Report from the 29th Scientific Conference
'Classification and Data Analysis – Theory and Applications'

Krzysztof Jajuga,[a] Krzysztof Najman,[b] Marek Walesiak[c]

The 29th Scientific Conference 'Classification and Data Analysis – Theory and Applications' (the 24th Taxonomic Conference) of the Classification and Data Analysis Section of the Polish Statistical Association (SKAD) took place on 7–9 September 2020, in Sopot, Poland. The conference was organised by the Faculty of Management of the University of Gdansk and held online through the Microsoft Teams communication platform. Krzysztof Najman, PhD, DSc, Assoc. Prof. at the University of Gdansk was the chairman of the Organising Committee, and Kamila Migdał-Najman, PhD, DSc, Assoc. Prof. at the University of Gdansk, Teresa Plenikowska-Ślusarz, MSc, and Katarzyna Raca, MSc, were the Committee members.

The basic information about the conference is available at: http://wzr.ug.edu.pl /skad-2020/.

The topics discussed included:

- theoretical aspects (taxonomy, discriminant analysis, linear ordering methods, multivariate statistical analysis, methods of analysing continuous variables, methods of discrete variables analysis, symbolic data analysis, graphical methods);
- practical applications (financial data analysis, marketing data analysis, spatial data analysis, other areas of data analysis application – medicine, psychology, archeology, etc., computer applications of statistical methods).

The main objective of the SKAD conference was to present the ongoing research and to create a platform for the exchange of ideas relating to theoretical and applied aspects of classification and data analysis. This annually-held forum is meant to present and promote state-of-the-art research and to indicate the possible directions for its development.

The conference featured 44 speakers who are faculty members and doctoral students of the following universities and institutions: AGH University of Science and Technology in Krakow, Warsaw University of Life Sciences – SGGW, SGH Warsaw School of Economics, University of Economics in Katowice, Cracow University of Economics, Poznań University of Economics and Business, Wroclaw

[a] Wroclaw University of Economics and Business, ul. Komandorska 118/120, 53-345 Wrocław, Poland,
e-mail: krzysztof.jajuga@ue.wroc.pl, ORCID: https://orcid.org/0000-0002-5624-6929.
[b] University of Gdansk, Faculty of Management, ul. Armii Krajowej 101, 81-824 Sopot, Poland,
e-mail: krzysztof.najman@ug.edu.pl, ORCID: https://orcid.org/0000-0003-1673-2858.
[c] Wroclaw University of Economics and Business, ul. Komandorska 118/120, 53-345 Wrocław, Poland,
e-mail: marek.walesiak@ue.wroc.pl, ORCID: https://orcid.org/0000-0003-0922-2323.

University of Economics and Business, University of Gdansk, Poznań University of Life Sciences, University of Szczecin, West Pomeranian University of Technology in Szczecin, Medical University of Silesia, and Professor Brunon Synak Pomeranian Research Institute. During 10 plenary sessions, 34 presentations were delivered, introducing research results concerning the theory and applications of classification and data analysis. The sessions were held by: Mirosław Szreder (two sessions), Marek Walesiak, Andrzej Dudek, Józef Pociecha, Kamila Migdał-Najman, Krzysztof Najman, Grażyna Trzpiot, Grażyna Dehnel, and Krzysztof Jajuga.

Selected papers presented at the conference will be published in a book entitled *Data Analysis and Classification: Methods and Applications*, edited by K. Jajuga, K. Najman, M. Walesiak, published by Springer. Below is a list of all papers presented during the conference:

- Grażyna Dehnel, Marek Walesiak, *Dynamic approach in relative taxonomy applied to the evaluation of social cohesion of Polish provinces in the years 2010–2018*;
- Jacek Batóg, Barbara Batóg, *Spatial factor in the classification of administrative units with regard to the level of socio-economic development*;
- Andrzej Dudek, *Evaluation of the two-step spectral clustering algorithm for large untypical data sets*;
- Barbara Batóg, Katarzyna Wawrzyniak, *Propositions of transformations of asymmetrical nominants into stimulants on the example of chosen financial ratios*;
- Dorota Rozmus, *Determining the number of groups in cluster analysis using classical indexes and stability measures – comparison of results*;
- Katarzyna Raca, *Dark data – hidden data of unknown value*;
- Beata Bieszk-Stolorz, *Models of competing events in assessing the effects of the transition of unemployed people between the states of registration and de-registration*;
- Wioletta Grzenda, *Direct adjusted survival probabilities in the analysis of finding a job by the unemployed depending on their individual characteristics*;
- Magdalena Kawecka, *Clustering of the selected European Union countries with regard to the situation on the job market for people aged 20–24 in the years 2008 and 2018*;
- Agnieszka Chłoń-Domińczak, Aneta Ptak-Chmielewska, *Spatial characteristics stimulating the development of companies on the local level*;
- Urszula Cieraszewska, Monika Hamerska, Paweł Lula, Marcela Zembura, *The significance of medical science issues in research papers published in the field of economics*;
- Agata Majkowska, Kamila Migdał-Najman, Krzysztof Najman, Katarzyna Raca, *Identification of the words most frequently used by different generations of Twitter users*;

- Grażyna Trzpiot, *Gini regression in the capital investment risk assessment – sensitivity risk measures in portfolio analysis*;
- Anna Gdakowicz, Ewa Putek-Szeląg, *The use of duration analysis methods in examining the exit of a real estate sale advert from the advert database system*;
- Romana Głowicka-Wołoszyn, Andrzej Wołoszyn, *Proposal of the measure of local spatial inequality*;
- Aleksandra Łuczak, Małgorzata Just, *Application of positional OTS-TOPSIS method to the evaluation of the sustainable development of territorial units*;
- Michał Bryś, *Classification algorithm applications for information security on the Internet: a review*;
- Krzysztof Najman, Krystian Zieliński, *Outlier detection with the use of Isolation Forests*;
- Dominik Krężołek, *Estimation of Value-at-Risk using Weibull distribution – portfolio analysis on the precious metals market*;
- Klaudia Przybysz, Agnieszka Stanimir, *Europe 2020 strategy – objective evaluation of the implementation of assumptions regarding seniors*
- Joanna Kos-Łabędowicz, Joanna Trzęsiok, *Do seniors get to the disco by bike or in a taxi? – classification of seniors according to their preferred means of transport*;
- Agnieszka Orwat-Acedańska, *Evaluation of forecasts of mortality obtained by methods of regional forecasting for counties in Poland*;
- Anna Adamus-Matuszyńska, *Validation of psychometric tests in the measurement of propensity of negotiators to heuristic thinking and to cognitive errors*;
- Robert Bęben, Izabela Dempc, *The impact of weather on consumer behavior on the leisure market, on the example of the St. Dominic's Fair in Gdańsk*;
- Mariusz Doszyń, *Ex post errors for rare demand*;
- Jacek Wolak, *The use of the spatial taxonomic measure of development to assess the tourist attractiveness of poviats of the Lesser Poland voivodship*;
- Paweł Baran, Iwona Markowicz, *Using the value and weight of commodities to determine the asymmetry of mirror data in the international trade*;
- Alicja Antonowicz, Paweł Antonowicz, *The capacity to forecast enterprise insolvency on the Polish market using the precursory Altman Z-score model*;
- Krzysztof Dmytrów, *Impact of the method of normalization criteria to time and path of picking*;
- Sylwia Słupik, Joanna Trzęsiok, *Is society ready for long-term ecological investments? Profiles of electricity users in Silesia*;
- Paweł Baran, Izabela Szamrej-Baran, *Convergence of the EU members with regard to energy poverty*;

- Ewelina Nojszewska, Agata Sielska, *The impact of Covid-19 on the economies of European countries in the first half of 2020, using business cycle indicators*;
- Marcin Salamaga, *Modelling the risk of foreign divestment in the Visegrad group countries during the COVID-19 pandemic*;
- Joanna Landmesser, *The use of the dynamic time warping (DTW) method to describe the Covid-19 dynamics in the EU countries*.

The members of the Classification and Data Analysis Section held an annual meeting on the first day of the conference. The meeting was chaired by Krzysztof Jajuga, PhD, DSc, ProfTit, and its agenda included the following items:

- report on the SKAD activity;
- information on the planned domestic and international conferences;
- organisation of SKAD conferences in 2021 and 2022;
- elections to the SKAD Council for the term of 2021–2022;
- other issues.

The report on the activities undertaken by SKAD was presented by the Secretary of the SKAD Council, Barbara Pawełek, PhD, DSc, Assoc. Prof. at the Cracow University of Economics. According to the report, SKAD has currently 236 members, and any by-laws and membership applications are available on the SKAD website.

Subsequently, Prof. Pawełek introduced information relating to a book containing papers presented during the previous SKAD conference (which was held in Szczecin, Poland, on 18–19 September 2019). Prof. Pawełek also mentioned that the report on that SKAD conference could be found in issue 4/2019 of the *Statistical Review*.

Another important piece of information mentioned by Secretary Pawełek was the recent election of the Vice-Chairman of the SKAD Council to the position of the Secretary of the Executive Committee of the International Federation of Classification Societies (https://ifcs.boku.ac.at) for the 2020–2022 term.

The impact of the COVID-19 pandemic on the planned conferences was then discussed. In effect, the following domestic conferences were rescheduled to 2021: the 14th Professor Aleksander Zeliaś International Conference on Modelling and Forecasting of Socio-Economic Phenomena, the 2nd MET2019 'Methodology of Statistical Research' scientific conference, and the 39th Scientific Conference on Multivariate Statistical Analysis MSA 2018. In addition, the following inter-national conferences are planned for 2021: ECDA 2021 (Rotterdam, 5–9 July 2021), IFCS 2021 (Porto, 24–28 August 2021), CLADAG 2021 (Florence, September 2021), and GPSDAA 2021.

It was also decided that the next SKAD Conference will be hosted by the Poznań University of Economics and Business, which will take place on 8–10 September 2021.

The next part of the meeting, chaired by Prof. Paweł Miłobędzki, was devoted to the election of members of the SKAD Council for the 2021–2022 term. Katarzyna Raca assumed the duties of the Returning Committee. Józef Pociecha, Andrzej Sokołowski, Marek Walesiak, Barbara Pawełek, Krzysztof Najman, Grażyna Dehnel, Andrzej Dudek, and Krzysztof Jajuga were proposed as candidates for the membership to the SKAD Council, and they all accepted the call. The Returning Committee then held a secret ballot through the Microsoft Teams system, which selected Grażyna Dehnel, Andrzej Dudek, Krzysztof Jajuga, Krzysztof Najman, Józef Pociecha, Barbara Pawełek, Andrzej Sokołowski, and Marek Walesiak as new SKAD Council members. 23 members took part in the ballot, all of whom casted a valid vote. The candidates received between 20 and 23 votes each.

The meeting was subsequently closed.

The newly elected SKAD Council held its first meeting using the Microsoft Teams platform. The following presidium were elected:

- Krzysztof Jajuga – Chairman of the Council;
- Andrzej Dudek – Vice-Chairman of the Council;
- Barbara Pawełek – Secretary of the Council;
- Józef Pociecha, Marek Walesiak, Andrzej Sokołowski, Grażyna Dehnel, Krzysztof Najman – Members of the Council.

At the end of the conference, Prof. Marek Walesiak presented the new membership of the SKAD Council and informed the participants about the potential publication of the presented papers in a book, by Springer. Prof. Krzysztof Jajuga expressed his gratitude to the conference organisers and invited all the present guests to the next SKAD conference.