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CONTEMPORARY STUDIES IN ECONOMIC AND
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THE NEW DIGITAL ERA: DIGITALISATION, EMERGING RISKS AND OPPORTUNITIES

EDITED BY

SIMON GRIMA

University of Malta, Malta

ERCAN ÖZEN

University of Uşak, Turkey

and

HAKAN BOZ

University of Uşak, Turkey



United Kingdom – North America – Japan
India – Malaysia – China

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ABOUT THE EDITORS

Prof. Simon Grima, is the the Deputy Dean of the Faculty of Economics, Management and Accountancy, Associate Professor and the Head of the Department of Insurance and Risk Management which he set up in 2015. He coordinates the MA and MSc Insurance and Risk Management degrees together with the Undergrad degree in Insurance. Simon is also a Professor at the University of Latvia, Faculty of Business, Management and Economics and a visiting Professor at UNICATT Milan. He served as the President of the Malta Association of Risk Management (MARM) and President of the Malta Association of Compliance Officers (MACO) between 2013 and 2015, and between 2016 and 2018 respectively. Moreover, he is the chairman of the Scientific Education Committee of the Public Risk Management Organization (PRIMO) and of the Federation of European Risk Management. His research focus is on Governance, Regulations and Internal Controls and has over 30 years of experience varied between Financial Services, academia and public entities. He has acted as co-chair and is a member of the scientific program committee on some international conferences and is a chief editor, editor and review editor of some Journals and Book Series. He has been awarded outstanding reviewer for Journal of Financial Regulation and Compliance in the 2017 Emerald Literati Awards. Moreover, Simon acts as an Independent Director for Financial Services Firms, sits on Risk, Compliance, Procurement, Investment and Audit Committees and carries out duties as a Compliance Officer, Internal Auditor and Risk Manager.

Prof. Ercan Özen, received his BSc in Public Finance (1994), MSc in Business-Accounting (1997), PhD in Business Finance (2008) from University of Afyon Kocatepe. Now he is Associate Professor of Finance in department of Banking and Finance, School of Applied Sciences, “University of Uşak, Turkey. His current research interests include different aspects of Finance. He has (co-) authored 5 book chapters and more than 50 papers, more than 40 conferences participation, member in International Program Committee of 3 conferences and workshops. He is chair of International Applied Social Sciences Congress. He is also a certificated accountant, member of Agean Finance Association and member of TEMA (Turkey Combating Soil Erosion, for Reforestation and the Protection of Natural Resources Foundation.)

Hakan Boz is Associate Professor of Marketing at Usak University’s Faculty of Applied Sciences, International Trade and Finance Department. Prior to joining the academia, he has held various positions in the tourism and hospitality sector business. He has over ten years of experience in the service industry. He carries out research to better understand consumer and employee behaviour in the service

sectors, especially by using equipments such as Accelerometer, Galvanic Skin Response (GSR), body temperature, Airflow (Breathing), Heart Rate (HR), Eye Tracker, Facial Recognition, Glucometer, Electrocardiogram (ECG), Oxygen in Blood (SPO2), Blood Pressure (sphygmomanometer), Electromyography (EMG), Electroencephalography (EEG) and fMRI via his own HBlab. His areas of interest are Neuromarketing, Marketing (Consumer and Employee Behaviour - How Do Consumers/People/Employees decision making when they faced different stimuli/situations?).

ABOUT THE CONTRIBUTORS

Rasmiyya Abdullayeva Sabir is a Doctor of Philosophy in Economics. She is working as a Head of the Department of 'Socio-Economic Problems of Living Standards' at the Institute of Economics of Azerbaijan National Academy of Sciences. At the same time, she works as an Associate Professor at the Academy of Public Administration under the President of the Republic of Azerbaijan. She is the author more than 120 scientific works (including 2 individual, 9 collective monographs and 1 textbook) published in Azerbaijani, Russian, Turkish, English and Chinese languages. Her scientific publications have been published in Turkey, the USA, The UK, Malta, Hungary, Russia, Kazakhstan, Belarus, Kyrgyzstan, Ukraine, and other countries. She has presented at more than 40 local and international scientific conferences. She has participated in the implementation of more than 10 projects (as a leader, expert and coordinator). Her research interest covers social security, social protection, government intervention, education, digitalisation and economy of health care.

Ahmad Al Yakin is an Assistant Professor at the Universitas Al Asyariah Mandar in West Sulawesi, Indonesia. He is a lecturer, a national speaker and a leader in politics. He was the Chairman of the Civic Education Department at the Teacher Training and Education Faculty, and was Assistant Dean at his university, to name a few of his accomplishments at his university. He is now the Head of the Bureau of Academic, Student Affairs and Information Systems. In the current year, he is active as a Lecturer, Researcher and National Coordinator of Merdeka Belajar Kampus Merdeka, on the Advisory Boards of Language, Character Institution and Women's Centre Studies, and on the Advisory Board of the Students Association at his university. He is also active as a Member of the Indonesian Association of Pancasila and the Civic Education Profession.

He also has excellent experience as a Visiting Professor at Celebrification and lectures on research methods, smart digital classroom and education management, and many other topics relevant to sociology research and teacher development, SDGS for quality education and quality enhancement in higher education.

His interests and his doctorate areas are celebrity, politics and hyperreality. He is ready for national and international collaboration and teamwork.

Aleksandra Amon is a young Researcher at the Institute of Finance and Artificial Intelligence and a PhD student at the Faculty of Economics and Business, University of Maribor. She has obtained a Master's degree in Finance and Banking and another Master's degree in International Business Economics. Her work experience includes banking and various posts in private entities, from corporations to smaller establishments.

Aytan Guliyeva Bakhtiyar is a Doctor of Philosophy in Economics. She is working as a Researcher at the Institute of Economics of Azerbaijan National Academy of Sciences. She is the author of more than 30 scientific works published in Azerbaijani, Russian and English languages. Her scientific publications have been published in Turkey, Russia, Kazakhstan, and other countries. She has presented at more than 20 local and international scientific conferences. Her research interest covers social security, social protection, finance of health care, and economy of health care.

Gul Erkol Bayram is currently an Associate Professor in the School of Tourism and Hotel Management, Department of Tour Guiding, University of Sinop, Sinop, Turkey. She has worked as an internal trainer and teacher in the tour guiding arena. Her Doctorate is in Tourism Management from the Sakarya University, Turkey, and she completed her dissertation research on Tour Guiding in Turkey. Her core subjects are tourism, tour guiding, tourism policy and planning and women studies. She has also worked as a Professional Tour Guide in the tourism sector. She has many book chapters in the international arena and published her books as an editor in the national arena. She has edited books namely *Tour Guiding – Past, Present, Future* under Detay Publishing, Turkey and *Women and Tourism* under Detay Publishing, Turkey. Currently, she is working on her book chapters for a book on *Dynamics of Tourism Industry: Post Pandemics and Disasters* under Apple Academic Press (CRC Press a Taylor and Francis Group). She also has many book chapters under Emerald, CABI and IGI Global also. She has been invited for many talks/lectures/panel discussions by different universities like University of Mumbai, India, International Multidisciplinary Conference, College for Women, Parade Ground, Jammu, India, International Faculty Development Programme, International Digital Conference 2021 on Curriculum 4.0, Jagdish Sheth School of Management and University of Management and Technology, Lahore, Alhamd Conference on Education, Islamic University, Islamabad, Pakistan, etc. The government of India has invited her to deliver a talk on tour guiding, the University of Kota about a career in tourism and Taylor's University on tour guiding. She is a special guest and guest of honour to many conferences and organisations. She has also worked as a professional tour guide in Turkey.

Sabina Taškar Beloglavac is a Senior Lecturer in Finance at the Faculty of Economics and Business of the University of Maribor, Slovenia, Department for Finance and a Researcher at the Institute for Finance and Artificial Intelligence. She concluded her graduate and postgraduate studies at the University of Maribor. Recently, her main research interests are post Covid-19 bank digitalisation and business model change, banks' ethical and socially responsible activities, non-financial reporting in financial institutions and international taxation. She has published several articles in national and international journals and book chapters.

Anastasiia Chystova is PhD student of the Accounting and Consulting Department, Kyiv National Economic University named after Vadym Hetman.

She works as a leading accountant in an auditing firm in Ukraine. She attended many lectures and courses in accounting and auditing. Her research interests are tax differences, accounting and auditing of tax differences.

Florin Costea is a PhD student studying the relationship between public sector governance and entrepreneurship. He already presented part of his research results in international conferences and published articles in journals indexed in international databases. He is also the Head of Finance in the Romanian corporate headquarters of a multinational company.

Mirela Cristea is a Professor at the University of Craiova (Romania), Faculty of Economics and Business Administration, Department of Finance, Banking and Economic Analysis, Center for Economic, Banking and Financial Research. She is a Doctoral Adviser in the field of Economics and her main research directions and teaching activities are interdisciplinary research in economics, insurance and private pension funds and banking administration. She obtained the scientific title of PhD in Economics at the University of Craiova and graduated at the Post-Doctoral School in Economics and Applied Sciences in Economics at the Romanian Academy from Bucharest. She received two awards from the Faculties on Economics Association from Romania, in 2007 and 2013, for two books on life insurance and pension system subjects. In addition, she is a reviewer and member of the scientific and organizational committees for numerous journals and conferences.

Violeta Cvetkoska is an Associate Professor of the courses: Operational Research and Fundamentals of Business Analytics and Head of the EUI at the Faculty of Economics in Skopje. She excels at transferring her deep knowledge and skills to students and managers, enabling them to become data-driven professionals helping companies obtain a competitive edge through operational research, analytics, and artificial intelligence. Her international academic career has been developed at the most renowned universities in Europe, North and South America, and Asia. She has published several scientific papers in renowned international journals and conferences. Prof. Cvetkoska actively participates as a member of the editorial boards of SCOPUS and Web of Science indexed journals, international societies, and working groups of the Association of European Operational Research Societies (EURO). Her exceptional ability to conduct original research has been recognized and awarded by IFORS and Creative Decision Foundation.

Milanka Dimovska got her master's degree in Corporate Financial Management at the Faculty of Economics in Skopje at the Ss. Cyril and Methodius University in Skopje, and has completed her undergraduate studies at the Department of Accounting and Auditing at the same Faculty in 2019. She is fluent in English and Turkish, has organizational, social and technical skills and abilities. She is the co-author of the paper "What will be the productivity of employees with shorter working hours?" which is the first research of that type in the Republic of North Macedonia.

Şahnaz Ekşioğlu was born in Ankara in 1983. After successfully completing her undergraduate education in Bilkent University, Department of Economics in 2007, she started her business life. Her finance life, which started in Zorlu Holding Finance Department, continued in private sector banks and companies in reporting, budget and analysis departments. Despite this intense work schedule, she was accepted to the Yeditepe University MBA programme in 2015 with the desire to continue education, and she successfully presented her thesis in 2018 and completed the programme with the first place in the department. She is married and has a child. She is accepted to the Business Administration Doctorate Programme with the scholarship she received from Yeditepe University and continues her doctoral education.

Dušan Fister received a BSc and MSc in Mechatronics from the University of Maribor, Slovenia. He is currently working towards a PhD in Economics. He is certified in Quantitative Risk Management. His areas of interest include econometrics, data mining, optimisation, robotics and controllers. He has published more than 60 research articles in referred journals, conferences and book chapters. He is currently an Assistant at the Faculty of Economics and Business, University of Maribor and a Researcher at the Institute for Finance and Artificial Intelligence.

Oliver Franck is an Economist with a focus on Transportation. After successfully completing Bachelor's and Master's degrees at Zeppelin University with a stay abroad in the USA, he began a Doctorate in September 2019, in the context of which he is devoting himself to the analysis of market behaviour in the mobility industries. This analysis is carried out using an industrial-economic approach to systematically determine the influence of exogenous factors.

Marilen Gabriel Pirtea has been the Rector of the West University of Timisoara since 2012 (after being Chancellor, Vice-Dean and Dean of the Faculty of Economics and Business Administration in Timisoara). Since 2016, he is a member of the Romanian Parliament, in the Budget and Finance Commission and since the beginning of 2022, he's been appointed as honorary advisor of the Romanian Prime Minister, in charge of the integration of Romanian universities in the European education and research area. He is a Professor and Doctoral Adviser in the field of Finance, his main interests being in the company financial management, direct investment and business financing, international finance and corporate governance. He is the main author of 4 books and co-author of 13 books, as well as author or co-author of more than 150 scientific articles and studies, and manager or part of the teams of 35 research projects. The scientific and professional activity is completed by his participation in different national and international organisations (Research Centre for Social Sciences (2C2S), International Association of Regional Sciences, Founding member of the 'Nicholas Georgescu-Roegen' Interdisciplinary Training and Research Platform, etc.), as well as by having leadership positions in research structures:

Expert/collaborator/trainer in the field of the Financial Management of Public Institutions for the National Institute for Administration of the Ministry for Domestic Affairs and Administrative Reform, Collaborator of the Centre for Continuous Education and Open Distance Learning of the West University of Timișoara, President of the Commission for Research and Human Resources from the Faculty of Economics Council, etc. He has often offered lectured on the topics of corporate governance or finance and financing of different entities and has been invited as guest lecturer in universities from Italy, USA, Spain, Serbia, Slovenia, Great Britain, etc.

Vincent Geilenberg is an Interdisciplinary Sociologist who takes a holistic approach to research. He considers sociological dynamics between market, state and civil society and has successfully completed the study programme ‘Sociology, Politics & Economics’ at the Zeppelin University with a Bachelor of Arts. His research focusses on systems and network theory as well as the exploration of complexity.

Grafiela Georgiana Noja is an Associate Professor at the West University of Timisoara (Romania), Faculty of Economics and Business Administration, Department of Marketing and International Economic Relations. She completed her studies with highest honours at the West University of Timisoara, respectively PhD Habilitation in Economics, PhD in Economics, Master in Management and European Integration and BA in International Economic Relations. She developed several national and international projects, has a wide membership in various educational organisations, research networks, scientific and review committees of top tier journals and international conferences. Her main research and teaching activities are developed within the framework of economics and international business area, with a focus on world economy, globalisation and European economic integration.

Irina-Maria Grecu is a PhD candidate in Economics at the West University of Timisoara (Romania), Faculty of Economics and Business Administration. She holds a Master in Management and European Integration and a BA in Economics and International Business at the West University of Timisoara, where she graduated with highest honours. Her main research activities are centred on international migration and labour market outcomes.

Arbër Hamdi Hoti is Teaching Assistant at the University of Prishtina ‘Hasan Prishtina’, Faculty of Education. Also, he is pursuing Doctoral studies at the South East European University in Computer Science – Contemporary Technologies. His interests in the research field are Internet of Things, machine learning and artificial intelligence, where he has several papers indexed in digital platforms.

Hamdi Hoti received his PhD at the University of Tirana. He is an Associate Professor at the Faculty of Economics, University ‘Ukshin HOTI’ Prizren. His research interests include Corporate Governance, Change Management, Human

Resource Management, Scientific Research Methods and Project Management. He is Vice Dean in the same faculty.

Sabina Hodžić is an Associate Professor at the Faculty of Tourism and Hospitality Management, University of Rijeka, Croatia. Her main fields of research are finance, public finance, digital economy, international taxation issues and local and regional government. She lectures on public finance and international taxation and is the author of several papers published in scientific journals and book chapters. She has been involved in several scientific research projects and currently she was granted as Post-Doc scholarship from Austria's Agency for Education and Internationalisation (in 2021). As a part of professional training, she stayed at Vienna University of Economics and Business (2018), University of New South Wales, Australia (2018) and University of Economics, Slovakia (2016).

Timotej Jagrič is a Full Professor of Applied Economics, Econometrics, and Finance at the University of Maribor, Slovenia, at the Department for Finance. He is certified in Quantitative Risk Management. He is Head of the Institute for Finance and Artificial Intelligence. He was Visiting Researcher at Humboldt University of Berlin. He is a Member of the Expert Group for FinTech and Cyber Security at the Bank of Slovenia and Steering Committee of the Slovenian Risk Association – SI.RISK. He is a WHO EURO Expert Partner and Member of the New Economics Alliance at the World Health Organization. His research interest is in data science and artificial intelligence, risk management and financial markets.

Vita Jagrič is an Assistant Professor of Finance at the University of Maribor, Slovenia, Faculty of Economics and Business, Department for Finance and a Researcher and Consultant at the Institute for Finance and Artificial Intelligence. Her background is in economics and law. Her research interest comprises risk management and insurance, financial innovation, financial regulation and supervision and taxation. She has published several articles as (co)author in (inter)national journals as well as in monographs. Recently, her research also includes health policy and health economics, exploring the economic impact and architecture of the health care sector.

Loredana Jicărean graduated from the Faculty of Economics and Business Administration, at the West University of Timișoara, following the Bachelor's programme 'Finance and Banking', then the Master Programme in 'Taxation and Tax Consulting'. To complete her master degree, she wrote a paper on the topic 'The impact of culture on the adoption and implementation of e-Taxation'.

Muhammad Abdul Kamal is working as an Assistant Professor in the Department of Economics at the Abdul Wali Khan University Mardan, Pakistan. He also worked as Postdoctoral Research Fellow at the Henan University, China. His research interest includes China's FDI, trade competitiveness and potential,

institutional environment, and environmental quality. He has published articles in peer-reviewed international journals such as the *Journal of Asia Pacific Economy*, *Emerging Markets Finance & Trade*, *Utilities Policy*, and *Economic Research-Ekonomska Istraživanja & Environmental Science and Pollution Research*.

Tehmina Khan has been in academia for more than 20 years. She has been undertaking research in the areas of sustainability (social and environment) accounting, accountability, reporting and Internet Technologies for more than 15 years. Her PhD thesis on internet reporting and disclosures is one of the seminal pieces of research on corporate Internet reporting. This is one of the first works on sustainability reporting via corporate websites. She has more than 40 sole and co-authored publications in these research areas. She has published widely in internationally recognised outlets including *Sustainability* and *Journal of Cleaner Production*. She serves as Deputy Chair and Reviewer on RMIT University's Business and Law Research Ethics Committee. She has undertaken more than 100 reviews of articles submitted to internationally renowned sustainability focussed journals including the *Journal of Cleaner Production*.

Nadezhda Kostadinova is a Lecturer in the Tourism Department, Faculty of Economics, St. Cyril and St. Methodius University of Veliko Tarnovo, Bulgaria. In 2018, she begins her academic way in the scientific field of *hospitality and destination management* being a Practitioner in the same sphere from 2004 to 2018. In 2021, she acquires her PhD degree from the University of Economics – Varna, Bulgaria. Her current academic interests are related to *event and congress tourism*. Her specific role in the Department of Tourism is to provide strong and effective *collaboration between business and education*. Currently, she is involved in a project aiming to supply on Bulgarian market the first specialised practice-applied book revealing competitive national conditions for practicing event tourism. Already she is a part of the organising committee and a Reviewer of the International Scientific Conference organised by the Department of Tourism, University of Veliko Tarnovo for the fourth year. Her papers are published in Bulgaria, Russia, Serbia and Brazil.

Edisona Kurhasku is PhD candidate in Economic field, at the University of Prishtine 'Hasan Prishtina'. She has long experience in developing marketing techniques, especially in the Republic of Kosovo. Her thesis related to the role and challenges in Kosovo's market. Also, her scientific papers are focused on developing and finding solutions in the marketing field.

Oana-Ramona Lobonț is Professor PhD Habilitation at Finance Department from the Faculty of Economics and Business Administration, West University of Timisoara. Her research mainly addresses the public economic field, namely the funding of public organisations, public policies, welfare, good governance,

general public sphere and new governmental forms. Her research in these fields has been published in 10 books and more than 40 papers indexed in Web of Science and SSCI academic journals.

Enkeleda Lulaj is a Doctor of Science in Finance and Accounting, and works as a Professor Assistant at the Faculty of Management in Tourism, Hospitality and Environment, University 'Haxhi Zeka' Peja-State of Kosovo. She is the Ambassador for Financial Evaluation, the Ambassador for Women-Tech, as well as the Ambassador for Research and Innovation. She is the Country Director of International Young Society and Country Director of World Voice International. She is a Member of the Editorial Board of many magazines in different countries of the world such as the USA, Belgium, Georgia, Germany, Denmark, Ukraine, India, etc. She has a great experience in international conferences as a supervisor, as a member of the scientific committee, as a member of the editorial board, as a session chair in universities, institutes and various countries of the world as follows: Belgium, France, Switzerland, Austria, Turkey, the UK, South Korea, India, Italy, etc. She is a reviewer in prestigious journals on Scopus and Web of Science such as: the UK and Switzerland. She also has an excellent experience as a visiting professor to lecture on economics, finance, accounting, education, teaching, research, and many other topics relevant to economic development, financial stability and quality enhancement in higher education at many universities, institutes, NGOs, symposia, summits around the world such as: the USA, India, Indonesia, Egypt, Philippines, Belgium, Germany, Albania, Italy, Iran, Australia, etc. She has completed many trainings and programmes in the field of economics, finance, accounting, research, management, diversity, etc., in world universities such as: the USA, Ukraine, Italy, Austria, Germany, Malaysia, Pakistan and Sweden, and is certified from the World Bank and the Monetary Fund through the Edx programme. She is a Member of: Institutes of Economics, Education and Research. She has experience in projects through Erasmus +, Euphoria, Tempus programmes. She is the winner of many awards in the world such as: teaching, science, creative ideas, a successful woman, peace, etc. In Kosovo, she has an excellent experience in many functions within the University: as a Member of the University Board, Senator, Coordinator for Academic Development and Quality Assurance, Member of the Commission for Internationalisation and member of many other committees within the Faculty and University. She has been a distinguished student in Kosovo and now has a number of acknowledgements from students as a distinguished professor. She is ready for collaborations and teamwork. She thanks God for all the successes.

Muhammad Massyat graduates from the Universitas Sebelas Maret who took the study programme 'Mass Communication' at the Faculty of Social Sciences and graduated on 4 November 2003. It doesn't stop there. Persistence to continue to increase knowledge finally brought him back to being a student at Hasanuddin University Makassar by choosing the Master of Communication Studies programme and graduating on 13 May 2013. After graduating from UNHAS with a Masters in Communication Studies, his career was getting more and more brilliant

until he was finally chosen and appointed as the Dean of one of the leading universities in West Sulawesi, which is none other than the FISIP at Al Asy'ariah Mandar University, commonly abbreviated as UNASMAN. As a Dean, recognising the campus vision and mission is a responsibility that must also be synergized with all the academic community, especially in the FISIP environment, and also no exception to all other faculties in UNASMAN. Taking on responsibilities as Dean, of course, it requires high professionalism and dedication. Therefore, all forms of planning and achievement targets are realised in the vision and mission by involving all parties within the FISIP Civitas in the form of deliberation and consensus, which eventually gave birth to the vision 'The implementation of superior and leading higher education in producing human resources' reliable and professional experts in the fields of government science and communication science, with a mission which is outlined in five main points, namely: (1) carry out education in the field of independent and professional government and communication sciences; (2) conducting research for knowledge development; (3) participate in community service as an application of science for the benefit of society; (4) collaborate with various agencies in the context of improving graduation quality; and (5) empowering alumni to improve the study programme's role and image. He is now spending time conducting various studies, which provides a hope for the contribution of knowledge to the next generation and the views of various parties on several objects and subjects that are the focus of his research. Some of his research results have been published in national and international journals. Several of them are in a study entitled 'Effectiveness of the Implementation of the Duties of the Civil Service Police Unit' in Enforcing Regional Regulation No. 10 of 2015 in the District, based on Permendagri No. 2 Year 2017 About Village Minimum Service Standards (Case Study of Kenje Village, Kec. Campalagian, Perception Al-Asy'ariah Mandar University Students Against the Dangers of Smoking on Packaging Cigarettes) and much more recent research that has been made into a scientific work by him.

Nicoleta-Claudia Moldovan is a Professor PhD Habilitation at Finance Department from the Faculty of Economics and Business Administration, West University of Timisoara. She is a PhD Advisor in Economics, finance specialisation, and also holds a Postdoctoral degree in Economics. She has 26 years of experience in research and teaching in higher education. Her research mainly addresses entrepreneurship, public policies, good governance, fiscal policies and economic competitiveness. She is an Evaluator in the Finance domain in the Romanian Agency for Quality Assurance in Higher Education, being a member of the committee of permanent specialised experts in economics. She was project manager for projects financed through the Romanian Operational Programme (OP) 'Human Capital' and member in different research projects.

Allahyar Muradov Niyaz is a Doctor of Philosophy in Economics. He is working as Deputy Director for Scientific Affairs at the Institute of Economics of Azerbaijan National Academy of Sciences. At the same time, he works as an Associate Professor at the Academy of Public Administration under the President

of the Republic of Azerbaijan. He is the author of more than 110 scientific works (including 1 individual, 1 co-author, 7 collective monographs and 1 textbook) published in Azerbaijani, Russian, English and Hungarian languages. His scientific publications have been published in Turkey, Hungary, Russia, Kazakhstan, Belarus, Kyrgyzstan, Ukraine, and other countries. He has presented at more than 50 local and international scientific conferences. He has participated in the implementation of more than 15 projects (as a leader, expert and coordinator). His research interests cover innovations, economy of science, digitalisation, government intervention, lifelong education and innovative economy.

Muthmainnah Muthmainnah is an Assistant Professor at the Universitas Al Asyariah Mandar in West Sulawesi, Indonesia. She is a lecturer, a global speaker, a researcher, and an international leader. Some of her achievements at her university were: she was the Chairman of the Indonesian Language Department at the Teacher Training and Education Faculty; she was in public relations at her university; she was the Director of Women's Centre Studies; and Deputy Director of the Quality Assurance Unit, also at her university. She is now the Deputy Director of the Language and Character Development Institute at her university. In the current year, she is active as an international member, international coordinator conference and international trainer. She is also on the International Board for Professors and Experts of the Scientific Innovation Research Group, Egypt (www.sirg.club), and the International Board of TEFL Kuwait (Member at Large) representing Asia. She is also a country head, an ambassador, an international reviewer, an editor board and an international advisory board of international journals, and she is also a country director for many international organisations representing Indonesia. She also has excellent experience as a Visiting Professor to lecture on ICT, technology in education, research methods, education management, empowerment of women, entrepreneurship, teaching, research and development and many other topics relevant to ICT research and teacher development, SDGS for quality education and quality enhancement in higher education at many universities. She is the winner of many awards, more than 60 awards in the world, such as: Outstanding Professor, Outstanding Leadership, Best International Influencer, Best Emerging Professor of the Year, International Award for Working Women, Best Speaker, SDGS Warrior, Best Global Outstanding Educational Innovation, etc. Her international achievements are as Doctor Honouris Causa from Layahe University and Candidate Doctor HC from the Philippines. She is also a Member of the United Nations Volunteer Roster. She is on the Advisory Board of Indonesian Education Share to Care Volunteers. Her interests and her doctorate areas are developing instructional materials, ASSURE, TEFL, ICT in Education and Cybergogy. She is ready for international collaboration and teamwork.

Ercan Özen received his BSc in Public Finance (1994), MSc in Business-Accounting (1997), PhD in Business Finance (2008) from the University of Afyon Kocatepe. Now he is an Associate Professor of Finance in the Department of Banking and

Finance, School of Applied Sciences, University of Uşak, Turkey. His current research interests include different aspects of Finance. He has (co-)authored five books in Emerald Pub. Co. and more than 50 papers, more than 40 conferences participation. He is a member in International Programme Committee of three conferences and workshops. He is the Chair of International Applied Social Sciences Congress. He is a certificated Accountant, Member of Aegon Finance Association and Member of TEMA (Turkey Combating Soil Erosion for Reforestation and the Protection of Natural Resources Foundation) and a Visiting Researcher and Lecturer at the Malta University, FEMA.

Peterson K. Ozili is an Economist, affiliated with the Central Bank of Nigeria. He works extensively in academia and policy making. He has experience in economic policy, financial inclusion, financial stability, financial innovation, banking regulation and supervision. His areas of specialisation are: financial economics, international development, accounting, development finance, the economics of financial markets, banking and financial reporting. He has published extensively in many accounting and finance journals such as the *British Accounting Review*, *Journal of Applied Accounting Research*, *Journal of Accounting in Emerging Economies*, *International Journal of Managerial Finance*, *European Journal of Finance*, *Research in International Business and Finance*, etc.

Gokulananda Patel is a Professor in Decision Sciences. He has a PhD in Operations Research and an M.Sc. in Applied Mathematics. His interest lies in Mathematical Programming, Performance Measurement, MCDM, Analytics. He has more than 100 papers published in both international and national journals of repute. He teaches Management Science, Business Analytics, Marketing Analytics, Retail Analytics, Data Envelopment Analysis, Statistics, and MCDM at both post-graduate and PhD levels. He continuously improves the courses he teaches in content as well as in pedagogy and enjoys integrating his research into his teaching.

Wolfgang H. Schulz is an internationally known Economist in the fields of Industrial Economics and System Dynamics. He holds the Chair for mobility, trade and logistics at the Zeppelin University in Germany. He is also active on the Scientific Advisory Board of the German Center for Rail Transport Research and on the Advisory Boards of the transport ministers of the federal states of Baden-Württemberg and North Rhine-Westphalia. His development of the theory of the institutional role model is used in a large number of projects to accelerate the introduction of new technologies. His current research focus is the economic importance of artificial intelligence.

Rashmi Sharma holds an MS (Finance) from the University of Rochester, New York. Prior to that, she completed her MBA from Himachal Pradesh University. She has worked in financial services sector in India and USA. She has also spent considerable time working with social enterprises in Africa and Southeast Asia.

Currently, she works as an Assistant Professor with Banasthali Vidyapeeth (Deemed to be University), India.

Mariya Shygun is a Doctor of Science in Economics (Accounting, Analysis and Audit), Professor, Auditor of Ukraine and Chair of the Accounting and Consulting Department at the Kyiv National Economic University named after Vadym Hetman (Kyiv, Ukraine). She is an author of more than 200 publications, including 10 monographies as a writer and co-writer, study books, scientific articles in journals indexed in international scientometric databases. She is a leader and participant in more than 12 research on accounting, auditing and taxation. She has been awarded for Distinguished Contribution 2020 ‘Conceptual Changes in Accounting’ for the CIMA (The Chartered Institute of Management Accountants) Research Excellence Award, presented by the CGMA Global University and Academic Center of Excellence (2020). She has been awarded for active participation in the development of audit in Ukraine, as a recognised expert in this field by the ‘Honor of the Audit Chamber of Ukraine’ (2016). Her research interests are theory and methodology of accounting and auditing, modelling of accounting system, strategic managerial accounting and systemic connections between management, accounting and control.

Cătălina Sitnikov is PhD Professor at the University of Craiova in Romania, at the Faculty of Economics and Business Administration. She holds a Doctorate in Management since 2000, Habilitation title in Management since 2014 and since February 2015, she has been a PhD Supervisor in Management. She was a Visiting Lecturer at Helsinki University of Technology, Lahti Center in Finland for three years. Since 1995, she has been teaching undergraduate, Master’s and PhD students. She teaches Quality Management, Total Quality Management and Management. Her main research areas include management, strategic management, and mostly quality management, instruments and models specific to the stages of quality planning, control and improvement, quality management strategies, ISO standards and CSR from the perspective of specific standards and instruments.

Stanley Smolka is an interdisciplinary lateral thinker between the market, the state and civil society and has successfully completed the study programme ‘Sociology, Politics & Economics’ at Zeppelin University with a Bachelor of Arts. In addition, he gained several years of professional experience in the areas of process analysis, process optimisation and process automation. His research focusses on good and correct management in terms of complexity, innovation and digitisation as well as relational leadership.

Aamir Aijaz Syed is working as an Assistant Professor in the Department of Management at the Shri Ramswaroop Memorial University, India. He has completed his Doctorate in Finance from the Motilal Nehru National Institute of Technology, India, and his thesis was based on international banking

non-performing loan issues. His research interest includes non-performing loan mitigation strategies, international banking, corporate finance and international economic issues. He is an avid researcher and has published papers in peer reviewed international journals such as *Journal of Public Affairs*, *Environmental Science and Pollution Research*, *Sustainability*, *International Journal of Economics and Business Research* and *Journal of Eastern and Central Asia Research*.

Tülin Ural is a Professor of Marketing in the Faculty of Economics and Administrative Sciences, Business Administration Department, University of Yeditepe, İstanbul, Turkey. She received a Bachelor's degree in Economy from Istanbul University. She was granted by Tubitak-Bideb Post-Doctoral Scholarship and visited to Michigan State University, USA, The Eli Broad College of Business, as Visiting Professor in 2006–2007. She has published books, including *Business and Marketing Ethics*, *Road Map of Branding*. She has published extensively as author and co-author of over 50 papers in highly regarded, peer-reviewed journals. She focusses on advanced quantitative research techniques, multivariate data analysis and marketing issues for organisations.

Sorana Vătavu , PHD, is a Lecturer within the Finance Department at the Faculty of Economics and Business Administration from the West University of Timisoara. Her research addresses aspects related to public policies and corporate finance, with interdisciplinary research directions that focus on the performance of the business and public sector, wellbeing, sustainability and economic growth.

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SECTION A

EMERGING RISKS AND OPPORTUNITIES DUE TO DIGITALISATION

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CHAPTER 1

DECENTRALISED FINANCE AND CRYPTOCURRENCY ACTIVITY IN AFRICA

Peterson K. Ozili

ABSTRACT

Objective: Recently, there has been an increase in the use of cryptocurrency, decentralised finance (DeFi) applications and DeFi services in several countries. These innovations facilitate the delivery of financial services using smart contracts. DeFi encompasses all financial services that are built on public block-chains, based on open protocols and removes intermediaries from the financial intermediation process. There is significant cryptocurrency activity in Africa while DeFi developments are relatively new and unpopular in the African continent. This chapter introduces DeFi in Africa. It presents some statistics and data on DeFi in Africa. Thereafter, the potential benefits, challenges and regulatory issues associated with DeFi in Africa are presented.

Method: This study used literature reviews and external data sources to show the benefits and advantages of DeFi.

Findings: The findings show that there is low interest in DeFi in Africa. Some benefits of DeFi to African countries include increased liquidity for many small- and medium-scale enterprises (SMEs), new opportunities to raise additional capital to fund capital-intensive activities, usher in an era of smart contracts that are negotiated bilaterally without needing an intermediary, encourage peer-to-peer trade between economic agents in several African countries, enhance the efficiency of the Pan-African Payment Settlement System and

encourage more trade between individuals and corporations under the African Continental Free Trade Agreement, among others.

Originality: This is the first chapter to examine DeFi in Africa.

Keywords: Decentralised finance; cryptocurrencies; bitcoin; blockchain; central bank digital currency crypto technologies; Africa

1. INTRODUCTION

Decentralised finance (DeFi) is one of the recent emerging technological evolutions in global finance. Yet, there is very little or no discussion about DeFi in Africa and there is little understanding of the meaning, benefits and implications of DeFi. In this chapter, I introduce DeFi in Africa. I present some DeFi statistics. Thereafter, I highlight some potential benefits, challenges and regulatory issues associated with DeFi in Africa.

Financial services in African countries are still very much centralised. As such, it is fair to say that much of modern finance in Africa is executed under a centralised financial (CeFi) system. This means that commercial banks, the central bank and other financial institutions are still heavily involved in financial intermediation, payments processing and settlements.

Today, Africa is among the globally recognised hub for Fintech growth and development. Many African countries, for example, South Africa, Nigeria, Kenya and Rwanda, have made tremendous progress in mobile money adoption and in building a robust payments system all of which were aided by Fintech technologies while other African countries are still in the process of exploring the endless possibilities of the Fintech revolution. Interestingly, cryptocurrency activity in African countries is on the rise as South Africa, Nigeria, Ghana and Kenya are top leaders in cryptocurrency activities in the continent as of 2021 while DeFi is slowly moving into Africa. Although these developments are interesting, it is difficult to tell whether the African continent is ready for DeFi. I show some existing data and statistics on the current state of DeFi in Africa and use these statistics to infer the readiness of African countries to embrace DeFi.

But what is DeFi? DeFi refers to any financial services that are built on public blockchains. It removes banks and financial institutions from the financial intermediation process. DeFi is based on open protocols which allow individuals or firms to perform financial transactions over the internet on a non-custodial basis without needing an intermediary. Most decentralised financial services are delivered using decentralised applications.

The rest of the chapter is structured as follows. Section 2 presents the few studies that explore DeFi. Section 3 reports the data and statistics on cryptocurrency and DeFi in Africa. Section 4 shows the potential benefits of DeFi for Africa. Section 5 presents the challenges to DeFi. Section 6 presents the DeFi regulatory issues. Section 7 presents some reflections and the conclusion of the chapter.

2. LITERATURE

2.1. Cryptocurrency in Africa

The literature shows that cryptocurrency is enabled by blockchain technology. [Ozili \(2019\)](#) shows that blockchain technology in finance can create a trustless environment for users and providers of finance and can remove the intermediaries in the financial intermediation process. [Agu \(2020\)](#) shows that cryptocurrency can act as a catalyst for economic growth especially when cryptocurrency assets are taxable. [Agu \(2020\)](#) argues that cryptocurrency is criticised by the African government as a means to launder money and commit financial crimes, and that its negative impact could outweigh its perceived positive impact on the economy. Some of the cryptocurrency-based intermediaries in Africa include, BTCGhana, BitPesa and Belfrics ([Gomachas, 2019](#)). [Norman-William \(2018\)](#) shows that cryptocurrency can act as a medium of exchange by using cryptography to anonymously secure transactions, verify the transfer of assets and control the creation of additional units of cryptocurrency. Although there is a growing demand for cryptocurrency in the African region, many African governments have banned private cryptocurrencies, such as bitcoin and Ethereum. This has discouraged investors from investing in cryptocurrency in Africa.

[Ozili \(2022a\)](#) shows that the central bank digital currency or the eNaira adopted in Nigeria can improve the efficiency of payments and increase financial inclusion in Nigeria while the specific risks that were identified include rising digital illiteracy, increased propensity for cyber-attacks and data theft. [Ozili \(2022b\)](#) shows that economic agents are using cryptocurrencies to make payments and this poses a threat to fiat currency. This has led many Central banks to respond to this threat by either banning cryptocurrency or taking steps to issue a central bank digital currency (CBDC; [Ozili, 2022d](#)). [Ozili \(2022b\)](#) then argues that central banks can leverage their monetary powers, and the trust people have in government-back money, to issue a CBDC which people will trust, and this could erode trust in cryptocurrencies and render cryptocurrency useless as a medium of exchange although not immediately.

2.2. DeFi Literature

There are few studies on DeFi in the finance literature. Existing studies on DeFi focus on the potential benefits and applications of DeFi while other studies identify the challenges of DeFi. For example, some studies show that DeFi uses smart contracts to create protocols that replicate existing financial services in an open, interoperable and transparent way ([Ozili, 2022c](#); [Schär, 2021](#)). [Dai \(2021\)](#) defines DeFi as a series of interoperable smart contracts running on distributed ledgers and offering alternative financial services. Also, [Popescu \(2020\)](#) shows that DeFi uses networks and open-source software to create or transform old financial products into trustworthy and transparent protocols that run without intermediaries. [WEF \(2021\)](#) shows that DeFi protocols have specific characteristics mainly the trust-minimised operation and settlement, a non-custodial design and a programmable and open architecture. [WEF \(2021\)](#) suggests the need to regulate

DeFi throughout its life cycle. [BitKom \(2020\)](#) shows that investors around the world entrust more than two billion USD to decentralized applications without fear of losing their money because they trust blockchain technology, particularly, the Ethereum blockchain.

Regarding the benefits of DeFi, [Chen and Bellavitis \(2019\)](#) show that decentralised financial services can reduce transaction costs, broaden financial inclusion, increase access to basic financial services, encourage permission-less innovation and create new opportunities for entrepreneurs, customers and innovators. [Chen and Bellavitis \(2020\)](#) state that DeFi can reshape the structure of modern finance and create a new landscape for entrepreneurship and innovation. [Schar \(2021\)](#) notes that DeFi is a segment of financial markets with certain risks even though it offers efficiency, transparency, accessibility and interoperability advantages. Meanwhile, [FSB \(2019\)](#) states that the use of decentralised financial technologies in modern finance offers financial stability advantages. FSB suggests that DeFi can introduce greater competition and diversity in the financial system, and a reduction in systemic risk which could potentially reduce the too-big-to-fail problems in existing financial intermediaries. [Piesse \(2021\)](#) examines DeFi in the insurance industry, and shows that DeFi can lead to the emergence of new digital asset classes in the insurance market which could lead to higher insurance policies and higher returns to the insurance industry. [Ye and Simon \(2021\)](#) examine money creation in DeFi. They show that stablecoins can be used to meet the demand for safe assets in decentralised financial transactions, and that stablecoin issuers can perfectly transform risky reserve assets into tokens of stable values. [Meegan and Koens \(2021\)](#) show that both DeFi and CeFi have benefits for the financial system. They suggest that DeFi and CeFi should be allowed to co-exist in the same financial system so that customers can enjoy the combined benefits of DeFi and CeFi.

In terms of the challenges of DeFi, [Zetzsche, Arner, and Buckley \(2020\)](#) argue that DeFi has the potential to undermine traditional forms of accountability and erode the effectiveness of traditional financial regulation and enforcement. [Chohan \(2021\)](#) argues that while DeFi prioritises disintermediation and decentralisation to empower individuals along crypto-anarchist principles, it has substantial difficulties such as market manipulation, distortionary incentives, excess short-termism, encouraging Ponzi-schemes and money-laundering challenges. [Wharton \(2021\)](#) shows that while DeFi can promote efficiency, transparency, innovation and financial inclusion, DeFi also presents serious concerns such as greater potential for fraud, cyber-attacks and DeFi governance problems. [Smith \(2021\)](#) examines how DeFi can be useful in accounting and finance practice. [Smith \(2021\)](#) argues that crypto assets present a number of accounting issues such as the lack of consistency in how crypto assets are treated, accounted for, and reported. Also, [Smith \(2021\)](#) points out that different regulators have diverging viewpoints on how crypto assets should be treated for accounting purposes. Also, the accounting for DeFi is further complicated by the volatility of the price of assets backed by cryptocurrency. These issues collectively make the accounting for DeFi-related crypto assets very difficult at the early stages. [Su \(2021\)](#) shows

that DeFi has a growing total value locked (TVL), which is the common measure of the market size for DeFi activity. The TVL exceeded \$100 billion in 2021. [Su \(2021\)](#) shows that DeFi offers financial services through a peer-to-peer system using digital assets and smart contracts. [Su \(2021\)](#) then argues that DeFi could save transaction costs in the finance industry even though there are concerns that DeFi could damage market integrity, disrupt the financial system and could also lead to an overhaul of existing financial regulatory frameworks to accommodate DeFi innovations. [Dai \(2021\)](#) shows that the major challenge of DeFi is the issue of privacy. This is because DeFi applications can expose privately negotiated contracts to public scrutiny.

3. CRYPTOCURRENCY AND DEFI ACTIVITY IN AFRICA: SOME STATISTICS

- Retail cryptocurrency – The African region had the largest retail cryptocurrency volume in May 2020 according to a Chainalysis 2020 report. In the report, retail cryptocurrencies are defined as cryptocurrencies below the \$10,000 mark globally.
- Cryptocurrency inflow and outflow – Among the regions of the World, the African continent witnessed the lowest cryptocurrency inflows and outflows between July 2019 to June 2020 according to a Chainalysis 2020 report.
- Cryptocurrency value – The African continent accounted for only 3 per cent of global cryptocurrency value according to the 2021 Chainalysis Global Crypto Report.
- Share of global cryptocurrency trading activity – Africa had the lowest share of global cryptocurrency trading activity compared to Europe according to the 2021 Chainalysis cryptocurrency report. The low cryptocurrency trading activity in Africa shows that decentralised financial services in African countries are either relatively new or unpopular.
- Interest in DeFi – Africa recorded the lowest interest in DeFi since DeFi inception. This is shown by the very low web traffic to DeFi protocols from 2019 to 2021 according to a 2021 chain analysis report. The majority of the web traffic to DeFi protocols came from North American countries and Western European countries. The low web traffic to DeFi protocols in Africa shows that there is low interest in DeFi in African countries.
- African countries adopting DeFi – Only 1 of 54 African countries is listed in the 2021 top 20 global DeFi adopters ranking. Togo is the only African country listed in the top 20 global DeFi adoption index in 2021. This shows that African countries are among the least adopters of DeFi in the world.

Overall, the above statistics show that there is little interest in DeFi in the African continent and the DeFi concept is relatively new concept in many African countries.

4. POTENTIAL BENEFITS OF DEFI IN AFRICA

DeFi offers some benefits to users in African countries, for example:

- (i) DeFi can increase liquidity for many small- and medium-scale enterprises (SMEs) in African countries.
- (ii) DeFi can create new opportunities to raise additional capital to fund capital-intensive activities of corporations and government agencies in African countries.
- (iii) DeFi can potentially usher in an era of smart contracts that are negotiated bilaterally without needing a middleman.
- (iv) DeFi will encourage peer-to-peer trade between economic agents in several African countries.
- (v) DeFi can enhance the efficiency of the Pan-African Payment Settlement System.
- (vi) DeFi can encourage more trade between individuals and corporations under the African Continental Free Trade Agreement.
- (vii) DeFi can reduce the costs of financial services. The absence of financial intermediaries will eliminate some transaction costs and lead to cost savings.
- (viii) DeFi can lead to exciting innovations in financial services in African countries. It can lead to new types of financial products and services that have wide usage in many industries and sectors in African countries.
- (ix) DeFi can motivate African governments to introduce digital financial literacy programmes for their citizens so that citizens can become familiar with blockchain-based financial services and digital financial services. Studies have shown that digital finance can enhance financial literacy (Ozili, 2018; Özen & Diakonidze, 2021).

5. CHALLENGES OF DEFI IN AFRICA

Blockchain-based DeFi may not generate immediate and real benefits to users of financial services in African countries. This is due to subsisting issues in many African countries, such as lack of technological infrastructure to support DeFi applications, poor security protocols, lack of regulatory sophistication to understand and regulate blockchain-based technology protocols, regulatory ambiguity, rising digital illiteracy among a large segment of the population, increased appetite for cyber-crime and resistance to change among policy makers and ordinary citizens and merchants. These challenges could limit the adoption DeFi in Africa. Despite these challenges, there is optimism that DeFi will eventually find its way into African financial systems. But first, the aforementioned challenges must be addressed in order to prepare the way for the adoption of DeFi . [Table 1](#) shows additional challenges of DeFi.