Annex 1
AWARD APPLICATION

1. Candidate

Name: Oprea
First name: Simona-Vasilica

PhD. Year: 2009

Current position: Associate professor

Institution: Bucharest University of Economic Studies
Mobile phone:
Email address:

2. "Gala Cercetarii Romanesti" Edition: 2024

3. The prize and the category for which it is applied: Științe sociale și economie – Premiul "Mattei Dogan", Research team

4. Team leader: Simona-Vasilica Oprea (SV Oprea), associate professor, habilitated since 2021

5. Team member: Adela Bâra (A Bâra), professor, habilitated since 2015

6. Research team scientific achievements - brief description. This team has been consolidated since 2010. The significant achievements of SV Oprea and A Bâra, as reflected in their publications, span various aspects of energy systems, electrical markets and data science applications. These achievements demonstrate a comprehensive approach to energy system management, blending technical innovation with an understanding of market dynamics, consumer behavior, and environmental impacts. Their work is characterized by a strong foundation in data science and machine learning, applied to practical and theoretical problems in energy systems and markets. SV Oprea and A Bâra have made significant contributions to the fields of energy systems, electrical markets and data science. Their work demonstrates a deep integration of technical expertise, innovative methodologies, and practical applications.
Their 10 most significant key accomplishments include:
1. Innovative Software Architectures and Applications: The development of PV-OPTIM, a software for prosumer management in solar energy systems, reflects a significant advancement in the field. Their work on software architecture for energy management and forecasting showcases a blend of technical acumen and practical application. Development of advanced software solutions: Their

creation of PV-OPTIM, a sophisticated software architecture, represents a significant stride in solar energy systems management. This tool is specifically designed for prosumers (producer-consumers), indicating a focus on the evolving landscape of energy production and consumption. Their other contributions in software development for energy management and forecasting demonstrate an adeptness in combining technical skill with practical utility.

2. Integration of Machine Learning and Big Data in Energy Markets: Their research on predicting electricity market prices, incorporating macroeconomic factors and machine learning techniques, stands out as a pioneering approach to energy market analysis. Pioneering machine learning applications in energy markets: Their research in predicting electricity market prices using machine learning and macroeconomic factors is groundbreaking. It exemplifies the effective use of advanced analytical techniques to understand and forecast complex market dynamics, a crucial aspect in today's volatile energy markets.

3. Advancements in Photovoltaic (PV) Forecasting: The embedding of Weather Prediction Errors (WPE) into PV forecasting using deep learning techniques represents a significant contribution to improving the accuracy of renewable energy forecasts. Innovations in renewable energy forecasting: Embedding WPE into PV forecasting marks a significant advancement in renewable energy integration. This innovation improves the accuracy and reliability of solar power predictions, which is vital for efficient energy management and grid stability. The two researchers published several papers on this topic in prestigious journals, such as: Applied Soft Computing (Elsevier), Computers in Industry (Elsevier), Knowledge and Informatic Systems (Springer) and Journal of Forecasting (Wiley).

4. Climate Change and Air Quality Studies: Their interdisciplinary work in understanding climate change impacts and air quality, using news and weather data, indicates a holistic approach to environmental issues. Interdisciplinary approach to climate change and air quality: Their work in analyzing climate change and air quality through the lens of news and weather data processing reflects an interdisciplinary approach. This research highlights the importance of understanding environmental issues from multiple data sources and perspectives.

5. Financial Market Insights: The examination of Bitcoin volatility and the analysis of on-chain metrics and social media data offer valuable insights into the intersection of energy, technology, and finance. Exploration of financial markets and cryptocurrency: Investigating the volatility of Bitcoin and analyzing social media and on-chain metrics demonstrates their ability to apply their expertise beyond traditional energy domains. This work offers insights into the interconnected nature of finance, technology, and energy sectors. The two researchers published several papers on this topic in prestigious journals, such as: PeerJ Computer Science, Engineering Applications of Artificial Intelligence (accepted), Electronic Commerce Research (accepted).

6. Designing Solutions for Energy Communities: Their research on value sharing methods for heterogeneous energy communities and the development of digital twin models for energy coordination showcases their understanding of the social and technical challenges in energy distribution. These contributions are crucial for creating sustainable and efficient energy communities. Holistic energy community solutions: Their work on value sharing methods for

heterogeneous energy communities and digital twin models for energy coordination reflects a deep understanding of the societal and technical aspects of energy distribution. A new method for Value Sharing (VS) is introduced to allocate the value among Energy Community (EC) members based on their individual contributions to the overall surplus or deficit. This method takes into account each member's load-generation profile, rewarding those who enhance the EC's revenue with a larger share. Conversely, members who increase the EC's costs due to high demand, either met by shared generation or grid supply, receive a smaller share. The effectiveness of various allocation approaches is assessed using the Fairness Index (FI). Additionally, to guide the EC's strategy, which may shift over time, a decision model is formulated. This model employs an objective function that integrates FI with the Self-Sufficiency Index (SSI), adjusted by specific weighting coefficients. The approach is encapsulated in an algorithm that autonomously computes and assigns the profits. For the VS method under consideration, the FI ranges from 0.81 to 1, indicating its effectiveness and fairness in value distribution. Both researchers published papers on this topic in prestigious journals such as: Energy Policy, Utilities policy, Expert Systems with Applications, iScience, Knowledge-based Systems, etc.

7. AI-Powered Forecasting in Electricity Markets: Their application of AI for enhancing market strategies and price forecasting in electricity markets demonstrates a fusion of cutting-edge technology and economic insights. Utilizing AI for enhanced electricity market strategies: This approach leverages state-of-the-art technology to provide practical solutions in energy trading and market analysis. Their studies delve into the recent dynamics of electricity prices in Romania's Balancing Market (BM), a critical segment of the East-European electricity markets. The aim is to decipher and forecast price trends within the current economic and geopolitical landscape. This analysis is particularly crucial for electricity producers as they strategize the allocation of their output among various segments such as the wholesale electricity market, ancillary services markets, and the BM, with the objective of maximizing value and fostering sustainable economic growth. One of their papers introduces an innovative AI-powered methodology for forecasting electricity prices in the BM. This methodology leverages a range of standout Machine Learning (ML) algorithms, including both classifiers and regressors, to predict BM prices. The forecasting approach is structured into two distinct phases. The initial phase focuses on determining the sign of the imbalance, which plays a pivotal role in enhancing the overall accuracy of the price prediction. Subsequently, the method offers valuable insights for market participants, presenting two distinct prediction solutions to inform trading decisions. The first prediction solution involves an average of the outcomes from five ensemble ML algorithms. The second solution adopts a more intricate approach, applying weights to the predictions of these five ML algorithms. These weights are derived either through linear regression or a decision tree algorithm. By integrating both supervised and unsupervised ML algorithms, the study lays the groundwork for developing optimal bidding strategies for market players in the electricity market. This comprehensive approach not only aids in understanding market dynamics but also assists in creating more informed and effective market participation strategies. Both researchers published papers on this topic in prestigious journals, such as Applied Intelligence.

8. Innovative Use of Blockchain and IoT Technologies: The conceptualization of a blockchain solution for e-voting and the development of architectures that integrate edge, fog, and cloud computing for IoT in smart metering indicate their expertise in adapting emerging technologies for practical solutions. Blockchain and IoT Applications: One of their paper focuses on the burgeoning relevance of e-voting, propelled by the digitalization wave across various sectors and underscored by the necessity to minimize crowds during pandemic situations. E-voting emerges as a practical alternative to traditional voting methods, offering the convenience of utilizing digital devices like laptops, mobile phones, or tablets. This digital approach not only streamlines the voting process but also addresses key issues associated with manual voting, such as human counting errors and potential fraud. The primary objective of this research is to delineate the critical specifications of an e-voting application, tailored specifically for university elections. The paper aims to develop a solution for this context and conduct a comparative analysis with existing e-voting systems. The proposed solution is anchored on a conceptual architecture that incorporates encrypted functions and is structured into two main stages: voting and validation. This architecture emphasizes the separation of layers and roles, ensuring a robust and secure framework. A distinctive feature of the proposed e-voting system is its reliance on blockchain technology, which facilitates secure and transparent interactions between the involved parties—voters and the voting committee. The system architecture integrates two main software components: a web application and a database. This combination ensures a seamless and secure voting experience. To enhance understanding and facilitate replication, the paper presents the conceptual architecture through various Unified Modeling Language (UML) diagrams. These diagrams provide a comprehensive and formalized representation of the system's structure and workflow. Moreover, the paper includes an initial implementation phase of the proposed solution, serving as a proof of concept. This implementation showcases the practical applicability and effectiveness of the e-voting system, marking a significant step forward in digitalizing and securing the voting process in academic institutions.

9. Empirical Analyses and Theoretical Contributions: Their empirical analysis of the impact of lockdowns on e-commerce and theoretical contributions to understanding electricity market dynamics showcase their ability to combine practical data analysis with theoretical modeling. One of their papers presents a detailed empirical analysis of e-commerce data derived from Google Analytics (GA) for two small businesses in Romania: an IT components company and a tourism agency. The study spans a critical period from January 2019, prior to the COVID-19 pandemic, to mid-February 2023, offering a comprehensive view of the pandemic's impact and seasonal variations over four years. The approach to data analysis is twofold, tailored to the unique characteristics of each business. For the IT company, the study categorizes GA metrics into groups that reflect website performance, site accessibility, and user behavior. In contrast, the analysis for the tourism agency concentrates on website accessibility, user behavior, and the effectiveness of marketing campaigns. The core objective is to cluster GA metrics based on their inherent significance and assess if each cluster accurately represents latent concepts like user behavior or site accessibility. Central to this study are five hypotheses formulated to examine the immediate and enduring effects of the COVID-19 pandemic on these small businesses.

10. Studies on Energy Consumer Behavior: Their research into factors influencing electricity consumer behavior, especially regarding demand response programs, shows their commitment to applying behavioral insights to energy consumption patterns. In summary, the breadth and depth of SV Oprea and A Bâra's work span across several critical areas of energy systems and markets. They have effectively bridged the gap between advanced technological methodologies and practical applications, providing valuable insights and solutions in the realms of renewable energy forecasting, market analysis, consumer behavior, and the application of emerging technologies like AI, blockchain, and IoT. Their interdisciplinary approach and innovative research contributions are a testament to their commitment to advancing the field of energy systems and technology. Both researchers published papers on this topic in prestigious journals such as Computers and Electrical Engineering, Kybernetes, Peer-to-Peer Networking and Applications, etc.

7. *Curriculum vitae of the team leader*

Simona-Vasilica Oprea *(Female, b. 1978, Nationality: Romanian)* has an interdisciplinary background in *Power System Engineering* (RES integration, grid planning studies) and *ICT* (database, big data, blockchain, machine learning algorithms, deep learning, web scraping). She received the **MSc degree** from the Infrastructure Management Program, Yokohama National University, Japan in 2007; **1st PhD** in Electrical Engineering from the Bucharest Polytechnic University; in 2009, **2nd PhD** in Economic Informatics from the Bucharest University of Economic Studies (ASE) in 2017. Since 2010, she is involved in 9 national and international research projects as member or PI. She is the author of 10 books and international chapters, and scientific articles, over **85 indexed in ISI Web of Science** (over 50 journal papers and over 20 proceeding conferences, 1 book chapter), h-index 15. She worked for the Romanian Transmission System Operator Transelectrica: 2002-2014; the National Energy Regulatory ANRE (2014) and the Bucharest University of Economic Studies (ASE): 2014-present.

a) Degrees and diplomas

December 2021 – Habilitation in Economic Informatics at the Bucharest University of Economic Studies. Habilitation thesis title: *„Big data analytics and blockchain solutions"*

2014-2017 PhD in Economic Informatics at the Bucharest University of Economic Studies. PhD thesis title: *„Informatics solutions for decision assistance regarding electricity consumption optimization in smart grids"*

2002-2009 PhD in Electrical Engineering at the Bucharest Polytechnic University. PhD thesis title: *"Aspects regarding the open access to the electricity grids. Renewable energy sources integration"*

2005-2007 Master in Infrastructure Management at the Yokohama National University, Japan. The International Graduate School of Social Sciences. Thesis title: *Allocation methods of cross-border grid capacity*

2001-2002 Master in Power Systems at the Bucharest Polytechnic University, Energy Faculty

1996-2001 Bachelor at the Bucharest Polytechnic University, Energy Faculty

b) Research projects

2010-present Researcher – *Manager* in 4 research projects (PNIII-PCE SMART-TWINS, PNIII-PED BIGDATA4GRID, PNIII-BRIDGE SMART-OPTIM , H2020-ERANET SMART-MLA) and *Member* in 4 research projects (PNII-TE , PNII-PCCA SIPAMER, PNIII-PTE OPTIMPV, COP SMARTRADE)
June 2022-2025 Principal Investigator – Project title: *Developing a Model-based Digital Twin Reference Architecture for Active Energy Consumers and Smart Communities* (SMART-TWINS), Funding agency: UEFISCDI, PCE 2021, Total budget 1.200.000 RON, 36 months, Contract no. PCE 35/2022, code PN-III-P4-PCE-2021-0334
2020-2022 Principal Investigator – Project title: *Big data solutions in demand side management enhancing market strategies and settlement for distribution grid operators* (BIGDATA4GRID), Funding agency: UEFISCDI, PN-III-P2-2.1-PED-2019-1198, PED 2019, Total budget 600.000 RON, Total amount for ASE: 400.000 RON, coordinator ASE, partner SC ICPE SA, 24 months, Contract no. 462PED/28.10.2020, web page: https://simonaoprea.ase.ro/research/bigdata4grid/
2018-2021 Principal Investigator for ASE partner – Project title: *Multi-layer aggregator solutions to facilitate optimum demand response and grid flexibility*, Funding agency: ERA-NET Co-fund under H2020, UEFISCDI, Total amount for ASE: 169.000 Euro, PNIII European and International Cooperation H2020, ERANET H2020, Partners: ASE (Romania), Stimasoft (Romania), KTH (Sweden), DTU (Denmark), EPRA (Turkey)-coordinator, AKEDAS (Turkey), USN (Norway), Contract 71/2018, Acronym: SMART-MLA, Project web page: https://smart-mla.stimasoft.com/; ERA-NET web page: https://www.eranet-smartenergysystems.eu/Projects
2016-2018 Principal Investigator – Project title: *Informatics solutions for electricity consumption analysis and optimization in smart grids*, Funding agency: UEFISCDI, Total amount for ASE: 100.000 Euro, PN-III-P2-2.1-BG-2016-0286, BRIDGE Grant, Partners: ASE (Romania)-coordinator, MET (Romania), Romanian-American University (Romania), Contract 77BG/2016, Acronym: SMART-OPTIM; Web page: https://sites.google.com/a/csie.ase.ro/smart-optim/
2016-2020 Project Member – *Intelligent system for trading on wholesale electricity market* Competitiveness Operational Programme (COP) 2014-2020, Contract 62/2016, Co-financed by European Regional Development Fund (ERDF), Funding agency: ANCSI, Total amount: 1.200.000 Euro, Acronym SMARTRADE; Project website: http://smartrade.ase.ro/
2016-2018 Project Member - *Informatics solutions for optimizing the operation of photovoltaic power plants,* PN-III-P2-2.1-PTE-2016-0032, 4PTE/06/10/2016, Funding agency: UEFISCDI, Total amount for ASE: 100.000 Euro, Partners: ICPE (Romania)-coordinator, ASE (Romania), EnergyPRO (Romania), Acronym: OPTIM-PV; Web page: http://www.icpe.ro/projects/optimpv/
2014-2017 Project Member – *Sistem inteligent pentru predicţia, analiza şi monitorizarea indicatorilor de performanţă a proceselor tehnologice şi de afaceri în domeniul energiilor regenerabile,* PN II PT-PCCA-2013-4-0996, Contract 49/2014, Funding agency: UEFISCDI, Total amount for ASE: 348.000 Euro, Partners: ASE (Romania)-coordinator, Romanian-American University (Romania), Stimasoft SRL (Romania), Acronym SIPAMER
2010-2013 Project Member – *Solutii informatice pentru asistarea procesului decizional in mediile incerte si cu evolutii putin predictibile in vederea integrarii in retele de tip grid,* PNII-TE, Code: 332, Contract 44/2010, Funding agency: UEFISCDI, Total amount: 140.000 Euro

c) Recent Jobs in Academia:

February 2022-present Associate Professor at the Bucharest University of Economic Studies, Faculty of Cybernetics, Statistics and Economic Informatics
2019 – 2022 Lecturer at the Bucharest University of Economic Studies, Faculty of Cybernetics, Statistics and Economic Informatics
2015-2019 Assistant Professor at the Bucharest University of Economic Studies, Faculty of Cybernetics, Statistics and Economic Informatics

d) Scientometric indicators from WoS: **Hirsch index=15**
Times Cited Total: 564
Times Cited Without self-citations: 451
e) ORCID: https://orcid.org/0000-0002-9005-5181
Google Scholar: https://scholar.google.com/citations?user=hIKefqAAAAAJ&hl=ro
f) Profile address from www.brainmap.ro: https://www.brainmap.ro/simona-vasilica-oprea
g) Website https://simonaoprea.ase.ro/

The candidate fulfills 3 out of the 6 points: namely 1, 3, 6.
Point 1. The candidate has 9 research papers in Q1 based on AIS. Also, the team member fulfills this criterion as they have numerous common publications.
Point 3. Both the candidate and the team member have numerous research projects as responsible, project principal investigator during 2019-2024 as in Table 3.
Point 6. The candidate's A score is over 5. Also, the team member's A score is over 5.

2019-2024
JOURNAL OF MODERN POWER SYSTEMS AND CLEAN ENERGY
WOS:000477895600005
AIS=1,086; n=5
A_1=0,2172
COMPUTERS & INDUSTRIAL ENGINEERING
WOS:000482244100030; n=4
WOS:000809236200002; n=2
AIS=1,139
A_2=0,2848
A_3=0,5695
IEEE TRANSACTIONS ON SUSTAINABLE ENERGY
WOS:000487199700050
AIS=2,27; n=4
A_4=0,5675
COMPUTERS IN INDUSTRY
WOS:000538762600005
AIS=1,548; n=2

A_5=0,774

ENERGY POLICY

WOS:000636054400028; n=2

WOS:001128156900001; n=2

AIS=1,538

A_6=0,769

A_7=0,769

KNOWLEDGE-BASED SYSTEMS

WOS:000685993500015

AIS=1,443; n=2

A_8=0,7215

EXPERT SYSTEMS WITH APPLICATIONS

WOS:000867544000005

AIS=1,277; n=2

A_9=0,6385

A=5,311

The candidate also reports the following two papers (with AIS in Q1) that are with the following status:

Published online

Adela Bâra, Simona-Vasilica Oprea, A Value Sharing Method for Heterogenous Energy Communities Archetypes, iScience, Adela Bâra, Simona-Vasilica Oprea, Volume 27, Issue 1, 2024, 108687, ISSN 2589-0042, https://doi.org/10.1016/j.isci.2023.108687, **AIS 1.655**

Accepted for publication

Adela Bâra, Simona-Vasilica Oprea, An Ensemble Learning Method for Bitcoin Price Prediction Based on Volatility Indicators and Trend, in Engineering Applications of Artificial Intelligence journal, **AIS 1.194**

Curriculum Vitae for the team member:

Adela BÂRA (b. October 11, 1978) is Professor at the Economic Informatics Department at the Faculty of Cybernetics, Statistics and Economic Informatics from the Academy of Economic Studies of Bucharest. She graduated from the Faculty of Economic Cybernetics in 2002, holds a PhD diploma in Economics since 2007. She is the author of 19 books in the domain of economic informatics, over 90 published scientific papers and articles (among which over 50 articles are indexed in ISI Web of Knowledge). She participated in 11 research projects (4 of them as principal investigator or project responsible), financed from national and international research programs. Domains of

competence: Databases; Big Data; Machine Learning; IoT; Informatics solutions for energy systems (data integration, analytics, web-services, cloud-computing development).

CONTACT INFO
Address: No. 6 Romana Square, District 1, Bucharest, Romania
Tel:
Email:
Website: https://adela-bara.ase.ro/
H-index = 15
Times Cited Total: 558
Times Cited Without self-citations: 450

EDUCATIONAL BACKGROUND

- **Habilitation** in Economic Informatics and Cybernetics, 2015
- **Ph.D.** in Economic Informatics and Cybernetics, Bucharest University of Economic Studies, Romania, 2007. Subject area: Data warehousing, Data Mining and Business Intelligence
- **M.Sc.** in Economic Informatics and Cybernetics, Bucharest University of Economic Studies, Romania (2002-2003)
- **B.Sc.** in Economic Informatics and Cybernetics, Bucharest University of Economic Studies, Romania (1997 - 2002)

WORK EXPERIENCE

- **Oct. 2015 to present:**
  Professor – Department of Economic Informatics and Cybernetics, Faculty of Economic Cybernetics, Statistics and Informatics, Bucharest University of Economic Studies (BUES)
  PhD Supervisor – main supervisor for 3 PhD students and co-supervisor for 10 PhD students, subject areas: Data warehousing, Data Mining, Big Data, Business Intelligence, Artificial neural Networks.
- **Oct. 2002 – Oct. 2015:**
  Assistant professor (2002-2008), *lecturer* (2008-2013), *associate professor* (2013-2015) – Department of Economic Informatics and Cybernetics, Faculty of Economic Cybernetics, Statistics and Informatics, Bucharest University of Economic Studies (BUES)

REASEARCH INTEREST

- Databases (relational, object-oriented, spatial, NoSQL); Big Data; Machine Learning; IoT;
- Informatics solutions for energy systems: data integration, analytics, web-services, cloud-computing development.

RECENT KEY PROJECTS

- Developing a Model-based Digital Twin Reference Architecture for Active Energy Consumers and Smart Communities (SMART-TWINS), PCE 35/2022, PN-III-P4-PCE-2021-0334, 2022-2024, member;
- Big data solutions in demand side management enhancing market strategies and settlement for distribution grid operators (BIGDATA4GRID), PN-III-P2-2.1-PED-2019-1198, 462PED/28.10.2020, 2020-2022, member;

- Multi-layer aggregator solutions to facilitate optimum demand response and grid flexibility (SMART-MLA), H2020, ERA NET-SMART GRID PLUS, 2018-2021, member;
- Intelligent system for trading on wholesale electricity market (SMARTRADE), COMPETITIVENESS OPERATIONAL PROGRAMME 2014-2020, funded by European Funds ERDF, 2016-2020, project responsible;
- Informatics solution for optimization of technical procedures of photovoltaic power plants (OPTIMPV), project code PN-III-P2-2.1-PTE-2016-0032, Increasing the Competitiveness of the Romanian Economy through Research, Development and Innovation, Subprogram 2.1. Competitiveness through Research, Development and Innovation, Transfer to Economic Operator Competition (PTE), funded by National Authority for Scientific Research and Innovation – UEFISCDI, Romania, 2016-2018, Principle Investigator;
- IT Solutions for Analysis and Consumption Optimization in Smart Grids (SMART-OPTIM), project code PN-III-P2-2.1-BG-2016-0286, Program Increasing the Competitiveness of the Romanian Economy through Research, Development and Innovation, Subprogram 2.1. Competitiveness through Research, Development and Innovation, Bridge Grant Competition, funded by National Authority for Scientific Research and Innovation – UEFISCDI, Romania, 2016-2018, member;
- Intelligent system for predicting, analysing and monitoring performance indicators and business processes in the field of renewable energies (SIPAMER), PNII - PCCA 2013, code 0996, no. 49/2014 funded by National Authority for Scientific Research and Innovation – UEFISCDI, Romania, 2014-2017, Principle Investigator;

RECENT KEY PUBLICATIONS

- Bâra Adela, Simona-Vasilica Oprea, Embedding the Weather Prediction Errors (WPE) into the PV Forecasting Method using Deep Learning. Journal of Forecasting, Wiley, 2024
- Simona-Vasilica Oprea, Bâra Adela, On-grid and Off-grid Photovoltaic Systems Forecasting using a Hybrid Meta-learning Method, Knowledge and Information Systems, Springer, 2024
- Bâra Adela, Simona-Vasilica Oprea, A Value Sharing Method for Heterogenous Energy Communities Archetypes, iScience, Adela Bâra, Simona-Vasilica Oprea, Volume 27, Issue 1, 2024, 108687, ISSN 2589-0042, https://doi.org/10.1016/j.isci.2023.108687 , iScience, 2024
- Bâra Adela, Simona-Vasilica Oprea, Enabling Coordination in Energy Communities: A Digital Twin Model, Volume 184, January 2024, 113910, Energy Policy, https://authors.elsevier.com/a/1iAus14YGgpcuM, Elsevier, 2024
- Bâra, A., Oprea, S.-V., & Ciurea, C.-E. (2023). Improving the strategies of the market players using an AI-powered price forecast for electricity market. Technological and Economic Development of Economy, 1-26. https://doi.org/10.3846/tede.2023.20251, VILNIUS TECH, 2023
- Bâra, A. and Oprea, S.V. (2023), A holistic view on business model-oriented energy communities, Kybernetes, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/K-07-2023-1235, Emerald Publishing Limited, 2023

- Simona-Vasilica OPREA, Adela BÂRA, Gabriela DOBRIȚA (ENE), Dragoș-Cătălin BARBU, A Horizontal Tuning Framework for Machine Learning Algorithms Using a Microservice-based Architecture, Studies in Informatics and Control, ISSN 1220-1766, vol. 32(3), pp. 31-43, 2023. https://doi.org/10.24846/v32i3y202303, https://sic.ici.ro/wp-content/uploads/2023/09/Art.-3-Issue-3-2023.pdf, SIC, 2023
- Simona-Vasilica Oprea, Adela Bâra. A stacked ensemble forecast for photovoltaic power plants combining deterministic and stochastic methods. Applied Soft Computing, Volume 147, November 2023, Page 110781, https://doi.org/10.1016/j.asoc.2023.110781, Elsevier, 2023
- Bâra, Adela, Simona-Vasilica Oprea, Cristian Bucur, and Bogdan-George Tudorică. „Unraveling the Impact of Lockdowns on E-commerce: An Empirical Analysis of Google Analytics Data during 2019–2022" Journal of Theoretical and Applied Electronic Commerce Research 18, no. 3: 1484-1510. https://doi.org/10.3390/jtaer18030075, 2023
- Bâra, A., Oprea, SV. & Băroiu, AC. Forecasting the Spot Market Electricity Price with a Long Short-Term Memory Model Architecture in a Disruptive Economic and Geopolitical Context. Int J Comput Intell Syst 16, 130 (2023). https://doi.org/10.1007/s44196-023-00309-3, Springer, 2023
- Bâra, A., Oprea, SV. & Tudorică, B.G. From the East-European Regional Day-Ahead Markets to a Global Electricity Market. Computational Economics (2023). https://doi.org/10.1007/s10614-023-10416-0, https://link.springer.com/article/10.1007/s10614-023-10416-0, Springer, 2023
- Bâra, A., Oprea, SV. Intelligent system to optimally trade at the interference of multiple crises. Applied Intelligence (2023). https://doi.org/10.1007/s10489-023-04823-x https://link.springer.com/article/10.1007/s10489-023-04823-x, Springer, 2023
- Bâra, A. and Oprea, S.-V. (2023), What makes electricity consumers change their behavior? Influence of attitude and perceived impact of DR programs on awareness, Kybernetes. https://doi.org/10.1108/K-01-2023-0032, Emerald Publishing Limited, 2023
- Bâra Adela, Simona-Vasilica Oprea, and Irina Alexandra Georgescu. 2023. Understanding Electricity Price Evolution – Day-Ahead Market Competitiveness in Romania. Journal of Business Economics and Management 24 (2):221–244. https://doi.org/10.3846/jbem.2023.19050, VILNIUS GEDIMINAS TECH UNIV, 2023
- S. -V. Oprea, A. Bâra, A. -I. Andreescu and M. P. Cristescu, Conceptual Architecture of a Blockchain Solution for E-Voting in Elections at the University Level, in IEEE Access, doi: 10.1109/ACCESS.2023.3247964, https://ieeexplore.ieee.org/document/10049991, IEEE Access, 2023.

8. List of publications

Full list of SCI publications can be found at the website: https://simonaoprea.ase.ro/articole-isi/

Table 1. Journal papers indexed by WoS, extracted from WoS (2019-2024)

N	Authors	Title	Journal	Ye

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1	Oprea, Simona-Vasilica; Bara, Adela	On-grid and off-grid photovoltaic systems forecasting using a hybrid meta-learning method, http://dx.doi.org/10.1007/s10115-023-02037-8, WOS:001138337300001	KNOWLEDGE AND INFORMATION SYSTEMS, ISSN/eISSN: 0219-1377/0219-3116	2024
2	Bara, Adela; Oprea, Simona-Vasilica	Enabling coordination in energy communities: A Digital Twin model, http://dx.doi.org/10.1016/j.enpol.2023.113910, WOS:001128156900001	ENERGY POLICY, ISSN/eISSN: 0301-4215/1873-6777	2024
3	Baroiu, Alexandru Costin; Diaconita, Vlad; Oprea, Simona Vasilica	Bitcoin volatility in bull vs. bear market- insights from analyzing on-chain metrics and Twitter posts, http://dx.doi.org/10.7717/peerj-cs.1750, WOS:001132077200002	PEERJ COMPUTER SCIENCE, ISSN/eISSN: /2376-5992	2023
4	Bara, Adela; Oprea, Simona-Vasilica; Ciurea, Cristian-Eugen	IMPROVING THE STRATEGIES OF THE MARKET PLAYERS USING AN AI-POWERED PRICE FORECAST FOR ELECTRICITY MARKET, http://dx.doi.org/10.3846/tede.2023.20251, WOS:001103738000001	TECHNOLOGICAL AND ECONOMIC DEVELOPMENT OF ECONOMY, ISSN/eISSN: 2029-4913/2029-4921	2023
5	Bara, Adela; Oprea, Simona Vasilica	A holistic view on business model-oriented energy communities, http://dx.doi.org/10.1108/K-07-2023-1235, WOS:001092258700001	KYBERNETES, ISSN/eISSN: 0368-492X/1758-7883	2023
6	Cristescu, Marian Pompiliu; Mara, Dumitru Alexandru; Culda, Lia Cornelia; Nerisanu, Raluca Andreea; Bara, Adela; Oprea, Simona-Vasilica	The Impact of Data Science Solutions on the Company Turnover, http://dx.doi.org/10.3390/info14100573, WOS:001095503900001	INFORMATION, ISSN/eISSN: /2078-2489	2023
7	Bara, Adela; Oprea, Simona-Vasilica; Bucur, Cristian; Tudorica, Bogdan-George	Unraveling the Impact of Lockdowns on E-commerce: An Empirical Analysis of Google Analytics Data during 2019-2022, http://dx.doi.org/10.3390/jtaer18030075, WOS:001074137500001	JOURNAL OF THEORETICAL AND APPLIED ELECTRONIC COMMERCE RESEARCH, ISSN/eISSN: 0718-1876/	2023
8	Oprea, Simona-Vasilica; Bara, Adela; Dobria (Ene), Gabriela; Barbu, Dragos-Catalin	A Horizontal Tuning Framework for Machine Learning Algorithms Using a Microservice-based Architecture, http://dx.doi.org/10.24846/v32i3y202303, WOS:001089145600003	STUDIES IN INFORMATICS AND CONTROL, ISSN/eISSN: 1220-1766/	2023
9	Bara, Adela; Oprea, Simona-Vasilica	Intelligent system to optimally trade at the interference of multiple crises, http://dx.doi.org/10.1007/s10489-023-04823-x, WOS:001045138000005	APPLIED INTELLIGENCE, ISSN/eISSN: 0924-669X/1573-7497	2023
10	Bara, Adela; Oprea, Simona-Vasilica; Baroiu, Alexandru-Costin	Forecasting the Spot Market Electricity Price with a Long Short-Term Memory Model Architecture in a Disruptive Economic and	INTERNATIONAL JOURNAL OF COMPUTATIONAL	20

		Geopolitical Context, http://dx.doi.org/10.1007/s44196-023-00309-3, WOS:001044924500001	INTELLIGENCE SYSTEMS, ISSN/eISSN: 1875-6891/1875-6883	23
11	Bara, Adela; Oprea, Simona-Vasilica; Tudorica, Bogdan George	From the East-European Regional Day-Ahead Markets to a Global Electricity Market, http://dx.doi.org/10.1007/s10614-023-10416-0, WOS:001040215200002	COMPUTATIONAL ECONOMICS, ISSN/eISSN: 0927-7099/1572-9974	2023
12	Bara, Adela; Oprea, Simona-Vasilica	What makes electricity consumers change their behavior? Influence of attitude and perceived impact of DR programs on awareness, http://dx.doi.org/10.1108/K-01-2023-0032, WOS:000994120700001	KYBERNETES, ISSN/eISSN: 0368-492X/1758-7883	2023
13	Oprea, Simona-Vasilica; Bara, Adela	An Edge-Fog-Cloud computing architecture for IoT and smart metering data, http://dx.doi.org/10.1007/s12083-022-01436-y, WOS:000913563000002	PEER-TO-PEER NETWORKING AND APPLICATIONS, ISSN/eISSN: 1936-6442/1936-6450	2023
14	Bara, Adela; Oprea, Simona-Vasilica; Georgescu, Irina Alexandra	UNDERSTANDING ELECTRICITY PRICE EVOLUTION-DAY-AHEAD MARKET COMPETITIVENESS IN ROMANIA, http://dx.doi.org/10.3846/jbem.2023.19050, WOS:000991227200001	JOURNAL OF BUSINESS ECONOMICS AND MANAGEMENT, ISSN/eISSN: 1611-1699/2029-4433	2023
15	Oprea, Simona-Vasilica; Bara, Adela; Andreescu, Anca-Ioana; Cristescu, Marian Pompiliu	Conceptual Architecture of a Blockchain Solution for E-Voting in Elections at the University Level, http://dx.doi.org/10.1109/ACCESS.2023.3247964, WOS:000942211300001	IEEE ACCESS, ISSN/eISSN: 2169-3536/	2023
16	Vaduva, Alin-Gabriel; Munteanu, Mihai; Oprea, Simona-Vasilica; Bara, Adela; Niculae, Andreea-Mihaela	Understanding Climate Change and Air Quality Over the Last Decade: Evidence From News and Weather Data Processing, http://dx.doi.org/10.1109/ACCESS.2023.3345466, WOS:001131870500001	IEEE ACCESS, ISSN/eISSN: 2169-3536/	2023
17	Oprea, Simona-Vasilica; Bara, Adela	A signaling game-optimization algorithm for residential energy communities implemented at the edge-computing side (vol 169, 108272, 2022), http://dx.doi.org/10.1016/j.cie.2022.108812, WOS:000899939200005	COMPUTERS & INDUSTRIAL ENGINEERING, ISSN/eISSN: 0360-8352/1879-0550	2022
18	Cristescu, Marian Pompiliu; Nerisanu, Raluca Andreea; Mara, Dumitru Alexandru; Oprea, Simona-Vasilica	Using Market News Sentiment Analysis for Stock Market Prediction, http://dx.doi.org/10.3390/math10224255, WOS:000887505400001	MATHEMATICS, ISSN/eISSN: /2227-7390	2022
19	Oprea, Simona-Vasilica; Bara, Adela	A measurement model for electricity Consumers' awareness with covariance structure Analyses. A solid pillar for boosting demand response programs,	SUSTAINABLE ENERGY TECHNOLOGIES AND ASSESSMENTS, ISSN/eISSN: 2213-1388/2213-1396	2022

		http://dx.doi.org/10.1016/j.seta.2022.102738, WOS:000890379800007		
20	Oprea, Simona-Vasilica; Bara, Adela	Mind the gap between PV generation and residential load curves: Maximizing the roof-top PV usage for prosumers with an IoT-based adaptive optimization and control module, http://dx.doi.org/10.1016/j.eswa.2022.118828, WOS:000867544000005	EXPERT SYSTEMS WITH APPLICATIONS, ISSN/eISSN: 0957-4174/1873-6793	2023
21	Oprea, Simona-Vasilica; Bara, Adela; Ciurea, Cristian-Eugen	A novel cost-revenue allocation computation for the competitiveness of balancing responsible parties, including RES. Insights from the electricity market, http://dx.doi.org/10.1016/j.renene.2022.09.007, WOS:000888849300003	RENEWABLE ENERGY, ISSN/eISSN: 0960-1481/1879-0682	2022
22	Oprea, Simona-Vasilica; Bara, Adela	A signaling game-optimization algorithm for residential energy communities implemented at the edge-computing side, http://dx.doi.org/10.1016/j.cie.2022.108272, WOS:000809236200002	COMPUTERS & INDUSTRIAL ENGINEERING, ISSN/eISSN: 0360-8352/1879-0550	2022
23	Oprea, Simona-Vasilica; Bara, Adela; Diaconita, Vlad	A motivational local trading framework with 2-round auctioning and settlement rules embedded in smart contracts for a small citizen energy community, http://dx.doi.org/10.1016/j.renene.2022.04.149, WOS:000807116100001	RENEWABLE ENERGY, ISSN/eISSN: 0960-1481/1879-0682	2022
24	Oprea, Simona-Vasilica; Bara, Adela; Ciurea, Cristian-Eugen; Stoica, Laura Florentina	Smart Cities and Awareness of Sustainable Communities Related to Demand Response Programs: Data Processing with First-Order and Hierarchical Confirmatory Factor Analyses, http://dx.doi.org/10.3390/electronics11071157, WOS:000782012900001	ELECTRONICS, ISSN/eISSN: /2079-9292	2022
25	Oprea, Simona-Vasilica; Bara, Adela	Feature engineering solution with structured query language analytic functions in detecting electricity frauds using machine learning, http://dx.doi.org/10.1038/s41598-022-07337-7, WOS:000762444200018	SCIENTIFIC REPORTS, ISSN/eISSN: 2045-2322/	2022
26	Barbu, Dragos-Catalin; Dobrita, Gabriela; Oprea, Simona-Vasilica; Bara, Adela; Diaconita, Vlad	Challenges and benefits of Blockchain-based Electronic Voting System, http://dx.doi.org/10.33436/v32i4y202210, WOS:000924067500010	ROMANIAN JOURNAL OF INFORMATION TECHNOLOGY AND AUTOMATIC CONTROL-REVISTA ROMANA DE INFORMATICA SI AUTOMATICA, ISSN/eISSN: 1220-1758/1841-4303	2022
27	Oprea, Simona-Vasilica; Bara, Adela; Puican,	Anomaly Detection with Machine Learning Algorithms and Big Data in Electricity Consumption,	SUSTAINABILITY, ISSN/eISSN: /2071-1050	20

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28	Oprea, Simona-Vasilica; Bara, Adela	Machine learning classification algorithms and anomaly detection in conventional meters and Tunisian electricity consumption large datasets, http://dx.doi.org/10.1016/j.compeleceng.2021.107329, WOS:000694013100024	COMPUTERS & ELECTRICAL ENGINEERING, ISSN/eISSN: 0045-7906/1879-0755	2021
29	Oprea, Simona-Vasilica; Bara, Adela	Edge and fog computing using IoT for direct load optimization and control with flexibility services for citizen energy communities, http://dx.doi.org/10.1016/j.knosys.2021.107293, WOS:000685993500015	KNOWLEDGE-BASED SYSTEMS, ISSN/eISSN: 0950-7051/1872-7409	2021
30	Oprea, Simona-Vasilica; Bara, Adela; Ifrim, George Adrian	Optimizing the Electricity Consumption with a High Degree of Flexibility Using a Dynamic Tariff and Stackelberg Game, http://dx.doi.org/10.1007/s10957-021-01876-1, WOS:000659800800001	JOURNAL OF OPTIMIZATION THEORY AND APPLICATIONS, ISSN/eISSN: 0022-3239/1573-2878	2021
31	Oprea, Simona-Vasilica; Bara, Adela	Devising a trading mechanism with a joint price adjustment for local electricity markets using blockchain. Insights for policy makers, http://dx.doi.org/10.1016/j.enpol.2021.112237, WOS:000636054400028	ENERGY POLICY, ISSN/eISSN: 0301-4215/1873-6777	2021
32	Oprea, Simona-Vasilica; Bara, Adela; Marales, Razvan Cristian; Florescu, Margareta-Stela	Data Model for Residential and Commercial Buildings. Load Flexibility Assessment in Smart Cities, http://dx.doi.org/10.3390/su13041736, WOS:000624830400001	SUSTAINABILITY, ISSN/eISSN: /2071-1050	2021
33	Bucur, Cristian; Tudorica, Bogdan George; Oprea, Simona-Vasilica; Nancu, Dumitru; Dusmanescu, Dorel Mihail	Insights Into Energy Indicators Analytics Towards European Green Energy Transition Using Statistics and Self-Organizing Maps, http://dx.doi.org/10.1109/ACCESS.2021.3075175, WOS:000645858100001	IEEE ACCESS, ISSN/eISSN: 2169-3536/	2021
34	Oprea, Simona Vasilica; Bara, Adela; Diaconita, Vlad; Ceaparu, Catalin; Ducman, Anca Alexandra	Big Data Processing for Commercial Buildings and Assessing Flexibility in the Context of Citizen Energy Communities, http://dx.doi.org/10.1109/ACCESS.2021.3137352, WOS:000736732500001	IEEE ACCESS, ISSN/eISSN: 2169-3536/	2021
35	Oprea, Simona-Vasilica; Bara, Adela; Tudorica, Bogdan George; Calinoiu, Maria Irene; Botezatu, Mihai Alexandru	Insights into demand-side management with big data analytics in electricity consumers' behaviour, http://dx.doi.org/10.1016/j.compeleceng.2020.106902, WOS:000640906400002	COMPUTERS & ELECTRICAL ENGINEERING, ISSN/eISSN: 0045-7906/1879-0755	2021
36	Oprea, Simona-Vasilica; Bara, Adela	Ultra-short-term forecasting for photovoltaic power plants and real-time key performance indicators analysis with big data solutions. Two case studies - PV Agigea and PV Giurgiu located	COMPUTERS IN INDUSTRY, ISSN/eISSN: 0166-3615/1872-6194	2020

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37	Oprea, Simona-Vasilica; Bara, Adela; Preda, Stefan; Tor, Osman Bulent	A Smart Adaptive Switching Module Architecture Using Fuzzy Logic for an Efficient Integration of Renewable Energy Sources. A Case Study of a RES System Located in Hulubesti, Romania, http://dx.doi.org/10.3390/su12156084, WOS:000559515100001	SUSTAINABILITY, ISSN/eISSN: /2071-1050	2020
38	Oprea, Simona-Vasilica; Bara, Adela; Tudorica, Bogdan George; Dobrita, Gabriela (Ene)	Sustainable Development with Smart Meter Data Analytics Using NoSQL and Self-Organizing Maps, http://dx.doi.org/10.3390/su12083442, WOS:000535598700375	SUSTAINABILITY, ISSN/eISSN: /2071-1050	2020
39	Oprea, Simona-Vasilica; Bara, Adela	Setting the Time-of-Use Tariff Rates With NoSQL and Machine Learning to a Sustainable Environment, http://dx.doi.org/10.1109/ACCESS.2020.2969728, WOS:000524658400002	IEEE ACCESS, ISSN/eISSN: 2169-3536/	2020
40	Oprea, Simona-Vasilica; Bara, Adela; Preotescu, Dan; Bologa, Ramona Ana; Coroianu, Lucian	A Trading Simulator Model for the Wholesale Electricity Market, http://dx.doi.org/10.1109/ACCESS.2020.3029291, WOS:000579347600001	IEEE ACCESS, ISSN/eISSN: 2169-3536/	2020
41	Oprea, Simona-Vasilica; Bara, Adela; Andreescu, Anca Ioana	Two Novel Blockchain-Based Market Settlement Mechanisms Embedded Into Smart Contracts for Securely Trading Renewable Energy, http://dx.doi.org/10.1109/ACCESS.2020.3040764, WOS:000597982200001	IEEE ACCESS, ISSN/eISSN: 2169-3536/	2020
42	Teimourzadeh, Saeed; Tor, Osman Bulent; Cebeci, Mahmut Erkut; Bara, Adela; Oprea, Simona Vasilica; Kisakurek, Sabri Murat	Enlightening Customers on Merits of Demand-Side Load Control: A Simple-But-Efficient-Platform, http://dx.doi.org/10.1109/ACCESS.2020.3032745, WOS:000587858000001	IEEE ACCESS, ISSN/eISSN: 2169-3536/	2020
43	Tor, Osman Bulent; Cebeci, Mahmut Erkut; Koc, Mehmet; Teimourzadeh, Saeed; Atli, Deren; Oprea, Simona Vasilica; Bara, Adela	Peak shaving and technical loss minimization in distribution grids: a time-of-use-based pricing approach for distribution service tariffs, http://dx.doi.org/10.3906/elk-1907-30, WOS:000532359500014	TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, ISSN/eISSN: 1300-0632/1303-6203	2020
44	Cebeci, Mahmut Erkut; Tor, Osman Bulent; Oprea, Simona Vasilica; Bara, Adela	Consecutive Market and Network Simulations to Optimize Investment and Operational Decisions Under Different RES Penetration Scenarios, http://dx.doi.org/10.1109/TSTE.2018.2881036, WOS:000487199700050	IEEE TRANSACTIONS ON SUSTAINABLE ENERGY, ISSN/eISSN: 1949-3029/1949-3037	2019

45	Oprea, Simona Vasilica; Bara, Adela; Ifrim, George Adrian; Coroianu, Lucian	Day-ahead electricity consumption optimization algorithms for smart homes, http://dx.doi.org/10.1016/j.cie.2019.06.023, WOS:000482244100030	COMPUTERS & INDUSTRIAL ENGINEERING, ISSN/eISSN: 0360-8352/1879-0550	2019
46	Teimourzadeh, Saeed; Tor, Osman Bulent; Cebeci, Mahmut Erkut; Bara, Adela; Oprea, Simona Vasilica	A three-stage approach for resilience-constrained scheduling of networked microgrids, http://dx.doi.org/10.1007/s40565-019-0555-0, WOS:000477895600005	JOURNAL OF MODERN POWER SYSTEMS AND CLEAN ENERGY, ISSN/eISSN: 2196-5625/2196-5420	2019
47	Oprea, Simona Vasilica; Bara, Adela; Diaconita, Vlad	Sliding Time Window Electricity Consumption Optimization Algorithm for Communities in the Context of Big Data Processing, http://dx.doi.org/10.1109/ACCESS.2019.2892902, WOS:000458177800075	IEEE ACCESS, ISSN/eISSN: 2169-3536/	2019
48	Oprea, Simona-Vasilica; Bara, Adela; Preotescu, Dan; Elefterescu, Luminta	Photovoltaic Power Plants (PV-PP) Reliability Indicators for Improving Operation and Maintenance Activities. A Case Study of PV-PP Agigea Located in Romania, http://dx.doi.org/10.1109/ACCESS.2019.2907098, WOS:000464212600001	IEEE ACCESS, ISSN/eISSN: 2169-3536/	2019
49	Oprea, Simona-Vasilica; Bara, Adela	Machine Learning Algorithms for Short-Term Load Forecast in Residential Buildings Using Smart Meters, Sensors and Big Data Solutions, http://dx.doi.org/10.1109/ACCESS.2019.2958383, WOS:000509483800046	IEEE ACCESS, ISSN/eISSN: 2169-3536/	2019

Table 2. Conference proceedings and Book Chapters indexed by WoS, extracted from WoS 2019-2023

N	**Authors**	**Title**	**Publication**	**Year**
1	Oprea, Simona-Vasilica; Bara, Adela; Jin Xiaolong; Meng, Qian; Berntzen, Lasse	Sustainable Communities with Smart Meters. A Statistical Measurement Model to Cope with Electricity Consumers' Behavior, http://dx.doi.org/10.1007/978-981-19-6755-9_12, WOS:001012874500012	EDUCATION, RESEARCH AND BUSINESS TECHNOLOGIES, ISSN/eISSN: 2190-3018/2190-3026	2023
2	Dobrita, Gabriela; Bara, Adela; Oprea, Simona-Vasilica; Baroiu, Costin; Barbu, Dragos-Catalin	Mobility, COVID-19 cases and virus reproduction rate data analysis for Romania using Machine Learning Algorithms, http://dx.doi.org/10.1109/ICSTCC55426.2022.9931806, WOS:000889980600042	2022 26TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC), ISSN/eISSN: 2372-1618/	2022
3	Oprea, Simona-Vasilica; Bara, Adela; Oprea, Niculae	Machine learning in electricity fraud detection in smart grids with multivariate Gaussian distribution, http://dx.doi.org/10.2478/picbe-2021-0049, WOS:000747987000021	PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON BUSINESS EXCELLENCE, ISSN/eISSN: 2502-0226/2558-9652	2021

4	Marales, Razvan Cristian; Bara, Adela; Oprea, Simona-Vasilica	Edge Computing in Real-Time Electricity Consumption Optimization Algorithm for Smart Grids, http://dx.doi.org/10.1007/978-3-030-53651-0_16, WOS:000621675100016	INTELLIGENT METHODS IN COMPUTING, COMMUNICATIONS AND CONTROL, ISSN/eISSN: 2194-5357/2194-5365	2021
5	Oprea, Simona-Vasilica; Bara, Adela; Dobrita (Ene), Gabriela	Machine Leaning Algorithms and Time Series Feature Extraction Library for Electricity Consumption Fraud Detection in Smart Grids, http://dx.doi.org/10.1109/ICSTCC52150.2021.9607308, WOS:000859487900083	2021 25TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC), ISSN/eISSN: 2372-1618/	2021
6	Oprea, Simona-Vasilica; Bara, Adela; Ceaparu, Catalin; Ducman, Anca Alexandra; Diaconita, Vlad; Ene, Gabriela Dobrita	Insights with Big Data Analysis for Commercial Buildings Flexibility in the Context of Smart Cities, http://dx.doi.org/10.5220/0010409801180124, WOS:000783446900012	PROCEEDINGS OF THE 10TH INTERNATIONAL CONFERENCE ON SMART CITIES AND GREEN ICT SYSTEMS (SMARTGREENS), ISSN/eISSN: /	2021
7	Preotescu, Dan; Oprea, Simona-Vasilica; Bara, Adela	Flexibility of the Electricity Load for the Main Types of Consumers, , WOS:000683887600019	UNDER THE PRESSURE OF DIGITALIZATION: CHALLENGES AND SOLUTIONS AT ORGANIZATIONAL AND INDUSTRIAL LEVELS, FIRST EDITION, ISSN/eISSN: /	2021
8	Ifrim, George; Oprea, Simona Vasilica; Bara, Adela	Peak Shaving Algorithms for Residential Consumers. A Comparative Study, http://dx.doi.org/10.1109/icstcc50638.2020.9259750, WOS:000646582900007	2020 24TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC), ISSN/eISSN: 2372-1618/	2020
9	Oprea, Simona-Vasilica; Tudorica, Bogdan; Bara, Adela; Tor, Osman Bulent	An Intra-Residential Smart Metering System - Design and Implementation, http://dx.doi.org/10.2478/9788366675162-033, WOS:000763773400032	INNOVATIVE MODELS TO REVIVE THE GLOBAL ECONOMY, ISSN/eISSN: 2704-6524/	2020
10	Ifrim, George; Oprea, Simona Vasilica; Bara, Adela	Shifting Optimization Algorithm for Flattening the Electricity Consumption Peak of Residential Communities, http://dx.doi.org/10.1109/icstcc.2019.8885831, WOS:000590181100119	2019 23RD INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC), ISSN/eISSN: 2372-1618/	2019
11	Oprea, Simona-Vasilica; Bara, Adela; Diaconita, Vlad; Preotescu, Dan; Tor, Osman Bulent	Big Data solutions - data ingestion and stream processing for demand response management, http://dx.doi.org/10.1109/icstcc.2019.8885519, WOS:000590181100118	2019 23RD INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC), ISSN/eISSN: 2372-1618/	2019

9. Research projects of the team. A summary of SV Oprea and A Bara's research projects is provided:

Table 3. SV Oprea and A Bara's research projects

Years	PI/Responsible / member	Project Title and Acronym	Type of Project	Funding Agency/ Competition	Budget ASE	Duration	Objective/Description
2024-2027	Responsible: SV Oprea, Project Member: A Adela	Valorisation and Integration of Extractive Waste towards the Sustainability of Raw Materials Industry	International (Intl.)	UEFISCDI ERA-MIN3	100.000 Euro	3 years	Focus on sustainable raw materials industry; details at valorwaste.ase.ro
2023-2026	PI Consortium Coordinator: SV Oprea, Co-PI: A Bara	Service-oriented Open Platform for Citizen Energy Communities (OPEN4CEC)	Intl.	UEFISCDI Driven Urban Transition 2022	230.000 Euro	3 years	Develop an open platform for energy communities; details at dutpartnership.eu
2023-2026	PI Consortium Coordinator: SV Oprea, Co-PI: A Bara	SMART-LEM (Business Model-Oriented Platform for Local Electricity Markets)	Intl.	UEFISCDI Clean Energy Transition Partnership 2022	230.000 Euro	3 years	Develop a platform for local electricity markets; details at smartlem.ase.ro
2022-2025	PI: SV Oprea, Co-PI: A Bara	SMART-TWINS (Digital Twin Architecture for Energy Consumers and Communities)	National	UEFISCDI	1.200.000 RON	3 years	Develop a digital twin reference architecture for energy consumers and communities
2020-2022	PI: SV Oprea, Co-PI: A Bara	BIGDATA4GRID (Big Data Solutions for Energy Consumption Management)	National	UEFISCDI	600.000 RON	2 years	Big data solutions for energy management and market strategies improvement
2018-2021	Responsible: SV Oprea, Project member: A Bara	SMART-MLA (Multi-layer Aggregator Solutions for Demand Response and Grid Flexibility)	Intl.	UEFISCDI ERA-NET Co-fund under H2020	169.000 Euro	3 years	Facilitate optimum demand response and grid flexibility; details at smart-mla.stimasoft.com
2016-2018	PI: SV Oprea, Co-PI: Bara Adela	SMART-OPTIM (Electricity Consumption Analysis and Optimization in Smart Grids)	National	UEFISCDI	100.000 Euro	2 years	Solutions for electricity consumption analysis and optimization in smart grids
2016-2020	Responsible: A Bara, Project member: SV Oprea	SMARTRADE (Intelligent System for Trading on Wholesale Electricity Market)	Intl.	European Regional Development Fund (ERDF)	1.200.000 Euro	4 years	Trading on wholesale electricity market; details at smartrade.ase.ro

2016-2018	Responsible: A Bara, Project member: SV Oprea	OPTIM-PV (Optimizing Operation of Photovoltaic Power Plants)	National	UEFISCDI	100.000 Euro	2 years	Optimize operation of photovoltaic power plants; details at icpe.ro/projects/optimpv
2014-2017	PI: A Bara, Project member: SV Oprea	SIPAMER (Intelligent System for Prediction, Analysis, and Monitoring in Renewable Energies)	National	UEFISCDI	348.000 Euro	3 years	Prediction, analysis, and monitoring in renewable energy processes
2010-2013	PI: A Bara, Project member: SV Oprea	Tinere Echipe (TE)	National	UEFISCDI	140.000 Euro	3 years	Informatics solutions for decision-making in uncertain environments

Table 3 illustrates the diverse and extensive research contributions of SV Oprea and A Bara in the field of information and communication technologies (ICT) and energy, highlighting her roles as both a principal investigator and a consortium coordinator in various national and international projects. Her work spans from developing solutions for energy consumption management to creating platforms for citizen energy communities, reflecting a strong focus on sustainability, innovation, and the integration of technology in energy systems.

International visibility

The team leader is principal investigator of two consortium in Driving Urban Transition (DUT) and Clean Energy Transition Partnership (CETP) projects won in 2023 with international partners from prestigious universities from Norway, Ireland, Spain, Italy, Portugal. The team leader and member are in one of the ERA-MIN3 projects won in 2023 and coordinated by Portugal.

Both team leader and member received an invitation to teach Chinese students in databases field.

Team leader: h-index = 15

Team member: h-index = 15

Both researchers are part of organization teams (S.V. Oprea from 2021, A. Bara from 2022), like Science Connect (https://www.esf.org/community-of-experts/, https://www.esf.org/fileadmin/user_upload/esf/2021_Annual_List_of_External_Reviewers_and_Panel_Members-protected.pdf), or research organization/authorities from Slovakia, Bulgaria, to evaluate international research projects.

Furthermore, both researchers are in the reviewing team of the Oeconomia Copernicana journal, Q1 (IF), Q3 (AIS), category: ECONOMICS – SSCI.

In 2017 and 2021, the two researchers were awarded Researcher of the Year in ASE Bucuresti. They both received Opera Omnia awards.

The research team has initiated projects that involved young researchers and already publishes several papers together ensuring the knowledge transfer and research skills of the PhD students.

10. List of patents

Both researchers together with Osman Tor and Dan Preotescu submitted a patent application in 2021.
Title: SISTEM INFORMATIC INTEGRAT ȘI METODE PENTRU MANAGEMENTUL CONSUMULUI ȘI PRODUCȚIEI DE ENERGIE ELECTRICĂ PENTRU SIMULAREA ȘI TRANZACȚIONAREA PE PIEȚELE DE ENERGIEI ELECTRICĂ
A/00549/21.01.2021 publication in BOPI 09/2021