

Research Group Big Data Analytics

General aim

The German Economic Institute founded its research group Big Data Analytics in October 2017. It deals with the different aspects of big data but with a special emphasis on economic questions. These different aspects and opportunities, offered by big data analysis, range from the generation of new data sets and the recombination of existing ones to the application of big data methods such as machine learning. The combination of big data and economics promises opportunities to answer so far unaddressed research questions with new data sources and new methods to analyse huge data sets.



Today, a big part of new data is becoming available from such sources as sensors, the Internet of Things (IoT), and the use of social media platforms. This geometric rise in data volumes, the frequency data occurs, and the different types of data are leading to the increasing use of big data analyses. With this capability we are able to exploit untapped potentials in many fields of business. However, generating this data and making meaningful use of it requires the above mentioned special technologies, approaches and systems. The IW's Big Data Analytics research group deals with the different aspects of big data but with a special emphasis on economic questions.

Our topics

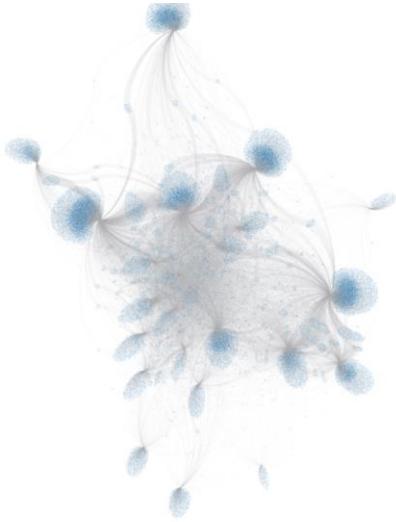
Because big data methods are a technical approach, it is not only applicable to one specific topic. In principle these methods can be applied to any economic topic, given appropriate data. Nevertheless, the research group Big Data Analytics at the German Economic Institute focuses on the following approaches and topics:

- Structured and unstructured data, generated by new methods and technologies such as internet searches, website content, social media information and price information from online shops and auction platforms
- New ways of linking data sets
- Application of big data methods such as machine learning to economic questions
- Application of big data in business cycle research
- Identification of statistical twins by means of survey data, internet data and machine learning (companies and households)
- Expanding on official statistics, for example, for the labour market
- Analysis of regional infrastructures
- Economic impact of big data

Communication network in social media

Furthermore, the communication of people on social media platforms yields a huge amount of new data. This data can be used to analyse the communication behaviour of specific groups by using social network analysis, for example economists (see graph). Moreover, it is possible to drill down further and analyse the

topics, which participants in these groups are talking about by the use of techniques such as natural language processing.



Twitter network of German top economists

Data economy

The research group also deals with the data economy from a theoretical perspective. The data economy is defined by certain features that are totally different to economies in the classical sense. For example, data as an input factor of production is characterised by non-rivalry in consumption in contrast to, for example, coal that is gone at the end of the production process.

In this context issues are discussed like data governance, how to value data in companies and what the specific fundamental characteristics of a data driven economy are as well as the implications for data driven business models.

Knowledge about these issues that is derived from a theoretical and economical point of view is necessary for companies to derive proper business models.

Selected publications

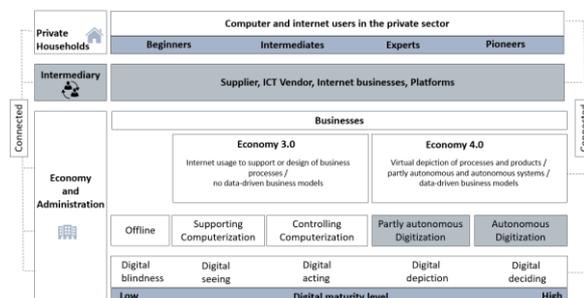
TwinEconomics, 2017, Neue Wertschöpfung durch Digitalisierung, for Zukunftsrat der bayerischen Wirtschaft.

Demary, Vera / Goecke, Henry, 2017, re-search proposal “DEMAND –Data Economics and Management of Data driven business”, for the Federal Ministry for Economic Affairs and Energy.

Contact

Head of the Research Group

Dr. Henry Goecke, + 49 221 4981-770,
goecke@iwkoeln.de



Data economy framework