

## Table of Contents

Abstract .....	ii
Resumen.....	iii
Resum .....	iv
Table of Contents .....	v
List of Tables.....	x
List of Figures.....	xii
List of Abbreviations.....	xiii
List of Appendices .....	xvi
Acknowledgements .....	xviii
1 Introduction.....	1
1.1 Leading to the Topic .....	1
1.2 Objectives and Contributions to the Scientific Community .....	3
1.3 Organization of the Thesis .....	4
2 Methodology and Research Framework.....	5
2.1 Justifying the Relevance of the Main Research Question for Science and Practice ...	5
2.2 Research Framework - Course of the Examination .....	6
2.2.1 Structured Literature Review .....	9
2.2.2 Exploratory Sequential Mixed-Method Approach .....	9
2.2.2.1 Qualitative Analysis.....	10
2.2.2.2 Quantitative Analysis .....	12
2.3 Justifying the Hypotheses.....	16
2.3.1 Hypothesis 1 .....	17
2.3.2 Hypothesis 2 .....	17
2.3.3 Hypothesis 3 .....	17
2.3.4 Hypothesis 4 .....	18
3 Summary of the Marketing Analysis Process (MAP) Methodology .....	19
4 <b>Publication 1</b> MAP - Marketing Analytics Process .....	22
Einleitung.....	23
Marketing-Analytics-Process-(MAP)-Modell.....	24

Phase I: Problemidentifikation/Zieldefinition .....	25
Exkurs: Analysen im (Online-)Marketing-Kontext.....	26
Praxis Use-Case .....	27
Phase II: Datenquellenauswahl .....	29
Praxis Use-Case .....	30
Phase III: Datenaufbereitung .....	34
Praxis Use-Case .....	35
Phase IV: Modellierung .....	40
Praxis Use-Case .....	41
Phase V: Modellevaluierung .....	42
Praxis Use-Case .....	43
Phase VI: Handlungsempfehlungen .....	44
Praxis Use-Case .....	44
Implementierung.....	45
Fazit .....	46
Literatur .....	47
<b>5 Publication 2 Attribution Modelling in an Omni-Channel Environment - New Requirements and Specifications from a Practical Perspective.....</b>	<b>50</b>
Introduction.....	51
Theoretical Background .....	51
Deriving Towards Omni-Channel Marketing.....	52
State of the Art.....	55
Channel Performance.....	55
Customer Satisfaction .....	56
Dynamic Attribution Approaches.....	56
Hypotheses.....	60
Research Methodology .....	61
Expert Sampling.....	62
Interview Guideline .....	63
Conducting the Semi-Structured Expert Interviews .....	64
Evaluation Methodology .....	64

Results .....	66
Identify Dynamic Attribution Approaches .....	66
Evaluation Criteria for Attribution Approaches in an Omni-Channel Environment .....	69
Evaluation of Existing Dynamic Attribution Models Towards their Applicability in an Omni-Channel Environment.....	73
Discussion .....	76
Critical Examination of the Results .....	78
Future Research Fields and Research Questions from a Practical Perspective .....	79
Conclusion .....	82
References.....	83
6 Developing an Omni-Channel Ready Data Foundation .....	91
6.1 Identifier Matching .....	91
6.2 Data Transformation Process .....	92
6.2.1 Workflow [01]: GOOGLE_ANALYTICS_STAGE_2_CORE .....	95
6.2.2 Workflow [01A]: GOOGLE_ANALYTICS_HITS_CUSTOMDIM_CORE.....	96
6.2.3 Workflow [01B]: GOOGLE_ANALYTICS_HITS_CORE .....	97
6.2.4 Workflow [02]: EVENTSTORE_STAGE_2_CORE.....	97
6.2.5 Workflow [03]: PRICING_DATA_STAGE_2_CORE.....	98
6.2.6 Workflow [04]: INTELLIAD_CLICK_REPORT_STAGE_2_CORE .....	99
6.2.7 Workflow [04A]: INTELLIAD_CLICK_REPORT_PRICE_CORE .....	99
6.2.8 Workflow [05]: PRODUCT_PRICES_STAGE_2_CORE.....	100
6.2.9 Workflow [06]: IMPORT_ONE_DAY_2_CORE .....	100
6.2.10 Workflow [07]: CREATE_HOLISTIC_CUSTOMER_JOURNEY_OF_ONE_DAY .....	101
6.3 Feature Generation .....	101
6.4 Descriptive Statistics of the HCJ .....	106
7 <b>Publication 3</b> Ready for Omni-Channel: Cross Device and Cross Platform Machine Learning Attribution Approach – A Field Experiment.....	111
Introduction and Objectives.....	112
Theoretical Background .....	112
Towards Attribution in an Omni-Channel Environment .....	113
Importance of Machine Learning for Marketing in Businesses .....	114
Define Objective.....	115

Research Methodology .....	116
Data Foundation.....	119
Collecting Data .....	122
Cross-Device / Cross-Platform .....	122
The HCJ Data Foundation in Numbers .....	122
HCJ Summarized .....	123
Feature Generation .....	124
Target Specification.....	124
Attribution Model .....	126
Model Requirements.....	126
Prepare Features and Target.....	128
Dimension Reduction – Increasing Performance.....	129
Define Classification Metric .....	130
Data Split .....	130
Identify Best Classifying Algorithm .....	131
Identify Best Hyperparameter Configuration .....	132
Model Accuracy.....	134
Results and Discussion .....	134
Recommendations for Practitioners .....	138
Attribution Model Extension and Integration.....	138
Conclusion .....	139
References.....	140
8 Results .....	148
8.1 Marketing Analytics Process (MAP).....	148
8.2 What does Efficient Attribution in an Omni-Channel Environment Look Like?.....	148
8.2.1 Verifying Hypotheses H1 and H2.....	148
8.2.2 Verifying Hypotheses H3 and H4.....	149
9 Conclusion .....	150
9.1 Summary of the Investigation .....	150
9.2 What does Efficient Attribution in an Omni-Channel Environment Look Like?.....	150
9.3 Critical Appraisal, Limitations and Opportunities for Further Research.....	151

Table of Contents

9.4	Contribution to Knowledge .....	153
9.4.1	Implications for Theory .....	154
9.4.2	Implications for Practitioners .....	155
10	Publication bibliography.....	156
	Appendices .....	I