



2.1.3. Measurement levels and data analysis methods .....	45
2.2. Questionnaire design .....	45
2.2.1. Stages in creating a questionnaire .....	45
2.2.2. Types of questions in the questionnaire .....	47
2.2.3. Organic food as a form of sustainable consumption: case study .....	50
2.3. Population and sample .....	54
2.3.1. Difference between population and sample .....	54
2.3.2. Determining sample size .....	54
2.3.3. Sampling method .....	57
2.4. Variables—first view .....	61
2.4.1. Introduction .....	61
2.4.2. Box and Whiskers chart .....	66
2.4.3. Crosstabs: percentage .....	68
2.5. Visualization—Likert scale and some chosen charts .....	73
2.5.1. Visualization of the Likert scale .....	73
2.5.2. Other examples of data visualization schemes .....	74

**PART II  
SELECTED METHODS OF DATA ANALYSIS**

Iwona Olejnik, Blaženka Knežević, Magdalena Stefańska

<b>3. FACTOR ANALYSIS IN SUSTAINABLE DEVELOPMENT RESEARCH ...</b>	<b>83</b>
3.1. Theoretical background .....	84
3.2. Factor analysis—research steps .....	85
3.3. Sustainable consumption behaviour—an example of application of factor analysis using the IBM SPSS Statistics version 26.0 .....	87
3.3.1. Model assumptions and selection of variables .....	87
3.3.2. Model estimation and analysis .....	91
3.4. Testing managers' ethics in retail industry: case study no. 1 .....	96
3.5. Local government representatives about retailers—from the CSR perspective: case study no. 2 .....	101
3.6. Testing attitude of Socially Responsible Employee: case study no. 3 .....	105

Todor Krastevich, Atanaska Reshetkova

<b>4. STRUCTURAL EQUATION MODELLING IN SUSTAINABLE DEVELOPMENT RESEARCH .....</b>	<b>117</b>
4.1. What is Structural Equation Modelling (SEM)? .....	118
4.1.1. SEM in a nutshell: basic concepts .....	118
4.1.2. The model estimation .....	123
4.1.2.1. Model estimation using CB-SEM approach .....	124
4.1.2.2. Model estimation using PLS-SEM approach .....	125
4.1.2.3. Choosing the right approach .....	126
4.1.3. Identification issues and model adequacy .....	127

4.1.3.1. Local criteria for model evaluation .....	130
4.1.3.2. Global criteria for model evaluation .....	131
4.2. Comparing the performance of SEM approaches with simulated data .....	134
4.2.1. CB-SEM approach .....	137
4.2.1.1. Fit a model to data using `lavaan` package in R/RStudio .....	137
4.2.1.2. Fit a model to data using IBM SPSS AMOS .....	143
4.2.1.3. Comparing and interpreting the results .....	147
4.2.2. PLS-SEM approach .....	149
4.2.2.1. Fit a model to data using `semPLS` package in R/RStudio ..	149
4.2.2.2. Fit a model to data using SmartPLS .....	156
4.3. Solving sustainability research problems with SEM .....	159
4.3.1. Sustainable development as a concept and strategy .....	160
4.3.2. Supply chain management .....	160
4.3.3. Corporate social responsibility .....	162
4.3.4. Innovations linked to sustainability .....	163
4.3.5. Consumer behaviour and sustainable consumption .....	164
4.3.6. Human resource management .....	168

Katarzyna Smędzik-Ambroży, Agnieszka Sapa

<b>5. DATA ENVELOPMENT ANALYSIS METHODS IN SUSTAINABLE AGRICULTURAL DEVELOPMENT RESEARCH .....</b>	<b>179</b>
5.1. DEA—theoretical background .....	180
5.2. DEA procedure: main steps .....	185
5.2.1. Aims of research and data (inputs and outputs) selection .....	185
5.2.2. Model calibration and calculation .....	187
5.2.3. Results interpretation .....	190
5.3. Comparison of farms' efficiency in the European Union: case study no. 1 ..	191
5.3.1. Aims of research and data selection from FADN .....	191
5.3.2. Model calibration and calculation .....	194
5.3.3. Results interpretation .....	197
5.4. Comparison of crops farm efficiency in the European Union: case study no. 2 .....	199
5.4.1. Aims of research and data selection from FADN .....	199
5.4.2. Model calibration and calculation .....	201
5.4.3. Results interpretation .....	203