



UNIVERSITI PUTRA MALAYSIA

***A MODEL FOR PREDICTING ANTI LITTERING BEHAVIOURAL
INTENTION AMONG VISITORS OF KANCHING RECREATION FOREST
IN MALAYSIA***

KAMBIZ YOUSEFI TALOOKI

FH 2019 4



**A MODEL FOR PREDICTING ANTI LITTERING BEHAVIOURAL
INTENTION AMONG VISITORS OF KANCHING RECREATION FOREST IN
MALAYSIA**

By

KAMBIZ YOUSEFI TALOOKI

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfilment of Requirements for the Degree of Doctor of Philosophy**

January 2018

All material contained within the thesis, including without limitation text, logos, icons, photographs and all other artwork, is copyright material of Universiti Putra Malaysia unless otherwise stated. Use may be made of any material contained within the thesis for non-commercial purposes from the copyright holder. Commercial use of material may only be made with the express, prior, written permission of Universiti Putra Malaysia.

Copyright © Universiti Putra Malaysia



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirements for the degree of Doctor of Philosophy

A MODEL FOR PREDICTING ANTI LITTERING BEHAVIOURAL INTENTION AMONG VISITORS OF KANCHING RECREATION FOREST IN MALAYSIA

By

KAMBIZ YOUSEFI TALOOKI

January 2019

Chairman: Associate Professor Azlizam bin Aziz, PhD
Faculty: Forestry

Littering is the most prevailing type of depreciative behaviour in Malaysian recreational forests. The litter prevalence can be attributed to the weakness of the managerial approaches in terms of covering all the determinant factors in the process of decision making which are necessary for a long term behavioural change among recreation users. Up to now a framework that can appropriately put all determinant psycho-social variables together and defined the linkage between them leading to stronger behavioural prediction has been lacking. Therefore, the current study attempted to propose a better prediction of Anti-littering Behavioural Intention (ALBI) at recreation forests through a combination of Theory of Planned Behaviour (TPB), Value Belief Norm Model (VBN), and an adaptation of Descriptive Norms (DN) and Anticipated Emotion (AE).

This research was conducted at Kanching Recreation Forest (KRF) which is one of the Peninsular Malaysia's recreation forests that has been suffering from the same issue. KRF was also chosen due to its proximity to two main cities including, Kuala Lumpur City and Rawang. Using time based stratified sampling, a total of 450 questionnaires were distributed among the KRF's visitors, of which 419 were usable. The study's results obtained from the Partial Least Square Structural Equation Modeling (PLS-SEM) showed a substantial improvement in total variance explained compared to both TPB and VBN. Visitors' Injunctive Norm (IN) had the strongest positive relationship with their ALBI, followed by their Personal Norm (PN) and AE. The least relationship strength belonged to the Attitude of KRF's visitors and their ALBI. Also, visitors' Perceived Behavioural Control (PBC) had a positive small effect on their ALBI. On the other hand, the relationship between Ascription of Responsibility (AR) and DN of KRF's visitors and their ALBI were not significant. Nevertheless, their DN showed a significant positive effect on their ALBI via the transmitting effect of their PN and AE. Their AR had an indirect effect on their ALBI via chain mediating effect of their PN and AE. The study results revealed an indirect relationship between IN of KRF's visitors and their ALBI via

transmitting effect of their PN and AE. Similarly, the effect of PBC on ALBI of KRF's visitors was mediated via chain mediating effect of their AR, PN, and AE. The PN of KRF's visitors had an indirect relationship with their ALBI via transmitting effect of AE. The findings of the study could potentially provide park managers and policymaker with ample material and information useful for the contents of their managerial intervention such as persuasive communication. It is hoped that via extraction of the most salient beliefs as a foundation of the factors that determine the recreation forest's visitors behavioural intention, long-term anti-littering behavioural change can be achieved.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Doktor Falsafah

**MODEL UNTUK MERAMAL TINGKAH LAKU ANTI-BUANG SAMPAH
MERATA-RATA DI ANTARA PELANCONG TAMAN EKO RIMBA
KANCHING DI MALAYSIA**

Oleh

KAMBIZ YOUSEFI TALOOKI

Januari 2019

Pengerusi: Profesor Madya Azlizam bin Aziz, PhD
Fakulti: Perhutanan

Pembuangan sampah adalah perilaku depresiatif yang sering berlaku di hutan rekreasi di Malaysia. Pembuangan sampah yang berleluasa berpunca dari kelemahan pendekatan pengurusan yang gagal mengenalpasti faktor-faktor penentu dalam proses membuat keputusan bagi perubahan perilaku dalam jangka masa panjang di kalangan pengguna rekreasi. Sehingga kini, masih wujud kekurangan rangkakerja yang boleh mengambilkira semua faktor penentu psiko-sosial secara bersama dan mengenalpasti perkaitan di antara mereka yang sepatutnya boleh digunakan untuk membuat jangkaan terhadap perilaku pengguna. Oleh yang demikian, kajian ini telah dijalankan untuk mencadangkan peramalan yang lebih baik untuk Hasrat Perilaku Anti Pembuangan Sampah (ALBI) di hutan rekreasi dengan menggabungkan Teori Rancangan Perilaku (*Teori of Plan Behavior -TPB*), Model Norma Nilai Kepercayaan (*Value Belief Norm Model - VBN*) serta Norma Diskriptif (*Descriptive Norm - DN*) dan Emosi Jangkaan (*Anticipated Emotion -AE*) yang telah diadaptasikan.

Kajian ini telah dijalankan di Hutan Rekreasi Kaching (*KRF*) yang merupakan salah satu hutan rekreasi di Semenanjung Malaysia yang mengalami masalah tersebut. KRF telah dipilih kerana ianya terletak di antara pusat Bandaraya Kuala Lumpur dan Rawang. Dengan menggunakan kaedah persampelan *time based stratified*, sebanyak 450 borang soal-selidik telah diedarkan di kalangan pengunjung KRF yang akhirnya cuma 419 borang soal selidik dapat digunakan abgi tujuan Analisa seterusnya. Hasil kajian menggunakan '*Partial Least Square Structural Equation Modeling (PLS-SEM)*' telah menunjukkan peningkatan yang ketara bagi '*Total Variance explain*' di antara TPB dan VBN. Norma Injuksi (*Injuctive Norm - IN*) pengunjung juga telah didapati menunjukkan perhubungan positive yang tinggi dengan ALBI, diikuti dengan nilai Norma Personal (*Personal Norm - PN*) dan AE. Perkaitan yang paling lemah telah didapati di antara Sikap (*Attitude*) pengunjung di KRF dengan nilai ALBI mereka. Juga, Persepsi Kawalan Perilaku (*Perceived Behavioural Control -PBC*) pengunjung hutan rekreasi ini telah

didapati hanya memberi kesan positif yang kecil kepada ALBI. Perkaitan di antara Tanggungjawab Kebolehan (*Ascription of Responsibility - AR*) dan Norma Diskriptif (*Discriptive Norma - DN*) terhadap ALBI bagi pengunjung adalah tidak signifikan. Namun, DN telah menunjukkan impak yang signifikan dan positif terhadap ALBI melalui PN dan AE. Jelas sekali, AR telah didapati mempunyai impak secara tidak langsung kepada ALBI dengan PN dan AE bertindak sebagai faktor mediasi.

Kajian ini telah membuktikan bahawa wujudnya perkaitan tidak langsung diantara IN dan ALBI melalui PN dan AE. Juga, impak PBC terhadap ALBI di kalangan pengunjung telah dipengaruhi oleh faktor-faktor mediasi AR, PN dan AE. PN pengunjung juga menunjukkan perkaitan tidak langsung dengan ALBI melalui AE. Keputusan kajian ini berpotensi memberikan sumber dan kandungan maklumat yang berguna kepada pengurus taman dan pengubal dasar bagi tindakan pengurusan intervensi seperti komunikasi persuasif. Adalah diharapkan dengan menggunakan kepercayaan penting (*salient belief*) sebagai asas utama bagi menentukan hasrat perilaku (*behavioural intention*) pengunjung hutan rekreasi, perubahan jangkamasa panjang kepada perilaku anti pembuangan sampah akan dapat dicapai.

ACKNOWLEDGEMENTS

In the name of God, the Most Gracious and the Most Merciful, all praises to God for the strengths and His blessing in completing this thesis. Special appreciation goes to Assoc Prof Dr. Azlizam Aziz, Assoc. Prof. Dr. Manohar Mariapan and Dr. Siti Suriawati Isa for their supervision and constant support. Their invaluable help of constructive comments and suggestions throughout this study have contributed to the completion of this research.

Special thanks to the staffs and managers of the Forestry Department Peninsular Malaysia and Kanching Recreation Forest's visitors for their welcoming and humble attitude and valuable help and cooperation.

My deepest gratitude goes to my beloved parents, my sister, brothers and nephew and niece for their infinite love, prayers and encouragement. They are the charming gardeners who make my soul blossom.

Last but not least, sincere thanks to all my friends for their kindness and moral support during my study. "There are big ships and small ships but the best ship of all is friendship" Thanks for the friendship and memories. To who indirectly contributed in this research, your kindness means a lot to me.

Thank you very much.

With love!

I certify that a Thesis Examination Committee has met on 3 January 2019 to conduct the final examination of Kambiz Yousefi Talooki on his thesis entitled "A Model for Predicting Anti Littering Behavioural Intention Among Visitors of Kanching Recreation Forest in Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

Members of the Thesis Examination Committee were as follows:

Hazandy bin Abdul Hamid, PhD

Professor
Faculty of Forestry
Universiti Putra Malaysia
(Chairman)

Suhardi bin Maulan, PhD

Associate Professor LAr.
Faculty of Design and Architecture
Universiti Putra Malaysia
(Internal Examiner)

Hamisah Zaharah bt Hasan, PhD

Associate Professor
Faculty of Modern Languages and Communication
Universiti Putra Malaysia
(Internal Examiner)

Chang Huh, PhD

Professor
Niagara University
United States
(External Examiner)



RUSLI HAJI ABDULLAH, PhD
Professor and Deputy Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 23 April 2019

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

Azlizam Aziz, PhD
Associate Professor
Faculty of Forestry
Universiti Putra Malaysia
(Chairman)

Manohar Mariapan, PhD
Associate Professor
Faculty of Forestry
Universiti Putra Malaysia
(Member)

Siti Suriawati Binti Isa, PhD
Senior Lecturer
Faculty of Forestry
Universiti Putra Malaysia
(Member)

ROBIAH BINTI YUNUS, PhD
Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date:

Declaration of graduate student

I hereby confirm that:

- this thesis is my original work;
- quotations, illustrations and citations have been duly referenced;
- this thesis has not been submitted previously or concurrently for any other degree at any other institutions;
- intellectual property from the thesis and copyright of thesis are fully-owned by Universiti Putra Malaysia, as according to the Universiti Putra Malaysia (Research) Rules 2012;
- written permission must be obtained from supervisor and the office of Deputy Vice-Chancellor (Research and Innovation) before thesis is published (in the form of written, printed or in electronic form) including books, journals, modules, proceedings, popular writings, seminar papers, manuscripts, posters, reports, lecture notes, learning modules or any other materials as stated in the Universiti Putra Malaysia (Research) Rules 2012;
- there is no plagiarism or data falsification/fabrication in the thesis, and scholarly integrity is upheld as according to the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) and the Universiti Putra Malaysia (Research) Rules 2012. The thesis has undergone plagiarism detection software.

Signature: _____ Date: _____

Name and Matric No.: _____

Declaration by Members of Supervisory Committee

This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) are adhered to.

Signature: _____
Name of Chairman of
Supervisory
Committee: _____

Signature: _____
Name of Member of
Supervisory
Committee: _____

Signature: _____
Name of Member of
Supervisory
Committee: _____

TABLE OF CONTENTS

	Page
ABSTRACT	i
ABSTRAK	iii
ACKNOWLEDGEMENTS	v
APPROVAL	vi
DECLARATION	viii
LIST OF TABLES	xiv
LIST OF FIGURES	xvii
LIST OF ABBREVIATIONS	xviii
CHAPTER	
1 INTRODUCTION	1
1.1 Background of the Study	1
1.2 Problem Statement	8
1.3 Research Questions	10
1.4 General Objective	11
1.5 Significance of the Research	13
1.5.1 Knowledge significance	14
1.5.2 Practical significance	14
2 LITERATURE REVIEW	17
2.1 Introduction	17
2.2 Pro-environmental behaviour	17
2.3 Anti-littering as pro-environmental behaviour	21
2.3.1 Littering behaviour and its determinants	22
2.3.2 Studies about littering in Malaysia's recreation forests	43
2.4 Approaches to persuade individuals to perform pro-environmental behaviour	45
2.5 Psycho-social theories of the decision making	47
2.5.1 Theory of Reasoned Action	47
2.5.2 Theory of Planned Behaviours	51
2.5.3 Value-Belief-Norm Model	55
2.5.4 Integrated Framework for Encouraging Pro-Environmental Behaviour	59
2.5.5 Development of the study's theoretical framework	63
2.5.6 Theoretical Research Framework	64
3 METHODOLOGY	67
3.1 Introduction	67
3.2 Research design	67
3.3 Location of study	67
3.4 Target population	69
3.5 Sample Size	69

3.6	Sampling design	70
3.7	Survey instrument	70
3.7.1	Odd Likert scale with a neutral choice in middle	80
3.8	Questionnaire Translation and Back-Translation	81
3.9	Pre-testing: procedure and results	82
3.10	Pilot study	83
3.11	Data collection procedure	84
3.12	Response rate for main study	84
3.13	Data Analysis	85
3.13.1	Missing value analysis	87
3.13.2	Reliability Analysis	87
3.13.3	Validity Analysis	87
3.13.4	Common method variance	88
3.13.5	Multivariate assumption analysis	88
3.13.6	Convergent Validity	90
3.13.7	Discriminant Validity	91
3.13.8	Path Analysis	91
3.14	Chapter Summary	92
4	RESULTS AND DISCUSSION	93
4.1	Introduction	93
4.2	Descriptive results	93
4.2.1	Respondents' profile	93
4.2.2	Respondents' travel behaviour and trip characteristics	96
4.2.3	Study's main construct	99
4.3	Model Development	110
4.3.1	Structural model	111
4.4	Measurement model	114
4.4.1	Convergent Validity	116
4.4.2	Discriminant validity	120
4.5	Structural Model Assessment	122
4.6	Behavioural intention of the KRF's visitors and direct, indirect, and total effects of its determinants	131
4.6.1	The effect size f^2	135
4.6.2	The Importance-Performance Matrix	135
4.6.3	Discussion of the results, anti-littering behavioural intention as endogenous variable	136
4.7	Anticipated emotion of KRF's visitors and direct, indirect, and total effects of its determinants	141
4.7.1	The effect size f^2	142
4.7.2	The Importance-Performance Matrix	142
4.7.3	Discussion of the results, Anticipated Emotion as endogenous variable	143
4.8	Personal norm of KRF's visitors and direct, indirect, and total effects of its determinants	146
4.8.1	The effect size f^2	146
4.8.2	The Importance-Performance Matrix	147
4.8.3	Discussion of the results, Personal Norm as endogenous variable	148

4.9	Ascription of responsibility of KRF's visitors and effects of its determinants	151
4.9.1	The effect size f^2	151
4.9.2	The Importance-Performance Matrix	152
4.9.3	Discussion of the results, Ascription of Responsibility as endogenous variable	152
4.10	Attitude of KRF's visitors toward anti-littering behaviour and direct, indirect, and total effects of its determinants	153
4.10.1	The effect size f^2	155
4.10.2	The Importance-Performance Matrix	156
4.10.3	Discussion of the results, attitude as the endogenous variable	156
4.11	New environmental paradigm of KRF's visitors toward anti-littering behaviour and effects of its determinants	159
4.11.1	The effect size f^2	159
4.11.2	The Importance-Performance Matrix	160
4.11.3	Discussion of the results, New Environmental Paradigm as the endogenous variable	160
5	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	165
5.1	Summary of findings	165
5.1.1	Respondents' socio-economic and trip characteristics	165
5.1.2	Study's main constructs	166
5.2	Discussion of findings	168
5.2.1	Exogenous constructs and their direct and indirect effects on anti-littering behavioural intention (SO ₁)	168
5.2.2	Exogenous constructs and their direct and indirect effects on Anticipated Emotion (SO ₂)	171
5.2.3	Exogenous constructs and their effects on Personal Norm (SO ₃)	173
5.2.4	Exogenous constructs and their direct and indirect effects on the Ascription of Responsibility (SO ₄)	175
5.2.5	Exogenous constructs and their direct and indirect effects on attitude toward anti-littering behaviour (SO ₅)	175
5.2.6	Exogenous constructs and their direct and indirect effects on New Environmental Paradigm (SO ₆)	177
5.3	Contributions and Implications of the Study	178
5.3.1	Theoretical Contributions	179
5.3.2	Practical Implications	180
5.4	Limitation of the study and recommendation for future studies	182
5.5	Conclusion	183

REFERENCES	184
APPENDICES	208
BIODATA OF STUDENT	244
PUBLICATION	245



LIST OF TABLES

Table	Page
1.1 Research specific objectives and their related hypotheses	13
3.1 Measurement items for attitude toward anti-littering behaviour	76
3.2 Measurement items for Injunctive Norm	77
3.3 Measurement items for Perceived Behavioural Control	77
3.4 Measurement items for behavioural intention	77
3.5 Measurement items for Ascription of Responsibility	78
3.6 Measurement items for Personal Norm	79
3.7 Measurement items for anticipated emotion	79
3.8 Measurement items for Descriptive Norm	80
3.9 Cronbach's alpha of the variables in pilot study (English and Malay)	83
3.10 Response rate	84
3.11 Summary of objective Analysis used in the study	86
3.12 Common-method variance result	88
4.1 Demographic Characteristics of KRF's visitors	95
4.2 Travel behaviour and trip characteristics of KRF's visitors	98
4.3 Values of KRF's visitors	100
4.4 New environmental paradigm of KRF's visitors	102
4.5 Attitude of KRF's visitors toward anti-littering behaviour	104
4.6 Injunctive norm of KRF's visitors toward the anti-littering behaviour	105
4.7 Descriptive norm of KRF's visitors toward the anti-littering behaviour	106
4.8 Perceived control of KRF's visitors over the anti-littering behaviour	107

4.9	Anticipated emotion of KRF's visitors toward the anti-littering behaviour	108
4.10	Ascription of responsibility of KRF's visitors toward the anti-littering behaviour	109
4.11	Personal norm of KRF's visitors toward the anti-littering behaviour	110
4.12	Anti-littering behavioural intention of KRF's visitors	110
4.13	T-Statistics of Outer Loadings and related convergent validities based on boot strapping method	118
4.14	Correlation of latent variables and discriminant Validity (Fornell-Larcker)	121
4.15	List of hypotheses and relative paths	123
4.16	Path coefficients, direct effects of exogenous constructs on indigenous constructs	125
4.17	Test of the total effects of exogenous constructs on indigenous constructs using bootstrapping	127
4.18	Endogenous variables related R^2	128
4.19	Exogenous constructs' indirect effects on indigenous constructs	129
4.20	Results of R^2 and Q^2 Values in the model	130
4.21	Exogenous constructs and their direct, indirect, and total effects on behavioural intention	134
4.22	Results of effect size f^2 for all exogenous variables related to behavioural intention	135
4.23	Exogenous constructs and their direct, indirect, and total effects on Anticipated Emotion	142
4.24	Results of effect size f^2 for all exogenous variables related to anticipated emotion	142
4.25	Results of effect size f^2 for all exogenous variables related to Personal Norm	147
4.26	Results of effect size f^2 for all exogenous variables related to Ascription of Responsibility	151

4.27	Exogenous constructs and their direct, indirect, and total effects on attitude	155
4.28	Results of effect size f^2 and q^2 for all exogenous variables related to attitude	155
4.29	Results of effect size f^2 for all exogenous variables related to New Environmental Paradigm	159
4.30	List of Hypotheses and their Relative Paths	163



LIST OF FIGURES

Figure		Page
2.1	Theory of Reasoned Action	50
2.2	Theory of Planned Behaviour	54
2.3	Value-Belief-Norm Theory	58
2.4	Hypothetical framework for Integrated Framework for Encouraging Pro-Environmental Behaviour	62
2.5	Study's theoretical research framework grounded on Theory of Planned Behaviour (TPB), Value Belief Norms theory (VBN), and exploratory study by Steg and her colleagues.	66
3.1	Kanching recreation forest	68
4.1	Theoretical research framework for the study was based upon Theory of Planned Behaviour (TPB), Value Belief Norms theory (VBN), and exploratory study by Steg and her colleagues.	112
4.2	Partial least squares-structural equation modelling, structural model	113
4.3	Partial least squares-structural equation modelling, measurement model and Initial Path	115
4.4	Results of Structural Model by using bootstrapping function	126
4.5	The Final Model of the Study	164

LIST OF ABBREVIATIONS

AC	Awareness of Consequences
AE	Anticipated Emotion
ALBI	Anti-littering Behavioural Intention
AR	Ascription of Responsibility
AVs	Altruistic Values
BI	Behavioural Intention
BVs	Biospheric Values
DN	Descriptive Norm
EVs	Egoistic Values
IFEP	Integrated Framework for Encouraging Pro-environmental Behaviour
IN	Injunctive Norm
KRF	Kanching Recreation Forest
NEP	New Environmental Paradigm
PBC	Perceived Behavioural Control
PN	Personal Norm
PNP	Penang National Park
SEM-PLS	Structural Equation Modeling-Partial Least Squares
SN	Subjective Norm
SPSS	Statistical Package for the Social Sciences
TPB	Theory of Planned Behaviour
VBN	Value Belief Norm Model

CHAPTER 1

INTRODUCTION

This chapter discusses the background of the study, problem statement, the purposes, the significance and the limitations of the study.

1.1 Background of the Study

In the 20th century, the demand for play as a method of learning for the children and leisure merely for the purpose of enjoyment has grown exponentially. The first half of 20th century saw a significant increase in the provision of the amenities (i.e., baths, music halls, public houses, and public parks) for the public to enjoy their leisure. The end of the World War I was accompanied by the emergence of the spectator sports and cinemas. However the television, as the "greatest leisure attraction of all time", appeared after World War II (Torkildsen 2005). This period was accompanied by enormous technological advancements for housekeeping aid and easing work, and provision of resources, for creating more time for leisure (Torkildsen 2005; Plummer 2009; McLean and Hurd 2011). In the United States, the American person's life dramatically changed after World War II, and up to 1970s, it was considered as a period of the optimism and prosperity for most American families. Leisure was considered as a part of a good life and consequently park programs and recreational activities flourished, owing to great movement of young people, mainly the white and middle class population (i.e., working class), into the suburban area (McLean and Hurd 2011).

Meanwhile, recreation and leisure management as epitomised today, begun in the 1960s in the United Kingdom and the United States. In the UK, leisure amenities were provided at an extensive level, from the construction of Harlow's "community multi-sport center" to recreation centers and community arts. Consequently, visitors and tourism has multiplied and music, creative arts, fashion, exhibition, and festivals have flourished (Torkildsen 2005). The amenity growth for leisure, introduced several new descriptions and names such as, leisure center, leisure ice, leisure pool, fitness and health club, restaurant and themed bar, multi-screen cinema, etc. Also, the national lottery had an enormous effect on additional projects and amenities (Torkildsen 2005). In the United States, recreation played an important role to eliminate poverty by assisting the government action coined "War on Poverty". Numerous recreation and park agencies subsequently placed a greater level of importance on serving minorities under pressure, due to civil rights movement (McLean and Hurd 2011).

Leisure and recreation either in the natural environment or in recreational amenities, help individuals to relieve the monotony and boredom of daily city life. Being free from the daily life obligations, is the primary characteristic and purpose of the leisure. Thus, in general for individuals, spending time leisurely in natural recreational destinations is a means whereby they can free themselves of city life duties and responsibilities. Although being free from any kind of the responsibility is the fundamental characteristic of the leisure, it can have negative effects on the context in which recreation activities take

place. That is, while individuals enjoying their freedom in recreation destinations, either natural or human-made one, they do not feel any obligation towards these places as it unconsciously contradicts the concept of their leisure. Consequently, they might be careless about the probable negative effects caused by their inappropriate actions in recreational areas (Kraus 1990; Torkildsen 2005; Plummer 2009; McLean and Hurd 2011).

In this regard, one of the natural recreational contexts which have received negative effects from the destructive human activities such as, mass wood harvesting and greenhouse effect, is the natural forest. Recreational visits to the natural forests that are assigned for recreation purpose can have potential negative impact on the nature, although converting the forests were initially used for wood harvesting, to recreation forests is justifiable both environmentally and economically. Human behaviour can depreciates the physical and esthetic qualities of the environment in recreation forest. Such depreciative behaviour often leads to theft or damage of property, compromising the quality of recreation experiences. A constant increase in direct costs of repairing, replacing the stolen or damaged facilities, and maintaining areas that have been destroyed due to careless or indifferent use has been reported.

The indirect costs of depreciative behaviour, though less tangible is as critical. Such indirect costs include, vandalism of the natural environment, nuisance behaviour, excessive noise, and a range of major as well as minor violations of rules and regulations, all of which reduce the quality of recreationists' experiences. Depreciative behaviour is categorized into a) nuisance acts, presenting the behaviour of annoying others including campers and other visitors which may or may not violate campsite rules or other legal regulations. Examples include, excessive noise, disruption of privacy (such as unsupervised children running through other parties' camps), and intentionally letting unleashed pets roam the campground b) vandalistic acts, comprising deliberate, damaging or defacing actions committed against campground, private property, or the surrounding environment c) legal violations which encompasses acts such as violation of the campsite rules, state or local rules, and traffic regulation.

Also, three characteristics can be attributed to depreciative behaviour firstly the depreciative behaviour occurs unintentionally secondly, it takes place due to the lack of the knowledge about the negative consequences of the behaviour. In the other words, if a person who committed depreciative behaviour was aware of the consequences of his/her behaviour, he/she would not engage in this kind of the behaviour. Finally, owing to their unawareness about the consequences of their behaviour they lack the sense of responsibility towards the effects caused by their behaviour (Christensen *et al.*, 1992; Namba and Dustin 1992; Manning 2003; Marion and Reid 2007; Manning *et al.*, 2017).

One of the depreciative behaviours is the act of littering which causes several negative consequences including sanitation and the aesthetic problem for the recreational forest, the health risk for individuals themselves, and also jeopardizing the life of the natural environments' fauna and flora in the recreational area, especially in the recreational forest (Clark *et al.*, 1971; Christensen *et al.*, 1992; Kim, 1995). Littering is the careless

discard of the rubbish that can be range from very small pieces such as cigarette butt to even abandoned vehicle (Finnie, 1973; Hansmann and Scholz, 2003). Although the negative outcomes of littering have been so obvious, in general, there have not been any formal constraint or sanction to prevent individuals from committing littering act especially in public places such as the recreational forest. In other words, littering could have not been classified under rule violation. Eventually, committing littering behaviour have had a high probability of occurrence which needs special attention (Campbell *et al.*, 1968; Tinker, 1969; Christensen and Clark, 1983; Cooley, 2006).

Fortunately, informal sanction such as the negative feedbacks from relative importance including friends, families, and even recreational areas' other visitors and managers can be considered as a strong motivational factor to stop individuals from committing littering act (Cialdini *et al.*, 1990; Kallgren *et al.*, 2000). Also, the sufficiency, usability, and accessibility of rubbish bins in the recreational area can be considered as another motivational factor for an individual to perform anti-littering act. Besides, to have a deeper influence on individuals and persuade them to perform anti-littering behaviour it seems wise to aware them about the negative consequences of the littering behaviour via educational approaches.

There are several management tools parks managers can implement, to control littering problem in recreational forest. Different tools are effective for different purposes (Buckley 1999). In selecting the appropriate management tool to implement for a particular problem, it is imperative that managers taken into consideration the workability, feasibility and effectiveness of the tool (Roggenbuck 1987). Selection of the appropriate management tool, depends on whether the tool is compatible and consistent with the establishment of the park (Winnett 1992). The fundamental tool for national parks should assure naturalness and retain the freedom of choice (the management approaches must be effective in terms of normative goals such as, naturalness while considering hedonic goal, such as, retaining freedom of choice). According to Vlek and Steg (2007), degradation of the environments is anthropogenic by nature or rooted in human behavior; such behavior, however, could be managed by changing the relevant behaviors to pro-environmental behavior (Steg and Vlek 2009).

In addition, there must be thoughtful consideration (i.e., gain goal) for visitors on costliness of performing the pro-environmental behaviour (Roggenbuck and Watson 1986). The feasibility of a tool will be dependent upon the budget and staffing conditions of the park (Roggenbuck 1987). Feasibility also determines whether the appropriate target population can benefit from such means (Roggenbuck 1992). The effectiveness of a management tool should be one of the key considerations, as there is no benefit in using a tool which is not achieving its purpose. It can be assumed that, both visitors and manager must be satisfied in terms of their normative, hedonic and gain goals. Accordingly, a critical point is in fulfilling all these goals without causing a conflict between the target populations' different interested goals (i.e., protected areas' manager and protected areas' visitors).

Management tools are characterised as direct or indirect (Hendee *et al.*, 1990; Manning *et al.*, 1996). Direct management involves on authoritarian regulations, which entails stringent control by managers (Brown *et al.*, 1987; Hendee *et al.*, 1990; Roggenbuck and Ham 1992; Kuo 2002). Direct management tools normally include regulations or infrastructure. For example, limiting the use of campfires in natural areas, by enforcing a rule that bans campfires (Manning *et al.*, 1996). Whereas, indirect management tools are comparatively more subtle and light-handed, whereby visitors maintain their freedom of choice (Lime and Lucas 1977; Brown *et al.*, 1987; Hendee *et al.*, 1990; Roggenbuck and Ham 1992). Indirect management tools typically involve education, persuasive communication strategy, and information provision (Gramann and Vander Stoep 1987; Hendee *et al.*, 1990; Kuo 2002; Marion and Reid 2007). For instance, as opposed to imposing strict regulation in reducing the use of campfires in natural areas, visitors would be educated on the ecological and aesthetic effects of campfires (Manning *et al.*, 1996).

It has been suggested that, national park managers apply indirect management tools as the first option, and only use direct management tools when indirect tools fail to achieve the management objectives (Hendee *et al.*, 1990). Generally, protected area managers prefer to use interpretation as a tool of indirect management (Lime and Lucas 1977; Washburne and Cole 1983; Olson 1984; Brown *et al.*, 1987; Eagles and McCool 2002). Interpretation is favored because it allows visitors to maintain their freedom of choice (Brown *et al.*, 1987; Roggenbuck 1987; Newsome *et al.*, 2002), is perceived to be a cost-effective method (Knudson *et al.*, 1995; Littlefair 2003), and it enhances visitor experiences and satisfaction (Beckmann 1991; Butler 1993; Bright 1994).

Land use managers often attempt to change peoples' behaviour, in managing problems such as, littering, by helping them to "shift" to increased level of moral development, where principles of justice and fairness are emphasized. This "shift" approach is achieved through methods associated with persuasion referred to as, the central route (Petty and Cacioppo 1986) or systematic processing (Chaiken and Stangor 1987). Persuasion is one of the fundamental principles of interpretive interventions, whereby individuals acquire awareness and deliberate critically about management decisions. One of the factors which may change through the central route to persuasion is attitude. Attitude is an estimation response (positive or negative, favourability or disfavourability) regarding the action for a given behavior (Ajzen and Fishbein 1980).

Although attitudes may be transformed through this deliberative, central route to persuasion, research has indicated that, there is a weak link between attitudes and behavioral outcomes (LaPierre 1934; Wicker 1969; Armitage and Christian 2003). One of the major factors that involve the attitude-behaviour link, is the intervening effect of social norms. According to the Theory of Planned Behaviour (TPB) (Ajzen 1985), the best predictor of a person's behaviour is their "behavioural intention", which is formulated with a combination of attitudes, normative influences, and the perceived ability to perform the given behaviour. The aim of persuasive communication is to waver the salient beliefs that underlie attitudes, social norms and perceived control. Therefore, determining the relationship between underlying values, attitudes, and beliefs with respect to any specific behaviour is critical. This knowledge is useful to park managers,

in order for them to identify the effectiveness of the interpretative management approach on specific behaviour in the certain area.

Albeit even though successfully predicting a wide range of behaviour, TPB has been criticized for neglecting moral considerations (Manstead 2000), an extension that is especially promising in morally relevant conditions (Gorsuch and Ortberg 1983). From a philosophical perspective, a situation is thought to be morally relevant when there is a clash between one's self-interest and the interest of others (Manstead 2000). Unfortunately, the proof of a net gain in the explanatory power of a morally extended TPB is uncertain. In their application of TPB to 5 specific acts, Harland *et al.*, (1999) determined that the inclusion of moral norms increased the proportion of explained variance in people's intention from 1% to 10% (Kaiser *et al.*, 2005).

Moral and other altruistic considerations are essential to understanding behaviour, as demonstrated by studies that focused on the Value Belief Norm (VBN) framework (Stern 2000). The VBN theory connects an individual's ecological worldview, evaluated by the New Environmental Paradigm (NEP) (Dunlap *et al.*, 2000a), and environmental values (Stern and Dietz 1994) with the norm-activation theory (Schwartz 1977). It proposes moral norms (known as Personal Norms (PNs))-a person's sense of obligation, to be the fundamental predictor of conservation behaviour. PNs, in turn, is described as a function of a chain of three beliefs namely, one's self-ascribed responsibility, one's awareness of the consequences of a behaviour for the valued object, and one's ecological worldview (i.e., the New Environmental Paradigm), which in turn is determined by environment-relevant values. In this particular model, an individual's awareness of the behavioural consequence is influence by his or her ecological worldview, in turn individual's awareness of the behavioural consequence affects his self-ascribed responsibility to act, which subsequently results in a person's sense of obligation to act (i.e., his or her PNs).

Stern *et al.*, (1999) believe the currently, their VBN model is the best explanatory account of acts of mundane environmentalism. Data has revealed, depending on the type of behaviour (i.e., private-sphere behaviour, policy support action, or environmental citizenship), VBN model explains 19% to 35% of its variance (Stern *et al.*, 1999). These values are considerably (3% to 10%) higher than the corresponding frameworks, from three comparatively tested alternative value based models (Stern *et al.*, 1999). However, though, explained variances between 19% and 35% look strikingly similar to the average 25% to 30%, that can be expected from TPB (Ajzen 1991).

In conjunction with attitude operational definition presented by Ajzen (1985), in a conceptual study by Steg *et al.*, (2014) situation is considerable, as if the information are salient, the degree of importance that different aspects of the choice options have in the mind of the involved persons, and how they evaluate those aspects. For example, individuals who hold strong Biospheric Values (BVs), consequently show stronger normative goals. Therefore, they are more concerned about the normative consequences of behaviour. Secondly, Personal Norm is activated by values. More specifically, values could determine whether individuals act upon normative purpose or hedonic and gain

goals, through the introducing a norm activation process, and provoking individuals' feeling of moral obligation to behave based on their salient values (Schwartz 1977).

Undeniably, numerous studies recommend that PNs become activated by values (Stern *et al.*, 1999; Nordlund and Garvill 2002, 2003; Steg *et al.*, 2005; De Groot *et al.*, 2008; Jakovcevic and Steg 2013). It should be noted that, to a wide extent the process in which values activate norm, in Steg *et al.*, (2014)'s statement (i.e., Integrated Framework for Encouraging Pro-environmental Behaviour (IFEP)) is in line with the path that has been presented in the VBN theory (Stern *et al.*, 1999; Stern 2000), where the individuals are highly aware of the problem, when they have the strong Biospheric Values, while those individuals with strong Egoistic Values (EVs), show the lesser problem awareness (Stern *et al.*, 1995; Garvill *et al.*, 2000; Nordlund and Garvill 2003; Schultz *et al.*, 2005; Steg *et al.*, 2005; De Groot *et al.*, 2008).

Once the individuals show that, they are aware of the environmental problem, they will proceed to the next step in which they find out whether their response (i.e., pro-environmental act) reduces negative consequences or not. Those who exhibit the higher problem awareness, feel a strong sense of responsibility, and they consider their behaviour as an efficient action to alleviate the problem. Knowing that, the action can reduce the negative consequence activates a persons' PNs (i.e. sense of moral obligation to behave along with environment matter). Based on IFEP and VBN, moral obligation eventually leads to behaviour, although TPB showed the immediate antecedent of the behaviour, is the intention. Steg *et al.*, (2014) stated that, high problem awareness besides a strong feeling of responsibility, could strengthen the determinant role of moral obligation to persuade individuals to perform the pro-environmental behaviour.

Furthermore, anticipated regret is assumed to be a mediating factor transmitting the effect of moral norm on intention. As reported by Steg *et al.*, (2014); Abraham and Sheeran (2003); Sheeran and Orbell (1999), inclusion of the aforementioned factor can sufficiently improve the predictive power of the both TPB and VBN theory. However, they presented different interpretations about how anticipated regret has been embedded in the theory of planned behavior. More precisely, in a specific situation where biospheric and Altruistic Values (AVs) are prominent and individuals hold normative goals, the consequences of the behaviour that maintain others' welfare and save the natural resources are important to them. Likely individuals whose behaviour is in line with their biospheric and AVs and their normative goals experience positive moral emotion, while negative moral emotion is experienced by those whose movement is against their moral consideration (Steg *et al.*, 2014).

According to the VBN theory, immediate antecedent of the pro-environmental behaviour is the individuals' moral consideration. Consequently, it could be assumed that, negative moral emotion reduces an individual's willingness to perform non-environmental behaviour, while positive moral emotion could increase their willingness to perform pro-environmental behaviour, through the strengthening or/and mediating the relationship between moral norm and intention. In other word, if an individual put him/herself in a hypothetical situation in which as an outcome of his/her behaviour his salient values and

moral responsibility fulfilled or violated, his/her feeling of pride or regret will be aroused thereby leading him/her to either perform or not perform that hypothetical behaviour respectively.

Subjective norm is another determinant variable in theory of planned behavior, that has been subjected to criticism. The original interpretation by Ajzen (1985) stated that, individuals' feeling of normative pressure arises from the level of approval or disapproval expressed by their relative importance towards their participation, in the target behaviour (i.e. Injunctive Norm (IN)). Although subjective norm specifically injunctive normative pressure showed to be a good predictor of behavioural intention, in situations where the non-environmental behaviour is predominant (e.g. littered environment) the existence of a sign trying to encourage individuals to participate or perform the pro-environmental behaviour, brings about counterproductive results. For instance, in a recreation area which is highly littered (i.e. Descriptive Norm (DN)), the presence of anti-littering sign increases littering rather than reducing it. It is due to the fact that the presence of prohibiting sign highlights a conflicting DN in a situation facing the heavy environmental problem (Cialdini *et al.*, 1990; Keizer *et al.*, 2011).

In conjunction with Cialdini *et al.*, (1990)s' findings, Steg *et al.*, (2014) mentioned that, in the situations where norm-violating behaviours are salient through the clues presented in the environment (e.g., littering) normative goals' strength may be reduced, thereby increasing the strength of gain and hedonic goals. Fortunately, the opposite is also true, whereby the strength of normative goals could increase, through situational cues indicative of others' respect and behaving in line with normative goals. Second situational factors that is assumed to reduce the strength of normative goals is costliness of behaviour thereby reducing individuals' willingness to participate in pro-environmental behaviour. In other words, if a behaviour was conceived as uncomfortable, costly, and requires a lot of effort, it would lessen the predictive ability of Biospheric Values and normative consideration (Harland *et al.*, 1999; Bamberg and Schmidt 2003; Diekmann and Preisendörfer 2003; Lindenberg and Steg 2007; Abrahamse *et al.*, 2009; Steg and Vlek 2009; Abrahamse and Steg 2011; Steg *et al.*, 2011). Third situational factors that affects the strength of the relationship between values and related goals is the presence of competing goals and how individuals prioritize them. As mentioned previously, individuals hold three different values which lead them to establish their salient goals in a particular condition. Based on the situations where behaviour takes place, the prominence level of the values is changes, which leads to the initiation of different goals. For example, in a certain situation where an individual is supposed to be punctual, the fuel-saving behaviour (i.e., behaviour that carries biospheric goals), threatens individuals' gain goal (i.e., being on time). Consequently, individuals ignore fuel saving behaviour and choose to be on time. Fortunately, the opposite is also true.

1.2 Problem Statement

Of the depreciative behaviours explained in the previous sections, littering is a highly prevalent resisting social and environmental problem (Clark *et al.*, 1971; Christensen *et al.*, 1992; Kim 1995). It is perceived as untidy by most people and can be harmful to the health of humans and wildlife. Littering is the casual, wrong discarding of waste and can be considered as one of the most neglected and visible types of environmental degradation. It is considered as a type of disorder and can be destructive to the well-being of human and wildlife alike (Finnie 1973; Hansmann and Scholz 2003). It is one of the common depreciative behaviour in most of public places. Despite vast amounts of research and interventions that have been carried out and implemented in different locations and countries in order to control this problem, litter can still be noticed in most of public spaces, ranging from urban areas to rural areas from major cities' residential areas to the recreational forests, worldwide (Campbell *et al.*, 1968; Tinker 1969; Christensen and Clark 1983; Cooley 2006). Litter can range from small pieces such as, cigarette butts, to as large as abandoned vehicles. It causes several adverse effects including pollution, aesthetic degradation, attracting hazardous species, odour and unpleasant smell, etc., (Clark *et al.*, 1971; Christensen *et al.*, 1992; Kim 1995).

Malaysian recreational forests with a vast number of annual visitors, suffers from the same littering problem and litter prevalence. Of the negative consequences of the littering behaviour and litter prevalence in Malaysia recreation forest is the cases of Leptospirosis, which is mainly caused by the rodents' urine that were attracted to the human leftover in recreation forest (Lim *et al.*, 2011; Herriman 2014; Lynn 2015; Yaakob *et al.*, 2015; Joibi 2017). In other words, the visitors rubbish especially their food left over which have carelessly discarded and left on the ground of the Malaysia's recreation forest were the main sources that can attracts rats and rodents whose urine have been infected by leptospirosis virous and eventually can pollutes water sources in Malaysia's recreation forest via their urination routine. In this regards the lock down of the Jeram Toi waterfall and recreational park can be mentioned, owing to four cases of leptospirosis or rat urine disease (Hong and Chan 2010; Bakar 2013; Adnan 2014; Aarons 2015; Majelan 2016). Also, due to excessive accumulation of the rubbish, several forest park have been closed down such as, the Mossy Forest Park located in Cameron Highlands (Hong and Chan 2010; Bakar 2013; Adnan 2014). Also, due to the aforementioned reasons, the annual local and international visits in some Malaysian recreational forests has decreased over the years (Idris *et al.*, 2013). Such cases as mentioned above, makes one cautious, and gives a rise to the question, when will be the next recreation forest be facing the same problem?

Aside from factors reported in the literature, other negative impacts attributed to the presence of litter in the Recreation Forest, include the reduction of the Parks' aesthetic value, causing a reduction in the quality of visitors' experience originating from, odour nuisance, probability of confronting dangerous wild animals, and vermin, which are attracted to visitors' leftovers, and increased wildlife's mortality (Cialdini *et al.*, 1990; Ellis and Lish 1999; Chin *et al.*, 2000; Buckley *et al.*, 2003; Thompson *et al.*, 2004; Schultz *et al.*, 2009; Brown *et al.*, 2010; Kaseva and Moirana 2010).

Therefore, in the current study, anti-littering behavioural intention (ALBI) among the visitors of Malaysian recreational forests, specifically Kanching recreation forest (KRF), was chosen as the study dependent variable. The choice of KRF was made due to its vicinity to two main cities in Malaysia including Kuala Lumpur and Rawang which makes this recreation forest a convenient and accessible place for Malaysia citizens and even foreigners to spend their leisure. Eventually owing to the high number of the visits and also prevalence of the litter as stated by an officer from Selangor State's Forestry Department, to prevent the occurrence of the similar cases of human infection disease such as leptospirosis which is one of the health-related consequences of the littering, the KRF was chosen as the study site in the current research.

It is anticipated that, by identifying the underlying factors expected to persuade visitors to take appropriate action against littering behaviour, a long lasting behavioural change among Malaysian recreational forests' visitors, can be achieved. Factors such as, visitors attitude toward the outcomes of anti-littering behaviour, the social pressure that they feel from their surroundings and relative importance by performing anti-littering behaviour, their beliefs in barriers and facilitators of their anti-littering behaviour, their emotional state once they perceive themselves in a hypothetical situation, resulting from their anti-littering behaviour, the obligation and responsibility that they attribute to themselves regarding anti-littering behaviour, their general worldview, and their abstract and long lasting evaluation towards themselves, others, and nature, will be investigated.

Once the factors that either strengthen or weaken individuals' willingness to perform anti-littering behaviour are identified, prioritized, and their hypothetical association examined, in the next phase the underlying beliefs that ground them can be extracted through elicitation studies. The beliefs can be used in the managerial stage, to build the contents of persuasive discussion towards target behaviour, interpretative messages that appear on signages, and topics that are supposed to be taught during educational campaigns.

The theories have been discussed in the previous sections, especially TPB and VBN has shown to be an efficient framework to predict individuals' pro-environmental behaviour and can well encompass behavioural change determinant factors. Nevertheless, a number of drawbacks can be attribute to each of them. Variables that are disregarded in VBN, have been respected in TPB. In other words, the absence of situational factors including environmental constraint impeding the performance of the behaviour and facilitating factors can be seen in the Value-Belief-Norm theory, while they have been well appreciated in TPB under the Perceived Behavioural Control (PBC) construct. Another situational factor that has been neglected in the VBN theory is, subjective norm which has received valuable consideration in the TPB theory. Conversely, TPB has been criticized for the absence of the individual's moral consideration, which is the immediate antecedent of pro-environmental behaviour in the VBN theory.

IFEP is a third conceptual explanation, which has attempted to improve the predictive ability of this study research framework. It also faces some drawbacks including, the absence of Injunctive Norm. Moreover, although it has tried to determine the moderating effectiveness of situational factors including, competing goals, costliness of the pro-environmental behaviour, and Descriptive Norm, the situational factors embedded in TPB consists of wider environmental constraints and facilitators (e.g., absence of rubbish bin, distance of rubbish bin, litter toxicity, and so forth). The absence of the intention which is the immediate determinant of the final behaviour in TPB, can be detected in both VBN and IFEP. However, IFEP can well elucidate the contribution of individuals' three different values (i.e., egoistic, altruistic, and biospheric) and their goals (i.e., hedonic, gain, and normative goals) toward their moral consideration to perform the pro-environmental behaviour, whereas it has been neglected in TPB.

Consequently, a comprehensive theoretical framework that can overcome and eliminate all aforementioned flaws warrants the better understanding of the underlying factors determining individuals' pro-environmental behavior (i.e., the anti-littering behavior of KRF's visitors), factors that could help KRF's managers to develop better management approaches leading to long-term behavioral changes. This study attempts to determine whether by combining and defining a new way of connecting the aforementioned variables drawn from TPB, VBN, and IFEP, could achieve a comprehensive framework efficient to predict willingness of KRF's visitors to perform the pro-environmental behavior (i.e., anti-littering behavior). It is assumed by understanding how the variables influence each other via specifying the relationship among them KRF's managers could have the opportunity to improve the effectiveness of their management approaches. For instance, by modifying, the messages that appear in interpretive signages. Messages can provoke and strengthen visitors' normative values and goals meanwhile; they can increase their knowledge about environmental matters and consequences of their behavior. In addition, through making pro-environmental behavior pleasurable, visitors' hedonic and gain goals could be fulfilled and leads to increase their intention to perform the target behaviour (i.e., anti-littering behavior). It is believed that, the discrepancies between the three different psycho-social theories (i.e., VBN, TPB, and IFEP) are negligible. However, in the field of pro-environmental behavior where the individuals' behaviors in society and toward environmental matters are concerned even small differences may lead to a determinant contribution.

1.3 Research Questions

It has been realized that variables embedded in the three different psycho-social theories (i.e., TPB, VBN, and IFEP) can contribute to better understanding the intention of KRF's visitors to perform the anti-littering behaviour. However, in determining the appropriateness of using a combination of factors from the three models, existing studies are surprisingly limited. Therefore, this study attempts to establish new conceptual model consisting of variables such as values, goals, awareness of consequences (i.e., attitude), Descriptive Norm, IN, perceived behavioral control, Ascription of Responsibility, moral norm, anticipated emotion, and intention of KRF's visitors. It also tries to define the relationship among the aforementioned variables by using structural equation modeling (SEM). Consequently, to achieve the aims of this study some research questions must be answered which are as follows:

RQ1. What are the relationships between Ascription of Responsibility, anticipated emotion, attitude, Descriptive Norm, Injunctive Norm, Perceived Behavioural Control, and Personal Norm of the KRF's visitors and their Anti-littering Behavioural Intention?

RQ2. What are the relationships between attitude, Descriptive Norm, Injunctive Norm, New Environmental Paradigm, and Personal Norm of the KRF's visitors and their Anticipated Emotion toward anti-littering behaviour?

RQ3. What are the relationships between Ascription of Responsibility, attitude, Descriptive Norm, Injunctive Norm, Perceived Behavioural Control, and New Environmental Paradigm of the KRF's visitors and their Personal Norm toward anti-littering behaviour?

RQ4. What are the relationships between attitude and Perceived Behavioural Control of the KRF's visitors and their Ascription of Responsibility toward anti-littering behaviour?

RQ5. What are the relationships between Altruistic Values, Biospheric Values, Egoistic Values, and New Environmental Paradigm of the KRF's visitors and their attitude toward anti-littering behaviour?

RQ6. What are the relationships between Altruistic Values, Biospheric Values, and Egoistic Values of the KRF's visitors and their New Environmental Paradigm?

1.4 General Objective

To measure the psychosocial variables of the KRF's visitors including their values, New Environmental Paradigm, specific attitude, ascription of responsibilities, Personal Norm, anticipated emotion, Injunctive Norm, Descriptive Norm, Perceived Behavioural Control, and intention toward their anti-littering behavior during their visit in KRF.

Specific Objectives

The study's specific objectives developed based on each endogenous construct and its anticipators along the study's causal chain framework. The specific objectives' related hypotheses are depicted in (Table 1.1).

SO1. To determine the relationship between Ascription of Responsibility, Anticipated Emotion, attitude, Descriptive Norm, Injunctive Norm, Perceived Behavioural Control, and Personal Norm of the KRF's visitors and their Anti-littering Behavioural Intention.

SO₂. To determine the relationship between attitude, Descriptive Norm, Injunctive Norm, New Environmental Paradigm, and Personal Norm of the KRF's visitors and their Anticipated Emotion toward anti-littering behaviour.

SO₃. To determine the relationship between Ascription of Responsibility, attitude, Descriptive Norm, Injunctive Norm, Perceived Behavioural Control, and New Environmental Paradigm of the KRF's visitors and their Personal Norm toward anti-littering behaviour.

SO₄. To determine the relationship between attitude and Perceived Behavioural Control of the KRF's visitors and their Ascription of Responsibility toward anti-littering behaviour.

SO₅. To determine the relationship between Altruistic Values, Biospheric Values, Egoistic Values, and New Environmental Paradigm of the KRF's visitors and their attitude toward anti-littering behaviour.

SO₆. To determine the relationship between Altruistic Values, Biospheric Values and Egoistic Values of the KRF's visitors and their New Environmental Paradigm.

Table 1.1: Research specific objectives and their related hypotheses

SOs	Hypotheses
SO ₁	H ₁ .AR of the KRF's visitors toward anti-littering behaviour has a positive effect on their ALBI.
	H ₂ .AE of the KRF's visitors toward anti-littering behaviour has a positive effect on their ALBI.
	H ₃ .Attitude of the KRF's visitors toward anti-littering behaviour has a positive effect on their ALBI.
	H ₄ .DN of the KRF's visitors has a positive effect on their ALBI.
	H ₅ .IN of the KRF's visitors has a positive effect on their ALBI.
	H ₆ .PBC of the KRF's visitors toward anti-littering behaviour has a positive effect on their ALBI.
	H ₇ .PN of the KRF's visitors toward anti-littering behaviour has a positive effect on their ALBI.
SO ₂	H ₁ .Attitude of the KRF's visitors toward anti-littering behaviour has a positive effect on their AE toward anti-littering behaviour.
	H ₂ .DN of the KRF's visitors has a positive effect on their AE toward anti-littering behaviour.
	H ₃ .IN of the KRF's visitors has a positive effect on their AE toward anti-littering behaviour.
	H ₄ .NEP of the KRF's visitors has a positive effect on their AE toward anti littering behaviour.
	H ₅ .PN of the KRF's visitors toward anti-littering behaviour has a positive effect on their AE toward anti littering behaviour.
SO ₃	H ₁ .AR of the KRF's visitors toward anti-littering behaviour has a positive effect on their PN toward anti-littering behaviour.
	H ₂ .Attitude of the KRF's visitors toward anti-littering behaviour has a positive effect on their PN toward anti-littering behaviour.
	H ₃ .DN of the KRF's visitors has a positive effect on their PN toward anti-littering behaviour.
	H ₄ .IN of the KRF's visitors has a positive effect on their PN toward anti-littering behaviour.
	H ₅ .PBC of the KRF's visitors toward anti-littering behaviour has a positive effect on their PN toward anti-littering behaviour.
	H ₆ .NEP of the KRF's visitors has a positive effect on their PN toward anti littering behaviour.
SO ₄	H ₁ .Attitude of the KRF's visitors toward anti-littering behaviour has a positive effect on their AR toward anti-littering behaviour.
	H ₂ .PBC of the KRF's visitors toward anti-littering behaviour has a positive effect on their AR toward anti-littering behaviour.
SO ₅	H ₁ .AVs of the KRF's visitors has a positive effect on their attitude toward anti-littering behaviour.
	H ₂ .BVs of the KRF's visitors has a positive effect on their attitude toward anti-littering behaviour.
	H ₃ .EVs of the KRF's visitors has a positive effect on their attitude toward anti-littering behaviour.
	H ₄ .NEP of the KRF's visitors has a positive effect on their attitude toward anti-littering behaviour.
SO ₆	H ₁ .AVs of the KRF's visitors has a positive effect on their NEP.
	H ₂ .BVs of the KRF's visitors has a positive effect on their NEP.
	H ₃ .EVs of the KRF's visitors has a negative effect on their NEP.

1.5 Significance of the Research

The contribution of this study is significant in both practical and theoretical aspects, in the area of Anti-littering Behavioural Intention of Malaysian's visitors during their visits to the Malaysian recreational forests. In the current study through a combination of the already existing theories including TPB and Value Belief Norm Model in the field of social science and pro-environmental behaviour, an effort has been made to expand the original theories. Also, two constructs namely Anticipated Emotion and Descriptive Norm are added to study's mixed model according to the conceptual work by Steg *et al.*, (2014).

1.5.1 Knowledge significance

The main purpose of the current study is to develop and identify a novel information based on the intention of visitors in Malaysian recreational forests. The views on Malaysian recreational forests' current issues such as, litter prevalence and littering behaviour is provided in this study. Besides, improving the understanding about the attitudinal, contextual and intentional determinant of visitors' anti-littering behaviour, it is expected the study findings enhance the comprehension of the visitors' demographic and trip characteristics, and travel behaviour, related to anti-littering behaviour, thereby helping the tourism industry.

Up to date, the studies that target visitors' behaviour in outdoor recreation destinations such as, recreational forests in Malaysia are limited. Also the few studies that have investigated this, generally concentrated on the actual behaviour and its consequences (Idris *et al.*, 2013). The scarcity of the research that can fill the gap between visitors' underlying psychosocial determinant factors and their behaviour whose outcomes either benefit or harm the nature can be felt which is the current study's main concern. The factors which could result in long lasting behavioural changes if identified and considered, could be applied in managerial intervention.

The findings of the current study are expected to contribute to the existing knowledge of visitors' behaviour in recreational destinations such as, recreational forests in Malaysia. Using TPB, VBN, and constructs borrowed from a conceptual study by Steg *et al.*, (2014), the current study will focus on visitors' prioritisation of their abstract values, their general perspective towards the universe and their association with it, their attitude towards the outcome of their behaviour, their beliefs in their abilities and their control over the target behaviour, the social pressures that they feel by performing or refusing to perform the behaviour, their beliefs in the power of their actions to alleviate harmful outcomes to environment, the responsibility that they attribute to themselves, their emotional stage once putting themselves in hypothetical situations where nature can be either protected or harmed as a consequences of their behaviour, and their willingness and intention to either perform or refuse to perform the behaviour. Unlike previous studies, the constructs in the current study can cover both emotional and cognitive process which is expected to build the foundation of visitors' decision-making.

1.5.2 Practical significance

By examining the study's theoretical framework an overall view of the constructs' priority and the hypothetical association among them can be obtained. Next individuals' beliefs grounding their behaviour's psychosocial determinants can be extracted via elicitation studies. The extracted beliefs can provide ample material for managerial approaches employed by policy makers and park authorities. For instance:

Visitors beliefs and evaluation about the behavioural outcomes can provide attractive topics for a profound discussion between managers and visitors around the behaviour of interest which can be considered as the central root to persuasion.

Determining how individuals prioritized their relative importance as the source of the social pressure, can give clues to the park managers how to remind visitors of how they would be portrayed by significant others by either performing or refusing to perform the behaviour of interest.

By obtaining information about the barriers and facilitators that individuals feel against or towards their wills, park managers and authorities can apply minor to major physical modifications inside recreational forests.

By learning about visitors' salient values park managers will have an opportunity to direct the current of persuasive discussion in the way that fulfils visitors' salient values.

By installing interpretative signage with messages that remind visitors about the power of their actions in eliminating negative environmental consequences, either to themselves, to others, or to the environment itself, park managers can potentially increase the probability to perform the behaviour of interest by parks' visitors.

After specifying the power of the individuals' emotional states, parks managers will be able to put parks' visitors in a hypothetical situation, where, as the results of their own behaviours, their salient values, their evaluation of behavioural consequences, the social pressure they feel, and the responsibility they feel, will be either fulfilled or violated, thereby arousing their sense of pride or regret.

Through learning about individual general perspective towards environment park managers, can expand the topics of persuasive communication to the farther adage of visitors' pro-environmental behaviour and its connection to nature.

Park managers can stimulate visitor felt responsibility and obligation toward the welfare of others and nature through educational campaigns and persuasive conversations, thereby motivating them to behave in a way that fulfils those responsibilities and obligations.

Furthermore, this study can assist recreational forests' managers to obtain a profound comprehension of the profiles, characteristics, and personal needs of their visitors, which can lead to beneficial approaches. Therefore, it is not merely of academic interest to understand visitors' behaviour; but is doing so it provides vital information, important for marketing and tourism planning.

Overall, this study demonstrates the factors which are effective in stabilizing the influence of environmental intervention such as interpretative intervention on anti-littering behaviour. The findings of the study might also provide social researchers and

students with some features of pro-environmental approaches to counter littering behaviour.



REFERENCES

- Aarons, M. (2015). New Consequences of Littering in Malaysia [Press release]. Retrieved from <http://cleanmalaysia.com/2015/10/13/new-consequences-of-littering-in-malaysia/>
- Abraham, C., and Sheeran, P. (2003). Acting on intentions: The role of anticipated regret. *British Journal of Social Psychology*, 42(4), 495-511.
- Abrahamse, W., and Steg, L. (2011). Factors related to household energy use and intention to reduce it: The role of psychological and socio-demographic variables. *Human ecology review*, 18(1), 30-40.
- Abrahamse, W., Steg, L., Gifford, R., and Vlek, C. (2009). Factors influencing car use for commuting and the intention to reduce it: A question of self-interest or morality? *Transportation Research Part F: traffic psychology and behaviour*, 12(4), 317-324.
- Adnan, Z. (2014). Jeram Toi park closed after four contract leptospirosis [Press release]. Retrieved from <http://www.thestar.com.my/news/nation/2014/10/11/jeram-toi-park-closed-after-four-contract-leptospirosis/>
- Aguilar-Luzón, M. d. C., García-Martínez, J. M. Á., Calvo-Salguero, A., and Salinas, J. M. (2012). Comparative Study Between the Theory of Planned Behavior and the Value–Belief–Norm Model Regarding the Environment, on Spanish Housewives' Recycling Behavior. *Journal of Applied Social Psychology*, 42(11), 2797-2833.
- Ajuhari, Z., Isa, S. S., and Aziz, A. (2016). *Promoting Pro-environmental Behavior in Ecotourism Destination*. Paper presented at the Regional Conference on Science, Technology and Social Sciences (RCSTSS 2014), Singapore
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl and J. Beckmann (Eds.), *Action Control from Cognition to Behavior* (pp. 11-39). Germany: Springer
- Ajzen, I. (1991). The theory of planned behavior organizational behaviour and human decision processes. *Organizational behavior and human decision processes*, 50(2), 179-211.
- Ajzen, I. (2002a). Attitude assessment. *Encyclopedia of psychological assessment*, 1, 110-115.
- Ajzen, I. (2002b). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32(4), 665-683.
- Ajzen, I., and Driver, B. (1992). Application of the theory of planned behavior to leisure choice. *Journal of Leisure Research*, 24(3), 207-224.

- Ajzen, I., and Fishbein, M. (1972). Attitudes and normative beliefs as factors influencing behavioral intentions. *Journal of personality and social psychology*, 21(1), 1-9.
- Ajzen, I., and Fishbein, M. (1977). Attitude-behaviour relations. A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84(5), 888-918.
- Ajzen, I., and Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour* (Vol. 278). USA: Englewood Cliffs NJ: Prentice Hall
- Ajzen, I., and Fishbein, M. (2005). The influence of attitudes on behavior. In D. Albarracin, B. T. Johnson, and M. P. Zanna (Eds.), *The handbook of attitudes* (Vol. 173-221, pp. 31). USA: Lawrence Erlbaum Associates, Inc.
- Ajzen, I., and Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology*, 22(5), 453-474.
- Al-Mosa, Y., Parkinson, J., and Rundle-Thiele, S. (2017). A Socioecological Examination of Observing Littering Behavior. *Journal of Nonprofit & Public Sector Marketing*, 29(3), 235-253.
- Altman, I. (1975). *The environment and social behavior: Privacy, Personal Space, Territory, and Crowding*. California, USA: Brooks/Cole
- Arafat, H. A., Al-Khatib, I. A., Daoud, R., and Shwahneh, H. (2007). Influence of socio-economic factors on street litter generation in the Middle East: effects of education level, age, and type of residence. *Waste Management & Research*, 25(4), 363-370.
- Armitage, C. J., and Christian, J. (2003). From attitudes to behaviour: Basic and applied research on the theory of planned behaviour. *Current Psychology*, 22(3), 187-195.
- Armitage, C. J., and Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, 40(4), 471-499.
- Awang, Z., Afthanorhan, W. M. A. W., and Asri, M. (2015). Parametric and non parametric approach in structural equation modeling (SEM): The application of bootstrapping. *Modern Applied Science*, 9(9), 58-67.
- Babbie, E. (2007). *The practice of social research* (Vol. 112). Belmont, CA: Wadsworth publishing company
- Bagozzi, R. P. (1992). The self-regulation of attitudes, intentions, and behavior. *Social Psychology Quarterly*, 55(2), 178-204.
- Bagozzi, R. P., and Yi, Y. (1994). Advanced topics in structural equation models. *Advanced methods of marketing research*, 151.

- Bakar, N. A. (2013). Turtles eat plastic bags thinking it is jellyfish [Press release]. Retrieved from <http://www.thestar.com.my/news/community/2013/04/20/turtles-eat-plastic-bags-thinking-it-is-jellyfish/>
- Bamberg, S., Hunecke, M., and Blöbaum, A. (2007). Social context, personal norms and the use of public transportation: Two field studies. *Journal of Environmental Psychology, 27*(3), 190-203.
- Bamberg, S., and Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology, 27*(1), 14-25.
- Bamberg, S., and Schmidt, P. (2003). Incentives, morality, or habit? Predicting students' car use for university routes with the models of Ajzen, Schwartz, and Triandis. *Environment and Behavior, 35*(2), 264-285.
- Bator, R. J., Bryan, A. D., and Schultz, P. W. (2011). Who Gives a Hoot?: Intercept Surveys of Litterers and Disposers. *Environment and Behavior, 43*(3), 295-315.
- Beckmann, E. A. (1991). *Environmental interpretation for education and management in Australian National Parks and other protected areas*. University of New England 1991, Australia.
- Beeharry, Y. D., Bekaroo, G., Bokhoree, C., Phillips, M. R., and Jory, N. (2017). Sustaining anti-littering behavior within coastal and marine environments: Through the macro-micro level lenses. *Marine pollution bulletin, 119*(2), 87-99.
- Bhattacharjee, A. (2012). *Social science research: Principles, methods, and practices* (second ed.). USA: University of South Florida
- Bickman, L. (1972). Environmental attitudes and actions. *The Journal of Social Psychology, 87*(2), 323-324.
- Black, J. S., Stern, P. C., and Elworth, J. T. (1985). Personal and contextual influences on household energy adaptations. *Journal of Applied Psychology, 70*(1), 3-21.
- Bobbitt, L. M., and Dabholkar, P. A. (2001). Integrating attitudinal theories to understand and predict use of technology-based self-service: the internet as an illustration. *International Journal of Service Industry Management, 12*(5), 423-450.
- Bollen, K. A. (1989). *Structural equations with latent variables*. New York, USA: Wiley
- Bratt, C. (1999). The impact of norms and assumed consequences on recycling behavior. *Environment and Behavior, 31*(5), 630-656.
- Bright, A. (1994). Information campaigns that enlighten and influence the public. *Parks & Recreation (Arlington), 29*(8), 49-54.

- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of cross-cultural psychology*, 1(3), 185-216.
- Brown, P. J., McCool, S. F., and Manfredo, M. J. (1987). Evolving concepts and tools for recreation user management in wilderness: a state-of-knowledge review. *General Technical Report, Intermountain Research Station, USDA Forest Service*(INT-220), 320-346.
- Brown, T. J., Ham, S. H., and Hughes, M. (2010). Picking up litter: an application of theory-based communication to influence tourist behaviour in protected areas. *Journal of Sustainable Tourism*, 18(7), 879-900.
- Bruijnis, M., Hogeveen, H., Garforth, C., and Stassen, E. (2013). Dairy farmers' attitudes and intentions towards improving dairy cow foot health. *Livestock Science*, 155(1), 103-113.
- Bryman, A., and Cramer, D. (2005). *Quantitative Data Analysis with SPSS 12 and 13*. New York, USA: Routledge
- Buckley, R. (1999). Tools and indicators for managing tourism in parks. *Annals of Tourism Research*, 26(1), 207-209.
- Buckley, R., Pickering, C., and Weaver, D. B. (2003). *Nature-based tourism, environment and land management*. UK: CABI Publishing
- Burgess, R. L., Clark, R. N., and Hendee, J. C. (1971). An experimental analysis of anti-litter procedures. *Journal of Applied Behavior Analysis*, 4(2), 71-75.
- Butler, J. R. (1993). Interpretation as a management tool. *Parks and protected areas in Canada: Planning and management*, 211-224.
- Campbell, F. L., Hendee, J. C., and Clark, R. N. (1968). Law and order in public parks. *Parks and Recreation*, 3(12), 28-31.
- Campbell, M., and de Heer, M. C. P. (2013). *2012 gladstone harbour catchment care: Social survey-Who are the people littering and why*. Retrieved from CQUniversity, Gladstone, Qld: <http://hdl.cqu.edu.au/10018/988004>
- Carapetis, E., Machado, A., Braun, K., and Byard, R. (2014). Recreational fishing-related injuries to Australian pelicans (*Pelecanus conspicillatus*) and other seabirds in a South Australian estuarine and river area. *International Journal of Veterinary Health Science & Research*, 2(3), 24-27.
- Carrus, G., Passafaro, P., and Bonnes, M. (2008). Emotions, habits and rational choices in ecological behaviours: The case of recycling and use of public transportation. *Journal of Environmental Psychology*, 28(1), 51-62.
- Cassel, C., Hackl, P., and Westlund, A. H. (1999). Robustness of partial least-squares method for estimating latent variable quality structures. *Journal of applied statistics*, 26(4), 435-446.

- Cassel, C. M., Hackl, P., and Westlund, A. H. (2000). On measurement of intangible assets: a study of robustness of partial least squares. *Total Quality Management*, 11(7), 897-907.
- Chaiken, S., and Stangor, C. (1987). Attitudes and attitude change. *Annual review of psychology*, 38(1), 575-630.
- Chandool, N. (1997). *Participation in park interpretive programs and visitors' attitudes, norms, and behavior about petrified wood theft*. (Master of science), Virginia Polytechnic Institute and State University, USA. Retrieved from <http://hdl.handle.net/10919/36995>
- Chin, C. L., Moore, S. A., Wallington, T. J., and Dowling, R. K. (2000). Ecotourism in Bako National Park, Borneo: Visitors' perspectives on environmental impacts and their management. *Journal of Sustainable Tourism*, 8(1), 20-35.
- Chin, W. W., and Dibbern, J. (2010). An Introduction to a Permutation Based Procedure for Multi-Group PLS Analysis: Results of Tests of Differences on Simulated Data and a Cross Cultural Analysis of the Sourcing of Information System Services Between Germany and the USA. In *Handbook of Partial Least Squares* (pp. 171-193): Springer
- Chiu, Y.-T. H., Lee, W.-I., and Chen, T.-H. (2014). Environmentally responsible behavior in ecotourism: Antecedents and implications. *Tourism Management*, 40, 321-329.
- Christensen, H., Johnson, D., and Brookes, M. (1992). *Vandalism: research, prevention, and social policy*. First International Symposium on Vandalism in North America, Seattle, Washington, 20-22 April 1988. Paper presented at the Vandalism: research, prevention, and social policy. First International Symposium on Vandalism in North America, Seattle, Washington, 20-22 April 1988.
- Christensen, H. H., and Clark, R. N. (1983). Increasing public involvement to reduce depreciative behavior in recreation settings. *Leisure Sciences*, 5(4), 359-379.
- Cialdini, R. B., Kallgren, C. A., and Reno, R. R. (1991). A focus theory of normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 24, pp. 201-234). USA: Elsevier
- Cialdini, R. B., Reno, R. R., and Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of personality and social psychology*, 58(6), 1015.
- Clark, R. N., Burgess, R. L., and Hendee, J. C. (1972a). The development of anti-litter behavior in a forest campground. *Journal of Applied Behavior Analysis*, 5(1), 1-5.

- Clark, R. N., Hendee, J. C., and Campbell, F. L. (1971). *Depreciative behavior in forest campgrounds: an exploratory study* (Vol. 161). USA: Pacific Northwest Forest and Range Experiment Station
- Clark, R. N., Hendee, J. C., and Washburne, R. (1972b). *Litterbags: an evaluation of their use* (Vol. 184). USA: Pacific Northwest Forest and Range Experiment Station
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (Vol. 2). London, United Kingdom: Academic press, INC
- Conner, M., and Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of Applied Social Psychology*, 28(15), 1429-1464.
- Conner, M., Lawton, R., Parker, D., Chorlton, K., Manstead, A. S., and Stradling, S. (2007). Application of the theory of planned behaviour to the prediction of objectively assessed breaking of posted speed limits. *British Journal of Psychology*, 98(3), 429-453.
- Cooley, R. R. (2006). *The effectiveness of signage in the reduction of litter in backcountry and frontcountry campsites*. Canada: Faculty of Graduate Studies 500 University Centre, University of Manitoba
- Cooper, D. R., and Schindler, P. S. (2013). *Business research methods* (Eleventh ed. Vol. 9). New York, USA: McGraw-Hill/Irwin
- Corporations, I. (2016). IBM SPSS Statistics for Macbook (Version 24.0). Armonk, NY: IBM Corporations.
- Cottrell, S. P. (2003). Influence of sociodemographics and environmental attitudes on general responsible environmental behavior among recreational boaters. *Environment and Behavior*, 35(3), 347-375.
- Crump, S. L., Nunes, D. L., and Crossman, E. (1977). The effects of litter on littering behavior in a forest environment. *Environment and Behavior*, 9(1), 137-146.
- De Groot, J., Steg, L., and Dicke, M. (2007). *Morality and reducing car use: Testing the norm activation model of prosocial behavior*. Retrieved from New York, USA NY: NOVA.
- De Groot, J. I., and Steg, L. (2009). Morality and prosocial behavior: The role of awareness, responsibility, and norms in the norm activation model. *The Journal of Social Psychology*, 149(4), 425-449.
- De Groot, J. I., and Steg, L. (2010). Relationships between value orientations, self-determined motivational types and pro-environmental behavioural intentions. *Journal of Environmental Psychology*, 30(4), 368-378.

- De Groot, J. I., Steg, L., Dicke, M., and Gustavsson, F. (2008). Transportation trends from a moral Perspective: Value orientations, norms and reducing car use. *New transportation research progress*, 67-91.
- de Kort, Y. A. W., McCalley, L. T., and Midden, C. J. H. (2008). Persuasive Trash Cans Activation of Littering Norms by Design. *Environment and Behavior*, 40(6), 870-891.
- De Leeuw, A., and Valois, P. (2014). Understanding primary-school students' beliefs regarding the adoption of pro-environmental behaviors. *International Journal of Education, Economics, and Management Engineering*, 8(5), 1391-1395.
- de Nooijer, J., Onnink, M., and van Assema, P. (2010). Vitamin D supplementation in young children: associations with theory of planned behaviour variables, descriptive norms, moral norms and habits. *Public health nutrition*, 13(8), 1279-1285.
- De Young, R. (2000). New ways to promote proenvironmental behavior: Expanding and evaluating motives for environmentally responsible behavior. *Journal of social issues*, 56(3), 509-526.
- Decker, D. J., and Goff, G. R. (1987). *Valuing wildlife: economic and social perspectives* (First ed.). the University of California, USA: Westview Press
- Department of Statistics, M. (2016). Current population estimates, Malaysia, 2014-2016. Retrieved from https://www.dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=155&bul_id=OW1xdEV0YlJCS0hUZzJyRUcvZEYxZz09&menu_id=L0pheU43NWJwRWVSZklWdzQ4TlhUUT09
- Deutscher, I. (1966). Words and deeds: Social science and social policy. *Social problems*, 13(3), 235-254.
- Diekmann, A., and Preisendörfer, P. (2003). Green and Greenback The Behavioral Effects of Environmental Attitudes in Low-Cost and High-Cost Situations. *Rationality and Society*, 15(4), 441-472.
- Dodge, M. C. (1972). *Modification of littering behavior an exploratory study*. Utah State University. Dept. of Forest Recreation., USA.
- Dolkar, Y. (2015). *The Effects of Socio-demographic Factors of Thimphu Residents on Litter Generation*. (Post graduate diploma in public administration), Royal Institute of Management, Bhutan. Retrieved from <http://202.144.157.211:8080/jspui/bitstream/1/177/1/yangchen%20dolkar.docx>
- Drake, E. A. (2009). *Positive vs. negative prompting for litter control: A systematic field evaluation of relative effectiveness*. (Doctor of philosophy), Virginia Tech, USA. Retrieved from <https://vtechworks.lib.vt.edu>

- Driza, P.-J. N. (2014). *Optimal building performance: Exploring human behavior impacts on energy and water consumption in campus residence halls*. (Doctor Of Philosophy Dissertation), University of Florida, USA. Retrieved from <https://search.proquest.com/docview/1710077609?pq-origsite=gscholar>
- Duncan, G. S., and Martin, S. R. (2002). Comparing the effectiveness of interpretive and sanction messages for influencing wilderness visitors' intended behavior. *International Journal of Wilderness*, 8(2), 20-25.
- Dunlap, R., and Vain Liere, K. (1978). The new environmental paradigm scale: A proposed measuring instrument. *The Journal of Environmental Education*, 9, 10-19.
- Dunlap, R. E. (2008). The new environmental paradigm scale: From marginality to worldwide use. *The Journal of Environmental Education*, 40(1), 3-18.
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., and Jones, R. E. (2000a). Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale. *Journal of social issues*, 56(3), 425-442.
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., and Jones, R. E. (2000b). New trends in measuring environmental attitudes: measuring endorsement of the new ecological paradigm: a revised NEP scale. *Journal of social issues*, 56(3), 425-442.
- Eagles, P. F. J., and McCool, S. F. (2002). *Tourism in national parks and protected areas: Planning and management* (First ed.). UK: CABI publisher
- Eastman, L. B., Núñez, P., Crettier, B., and Thiel, M. (2013). Identification of self-reported user behavior, education level, and preferences to reduce littering on beaches—A survey from the SE Pacific. *Ocean & Coastal Management*, 78, 18-24.
- Ellis, D. H., and Lish, J. W. (1999). Trash-caused mortality in Mongolian raptors. *Ambio*, 28(6), 536-537.
- Evans, D., and Norman, P. (2003). Predicting adolescent pedestrians' road-crossing intentions: an application and extension of the Theory of Planned Behaviour. *Health Education Research*, 18(3), 267-277.
- Faul, F., Erdfelder, E., Buchner, A., and Lang, A.-G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior research methods*, 41(4), 1149-1160.
- Faul, F., Erdfelder, E., Lang, A.-G., and Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods*, 39(2), 175-191.
- Feld, S. L. (1978). Deterrence: For the prevention and cure of litter. *Evaluation Quarterly*, 2(4), 547-560.

- Fini, R., Grimaldi, R., Marzocchi, G. L., and Sobrero, M. (2012). The determinants of corporate entrepreneurial intention within small and newly established firms. *Entrepreneurship Theory and Practice*, 36(2), 387-414.
- Finnie, W. C. (1973). Field experiments in litter control. *Environment and Behavior*, 5(2), 123-144.
- Fishbein, M., and Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. *Philosophy & Rhetoric*, 10(2), 130-132.
- Fornell, C., and Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error *Journal of Marketing Research*, 18 (1), 39-50.
- Forward, S. E. (2009). The theory of planned behaviour: The role of descriptive norms and past behaviour in the prediction of drivers' intentions to violate. *Transportation Research Part F: traffic psychology and behaviour*, 12(3), 198-207.
- Francis, J. J., Eccles, M. P., Johnston, M., Walker, A., Grimshaw, J., Foy, R., . . . Bonetti, D. (2004). *Constructing questionnaires based on the theory of planned behaviour: A manual for health services researchers*. Retrieved from Newcastle, UK: <http://openaccess.city.ac.uk/1735/1/TPB%20Manual%20FINAL%20May2004.pdf>
- Gallup, I. (1972). What America really thinks about pollution. *National Wildlife*, April-May.
- Gardner, B., and Abraham, C. (2010). Going green? Modeling the impact of environmental concerns and perceptions of transportation alternatives on decisions to drive. *Journal of Applied Social Psychology*, 40(4), 831-849.
- Gärling, T., Fujii, S., Gärling, A., and Jakobsson, C. (2003). Moderating effects of social value orientation on determinants of proenvironmental behavior intention. *Journal of Environmental Psychology*, 23(1), 1-9.
- Garson, G. D. (2012). *Testing statistical assumptions*. Asheboro, NC, USA: Statistical Associates Publishing
- Garson, G. D. (2016). *Partial least squares: regression and structural equation model*. USA: Statistical Publishing Associates
- Garvill, J., Marell, A., and Nordlund, A. (2000). Effects of values, environmental concern, personal norm, attitude, and habit on car use. *International Journal of Psychology*, 35(3-4), 83-84.
- Geller, E. S., Winett, R. A., Everett, P. B., and Winkler, R. C. (1982). *Preserving the environment: New strategies for behavior change* (Vol. 102). USA: Pergamon Press Elmsford, NY

- Geller, E. S., Witmer, J. F., and Orebaugh, A. L. (1976). Instructions as a determinant of paper-disposal behaviors. *Environment and Behavior*, 8(3), 417-439.
- Goethner, M., Obschonka, M., Silbereisen, R. K., and Cantner, U. (2012). Scientists' transition to academic entrepreneurship: Economic and psychological determinants. *Journal of Economic Psychology*, 33(3), 628-641.
- Google Maps. (2018). Kanching Recreation Forest, Selangor, Malaysia. Retrieved from <https://goo.gl/maps/PVsdDTMkYCs>
- Gorsuch, R. L., and Ortberg, J. (1983). Moral obligation and attitudes: Their relation to behavioral intentions. *Journal of personality and social psychology*, 44(5), 1025.
- Gosling, E., and Williams, K. J. (2010). Connectedness to nature, place attachment and conservation behaviour: Testing connectedness theory among farmers. *Journal of Environmental Psychology*, 30(3), 298-304.
- Gramann, J., and Vander Stoep, G. (1987). Prosocial behavior theory and natural resource protection: A conceptual synthesis. *Journal of Environmental Management*, 24(3), 247-257.
- Granberg, D., and Holmberg, S. (1990). The person positivity and principal actor hypotheses1. *Journal of Applied Social Psychology*, 20(22), 1879-1901.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., and Tatham, R. L. (1998). *Multivariate data analysis* (Vol. 5). USA: Prentice hall New Jersey
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., and Tatham, R. L. (2006). *Multivariate data analysis* (6 ed.). USA: Pearson Prentice Hall
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., and Tatham, R. L. (2009). *Multivariate Data Analysis* (7 ed.). Upper Saddle River, NJ, USA: Prentice-Hall International
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., and Tatham, R. L. (2010). SEM: An introduction. *Multivariate data analysis: A global perspective*, 629-686.
- Hair, J. F., Hult, G. T. M., Ringle, C., and Sarstedt, M. (2013). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. California, USA: SAGE Publications
- Hair, J. F., Hult, G. T. M., Ringle, C., and Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. USA: Sage Publications
- Han, H. (2015). Travelers' pro-environmental behavior in a green lodging context: Converging value-belief-norm theory and the theory of planned behavior. *Tourism Management*, 47, 164-177.

- Han, H., and Hwang, J. (2017). What Motivates Delegates' Conservation Behaviors While Attending a Convention? *Journal of Travel & Tourism Marketing*, 34(1), 82-98.
- Han, H., and Hyun, S. S. (2014). Medical hotel in the growth of global medical tourism. *Journal of Travel & Tourism Marketing*, 31(3), 366-380.
- Hansen, T. (2008). Consumer values, the theory of planned behaviour and online grocery shopping. *International Journal of Consumer Studies*, 32(2), 128-137.
- Hansmann, R., and Scholz, R. (2003). A two-step informational strategy for reducing littering behavior in a cinema. *Environment and Behavior*, 35(6), 752-762.
- Hansmann, R., and Steimer, N. (2015). Linking an Integrative Behavior Model to Elements of Environmental Campaigns: An Analysis of Face-to-Face Communication and Posters against Littering. *Sustainability*, 7(6), 6937-6956.
- Harland, P., Staats, H., and Wilke, H. A. (1999). Explaining proenvironmental intention and behavior by personal norms and the theory of planned behavior. *Journal of Applied Social Psychology*, 29(12), 2505-2528.
- Harman, H. H. (1976). *Modern factor analysis*. Chicago, USA: University of Chicago Press
- Hawcroft, L. J., and Milfont, T. L. (2010). The use (and abuse) of the new environmental paradigm scale over the last 30 years: A meta-analysis. *Journal of Environmental Psychology*, 2(30), 143-158.
- Heberlein, T. A. (1971a). *Moral norms, threatened sanctions, and littering behavior*. USA: University of Wisconsin--Madison
- Heberlein, T. A. (1971b). *Social Norms, Threatened Sanctions, and Littering Behavior*. USA: University of Wisconsin--Madison Microfilms
- Hendee, J., Stankey, G., and Lucas, R. (1990). *Wilderness Management* (2 ed.). USA: Fulcrum Publishing
- Herriman, R. (2014). Malaysia waterfall park closed due to leptospirosis [Press release]. Retrieved from <http://outbreaknewstoday.com/malaysia-waterfall-park-closed-due-to-leptospirosis-10936/>
- Hines, J. M., Hungerford, H. R., and Tomera, A. N. (1987). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *The Journal of Environmental Education*, 18(2), 1-8.
- Hoeksma, D. L., Gerritzen, M. A., Lokhorst, A. M., and Poortvliet, P. M. (2017). An extended theory of planned behavior to predict consumers' willingness to buy mobile slaughter unit meat. *Journal of meat science*(128), 15-23.

- Homer, P. M., and Kahle, L. R. (1988). A structural equation test of the value-attitude-behavior hierarchy. *Journal of personality and social psychology*, 54(4), 638.
- Hong, C. W., and Chan, N. W. (2010). The potentials, threats and challenges in sustainable development of Penang National Park. *Malaysian Journal of Environmental Management*, 11(2), 95-109.
- Hopper, J. R., and Nielsen, J. M. (1991). Recycling as altruistic behavior: Normative and behavioral strategies to expand participation in a community recycling program. *Environment and Behavior*, 23(2), 195-220.
- Hoyos, D., Mariel, P., and Fernández-Macho, J. (2009). The influence of cultural identity on the WTP to protect natural resources: some empirical evidence. *Ecological economics*, 68(8), 2372-2381.
- Huddart-Kennedy, E., Beckley, T. M., McFarlane, B. L., and Nadeau, S. (2009). Rural-urban differences in environmental concern in Canada. *Rural sociology*, 74(3), 309-329.
- Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic management journal*, 20(2), 195-204.
- Hunecke, M., Blöbaum, A., Matthies, E., and Höger, R. (2001). Responsibility and environment: Ecological norm orientation and external factors in the domain of travel mode choice behavior. *Environment and Behavior*, 33(6), 830-852.
- Hunt, S. D., Sparkman, R. D., and Wilcox, J. B. (1982). The Pretest in Survey Research: Issues and Preliminary Findings. *Journal of Marketing Research*, 19(2), 269-273.
- Hynie, M., MacDonald, T. K., and Marques, S. (2006). Self-conscious emotions and self-regulation in the promotion of condom use. *Personality and social psychology bulletin*, 32(8), 1072-1084.
- Idris, N., Aziz, A., Mariapan, M., and Jamaludin, M. (2013). Attractiveness of recreational forests: an overview on selected researches. *International journal of independent research and studies*, 2(3), 102-108.
- Iwata, O. (2001). Attitudinal determinants of environmentally responsible behavior. *Social Behavior and Personality: an international journal*, 29(2), 183-190.
- Jakovcevic, A., and Steg, L. (2013). Sustainable transportation in Argentina: Values, beliefs, norms and car use reduction. *Transportation Research Part F: traffic psychology and behaviour*, 20, 70-79.
- Jalil, M. A., Mian, M. N., and Rahman, M. K. (2013). Using plastic bags and its damaging impact on environment and agriculture: An alternative proposal. *International Journal of Learning and Development*, 3(4), 1-14.

- Jayawardhena, C. (2004). Personal values' influence on e-shopping attitude and behaviour. *Internet Research*, 14(2), 127-138.
- Johanson, G. A., and Brooks, G. P. (2010). Initial scale development: sample size for pilot studies. *Educational and Psychological Measurement*, 70(3), 394-400.
- Joibi, N. (2017). Niosh urges authorities to address spike in leptospirosis cases [Press release]. Retrieved from <http://www.thestar.com.my/news/nation/2017/07/15/niosh-urges-authorities-to-address-spike-in-leptospirosis-cases/>
- Kaiser, F. G. (1998). A general measure of ecological behavior. *Journal of Applied Social Psychology*, 28(5), 395-422.
- Kaiser, F. G., Hübner, G., and Bogner, F. X. (2005). Contrasting the Theory of Planned Behavior With the Value, Belief, Norm Model in Explaining Conservation Behavior1. *Journal of Applied Social Psychology*, 35(10), 2150-2170.
- Kallgren, C. A., Reno, R. R., and Cialdini, R. B. (2000). A focus theory of normative conduct: When norms do and do not affect behavior. *Personality and social psychology bulletin*, 26(8), 1002-1012.
- Kang, M., and Moscardo, G. (2006). Exploring cross-cultural differences in attitudes towards responsible tourist behaviour: A comparison of Korean, British and Australian tourists. *Asia Pacific Journal of Tourism Research*, 11(4), 303-320.
- Kaseva, M. E., and Moirana, J. L. (2010). Problems of solid waste management on Mount Kilimanjaro: A challenge to tourism. *Waste Management & Research*, 28(8), 695-704.
- Kassem, N. O., Lee, J. W., Modeste, N. N., and Johnston, P. K. (2003). Understanding soft drink consumption among female adolescents using the Theory of Planned Behavior. *Health Education Research*, 18(3), 278.
- Keep America Beautiful, I. (1968). *Who litters and why: Results of a survey of public awareness and concern about the problem of litter*. . New York, USA: KAB. In
- Keep America Beautiful, I. (1970). *Fact Sheet. Litter is a national disgrace*. 99 Park Ave., New York, USA: KAB. In
- Keizer, K., Lindenberg, S., and Steg, L. (2011). The reversal effect of prohibition signs. *Group Processes & Intergroup Relations*, 14(5), 681-688.
- Kerlinger, P., Burger, J., Cordell, H. K., Decker, D. J., Cole, D. N., Landres, P., . . . O'Shea, T. (2013). *Wildlife and recreationists: coexistence through management and research*. USA: Island Press
- Kevin D. McCaul, Ann K. Sandgren, H. Katherine O'Neill, and Verlin B. Hinsz. (1993). The value of the theory of planned behavior, perceived control, and self-efficacy

expectations for predicting health-protective behaviors. *Basic and Applied Social Psychology*, 14(2), 231-252.

- Kiatkawsin, K., and Han, H. (2017). Young travelers' intention to behave pro-environmentally: Merging the value-belief-norm theory and the expectancy theory. *Tourism Management*, 59, 76-88.
- Kim, S.-o. (1995). *Effects of information on users' normative standards, perceived conflict, and depreciative behavior at campgrounds of Chiri-Mountain National Park, Korea*. (Doctor of Philosophy), Oregon State University, USA. Retrieved from http://ir.library.oregonstate.edu/concern/graduate_thesis_or_dissertations/7p88ck70n
- King, T., and Dennis, C. (2003). Interviews of deshopping behaviour: an analysis of theory of planned behaviour. *International Journal of Retail & Distribution Management*, 31(3), 153-163.
- Klein, J. P., and Moeschberger, M. L. (2005). *Survival analysis: techniques for censored and truncated data*. New York, USA: Springer Science & Business Media
- Kline, R. B. (2015). *Principles and practice of structural equation modeling* (4 ed.). New York, USA: The Guilford Press
- Knudson, D. M., Cable, T. T., and Beck, L. (1995). *Interpretation of Cultural and Natural Resources*. USA: Venture Publishing, Inc., 1999 Cato Ave., State College, PA 16801; Tel: 814-234-4561 (\$39.95).
- Kraus, R. G. (1990). Recreation and leisure in modern society. In: Scott, Foresman/Little, Brown Higher Education (Glenview, Ill.)
- Kuo, I. (2002). The effectiveness of environmental interpretation at resource-sensitive tourism destinations. *International Journal of Tourism Research*, 4(2), 87-101.
- LaPierre, R. (1934). Actions vs. attitudes. *Social forces*, 13, 230-238.
- Larson, L. R., Stedman, R. C., Cooper, C. B., and Decker, D. J. (2015). Understanding the multi-dimensional structure of pro-environmental behavior. *Journal of Environmental Psychology*, 43, 112-124.
- Latip, N. A., Marzukia, A., and Rais, N. S. M. (2016). *Conservation and Environmental Impacts of Tourism in Kinabalu Park, Sabah*. Paper presented at the 1st International Conference on Society, Space & Environment, Malaysia. <http://www.soc.usm.my/images/pdf/ICSSE-Final22-Nov-17.pdf#page=42>
- Li, M., Cai, L. A., and Qiu, S. (2016). A Value, Affective Attitude, and Tourist Behavioral Intention Model. *Journal of China Tourism Research*, 12(2), 179-195.

- Lim, J. K., Murugaiyah, V. A., Ramli, A. S., Rahman, H. A., Mohamed, N. S. F., Shamsudin, N. N., and Tan, J. C. (2011). A case study: leptospirosis in Malaysia. *Webmed Central INFECTIOUS DISEASES*, 2(12), 1-12.
- Lime, D. W., and Lucas, R. C. (1977). Good information improves the wilderness experience. *Naturalist*, 28(4), 18-21.
- Lindberg, K., and McKercher, B. (1997). Ecotourism: a critical overview. *Pacific Tourism Review*, 1(1), 65-79.
- Lindenberg, S. (2012). How cues in the environment affect normative behavior. *Environmental Psychology: An Introduction*, New York: Wiley, 119-128.
- Lindenberg, S., and Steg, L. (2007). Normative, gain and hedonic goal frames guiding environmental behavior. *Journal of social issues*, 63(1), 117-137.
- Liska, A. E. (1984). A critical examination of the causal structure of the Fishbein/Ajzen attitude-behavior model. *Social Psychology Quarterly*, 47(1), 61-74.
- Littlefair, C. J. (2003). *The effectiveness of interpretation in reducing the impacts of visitors in national parks*. (Doctor of Philosophy), Griffith University, Brisbane, Queensland,, Australia. Retrieved from <http://hdl.handle.net/10072/366059>
- Loewenstein, G., and Lerner, J. S. (2003). The role of affect in decision making. *Handbook of affective science*, 619(642), 3.
- Lohmöller, J.-B. (2013). *Latent variable path modeling with partial least squares*. New York, USA: Springer Science & Business Media
- López-Mosquera, N., and Sánchez, M. (2012). Theory of Planned Behavior and the Value-Belief-Norm Theory explaining willingness to pay for a suburban park. *Journal of Environmental Management*, 113, 251-262.
- Lütkenhaus, P., and Bullock, M. (1991). The development of volitional skills. *Contributions to human development*, 22, 14-23.
- Lynn, W. E. (2015). Vexing problem of littering problem [Press release]. Retrieved from <http://www.thestar.com.my/opinion/letters/2015/03/26/vexing-problem-of-littering-problem/>
- MahougbeHounsa, A., Godin, G., Alihonou, E., Valois, P., and Girard, J. (1993). An application of Ajzen's theory of planned behaviour to predict mothers' intention to use oral rehydration therapy in a rural area of Benin. *Social Science & Medicine*, 37(2), 253-261.
- Majelan, S. (2016). Malaysians And Littering – A Never-Ending Story [Press release]. Retrieved from <http://malaysiandigest.com/frontpage/282-main-tile/638421-malaysians-and-littering-a-never-ending-story.html>

- Manning, R., Ballinger, N., Marion, J., and Roggenbuck, J. (1996). Recreation management in natural areas: problems and practices, status and trends. *Natural Areas Journal*, 16(2), 142-146.
- Manning, R. E. (2003). Emerging principles for using information/education in wilderness management. *International Journal of Wilderness*, 9(1), 20-27.
- Manning, R. E., Anderson, L. E., and Pettengill, P. (2017). *Managing outdoor recreation: Case studies in the national parks*. Vermont, USA: CABI
- Manstead, A. S. (2000). The role of moral norm in the attitude-behaviour relation. In D. J. Terry and M. A. Hogg (Eds.), *Attitudes, behaviour, and social context : the role of norms and group membership applied social research* (pp. 11-30). USA: Lawrence Erlbaum Associates, Inc
- Manstead, A. S., and Parker, D. (1995). Evaluating and extending the theory of planned behaviour. *European review of social psychology*, 6(1), 69-95.
- Mapjabil, J., Marzuki, M., Zainol, R. M., Jusoh, A. T. M., and Ramli, R. S. (2017). Applying sustainability indicators to eco-tourism development: The case of Jeram Linang Amenity Forest, Kelantan. *Geografita-Malaysian Journal of Society and Space*, 11(12), 64-73.
- Marion, J. L., and Reid, S. E. (2007). Minimising visitor impacts to protected areas: The efficacy of low impact education programmes. *Journal of Sustainable Tourism*, 15(1), 5-27.
- Marler, L. (1971). A study of anti-litter messages. *Journal of Environmental Education*, 3(1), 52-53.
- Mathieson, A., and Wall, G. (1982). *Tourism, economic, physical and social impacts*. London, United Kingdom: Longman
- Mayer, J., Seekamp, E., Casper, J., and Blank, G. (2015). An examination of behavior change theories to predict behavioral intentions of organisms-in-trade hobbyists. *Human ecology review*, 21(2), 65-92.
- McAdam, D., McCarthy, J. D., and Zald, M. N. (1988). Social Movements. In N. H. Smelser (Ed.), *Handbook of Sociology* (pp. 695-737). Thousand Oaks, CA, US: Sage Publications, Inc
- McCool, S. F., and Cole, D. N. (2000). *Communicating minimum impact behavior with trailside bulletin boards: Visitor characteristics associated with effectiveness*. Paper presented at the Wilderness science in a time of change conference, Missoula, USA
- McCool, S. F., and Merriam, L. C. (1970). Factors associated with littering behavior in the Boundary Waters Canoe Area. *Minnesota Forestry Research Notes*, 218.

- McLean, D., and Hurd, A. (2011). *Kraus' Recreation and leisure in modern society* (Ninth ed.). USA: Jones and Bartlett Learning
- Meeker, F. L. (1997). A comparison of table-littering behavior in two settings: A case for a contextual research strategy. *Journal of Environmental Psychology, 17*(1), 59-68.
- Mellers, B. A., and McGraw, A. P. (2001). Anticipated emotions as guides to choice. *Current directions in psychological science, 10*(6), 210-214.
- Miller, M. R. (2017). *Understanding Cigarette Butt Littering Behavior on a Public Beach: A Case Study of Jekyll Island*. (Master of Science), University of Nebraska, USA. Retrieved from <https://digitalcommons.unl.edu/conservationsurvey/173>
- Moriano, J. A., Gorgievski, M., Laguna, M., Stephan, U., and Zarafshani, K. (2012). A cross-cultural approach to understanding entrepreneurial intention. *Journal of career development, 39*(2), 162-185.
- Nadler, J. T., Weston, R., and Voyles, E. C. (2015). Stuck in the middle: the use and interpretation of mid-points in items on questionnaires. *The Journal of general psychology, 142*(2), 71-89.
- Namba, R., and Dustin, D. (1992). *Towards New Definitions of Depreciative Behavior and*. USA: Pacific Northwest Research Station Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.123.236&rep=rep1&type=pdf#page=71>
- Nazaruddin, D. A. (2016). Geoheritage from the remote rainforest: hidden treasures in the upstream of the Pertang River, Taman Negara Kuala Koh (National Park), Kelantan, Malaysia. *Environmental Earth Sciences, 75*(16), 1200.
- Netemeyer, R. G., Burton, S., and Johnston, M. (1991). A comparison of two models for the prediction of volitional and goal-directed behaviors: A confirmatory analysis approach. *Social Psychology Quarterly, 54*(2), 87-100.
- Newsome, D., Moore, S. A., and Dowling, R. K. (2002). *Natural area tourism: ecology, impacts, and management*. Clevedon, UK: Channel View Publications Ltd,
- Nordfjærn, T., and Zavareh, M. F. (2017). Does the value-belief-norm theory predict acceptance of disincentives to driving and active mode choice preferences for children's school travels among Chinese parents? *Journal of Environmental Psychology, 53*, 31-39.
- Nordlund, A. M., and Garvill, J. (2002). Value structures behind proenvironmental behavior. *Environment and Behavior, 34*(6), 740-756.
- Nordlund, A. M., and Garvill, J. (2003). Effects of values, problem awareness, and personal norm on willingness to reduce personal car use. *Journal of Environmental Psychology, 23*(4), 339-347.

- Norman, P., and Hoyle, S. (2004). The theory of planned behavior and breast self-examination: Distinguishing between perceived control and self-efficacy. *Journal of Applied Social Psychology, 34*(4), 694-708.
- Norrgrén, L., and Swahnberg, H. (2016). *Investigating Prosocial Behavior: A Case Study of Littering in Laos*. (Master of science), Linköping University, Sweden. Retrieved from <http://urn.kb.se/resolve?urn=urn%3Anbn%3Ase%3Aliu%3Adiva-131331>
- Nowlis, S. M., Kahn, B. E., and Dhar, R. (2002). Coping with ambivalence: The effect of removing a neutral option on consumer attitude and preference judgments. *Journal of Consumer Research, 29*(3), 319-334.
- Ojea, E., and Loureiro, M. L. (2007). Altruistic, egoistic and biospheric values in willingness to pay (WTP) for wildlife. *Ecological Economics, 63*(4), 807-814.
- Ojedokun, O. (2013). The Role of Socio-demographical and Psychological Factors in Taking Littering Prevention Actions. *International Journal of Advances in Psychology, 2*(4), 197-206.
- Olson, E. (1984). Interpretation and nonformal environmental education in natural resources management. *Journal of Environmental Education, 15*(4), 6-10.
- Onel, N., and Mukherjee, A. (2017). Why do consumers recycle? A holistic perspective encompassing moral considerations, affective responses, and self-interest motives. *Psychology & Marketing, 34*(10), 956-971.
- Onwezen, M. C., Antonides, G., and Bartels, J. (2013). The Norm Activation Model: An exploration of the functions of anticipated pride and guilt in pro-environmental behaviour. *Journal of Economic Psychology, 39*, 141-153.
- Oreg, S., and Katz-Gerro, T. (2006). Predicting proenvironmental behavior cross-nationally values, the theory of planned behavior, and value-belief-norm theory. *Environment and Behavior, 38*(4), 462-483.
- Parker, D., Manstead, A. S., and Stradling, S. G. (1995). Extending the theory of planned behaviour: The role of personal norm. *British Journal of Social Psychology, 34*(2), 127-138.
- Petty, R. E., and Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. USA: Springer-Verlag New York Inc
- Plummer, R. (2009). *Outdoor recreation: An introduction*. USA: Routledge New York
- Podsakoff, P. M., and Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of management, 12*(4), 531-544.
- Powers, R. B., Osborne, J. G., and Anderson, E. G. (1973). Positive reinforcement of litter removal in the natural environment. *Journal of Applied Behavior Analysis, 6*(4), 579.

- Presser, S., Couper, M. P., Lessler, J. T., Martin, E., Martin, J., Rothgeb, J. M., and Singer, E. (2004). Methods for testing and evaluating survey questions. *Public opinion quarterly*, 68(1), 109-130.
- Pryor, B. W. (1990). Predicting and explaining intentions to participate in continuing education: An application of the theory of reasoned action. *Adult education quarterly*, 40(3), 146-157.
- Puhakka, R. (2011). Environmental concern and responsibility among nature tourists in Oulanka PAN Park, Finland. *Scandinavian Journal of Hospitality and Tourism*, 11(1), 76-96.
- Reich, J. W., and Robertson, J. L. (1979). Reactance and norm appeal in anti-littering messages. *Journal of Applied Social Psychology*, 9(1), 91-101.
- Reinartz, W., Haenlein, M., and Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of research in Marketing*, 26(4), 332-344.
- Rezvani, Z., Jansson, J., and Bengtsson, M. (2017). Cause I'll Feel Good! An Investigation into the Effects of Anticipated Emotions and Personal Moral Norms on Consumer Pro-Environmental Behavior. *Journal of Promotion Management*, 23(1), 163-183.
- Rhodes, R. E., and Courneya, K. S. (2003). Investigating multiple components of attitude, subjective norm, and perceived control: An examination of the theory of planned behaviour in the exercise domain. *British Journal of Social Psychology*, 42(1), 129-146.
- Ringle, C., Wende, S., and Becker, J. (2015). SmartPLS3. SmartPLS, Bonningstedt. In
- Rivis, A., and Sheeran, P. (2003). Descriptive norms as an additional predictor in the theory of planned behaviour: A meta-analysis. *Current Psychology*, 22(3), 218-233.
- Rivis, A., Sheeran, P., and Armitage, C. J. (2009). Expanding the Affective and Normative Components of the Theory of Planned Behavior: A Meta-Analysis of Anticipated Affect and Moral Norms. *Journal of Applied Social Psychology*, 39(12), 2985-3019. doi:10.1111/j.1559-1816.2009.00558.x
- Robbins, M. (2005). *Comparing the influence of interpretive and sanction signs on visitors' attention, knowledge, attitudes and behavioral intentions*. (Master of Sciences), Humboldt State University, USA. Retrieved from http://humboldt-dspace.calstate.edu/xmlui/bitstream/handle/2148/26/MarminRobbinsthesis12-20-05.pdf?sequence=1&origin=publication_detail
- Robinson, S. N. (1976). Littering behavior in public places. *Environment and Behavior*, 8(3), 363-384.

- Roggenbuck, J. (1987). *Park interpretation as a visitor management strategy. Metropolitan Perspectives in Parks and Recreation*. Paper presented at the Annual Conference of the Royal Australian, Australia.
- Roggenbuck, J. (1992). Use of persuasion to reduce resource impacts and visitor conflicts. In M. J. Manfredo (Ed.), *Influencing human behavior: Theory and application in recreation, tourism, and natural resources management* (pp. 149-208). Champaign, Illinois, USA: Sagamore Publishing
- Roggenbuck, J., and Ham, S. H. (1992). Use of information and education in recreation management. *Conflicts on Multiple Use Trails*, 23.
- Roggenbuck, J. W., and Watson, A. E. (1986). *Providing information for management purposes*. Paper presented at the A symposium: wilderness and natural areas in the Eastern United States: a management challenge, Nacogdoches, TX: Stephen F. Austin University, Center for Applied Studies, School of Forestry, USA
- Rokeach, M. (1968). *Beliefs, attitudes and values: A theory of organization and change*. San Francisco, USA: Jossey-Bass
- Rothgeb, J. M., Willis, G., and Forsyth, B. (2007). Questionnaire Pretesting Methods. Do Different Techniques and Different Organizations Produce Similar Results? *Bulletin de méthodologie sociologique. Bulletin of sociological methodology*, 96(1), 5-31.
- Rozycka-Tan, J., Ha, T. T. K., Ciecuch, J., and Schwartz, S. H. (2017). Universals and specifics of the structure and hierarchy of basic human values in Vietnam. *Health Psychology Report*, 5(3), 193-204.
- Sauer, U., and Fischer, A. (2010). Willingness to pay, attitudes and fundamental values—On the cognitive context of public preferences for diversity in agricultural landscapes. *Ecological economics*, 70(1), 1-9.
- Savage, S. A., and Clarke, V. A. (2001). Factors associated with breast and cervical cancer screening behaviours. *Health education*, 101(4), 176-186.
- Schultz, P., Bator, R. J., Large, L. B., Bruni, C. M., and Tabanico, J. J. (2013). Littering in context: Personal and environmental predictors of littering behavior. *Environment and Behavior*, 45(1), (35-59).
- Schultz, P. W., Gouveia, V. V., Cameron, L. D., Tankha, G., Schmuck, P., and Franěk, M. (2005). Values and their relationship to environmental concern and conservation behavior. *Journal of cross-cultural psychology*, 36(4), 457-475.
- Schultz, P. W., Large, L., Tabanico, J., Bruni, C., and Bator, R. (2009). *Littering behavior in America: Results of a national study*. Retrieved from California, USA www.takeactionresearch.com
- Schwartz, S. H. (1968). Awareness of Consequences and the Influence of Moral Norms on Interpersonal Behavior. *Sociometry*, 31(4), 355-369.

- Schwartz, S. H. (1973). Normative explanations of helping behavior: A critique, proposal, and empirical test. *Journal of Experimental Social Psychology*, 9(4), 349-364.
- Schwartz, S. H. (1974). Awareness of interpersonal consequences, responsibility denial, and volunteering. *Journal of personality and social psychology*, 30(1), 57-63.
- Schwartz, S. H. (1977). Normative Influences on Altruism¹. *Advances in experimental social psychology*, 10, 221-279.
- Schwartz, S. H. (1992). Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries. *Advances in experimental social psychology*, 25, 1-65.
- Schwartz, S. H., and Bilsky, W. (1987). Toward a universal psychological structure of human values. *Journal of personality and social psychology*, 53(3), 550.
- Schwartz, S. H., Melech, G., Lehmann, A., Burgess, S., Harris, M., and Owens, V. (2001). Extending the cross-cultural validity of the theory of basic human values with a different method of measurement. *Journal of cross-cultural psychology*, 32(5), 519-542.
- Sekaran, U., and Bougie, R. (2010). *Research methods for business: A skill building approach*. UK: John Wiley & Sons
- Sheeran, P., and Orbell, S. (1999). Augmenting the theory of planned behavior: Roles for anticipated regret and descriptive norms¹. *Journal of Applied Social Psychology*, 29(10), 2107-2142.
- Sheppard, B. H., Hartwick, J., and Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15(3), 325-343.
- Shih, Y. Y., and Fang, K. (2004). The use of a decomposed theory of planned behavior to study Internet banking in Taiwan. *Internet Research*, 14(3), 213-223.
- Sibley, C. G., and Liu, J. H. (2003). Differentiating Active and Passive Littering: A Two-Stage Process Model of Littering Behavior in Public Spaces. *Environment and Behavior*, 35(3), 415-433.
- Slavin, C., Grage, A., and Campbell, M. L. (2012). Linking social drivers of marine debris with actual marine debris on beaches. *Marine pollution bulletin*, 64(8), 1580-1588.
- Smith, J. R., and Louis, W. R. (2008). Do as we say and as we do: The interplay of descriptive and injunctive group norms in the attitude-behaviour relationship. *British Journal of Social Psychology*, 47(4), 647-666.

- Söderlund, M., Vilgon, M., and Gunnarsson, J. (2001). Predicting purchasing behavior on business-to-business markets. *European Journal of Marketing*, 35(1/2), 168-181.
- Sparks, P., and Shepherd, R. (1992). Self-Identity and the theory of planned behavior: Assesing the role of identification with " green consumerism". *Social Psychology Quarterly*, 55(4), 388-399.
- Spash, C. L., Urama, K., Burton, R., Kenyon, W., Shannon, P., and Hill, G. (2009). Motives behind willingness to pay for improving biodiversity in a water ecosystem: Economics, ethics and social psychology. *Ecological economics*, 68(4), 955-964.
- St-Jean, É., Nafa, A., Tremblay, M., Janssen, F., Baronet, J., and Loué, C. (2014). Entrepreneurial intentions of university students: an international comparison between African, European and Canadian students. *International Journal of Entrepreneurship and Innovation Management*, 18(2-3), 95-114.
- Steg, L., Bolderdijk, J. W., Keizer, K., and Perlaviciute, G. (2014). An Integrated framework for encouraging pro-environmental behaviour: The role of values, situational factors and goals. *Journal of Environmental Psychology*, 38, 104-115.
- Steg, L., De Groot, J. I., Dreijerink, L., Abrahamse, W., and Siero, F. (2011). General antecedents of personal norms, policy acceptability, and intentions: The role of values, worldviews, and environmental concern. *Society and Natural Resources*, 24(4), 349-367.
- Steg, L., Dreijerink, L., and Abrahamse, W. (2005). Factors influencing the acceptability of energy policies: A test of VBN theory. *Journal of Environmental Psychology*, 25(4), 415-425.
- Steg, L., and Nordlund, A. (2012). Models to explain environmental behaviour. In *Environmental psychology: an introduction* (pp. 186-195). Chichester, UK: Wiley-Blackwell
- Steg, L., and Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, 29(3), 309-317.
- Stern, P. C. (2000). New environmental theories: toward a coherent theory of environmentally significant behavior. *Journal of social issues*, 56(3), 407-424.
- Stern, P. C. (2005). Understanding individuals' environmentally significant behavior. *Environmental Law Reporter News and Analysis*, 35(11), 10785.
- Stern, P. C., and Dietz, T. (1994). The value basis of environmental concern. *Journal of social issues*, 50(3), 65-84.

- Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., and Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human ecology review*, 6(2), 81-98.
- Stern, P. C., Dietz, T., and Guagnano, G. A. (1998). A brief inventory of values. *Educational and Psychological Measurement*, 58(6), 984-1001.
- Stern, P. C., Dietz, T., and Kalof, L. (1993). Value orientations, gender, and environmental concern. *Environment and Behavior*, 25(5), 322-348.
- Stern, P. C., and Gardner, G. T. (1981a). The place of behavior change in the management of environmental problems. *Zeitschrift für Umweltpolitik*, 2, 213-239.
- Stern, P. C., and Gardner, G. T. (1981b). Psychological research and energy policy. *American psychologist*, 36(4), 329.
- Stern, P. C., Kalof, L., Dietz, T., and Guagnano, G. A. (1995). Values, Beliefs, and Proenvironmental Action: Attitude Formation Toward Emergent Attitude Objects. *Journal of Applied Social Psychology*, 25(18), 1611-1636.
- Straub, D., Boudreau, M.-C., and Gefen, D. (2004). Validation guidelines for IS positivist research. *The Communications of the Association for Information Systems*, 13(1), 63.
- Tabachnick, B. G., and Fidell, L. S. (2013). *Using Multivariate Statistics* (Sixth ed.). USA: Pearson Education
- Thapa, B. (2010). The mediation effect of outdoor recreation participation on environmental attitude-behavior correspondence. *The Journal of Environmental Education*, 41(3), 133-150.
- Thøgersen, J. (2002). Direct experience and the strength of the personal norm-behavior relationship. *Psychology & Marketing*, 19(10), 881-893.
- Thøgersen, J. (2006). Norms for environmentally responsible behaviour: An extended taxonomy. *Journal of Environmental Psychology*, 26(4), 247-261. doi:<https://doi.org/10.1016/j.jenvp.2006.09.004>
- Thompson, R. C., Olsen, Y., Mitchell, R. P., Davis, A., Rowland, S. J., John, A. W., . . . Russell, A. E. (2004). Lost at sea: where is all the plastic? *Science*, 304(5672), 838-838.
- Tinker, F. (1969). The recreation killers. *Kiwanis Magazine*, 27-30.
- Torgler, B., García-Valiñas, M. A., and Macintyre, A. (2012). Justifiability of Littering: An Empirical Investigation. *Environmental Values*, 21(2), 209-231.
- Torkildsen, G. (2005). *Leisure and recreation management*. UK: Psychology Press

- Trafimow, D., and Fishbein, M. (1994a). The importance of risk in determining the extent to which attitudes affect intentions to wear seat belts *Journal of Applied Social Psychology*, 24(1), 1-11.
- Triandis, H. C. (1977). *Interpersonal behavior*: Brooks/Cole Pub. Co.
- Van Dyck, I. P., Nunoo, F. K., and Lawson, E. T. (2016). An Empirical Assessment of Marine Debris, Seawater Quality and Littering in Ghana. *Journal of Geoscience and Environment Protection*, 4(5), 21-36.
- Vaske, J. J., and Kobrin, K. C. (2001). Place attachment and environmentally responsible behavior. *The Journal of Environmental Education*, 32(4), 16-21.
- Vlek, C., and Steg, L. (2007). Human Behavior and Environmental Sustainability: Problems, Driving Forces, and Research Topics. *Journal of social issues*, 63(1), 1-19.
- Washburne, R. F., and Cole, D. N. (1983). Problems and practices in wilderness management: a survey of managers. *USDA Forest Service Research Paper, Intermountain Forest and Range Experiment Station, Forest Service, US Department of Agriculture*(INT-304).
- White, K. M., Smith, J. R., Terry, D. J., Greenslade, J. H., and McKimmie, B. M. (2009). Social influence in the theory of planned behaviour: The role of descriptive, injunctive, and in-group norms. *British Journal of Social Psychology*, 48(1), 135-158.
- Wicker, A. W. (1969). Attitudes versus actions: The relationship of verbal and overt behavioral responses to attitude objects. *Journal of social issues*, 25(4), 41-78.
- Winnett, R. (1992). Behavioral systems framework for media-based behavior change strategies. *Influencing human behavior: Theory and applications in recreation, tourism, and natural resources management*, 103-126.
- Yaakob, Y., Rodrigues, K. F., and John, D. V. (2015). Leptospirosis: recent incidents and available diagnostics—a review. *Med J Malaysia*, 70(6), 351-355.
- Zald, M. N. (1992). *Looking backward to look forward: Reflections on the past and future of the resource mobilization research program*. Paper presented at the Frontiers in social movement theory, New Haven, CT., USA
- Zeelenberg, M., Van Dijk, W. W., and Manstead, A. S. (1998). Reconsidering the relation between regret and responsibility. *Organizational behavior and human decision processes*, 74(3), 254-272.