
Contents

Preface	xi
Introduction	xiii
Part 1. The Sharing Economy or the Emergence of a New Business Model	1
Chapter 1. The Sharing Economy: A Concept Under Construction	3
1.1. Introduction	3
1.2. From simple sharing to the sharing economy	5
1.2.1. The genesis of the sharing economy and the break with “consumer” society	5
1.2.2. The sharing economy: which economy?	8
1.3. The foundations of the sharing economy	10
1.3.1. Peer-to-peer (P2P): a revolution in computer networks	10
1.3.2. The gift: the abstract aspect of the sharing economy	13
1.3.3. The service economy and the offer of use	18
1.4. Conclusion	24
Chapter 2. An Opportunity for the Business World	25
2.1. Introduction	25
2.2. Prosumption: a new sharing economy trend for the consumer	27
2.3. Poverty: a target in the spotlight of the shared economy	29
2.4. Controversies on economic opportunities of the sharing economy	31
2.5. Conclusion	37

Chapter 3. Risks and Issues of the Sharing Economy	39
3.1. Introduction.	39
3.2. Uberization: a white grain or just a summer breeze?	40
3.3. The sharing economy: a disruptive model.	43
3.4. Major issues of the sharing economy.	47
3.5. Conclusion	50
Chapter 4. Digital Platforms and the Sharing Mechanism	51
4.1. Introduction.	51
4.2. Digital platforms: “What growth!”	52
4.3. Digital platforms or technology at the service of the economy	54
4.4. From the sharing economy to the sharing platform economy	57
4.5. Conclusion	59
Part 2. Big Data Analytics at the Service of the Sharing Economy	61
Chapter 5. Beyond the Word “Big”: The Changes	63
5.1. Introduction.	63
5.2. The 3 Vs and much more: volume, variety, velocity.	64
5.2.1. Volume.	65
5.2.2. The variety.	66
5.2.3. Velocity	67
5.2.4. What else?	68
5.3. The growth of computing and storage capacities.	69
5.3.1. Big Data versus Big Computing	70
5.3.2. Big Data storage	71
5.3.3. Updating Moore’s Law	73
5.4. Business context change in the era of Big Data.	74
5.4.1. The decision-making process and the dynamics of value creation	75
5.4.2. The emergence of new data-driven business models	77
5.5. Conclusion	78
Chapter 6. The Art of Analytics	81
6.1. Introduction.	81
6.2. From simple analysis to Big Data analytics	82
6.2.1. Descriptive analysis: learning from past behavior to influence future outcomes	84
6.2.2. Predictive analysis: analyzing data to predict future outcomes	84
6.2.3. Prescriptive analysis: recommending one or more action plan(s).	85
6.2.4. From descriptive analysis to prescriptive analysis: an example.	87
6.3. The process of Big Data analytics: from the data source to its analysis.	88

6.3.1. Definition of objectives and requirements	90
6.3.2. Data collection	91
6.3.3. Data preparation	92
6.3.4. Exploration and interpretation	94
6.3.5. Modeling	95
6.3.6. Deployment	97
6.4. Conclusion	97
Chapter 7. Data and Platforms in the Sharing Context	99
7.1. Introduction.	99
7.2. Pioneers in Big Data	101
7.2.1. Big Data on Walmart's shelves.	101
7.2.2. The Big Data behind Netflix's success story.	102
7.2.3. The Amazon version of Big Data	103
7.2.4. Big data and social networks: the case of Facebook	104
7.2.5. IBM and data analysis in the health sector	105
7.3. Data, essential for sharing	106
7.3.1. Data and platforms at the heart of the sharing economy	108
7.3.2. The data of sharing economy companies	110
7.3.3. Privacy and data security in a sharing economy	111
7.3.4. Open Data and platform data sharing	114
7.4. Conclusion	116
Chapter 8. Big Data Analytics Applied to the Sharing Economy	119
8.1. Introduction.	119
8.2. Big Data and Machine Learning algorithms serving the sharing economy	121
8.2.1. Machine Learning algorithms.	122
8.2.2. Algorithmic applications in the sharing economy context	124
8.3. Big Data technologies: the sharing economy companies' toolbox.	125
8.3.1. The appearance of a new concept and the creation of new technologies	127
8.4. Big Data on the agenda of sharing economy companies	130
8.4.1. Uber.	131
8.4.2. Airbnb	132
8.4.3. BlaBlaCar	133
8.4.4. Lyft	134
8.4.5. Yelp.	135
8.4.6. Other cases.	137
8.5. Conclusion	139

Part 3. The Sharing Economy? Not Without Big Data Algorithms . . .	141
Chapter 9. Linear Regression	143
9.1. Introduction	143
9.2. Linear regression: an advanced analysis algorithm	144
9.2.1. How are regression problems identified?	145
9.2.2. The linear regression model	146
9.2.3. Minimizing modeling error	148
9.3. Other regression methods	149
9.3.1. Logistic regression	150
9.3.2. Additional regression models: regularized regression	151
9.4. Building your first predictive model: a use case	152
9.4.1. What variables help set a rental price on Airbnb?	152
9.5. Conclusion	169
Chapter 10. Classification Algorithms	171
10.1. Introduction	171
10.2. A tour of classification algorithms	172
10.2.1. Decision trees	172
10.2.2. Naïve Bayes	175
10.2.3. Support Vector Machine (SVM)	177
10.2.4. Other classification algorithms	179
10.3. Modeling Airbnb prices with classification algorithms	183
10.3.1. The work that's already been done: overview	184
10.3.2. Models based on trees: decision tree versus Random Forest	185
10.3.3. Price prediction with kNN	190
10.4. Conclusion	193
Chapter 11. Cluster Analysis	195
11.1. Introduction	195
11.2. Cluster analysis: general framework	196
11.2.1. Cluster analysis applications	197
11.2.2. The clustering algorithm and the similarity measure	198
11.3. Grouping similar objects using k-means	200
11.3.1. The k-means algorithm	201
11.3.2. Determine the number of clusters	203
11.4. Hierarchical classification	205
11.4.1. The hierarchical model approach	206
11.4.2. Dendrograms	207
11.5. Discovering hidden structures with clustering algorithms	208

11.5.1. Illustration of the classification of prices based on different characteristics using the k-means algorithm	209
11.5.2. Identify the number of clusters k	210
11.6. Conclusion	213
Conclusion	215
References	217
Index	233