĂ	
Laurențiu RECE	
Andreea Dora Bianca PIRONEA	
<b>MODULAR PRECAST METALLIC BALCONIES FOR BUILDINGS AND PROCESSES FOR MAKING THE SAME.....</b>	<b>840</b>
Laurentiu RECE	
Dragos VOICULESCU	
Andreea Dora Bianca PIRONEA	
<b>COMPARATIVE ANALYSIS OF THE SHEAR FORCE RESISTANCE OF WELDED STEEL SECTIONS WITH FLAT WEBS TO CORRUGATED WEBS STEEL CROSS SECTIONS.....</b>	<b>851</b>
Daniel Taus	

Dorin Radu	
<b>EVALUATION OF STEADY-STATE OPERATION OF ENVIRONMENTAL CLIMATIC CHAMBER MEASURING TEMPERATURE AND RELATIVE HUMIDITY.....</b>	<b>858</b>
Iska Kolaveri Spahiu	
Dhurata Premti	
Floran Vila	
Anisa Dhroso	
<b>PERFORMANCE EVALUATION OF AN EXPERIMENTAL SYSTEM MEASURING ETHANOL CONCENTRATION.....</b>	<b>862</b>
Erinda Piluri	
Hasime Manaj	
Ilijan Malollari	
Irakli Premti	
<b>THE FACTORS AFFECTING THE TREND OF FDI-S IN ALBANIA DURING THE LAST 5 YEARS.....</b>	<b>866</b>
Blerta Dragusha	
Erjola Barbullushi (Sakti)	
<b>CROWDFUNDING AND SOCIAL RESPONSIBILITY: CREATING ECONOMIC VALUE AND SOCIAL VALUE.....</b>	<b>868</b>
Nadia Oliva	
<b>THE STRUCTURE OF MARGINAL COSTS: A PEDAGOGICAL REVIEW .....</b>	<b>869</b>
Petar Stankov	
<b>ANALYSIS OF THE STRUCTURE OF BANK RECEIVABLES FROM THE BUSINESS SECTOR IN THE REPUBLIC OF SERBIA .....</b>	<b>872</b>
Dragana Tadić Živković	
<b>ALTMAN Z-SCORE REVISED MODELS AS EARLY WARNING SYSTEMS FOR BANKRUPTCY EVALUATION OF ECONOMIC ENTITIES .....</b>	<b>873</b>
Erjole Barbullushi	
Blerta Dragusha	
<b>NON-FINANCIAL BACKGROUND OF FINANCIAL PERFORMANCE: EVIDENCE FROM CENTRAL AND EASTERN EUROPE.....</b>	<b>874</b>
Gyorgy Andor	
Tamas Toth	
<b>ENTERPRISE ARCHITECTURE AS A FACTOR TO ELIMINATE IMPACTS IN ENTERPRISE EXTERNAL ENVIRONMENT .....</b>	<b>875</b>
Petra Pártlová	

Jan Váchal	
<b>THE 40% CLUB: COMPANY PERFORMANCE QUALITY AND GENDER EQUALITY.....</b>	<b>877</b>
Brikena Berisha	
<b>CORPORATE GOVERNANCE AND PERFORMANCE OF SME SECTOR IN KOSOVO .....</b>	<b>879</b>
Saxhide Mustafa	
<b>CORPORATE SUSTAINABILITY: VALUE CREATION IN SUSTAINABLE MANUFACTURING .....</b>	<b>880</b>
Damla Ozekan	
<b>CHANGING ROLE OF CFOS.....</b>	<b>882</b>
Sinan Cifci	
<b>UNBUNDLING THE ROLES OF INSTITUTIONS AND HUMAN CAPITAL IN DEVELOPMENT: A GLOBAL EVIDENCE .....</b>	<b>883</b>
Soner Gokten	
Furkan Baser	
Pınar Okan Gokten	
<b>THE IMPACT OF HUMAN CAPITAL ON SUSTAINABLE GROWTH - THE CASE OF REPUBLIC OF MACEDONIA - .....</b>	<b>884</b>
Slagjana Stojanovska	
Violeta Madzova	
Margarita Matlievska	
<b>LEADERSHIP EFFECTIVENESS IN MODERN AGE.....</b>	<b>885</b>
Vuk Mirčetić	
Pavle Brzaković	
Svetlana Vukotić	
<b>GOOD ORGANIZATIONAL GOVERNANCE AND DEVELOPMENT OF LEADERSHIP SKILLS IN SPORTS .....</b>	<b>886</b>
Danica Pirsl	
Andon Kostadinovic	
<b>MANIFESTATIONS AND SIGNIFICANCE OF “WORK EXPERIENCE” IN THE ORGANIZATION.....</b>	<b>888</b>
Mária Héder	
<b>SUSTAINABLE MARKETING AS A COMPETITIVE ADVANTAGE AND A CASE STUDY ON GLASS SECTOR IN TURKEY .....</b>	<b>889</b>
Evrım İldem Develi	
<b>ACCESS AND METHODS OF MARKETING RESEARCH.....</b>	<b>891</b>

Dina Lazarević	
Nevena Ćurić	
Katarina Radlovački	
<b>SIGNIFICANCE OF SOCIAL MEDIA MARKETING .....</b>	<b>893</b>
Milena Sretić	
Nemanja Stojković	
Željko Ondrik	
<b>THE INFLUENCE OF THE EXTERNAL ENVIRONMENT ON THE FORMULATION OF MARKETING STRATEGY .....</b>	<b>895</b>
Katarina Radlovački	
Željko Ondrik	
Nemanja Stojković	
<b>INTEGRATING CLOUD ENABLED SMART TECHNOLOGIES INTO EVENT MANAGEMENT.....</b>	<b>896</b>
Saha Baygul Ozpinar	
Alper Ozpinar	
<b>OFF-ROAD TOURISM: AN ALTERNATIVE WAY FOR SUSTAINABLE TOURISM IN ÇANAKKALE, TURKEY .....</b>	<b>898</b>
Figen SEVİNÇ	
Erol DURAN	
<b>INFORMATION AND COMMUNICATION TECHNOLOGIES IN SERBIA: GROWTH AND UNEVEN SPATIAL DEVELOPMENT .....</b>	<b>899</b>
Aljoša Budović	
Vojislav Deđanski	
<b>EVALUATION OF INNOVATIVE ENTREPRENEURSHIP ECOSYSTEM: TECHNOLOGY AUDIT .....</b>	<b>901</b>
Mehmet Şahin Gök	
Erşan Ciğerim	
Tuğkan Arıcı	
<b>ADAPTING A COMPANY’S STRATEGY IN THE DIGITAL TRANSFORMATION ERA .....</b>	<b>902</b>
Christian Tanushev	
<b>BLACK BOX OF INDUSTRY 4.0: NEW OPPORTUNITIES FOR ENTREPRENEURSHIP ECOSYSTEM .....</b>	<b>903</b>
Erşan Ciğerim	
Tuğkan Arıcı	
Mehmet Şahin Gök	

<b>IMPROVING TEACHING USING A GAME ENGINE .....</b>	<b>904</b>
Natalija Vugdelija	
Nenad Kojić	
Nikola Mihajlović	
<b>CONTRACT ON GIVING INFORMATION AND ADVICE (CONSULTING CONTRACT).....</b>	<b>906</b>
Mario Vojnić Hajduk	
<b>CROSS-BORDER UNFAIR COMPETITION CASES IN ONLINE ENVIRONMENT – THE EU CONFLICT-OF-LAWS PERSPECTIVE IN TERMS OF LEGAL CERTAINTY AND PREDICTABILITY .....</b>	<b>908</b>
Iveta Rohová	
<b>EUROPEAN BUSINESS EXCELLENCE MODEL ON SUSTAINABLE DEVELOPMENT.....</b>	<b>910</b>
Vesna Miladinović	
Katarina Lazović	

## Index of Authors

### A

Adriana Grenčíková, 506  
Aglia Kaneva, 86  
Ajay Kumar, 616  
Albena Björck, 323  
Aleksandra Jovanović, 802  
Aleksandra Živaljević, 273  
Alexandra Lešková, 372  
Alper Ozpinar, 896  
Aljoša Budović, 899  
Ana Gorenca, 330  
Andon Kostadinovic, 886  
Andreea Dora Bianca PIRONEA, 824, 840  
Anisa Dhroso, 858  
Anisa Myrtaj (Rexhepi), 701  
Anita Kulaš Mirosavljević, 665  
Anita Silvana Ilak Peršurić, 606  
Anka Bulatović, 401  
Anna Loginova, 817  
Anton Vorina, 616  
Antonio Badurina, 567  
Arsen Benga, 137  
Aslı Beyhan Acar, 438  
Atila Yüksel, 679  
Aydan Taştan, 679

### B

Bashkim Rrahmani, 781  
Biljana Jovanović Gavrilović, 354  
Biljana Petrevska, 40  
Biljana Radivojević, 354  
Blerta Dragusha, 866, 873  
Brikena Berisha, 877  
Burim Fezaj, 230

### C

Călin Vegheș, 575  
Camelia Slave, 728  
Catalin Gheorghe, 534  
Christian Olivier Graf, 340  
Christian Tanushev, 902  
Cuneyt MENGÜ, 644

### D

Dagmar Petrušová, 47, 506  
Dagmar Škodová Parmová, 65  
Damla Ozekan, 880  
Danica Pirsl, 886  
Daniel Seelhofer, 340  
Daniel Taus, 851  
Danijela Rakic, 692  
Denada Olli, 430  
Dhurata Premti, 858  
Diana Vască Zamfir, 728  
Dijana Grahovac, 55  
Dina Lazarević, 891  
Dorin Radu, 851  
Dragan Jovašević, 746  
Dragana Tadić Živković, 872  
Dragos VOICULESCU, 840  
Duygu Nedret Tüter, 657

### E

Edina Kulcsár, 252  
Egemen Gunes Tukenmez, 551  
Ekrem Tufan, 657, 679  
Emir Temimović, 637  
Enis Yakut, 299  
Erhan Eren, 657  
Erinda Piluri, 862  
Erjola Barbullushi (Sakti), 866  
Erjole Barbullushi, 873  
Erol DURAN, 898  
Erşan Ciğerim, 901, 903  
Evgeniya Yazovskikh, 361  
Evrin Ildem Develi, 889

### F

Figen SEVİNÇ, 898  
Flamur Keqa, 160  
Flamur Mrasori, 176  
Floran Vila, 858  
Forcim Kola, 125  
Fuad Hasanović, 489  
Funda Eriş, 679  
Furkan Baser, 883

**G**

Glediana Zeneli, 137  
 Goca D. Jovanović, 724  
 Goran Pavlović, 592  
 Gyorgy Andor, 22, 874

**H**

Hanna Khomenko, 211  
 Hasime Manaj, 862  
 Holta Heba, 497  
 Hristina Oreshkova, 195

**I**

Ilijan Malollari, 701, 715, 862  
 Irakli Prenti, 862  
 İrem Ceylan Karagöz, 657  
 Irena Lekoska, 169  
 Irena Šljivar Milijić, 802  
 Iska Kolaveri Spahiu, 858  
 Ismail Metin, 299  
 Iva Bubanja, 513  
 Iva Raycheva, 35  
 Iveta Rohová, 908  
 Ivica Nikolić, 453  
 Iwona Olejnik, 115

**J**

Jan Váchal, 392, 875  
 Jana Sochuľáková, 47  
 Jarmila Straková, 383  
 Jaroslav Bednárik, 424  
 Jasmina Gržinić, 560  
 Jelena Matijašević-Obradović, 708  
 Jonilda Llupa, 715  
 Jova Miloradić, 453  
 Julija Avakumovic, 415  
 Justin Pupavac, 567

**K**

Karol Krajčo, 506  
 Katarína Kráľová, 47  
 Katarina Lazović, 910  
 Katarina Radlovački, 891, 895  
 Katarína Remeňová, 222  
 Konstantin Kolev, 474

**L**

Landi Gushi, 97  
 Laurențiu RECE, 824  
 Laurentiu, RECE, 840  
 Lena Duspara, 665  
 Lidia NICULIȚĂ, 824  
 Lorina Lici, 715  
 Ľubica Simanová, 282  
 Luka Rakojević, 482  
 Luljeta Pinguli, 701, 715  
 Ljubiša Konatar, 752

**M**

Magdalena Stefańska, 115  
 Majlinda Belegu, 772  
 Margarita Matlievska, 884  
 Mária Héder, 888  
 Marija Rok, 582  
 Marijana Simic, 447  
 Marijana Vidas-Bubanja, 513  
 Marina Gajic Glamoclija, 16  
 Marina Guzovski, 466  
 Marina Jovanovic Milenkovic, 521  
 Marina Stanić, 466  
 Mario Vojnić Hajduk, 906  
 Marius Calin BENEĂ, 460, 673  
 Marko Slavkovic, 447  
 Mary Ellen Toffle, 2  
 Maya Tsoklinova, 474  
 Mehmet Şahin Gök, 901, 903  
 Milan Počuča, 708  
 Milan Vukcević, 230  
 Milena Sretić, 893  
 Mileta Janjić, 230  
 Milos Loncar, 521  
 Milos Trkulja, 521  
 Miodrag N. Simović, 746  
 Mirko Smoljić, 466  
 Miroslav Cavlin, 266  
 Mohammed Zaheeruddin, 789  
 Monika Vámošová, 79  
 Mustafa Levent, 685  
 Mykola Gorodysky, 211

**N**

Nada Kosanovic, 692  
 Nadežda Jankelová, 222

Nadia Oliva, 868  
Natalija Vugdelija, 685, 904  
Nemanja Stojković, 893, 895  
Nenad Kojić, 685, 904  
Nevena Ćurić, 891  
Nevena Vrčelj, 592  
Nevenka Nićin, 401  
Nikola Mihajlović, 904  
Nikola Vukčević, 482  
Nikolay Atanasov, 106  
Nil Selenay Erden, 438  
Nur Undey Kalpaklioglu, 551

## O

Olena Syvak, 211

## P

Pavle Brzaković, 885  
Pavle Pocuc, 266  
Pavol Gejdoš, 282  
Paweł Mielcarek, 316  
Petar Stankov, 869  
Petra Pártlová, 875  
Petre BREZEANU, 237  
Pınar Okan Gokten, 883

## R

Radivoj Prodanovic, 266  
Renáta Pakšiová, 736  
Rodica Baciu (Boanta), 237  
Rostislav Kain, 65

## S

Saha Baygul Ozpinar, 896  
Sanja Knežević, 665  
Sara Stanić Jovanović, 273  
Saša Virijević Jovanović, 542  
Saxhide Mustafa, 879  
Selina Guhl, 340  
Sened Softić, 55  
Sezer Deniz, 657  
Shkendije Nahi, 176  
Shuvro Prosun Sarker, 764  
Sinan Cifci, 882  
Slađana Stojanovska, 884

Slavko Božilović, 724  
Snežana Popovčić-Avrić, 513  
Soner Gokten, 883  
Sonja Cindori, 310  
Stanislav Pridvizhkin, 817  
Stanislav Viktorovich Pridvizhkin, 292  
Svetlana Vukotić, 885

## T

Tamas Toth, 874  
Tark YALÇINKAYA, 599  
Tatjana Boshkov, 185  
Teuta Cerpja, 125  
Tibor Tarnóczy, 252  
Toni Janković, 310  
Tuğkan Arıcı, 901, 903  
Tülay GÜZEL, 599  
Tulishree Pradhan, 764

## U

Ulyana Petrovna Degtyareva, 292

## V

Valentina Vukosavljevic Pavlovic, 409  
Vesna Filipović, 542  
Vesna Miladinović, 910  
Vesna Pijevac, 542  
Veton Vula, 808  
Violeta Madzova, 884  
Vladimir M. Simović, 746  
Vojislav Deđanski, 899  
Vojislava Grbić, 401  
Vuk Bevanda, 273  
Vuk Mirčetić, 885

## Z

Zarko Radjenovic, 185  
Zeba Zarin Ansari, 616  
Zhao Qiogyu, 361  
Zuzana Dvořáková Líšková, 65  
Zvezdan Stojanović, 489  
Žaklina Spalević, 752  
Željana Vručinić, 147  
Željko Ondrik, 893, 895  
Željko Spalević, 752

## P R E F A C E

Economic development refers to the improvement of activities in the economy, which leads to progressive changes in the socio-economic structure and the rising of living standards. Given that the objective of sustainable economic development is elimination of poverty, inequality and unemployment - thus leading to social inclusion and improvement of the quality of life; it is necessary in analysis of this important issue apply extremely multidisciplinary approach.

Faculty of Business Studies, Mediterranean University - Podgorica, Montenegro; University of National and World Economy - Sofia, Bulgaria; Faculty of Commercial and Business Studies - Celje, Slovenia; Faculty of Applied Management, Economics and Finance - Belgrade, Serbia and the Association of Economists and Managers of the Balkans have recognized following issue and organized in Sofia on June 7, 2018 at the Sofia City Hotel Fourth International Scientific Conference titled: *Knowledge based sustainable economic development - ERAZ 2018*.

The conference objective was to bring together academic community (experts, scientists, engineers, researchers, students and others) and publication of their scientific papers for the purpose of popularization of science and their personal and collective affirmation. The unique program combined interactive discussion and other forms of interpersonal exchange of experiences and presentation of the latest scientific developments in following areas.

- Microeconomics and macroeconomics,
- Economic policy,
- International Economics and Trade,
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- Economic diplomacy,
- Lobbying,
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- European business,
- Modern management and innovation,
- Business and Public Finance,
- Fiscal policy,
- Stock exchange and financial markets,
- Risk management,
- Insurance and reinsurance companies,
- Financial Management and Banking,
- Modern forms of entrepreneurship and investment,
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- Corporate entrepreneurship,
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- Marketing of non-profit sector,
- Research in marketing,
- Marketing in education,
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- Accounting and auditing,
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- Labor law,
- Business law,
- The role of the rule of law in the country's progress,
- Human rights and protection of minorities,
- Legal aspects of EU integration,
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- CEFTA,
- Ecology and energy,
- Renewable energy,
- Energetic efficiency,

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- E-society and E-learning,
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In the Conference Proceedings of the ERAZ 2018 conference **97 papers and 30 abstracts** have been published on more than **900 pages**.

Participation in the conference took **227 researchers with the paper** representing:

- 21 different countries,
- 80 different universities,
- 69 eminent faculties,
- 8 scientific institutes,
- 17 colleges,
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6. International Management Institute, Zurich University of Applied Sciences, Winterthur, Switzerland
7. Riinvest - Institute for Development Research
8. Social Science Institute/Tourism Management, Canakkale Onsekiz Mart University, Turkey

### **Colleges:**

1. Bartın Vocational school, Bartın University, Turkey
2. Belgrade Business School, Belgrade, Serbia
3. Çanakkale School of Applied Sciences, Çanakkale Onsekiz Mart University, Çanakkale, Turkey
4. College AAB, Pristina
5. College of Applied Sciences "Lavoslav Ružička" in Vukovar, Vukovar; Croatia
6. College of Law, United Arab Emirates

7. College of Slavonski Brod, Slavonski Brod, Croatia
8. Federal State Autonomous Educational Institution of Higher Professional Education “Ural Federal University named after the first President of Russia B.N. Yeltsin”, Yekaterinburg, Russian Federation
9. High Business School of Vocational Studies Leskovac, Serbia
10. High school for tourism, Belgrade, Serbia
11. Higher Colleges of Technology, United Arab Emirates
12. ICT College for vocational studies, Belgrade, Serbia
13. Károly Ihrig Doctoral School of Management and Business, University of Debrecen, Hungary
14. KIIT School of Law, Odisha, India
15. School of Business, Istanbul University, Istanbul, Turkey
16. School of Management and Law, Zurich University of Applied Sciences, Winterthur, Switzerland
17. Vocational College, Celje, Slovenia

### **Other Participating Institutions:**

Academy of Sciences and Art of Bosnia and Herzegovina; Academy of Sciences of Albania, Tiranë, Albania; Central Bank of Kosovo; City Administration of Pančevo City, Serbia; Constitutional Court of Bosnia and Herzegovina; Edukos d.o.o., Banja Luka, Bosnia and Hercegovina; European Academy of Sciences and Arts; General Directorate of Metrology of Albania, Tirane, Albania; JKP „Beograd put“ – Belgrade, Serbia; Lab of Food Chemistry, Department of Chemistry, University of Ioannina, Greece; Labor Inspection, Nis, Serbia; Mercan Tourism, Istanbul, Turkey; Ministry of finance, Tax administration, Split, Croatia; Prosecutor's Office of Bosnia and Herzegovina; Provincial Secretariat for Economy and Tourism of AP Vojvodina, Novi Sad, Serbia; Russian Academy of Natural Sciences; Surčin Cultural Center, Surčin, Serbia



## DEVELOPING E-BANKING PLATFORM IN CONTEMPORARY WORLD

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**Abstract:** *Banks play a crucial role in promoting online businesses. Banks are trustworthy intermediaries in the online transactions and they provide a bold opening in the online business. Banks have e-payment systems like Internet banking, electronic fund transfers, plastic money (credit card & debit card) and mobile banking. These systems provide payment to online transactions. For the real working of these e-services, the need of e-banking platform development is an inevitable feature.*

*This paper examines the efficient utilization of developing e-banking platform which have all the infrastructures for availing the same. For this reason we explore the impact of systems factors for E-banking platform development (scalability, interoperability, fast server response, user-friendliness ect.), Organizational factors for E-banking platform development (multistakeholders perspective, bank image and resource allocation) and Economic factors (operational efficiency, administration costs, innovation diffusion, financial information assistance). The change of economy from a traditional way to the recently demanded form needs a huge technological support and effort, better planning and efficiency in implementation thus pushing the banks to design various electronic money products.*

**Key words:** *e-money, e-banking, platform, software alternatives.*

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### 1. INTRODUCTION

A well-functioning financial system plays a crucial role in the transformation process from a centrally-planned economy towards one that is market-oriented. It is essential that developing countries consider steps towards financial liberalization or deregulation, which will help open the borders for capital flows and attract new investments and ideas. While financial liberalization does not guarantee quick economic growth for developing countries, it helps increase the chances for progress and creation of opportunities for financial development. Developing countries have learned through their own history and the evidence from around the world that, in order to start liberalization processes, it is essential to first ensure adequate regulation of their financial systems in line with country-specific requirements and circumstances. It is often wrongly assumed that economies with greater connection and dependencies on international trade require stronger liberalization. It is important to recognize that, when it comes to financial systems and economy, each developing country follows their own practices, processes and traditions and should also find the most appropriate liberalization model that suits their circumstances.

Banks are intermediaries in the online transactions and they provide a bold opening in the online business. Banks have e-payment systems like Internet banking, electronic fund transfers, plastic

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money (credit card & debit card) and mobile banking. These systems provide payment to online transactions. For the real working of these e-services, the need of e-banking platform development is an inevitable feature.

This paper examines the efficient utilization of developing e-banking platform which have all the infrastructures for availing the same. For this reason we explore the impact of systems factors for E- banking platform development (scalability, interoperability, fast server response, user-friendliness ect.), Organizational factors for E- banking platform development (multistakeholders perspective, bank image and resource allocation) and Economic factors (operational efficiency, administration costs, innovation diffusion, financial information assistance). The change of economy from a traditional way to the recently demanded form needs a huge technological support and effort, better planning and efficiency in implementation thus pushing the banks to design various electronic money products.

## **2. LITERATURE REVIEW**

From the era of barter economy, metal and coins to gold and silver, continuing to the modern monetary systems and checks, and ending with the latest developments in the global currency, such as the introduction of cryptocurrency like Bitcoin, have passed centuries. Each type of money plays a crucial role in transactional activities in some period of time. As human society and markets developed in particular, there was a need for more sophisticated instruments for the exchange of goods.

There are two reasons for the emergence of electronic money and digital currencies. The first, according to the Austrian School of Economic Analysis money is a "social institution" subject to the already initiated institutional change and is interpreted as a consequence of a spontaneous evolution that should overcome the shortcomings of the swap and the double coincidence of desires [6, 7]. Today e-money is the last stage of this development and represents an additional degree of institutional change [8].

Their main role is to support online e-commerce, enable transactions, reduce their costs, or replace the payment of money and coins in retail. The second reason for the emergence of e-money is the Information Revolution, which is characterized by the integration of electronic information processing and telecommunication technologies, which reduces the geographical differences by means of which information can be transmitted to the whole world. The Information Revolution has changed the financial sector, making payment modes more secure and more efficient, giving an additional reason for the emergence of new monetary innovations [5].

Unlike the information revolution, the emergence of e-money is a new way of processing information for transferring purchasing power. Many financial innovations are not a new form of money, but a different way of using existing money in transactions [9]. Regardless of the consequences of the mentioned technological development, the nature of the money is still identical i.e money serves as a means of exchange, as an asset and as a value. The nature of the money will never change, so the money will remain only an intermediary in the exchange of goods and services. The e-money card is a different payment method that allows electronic transfer of the value from the card to the terminal or from the card in the wallet, both in real time and through networks [3]. It is considered that e-money is the most important achievement that transfers the predetermined monetary value so it can be used for more transactions of lesser value. The e-pocket consists of a microcomputer that contains information about the monetary

value that can be used. It is a higher degree of technological development compared to magnetic tape cards. Also, the e-pouch is more secure, which can reduce deception because cards with a chip can be more difficult to abuse than magnetic tape cards.

### **3. OVERVIEW OF THE IT REVOLUTION AND INNOVATIONS RELATED TO MONEY**

From the aspect of the development of the e - payment method, digital currency is not physically printed by the Central Bank, too. For now, digital currency is considered with its own rules of the game. In the literature, all those who support the use of Bitcoin underscore the characteristic as a currency that does not cause financial crises. Namely, the view is that as banks can print more money to cover their national debt, thus devaluing their currencies, Bitcoin does not function in such a way.

Electronic payment method exists from the 1960s, i.e from the development of Electronic Funds Transfer (EFT), which became more sophisticated and applicable in a growing number of countries [2]. EFT implies the application of computer and telecommunication technology in payment. This method was used by banks and other financial institutions to exchange and transfer a large amount of money on a national and international level. The basis for the operation of EFT is that the money moves through a network as a substitute for cash or checks to execute a transaction. In this way, the time for paying should be shortened and the transaction costs reduced. The use of EFT has significantly increased with the emergence and acceptance of ATMs, which allow money transfer at the point of sale (EFTPOS). EFT is considered as first degree in the electronization of transactions.

In the early 1980s, thanks to the development of network technology, the costs of telecommunications and data processing were reduced, and electronic payments became more useful with the appearance of credit and debit cards, which for several years (after their appearance) became the most popular electronic small transaction tool. Also, the development of encryption has played a major role in successful card payments. This innovation is considered as a second degree in the electronization of transactions.

The growth and acceptance of card payments had negative consequences for the traditional way of payment. Many countries have made a move from the use of paper instruments, such as cash and checks, to the use of electronic instruments. For the first time in many countries, the number of checks payments has been reduced. Namely, checks as a very popular payment instrument loose the market role, thereby reducing their use [4].

### **4. E- PAYMENT AND TRANSACTION COSTS**

Payments in classical trade require at least one buyer and one seller, with both having to have accounts in banks that are connected through clearing houses. Payments with traditional instruments such as checks require intervention of a financial intermediary like bank. Payment with e-money is similar to the traditional scheme - there are two parties - one or two banks. However, the whole process becomes more efficient and easier. The transaction does not require any code and cannot exceed the previously defined amount. If the amount that is on the chip is fully spent, the card can be automatically refilled at the merchant, without charging any fees, thanks to the special POS mechanism [1].

Once the chip is full, the user does not need to require an ATM or an exact amount of cash. Additionally, the problem of stealing or losing money is reduced to a minimum. An e-money transaction does not require an intermediary at present because the money expressed in units (called bits) is electronically transferred from the buyer to the seller. The amount of money that has been paid is prepared at the seller's terminal, i.e. from time to time his account is transferred to the financial institution.

Payment with e-money reduces transaction costs, and time is shortened compared to other forms of payment. Humphrey and colleagues estimate that "the cost of using electronic money amounts to one third to half of the cost of paying paper money. When all transactions in one country would be carried out electronically, it would be possible to save more than 1% per year BDP.

## **5. E- BANKING PLATFORM ANALYSIS USING MULTICRITERIA DECISION SOFTWARE: EXPERT CHOICE**

### **5.1. EXPERT CHOICE ANALYSIS**

The Expert Choice program is based on the principles of multi-criteria decision-making using the method of analytical hierarchical processes (AHP). On the other hand, the AHP method in determining weight coefficients and deciding on the optimal alternative is based on the Saaty scale. In order to find the best software alternative for the development of the electronic banking platform, the first seven best software solutions were selected in the world. The current positioning of these software solutions in electronic banking does not mean that they are the best choice for a given banking organization, since each organization has its own specificities in the way it operates. It is important to note that using the Expert Choice program and the application of the AHP method, the model consistency index should be considered, which should not be greater than 0.1 in order to satisfy the validity of the model itself and the relationship of attributes and alternatives. In order to best optimize the ranking of these software solutions, certain attributive factors have been selected which in the best possible way represent the characteristics of the electronic banking platform in the author's opinion. They are grouped into three major parts:

- **Systems factors for E- banking platform development:**
  - Scalability,
  - Interoperability,
  - Fast server response,
  - User- friendliness,
  - Networking,
  - Big data analysis,
  - Data aggregation,
  - Security,
  - Easy application navigation,
  - Real time information transmission,
  - Web- based platform,
  - Providers,
  - Expert chat availability.

**- Organizational factors for E- banking platform development:**

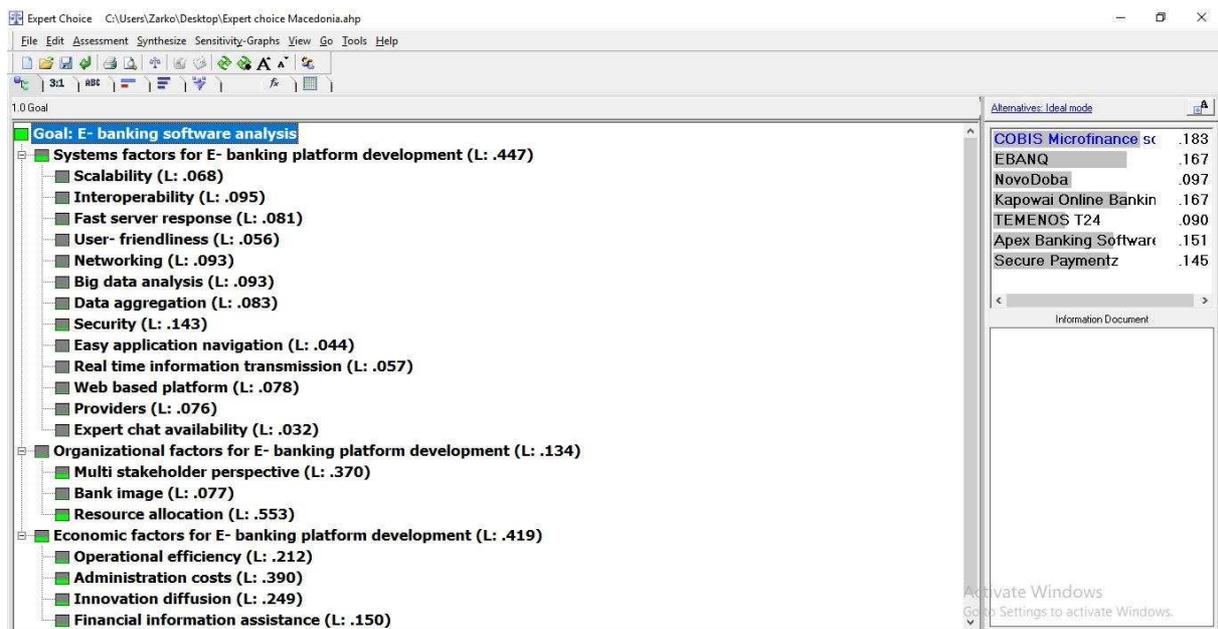
- Multistakeholders perspective,
- Bank image,
- Resource allocation.

**- Economic factors for E- banking platform development:**

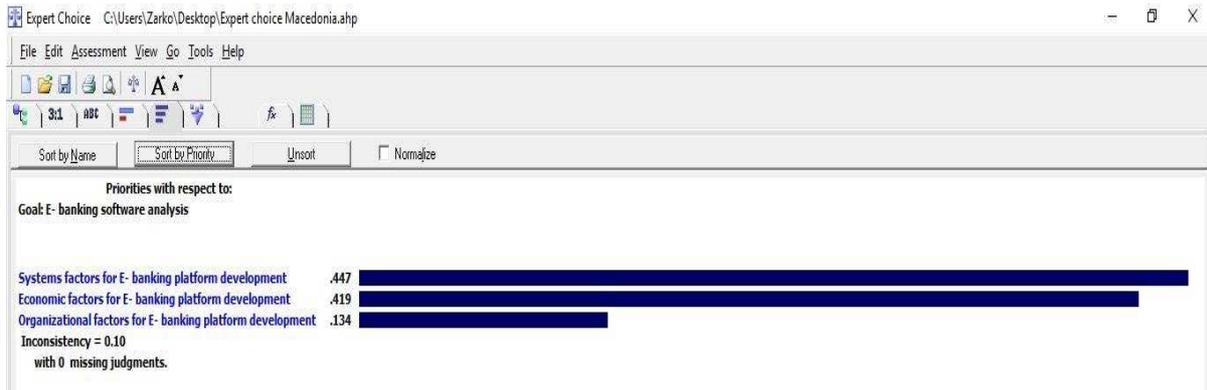
- Operational efficiency,
- Administration costs,
- Innovation diffusion,
- Financial information assistance.

**The top seven world software alternatives for e- banking platform according to Capterra are:**

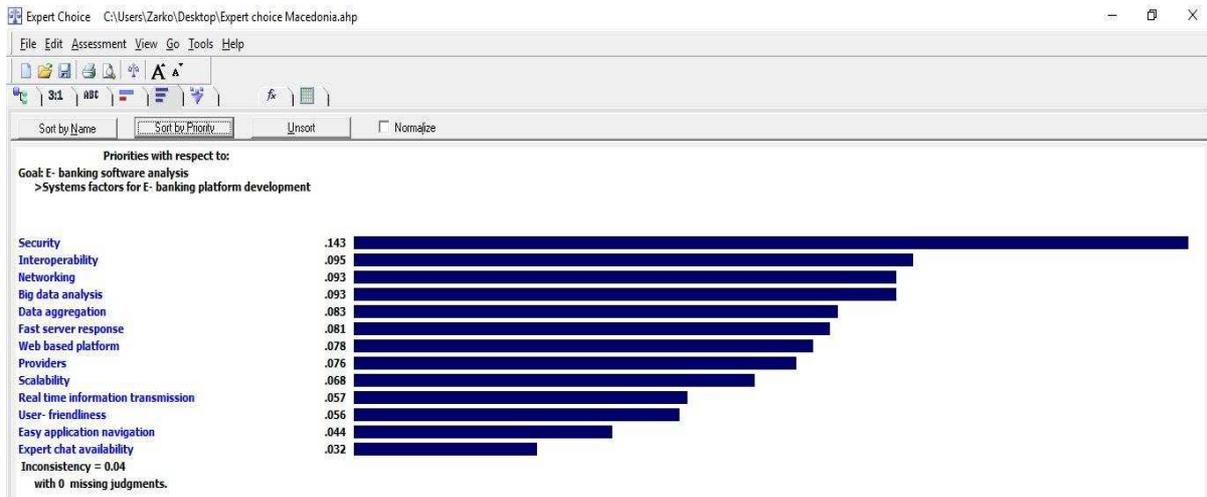
- COBIS Microfinance Softwares,
- EBANQ,
- NovoDoba,
- Kapowai Online Banking,
- TEMENOS T24,
- Apex Banking Software,
- Secure Paymentz.



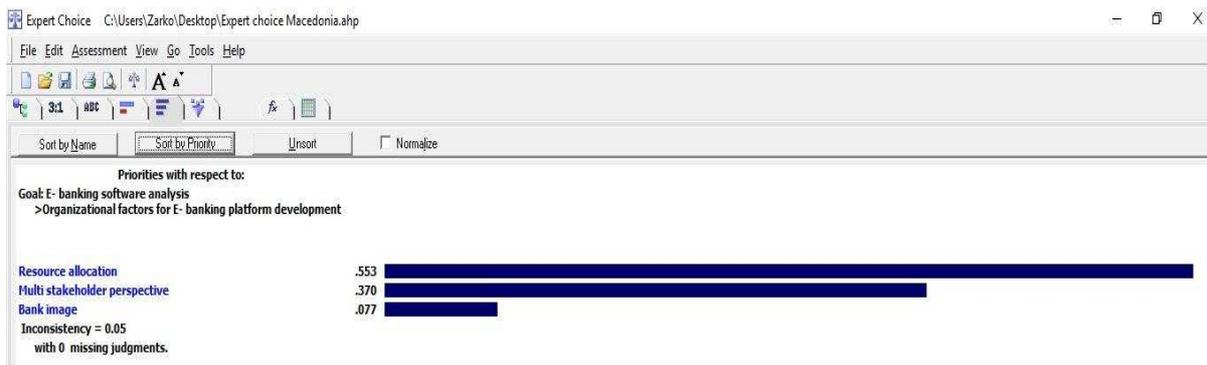
Based on the first picture, it can be concluded that the ranking of the best ranked alternatives based on the aforementioned criteria has changed in view of the specificity of the banking sector and business practices, but that COBIS Microfinance Softwares retained its original position. On the other hand, alternatives such as EBANQ (0.167), Kapowai Online (0.167) and Apex (0.151) match each other and show favorable ranking in the overall score. The last alternative of which is the 0.09 rank is TEMENOS T24.



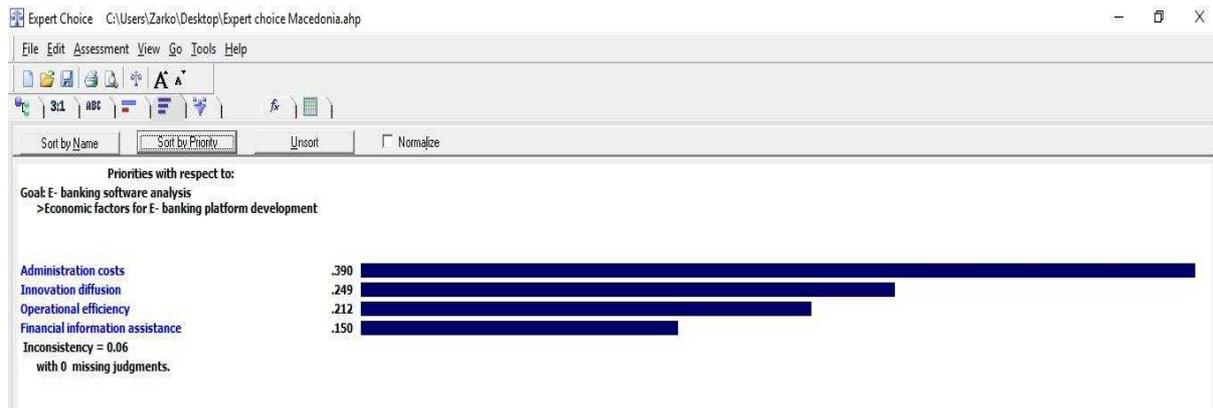
The most influential factors in choosing a software solution for electronic banking are Systems factors for E- banking platform development.



Also, the factor that is most distinguished within the mentioned group is of importance Security. Also this criteria is followed by Interoperability, Networking and Big data analysis.



On the other side, the most ranked criteria from the second factor group is Resource allocation.

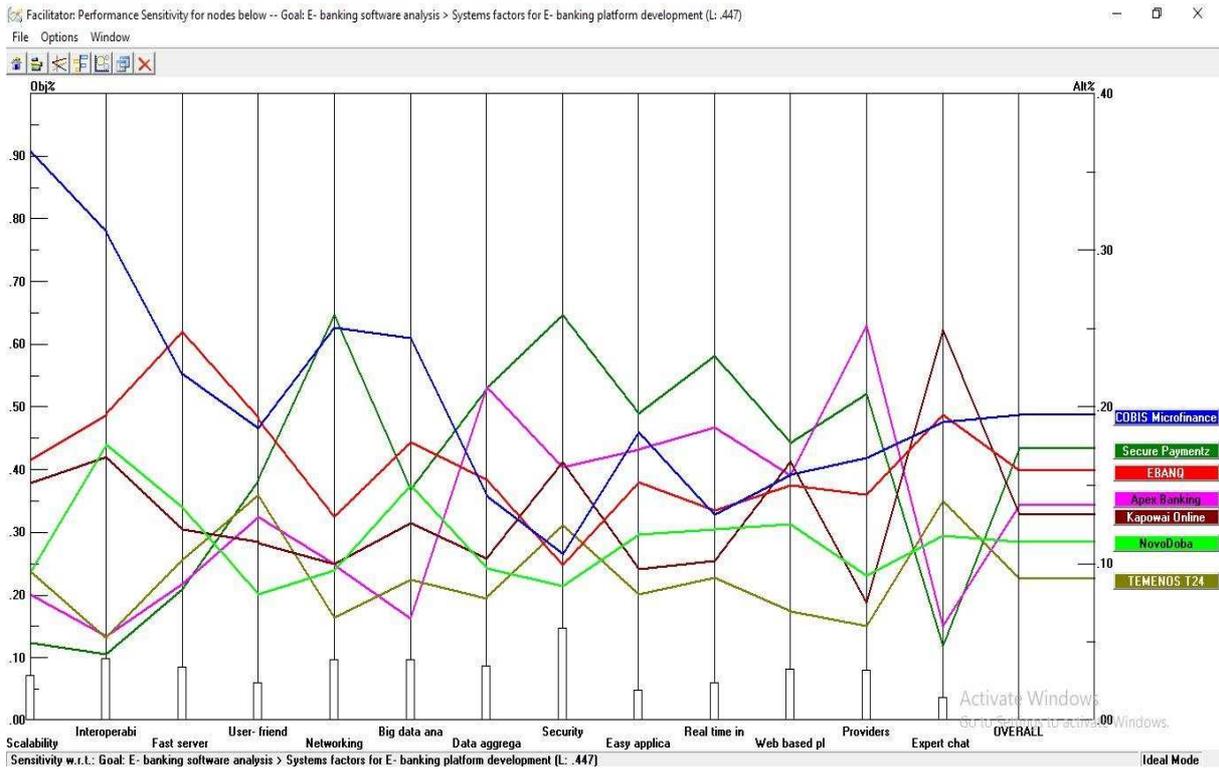


In the group of economic factors which influences on the e- banking software decision the most important criteria are Administrative costs.

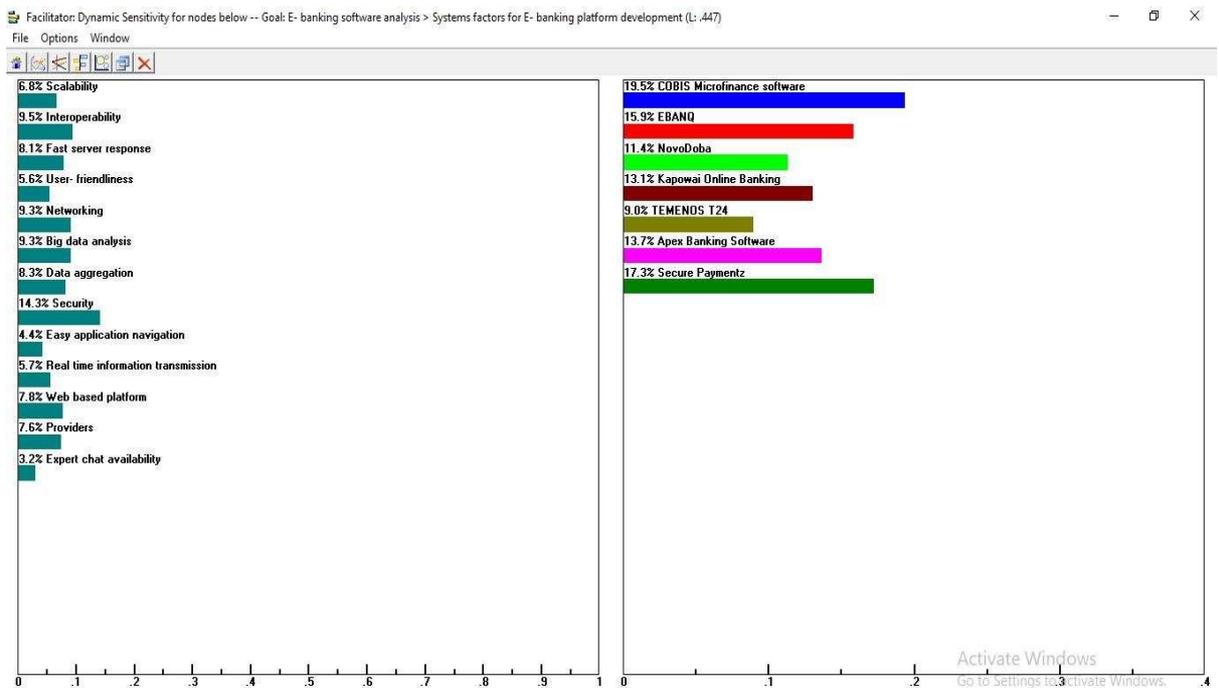
Particular attention is paid to Performance Sensitivity Analysis, which shows the influence of particular criteria from the first group of factors on the ranking of alternatives in the final order. The influence of the weight of all criteria on the final ranking of the alternatives leads to the fact that the chart clearly reads the best alternative, as well as its advantage over competitors according to the chosen criteria.

The value of the criteria and the sensitivity of their movement in a given interval are shown by vertical rectangles, while the alternatives are represented by horizontal lines. The weight of the criterion is defined by the height of the rectangle, which is read on the left axis of Obj%. On the other hand, the priority of the alternative according to a given criterion is formed in the cross section of their horizontal lines with a vertical line of criteria, which can be read on the right axis Alt%. The values of the criteria determined by the height of vertical reagents are of a dynamic type, and by their shift, the values of the criteria themselves change, but also their influence on the alternatives themselves and their ranking.

For example, sensitivity analysis give us different ranking according to systems factors which have the biggest impact on the e- banking software solutions beside the other two factor groups. On the second plays now is Secure Paymentz and the factors with the biggest impact on its implementation from the first factors group are noticed on peaks of its chart: networking, security, real time information transmission and providers.



By applying dynamic analysis, one can see how dynamically changing the priorities of the alternatives in changing the weight of particular criteria. This view allows us to review the overall contribution of the weight of particular criteria in prioritizing alternatives. If we change the weight of one criterion, the other weights change proportionally to the initial weight of the criteria. On the left side are shown the percentage values of the impact of particular criteria on the priorities of the alternative. The expert chat availability criteria has the lowest contribution in e- banking software ranking and further implementation according to the first factors group.



## 6. CONCLUSION

Advances in information and communications technology have enabled the appearance of new methods of electronic payment in the real world and the virtual world. The reason for the spread of these products has been their greater effectiveness compared with the traditional payment systems. However, statistics on payment systems indicate that electronic money development is still at an early stage of development and that cash continues to be the most important means of payment for retail transactions. Thus, contrary to some early expectations, cash has not been yet replaced by electronic money.

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The most influential factors in choosing a software solution for electronic banking are Systems factors for E- banking platform development. Also, the factor that is most distinguished within the mentioned group is of importance Security. Also this criteria is followed by Interoperability, Networking and Big data analysis. On the other side, the most ranked criteria from the second factor group is Resource allocation.

In the group of economic factors which influences on the e- banking software decision the most important criteria are Administrative costs. Particular attention is paid to Performance Sensitivity Analysis, which shows the influence of particular criteria from the first group of factors on the ranking of alternatives in the final order. The influence of the weight of all criteria on the final ranking of the alternatives leads to the fact that the chart clearly reads the best alternative, as well as its advantage over competitors according to the chosen criteria.

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Governments could play a potentially significant role in changing the habit persistence problem and thus promoting the use of e-money. For instance, by encouraging the use of e-money in small transactions such as public parking meters and public transportation services, they could significantly increase the number of users of electronic forms of payment, helping to achieve the critical mass of users necessary to trigger network effects.

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