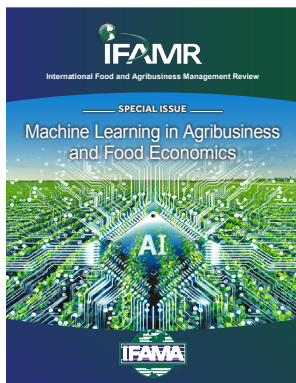




CALL FOR PAPERS – Special Issue

Machine Learning in Agribusiness and Food Economics



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ABSTRACTS DUE: December 31, 2023 (1000 words)

OVERVIEW

The fields of agribusiness and food economics have witnessed a sharp increase in interest for machine learning applications in recent times, which is, in part, driven by better computational capacities and by the increasing availability of micro-level, or high-dimensional, data. Easy access to and significantly lower costs associated with these data enable more researchers to model complex systems with modern empirical tools. There is considerable potential to apply machine learning methods to topics in agribusiness and food economics, as methodological developments are necessary to answer some of the greatest challenges of the present, such as climate change and sustainability transformations. This special issue aims to bring together contributions that highlight the potential, as well as the limitations, of machine learning across the domains of agribusiness and food economics.

GENERAL STATEMENT

To handle the growing scope and resolution of data available to empiricists, modelers, businesses, and policymakers, machine learning techniques are particularly suitable for applications in agribusiness and food economics. Machine learning offers a variety of novel approaches of data management and data analysis, particularly feature engineering (selection of relevant input variables), prediction, and modelling. In certain cases, it is more appropriate than traditional statistics and econometrics. For example, with large samples, techniques of hypothesis testing based on small samples of a population and statistical significance may no longer be necessary, or relevant.

Machine learning algorithms have been criticized as difficult to interpret, and limitations with respect to theoretical development in comparison to conventional econometrics have been highlighted. However, in recent times, as the number of applications in the field of economics has increased, methodological developments in machine learning have been successful at uncovering underlying mechanisms and identifying causal relationships. First, a series of methods emerged that help shed light on the ‘black box’ mechanisms associated with machine learning. Modelers can gain interpretability with tools that show the variables’ ranking of importance in predicted outcomes (e.g., Shapley values, Garson’s algorithm). Second, causal machine learning methods (e.g., Causal Forests) now bridge the gap between the predicting power of machine learning and the need for causality analysis. In turn, we are beginning to understand the appropriate use cases to harness its predictive capabilities.

Machine learning algorithms are particularly relevant to help inform business decisions that rely on predictions. Machine learning combined with large data enables pattern recognition and outcome prediction based on underlying training and testing data. This approach is particularly relevant for making predictions in complex environments with non-linear or semi-parametric relationships and many dimensions, in particular when sustainability is involved (e.g., environment, biodiversity, animal rights protection, soil preservation). Relevant applications within the food and agribusiness sectors include the following:

- **Production agriculture.** Innovations in digital agriculture have revolutionized the field of precision agriculture, and have generated plenty of data at different stages of the growing and harvesting activities, as well as along the food supply chain. Remotely-sensed data (sensors in agricultural fields, satellite data) capture interactions between human and the natural environment. Machine learning is then used to obtain more precise predictions of fertilizer and pesticide need, as well as predictions of yield, yield loss, or food stocks – all with implications for business decisions and sustainability.
- **Marketing and food distribution.** Data collected from social media contributions can refine the perceptions, opinions, and behavior of consumers and stakeholders in relation to new food products, new policies or issues such as environmental or animal protection. Purchasing behavior and preferences of consumers collected from micro-level scanner data can also be used to predict emerging trends and consumers' acceptance for innovation in food products, for example, with machine learning methods.
- **Food safety.** Machine learning algorithms also perform well at identifying anomalies, which can be used in the domain of food safety.

AREAS OF FOCUS

1. Innovative data sources for agribusiness and their applications
2. Digitalization in farms and agribusinesses
3. Precision agriculture, robotics, and business implications
4. European common agricultural policy and farmer decisions
5. Supply chain, including food production, transportation, purchase and consumption activities.
6. Consumer behavior and preferences with text mining, automatic language processing
7. Innovative food products (e.g., meat and dairy alternatives)
8. Predictions in trade of food products
9. Prediction of food (in)security, food waste
10. Low carbon economy, sustainable energy and agriculture, bioenergy
11. Targeting of participants for agricultural policy, e.g., poverty-reduction program, business development support

SUBMISSION INSTRUCTIONS

Step 1: Submit abstracts to the Guest Editors at xyu@uni-goettingen.de on or before **December 31, 2023**. Extended abstracts should be 1000 words (excluding references), and concisely address the following: Motivation; Objective; Methodology; Results; Managerial Implications.

Step 2: Guest editors will select extended abstracts and notify individuals submitting abstracts about acceptance of the proposal by **January 31, 2024**.

Step 3: Full papers of the selected extended abstracts will be submitted on or before Apr. 30, 2024, and will enter the IFAMR reviewing process with a double-blind review process and will follow the [guidelines of regular IFAMR issues](#).

Final manuscripts will be uploaded using [IFAMR's online submission portal](#).

SPECIAL ISSUE TIMELINE

31 December, 2023 Submission deadline for extended abstracts (approximately 1000 words)

31 January, 2024 Authors informed of abstract acceptance and invited to submit full papers

30 April, 2024 Submission deadline for full papers for peer-review

31 August, 2024 Expedited peer-review and revision process

Papers will be published in the 'In Press' section as soon as possible after acceptance. The complete special issue is expected to be published end 2024.

FORMATTING GUIDELINES

Please follow these formatting guidelines in order to streamline the submission process:

- **Title page.** This page should include:
 1. Title of the manuscript
 2. Contact author, first and last name
 3. University/organization and department
 4. Email address
 5. Provide the same contact information for each co-author
 6. JEL Codes
 7. Keywords
- **Second and subsequent pages.** Body of the abstract. Please insert line numbers of your abstract. This enables our reviewers to easily reference sections of your paper.

In order to ensure anonymity throughout the review process, no reference to the authors or their affiliation should appear in the file properties or subsequent pages other than the Title Page.

PUBLICATION FEE

All published articles in the IFAMR Special Issue will be assessed the standard article publication charge of € 1300.

JOURNAL IMPACT FACTOR

IFAMR is indexed in the Science Citation Index Expanded (SCIE), with an Impact Factor of 1.5 and a Scimago journal ranking of Q2 in 2022.

QUESTIONS?

Please contact the Special Issue Guest Editor: Xiaohua Yu, xiaohua.yu@zentr.uni-goettingen.de

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