Table of Contents

Tab	le of C	Contents	i
List	of Fig	gures	v
List	of Ta	bles	vi
Abl	breviat	ions	viii
A		damentals	
1		troduction	
	1.1	Motivation	
	1.2	Research Objective	4
	1.3	Structure of the Thesis	7
	1.4	Research Context and Design	. 11
	1.5	Audience Addressed and Anticipated Contributions	. 13
2	Ba	ackground	. 15
	2.1	Electric Mobility	. 15
	2.2	The Price Barrier to EV Adoption	. 18
	2.3	The Infrastructure Barrier to EV Adoption	. 20
	2.4	The Range Barrier to EV Adoption	. 22
В	Und	erstanding the Phenomenon of Range Anxiety	. 27
1	Tł	ne Evolution of Range Anxiety – A Literature Analysis	. 29
	1.1	Research Scope	.30
	1.2	Analyzing the Literature	. 30
	1.3	2.1 Methodological Approach	.30
	1.2	2.2 Evaluating the Final Set of Articles	. 34
	1.3	Synthesizing the Literature	.35
	1.3	3.1 Psychological Perspective	
		1.3.1.1 General Findings	
		1.3.1.2 Individual Range Resources	
	1 '	3.2 Information Systems and Technical Perspective	
	1	1.3.2.1 Range Prediction Accuracy	
		1.3.2.2 Displaying the Remaining Driving Range	. 43



		1.3.2	2.3 Routing and Recommender Systems	44
	1.3	3.3	Infrastructure Perspective	45
	1.3	3.4	Range Anxiety Measurement	46
	1.4	Co	nclusion	47
2	Th	ie Va	alue of IS for Increasing the Acceptance of Electric Vehicles	51
	2.1	Inti	roduction	52
	2.2	The	eoretical Background	53
	2.2	2.1	Electric Mobility and Charging Infrastructure	53
	2.2	2.2	Range Anxiety	53
	2.2	2.3	User Acceptance	54
	2.3	Rel	ated Work	55
	2.4	Co	nceptualization of Range Anxiety	56
	2.4	4.1	Identifying the Factors Influencing Range Anxiety	56
	2.4	4.2	Assessment of the Identified Factors Influencing Range Anxiety	58
	2.5	Me	thod	58
	2.5	5.1	Approach for the Measurement of Range Anxiety	59
	2.5	5.2	Identifying the Influence of IS for Reducing Range Anxiety	61
	2.6	Res	sults	61
	2.7	Dis	scussion	64
	2.8	Co	nclusion	65
C	Eval	uatin	ng Measures to Mitigate the Range Barrier	67
1	Th	ie Ro	ole of Mobile Applications for Electric Vehicle Diffusion	69
	1.1	Inti	roduction	70
	1.2	The	eoretical Background	71
	1.2	2.1	The Need for Disruptive Eco-Innovations	71
	1.2	2.2	Mobile Applications for Environmental Sustainability	72
	1.2	2.3	Electric Vehicles and Information Systems	73
	1.3	Me	thodological Approach	74
	1.3	3.1	Survey	74
	1.3	3.2	Data-Collection Procedure and Sample Characteristics	75
	1.3	3.3	Data Analysis	76
	1.3	3.4	Mobile Applications Analysis	76

	1.4 Fi	ndings	77
	1.4.1	Attributes and Substitution Potential	77
	1.4.2	Mobile Applications	79
	1.5 Sy	nopsis and Discussion	81
	1.6 Li	mitations and Conclusion	82
2	The I	mpact of Information Systems on Perceived Stress and Attitude	85
		troduction	
	2.2 Th	neoretical Background	88
	2.2.1	Stress and the Transactional Stress Model	88
	2.2.2	The Role of Attitude in Predicting Behavior	91
	2.3 Re	esearch Model and Hypotheses	92
	2.4 M	ethodological Approach	94
	2.4.1	Sample and Data-Collection Procedure	95
	2.4.2	Measurement of Constructs	95
	2.5 Re	esults	98
	2.5.1	Analysis of Measurement's Construct	98
	2.5.2	Hypothesis Tests	99
	2.6 D	scussion	100
	2.7 C	onclusion	103
3		rstanding the Influence of Information Systems on Range Stress	
	3.1 In	troduction	106
	3.2 M	aterial and Methods	
	3.2.1	Research Model and Hypothesis Development	
	3.2.2	Measurement of Constructs	
	3.2.		
	3.2.	2.2 Psychophysiological Evaluation	112
	3.2.3	Participants	112
	3.2.4	Experimental Setting	113
	3.3 R	esults	116
	3.3.1	Psychometrical Evaluation	116
	3.3.2	Psychophysiological Evaluation	118
	3.4 D	iscussion	121
	3.4.1	Psychometric Data Evaluation	121

	3.4	Psychophysiological Data Evaluation
	3.4	2.3 Comparing Psychometric and Psychophysiological Results
	3.4	4.4 Limitations and Future Research
	3.5	Conclusion
4	Fi	nding Suitable Locations for Charging Stations125
	4.1	Introduction
	4.2	Literature Analysis
	4.3	Methodical Approach
	4.4	Research Design
	4.5	Results
	4.6	Discussion
	4.7	Conclusion
	Ackr	owledgments
D	Cont	ributions141
1	Fi	ndings142
	1.1	Findings that Help Understand the Phenomenon of Range Anxiety 142
	1.2	Findings Related to Measures for Mitigating the Range Barrier 143
	1.3	Aggregated Findings
2		Aggregated Findings
2		
2	In	plications for Theory and Practice150
3	Im 2.1 2.2	Polications for Theory and Practice
	Im 2.1 2.2	Major Contributions to Practitioners
	2.1 2.2 Co	Major Contributions to Practitioners 150 Major Contributions to Practitioners 151 Oncluding Remarks 153
3	2.1 2.2 Co 3.1 3.2	Major Contributions to Theory
3 Ref	2.1 2.2 Co 3.1 3.2	Major Contributions to Practitioners